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Eye Movement Desensitization and Reprocessing as an Effective Treatment Approach with Traumatized Youth

KHILIA TYESE GIACOBONE
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Walden University

College of Psychology and Community Services

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Khilia Tyese Giacobone

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Walden University
2022

Abstract

Eye Movement Desensitization and Reprocessing as an Effective Treatment Approach
with Traumatized Youth

by

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MA, American School of Professional Psychology, 2007

BS, Virginia Commonwealth University, 2003

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Clinical Psychology

Walden University

May 2022

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Abstract

Trauma is anything that impacts an individual's ability to cope. Eye Movement Desensitization and Reprocessing (EMDR) is an evidenced-based treatment for many psychological disorders resulting from traumatic stress; however, there is limited research supporting use with children and adolescents. The purpose of this quantitative study was to evaluate the relationship between EMDR treatment on the reduction of trauma symptoms in children and adolescents. This study was grounded in Adaptive Information Processing (AIP) theory. The research questions explored the relationship between EMDR as an effective treatment for youth who have experienced trauma. The variables considered the pre- and post-test scores on the Subjective Units of Distress Scale (SUDS), the classification of traumatic distress (acute, chronic, or complex) as measured by the adverse childhood experience (ACE) score prior to the start of treatment, and the total number of EMDR sessions received. Archival data were collected on 52 children and adolescents (11–17 years of age) who have undergone EMDR treatment. Results indicated EMDR treatment did not show any statistically significant difference among youth with acute, chronic, or complex trauma; however, results indicated a statistically significant improvement in trauma symptom scores pre- and post-test treatment. The findings supported the reduction of trauma symptoms in youth after participating in EMDR treatment. Based on the results, it is recommended that further exploration be made in the use of EMDR treatment with children and adolescents. The positive social change that this research has provided is empirical support for evidenced-based treatment for youth who have experienced trauma.

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Dedication

This research is dedicated to all of the voices lost... Believe in yourself and your ability to overcome. To the youth of today, you are the future, so make a difference in this world.

Most importantly, this work is dedicated to those who believed in me, took a chance with me, and lastly those who were there to pick me up, dust me off, and helped me to continue persevering. There are a couple individuals that I owe the world, as you were with me every step of the way during this journey. I could not have done without you, and I will forever be grateful.

My family... I love you! I hope the ones who are able to share in the moment are as proud as those looking down from above. My work, my passion, and my mission continue on my relentless battle to make you all proud and make a difference in the world.

Lastly, to those who have been so gracious as to mentor me, and share their knowledge with me... I have no words for the many individuals whom I have encountered and made a significant impact on my life. Please know that I will take the knowledge obtained and continue doing my part to make a difference.

In Honor of Dr. Francine Shapiro, Ph.D.

February 18, 1948–June 16, 2019

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Table of Contents

List of Tables	iv
List of Figures	v
Chapter 1: Introduction to the Study.....	1
Background.....	2
Trauma Exposure	2
Trauma in Children and Adolescents.....	3
Adverse Childhood Experiences.....	4
Psychological Interventions for Trauma.....	4
Problem Statement	6
Purpose of the Study	6
Research Question and Hypotheses	7
Theoretical Foundation	8
Nature of the Study	9
Definition of Terms.....	14
Assumptions.....	17
Scope and Delimitations	18
Limitations	18
Significance.....	19
Summary	20
Chapter 2: Literature Review.....	22
Literature Search Strategy.....	23

Theoretical Foundation	24
Francine Shapiro’s Information Processing Theory	24
Literature Review Related to Key Concepts and Variables.....	27
Trauma	27
Trauma in Children and Adolescents.....	32
Trauma and Psychological Intervention	36
Comparative Analysis.....	58
Treatment of Traumatic Stress.....	62
Summary	64
Chapter 3: Research Method.....	67
Research Design and Rationale	67
Methodology	69
Population	69
Sampling Procedure	69
Procedure for Recruitment, Participation, and Data Collection	72
Instrumentation and Operationalization of Constructs	74
Data Analysis Plan	77
Threats to Validity	79
Ethical Procedure	80
Summary	81
Chapter 4: Results	82
Data Collection and Analysis.....	84

Results.....	87
Validity of Data.....	87
Demographic Characteristics of Sample and Study Variables	89
Research Questions and Hypothesis Testing	90
Summary.....	95
Chapter 5: Discussion, Recommendations, and Conclusion	97
Interpretation of Findings	100
Limitations of the Study.....	106
Recommendations.....	108
Implications for Social Change.....	110
Conclusion	113
References.....	117
Appendix A: Subjective Units of Distress Scale	140
Appendix B: CDC-Kaiser ACE Study.....	143
Appendix C: Clinical Assessment Tools	148
Appendix D: Neurofeedback Quick Assessment.....	149
Appendix E: Adaptive Information Processing Theory.....	151

List of Tables

Table 1. Descriptive Statistics (ANOVA)	89
Table 2. Tests of Between-Subjects Effects	91
Table 3. Descriptive Statistics (ANCOVA).....	93
Table 4. Tests of Within-Subjects Contrasts.....	94

List of Figures

Figure 1. Estimated Marginal Means of Subjective Units of Distress Scale 91

Figure 2. Estimated Marginal Means of Pre- and Post-Tests Subjective Units of Distress
..... 92

Dissertation: Eye Movement Desensitization and Reprocessing (EMDR) as an Effective Treatment Approach with Traumatized Youth

Chapter 1: Introduction to the Study

A significant number of children in American society are exposed to traumatic life events, with more than two thirds of children and adolescents reporting experiencing a traumatic event by 16 years of age (American Psychological Association, 2018). However, much of the knowledge about traumatic stress has been based on adult studies (DeBellis & Zisk, 2014; Van der Kolk, 2014). The impact of trauma can have lasting effects on individuals (Corrigan & Hull, 2015; Courtois & Ford, 2009; Substance Abuse and Mental Health Services Administration [SAMHSA], 2014). Further, trauma can have detrimental impact on the brain and brain development, as the stress hormones produced during a traumatic experience, interfere with the development of higher brain functions (DeBellis & Zisk, 2014). It changes not only how an individual processes information but also their capacity to think and perceive interactions (Burke Harris, 2019; Canada, 2019; de Roos et al., 2011). But there is limited research on the relationship between trauma symptoms with children and adolescents (Litz et al., 2015; Shubina, 2015). Thus, this study was conducted to uncover prevalent trends in the treatment of children and adolescents who have suffered various forms of trauma.

In Chapter 1, an overview of the intended research study is provided. The study begins with background information on trauma in children and adolescents, exploring terms and definitions of the various classifications of trauma exposure. The study continues with a description of Francine Shapiro's (2007) adaptive information processing (AIP) theory of psychological distress describing the process by which

traumatic memories are stored maladaptively in the brain. This supports exploration of the impact of trauma symptoms, and the need for interventions that may be effective in reducing negative outcomes and enhancing adaptive functioning. Further, the problem statement, the purpose of the study, and then the research question and hypotheses are discussed. Next, the nature of the study and the definitions that guide this study are explained, followed by the assumptions, delimitations, and limitations. Finally, the significance of this study and how it may contribute to the field are discussed along with providing a summary to highlight the main areas that are discussed throughout this chapter.

Background

Trauma Exposure

Rates of traumatic stress range from 7% to 12%, with higher rates reported in military personnel, and screenings conducted in adolescents as well as adults have indicated that at least 50% of individuals report moderate to severe trauma stress symptoms (Loudenback, 2016). Traumatic stress often results from individual experiences of an incident or event that overwhelmed the brain's information processing system (Chen et al., 2018). The impact of trauma exposure results in a fundamental reorganization in the way the brain manages perceptions, changing an individual's capacity to process information such as perceiving interactions (Burke Harris, 2019; Canada, 2019; de Roos et al., 2011). According to Schmid (2017), scientists have been studying how prolonged exposure to panic and stress early in life can upset hormones and neurotransmitters. An emerging topic called epigenetics, in the field of medicine has been

exploring how chronic stress builds up toxins within the body and potentially can even mutate genetic codes, which are passed down in the DNA to children (Schmid, 2017). Possible causes of traumatic stress are extreme child abuse and neglect, domestic violence (witnessed and experienced), sexual assault and violence, and violent experiences (Chen et al., 2018; Dorsey et al., 2017; Solomon et al., 2009). Prolonged exposure to repetitive or severe events such as child abuse is likely to cause the most severe and lasting effects (International Society for the Study of Trauma and Dissociation, 2009). The National Child Traumatic Stress Network (2017) has recognized the personal and societal costs of doing nothing to recognize and respond to children and families exposed to trauma.

Trauma in Children and Adolescents

Childhood trauma has been viewed as a silent epidemic because the prevalence rate continues to be high, and it is severely underreported (Centers for Disease Control and Prevention [CDC], 2019; Bessel van der Kolk, 2014; Chen et al., 2018; Dorsey et al., 2017; Solomon et al., 2009). It is more common for children to be exposed to more than a single traumatic event, but children exposed to chronic and pervasive trauma are especially vulnerable to the impact of subsequent trauma (American Psychological Association, 2008, 2018). Children and adolescents vary in the nature of their responses to traumatic experiences due to their developmental level, ethnicity/cultural factors, previous trauma exposure, available resources, and preexisting child and family problems (American Psychological Association, 2018). However, nearly all children and adolescents express some kind of distress or behavioral change in the acute phase of

recovery from a traumatic event (American Psychological Association, 2008). Despite this exposure to trauma, there are limited to no published research studies on the relationship between trauma symptoms and children and adolescents. Identifying and improving the available treatment options are significant steps that are needed as part of a true public health approach to an epidemic of trauma exposure.

Adverse Childhood Experiences

Adverse childhood experiences (ACEs) are stressful or traumatic events that include abuse, neglect, household dysfunction, which includes domestic violence (Adler-Nevo & Manassis, 2005; CDC, 2019; Felitti et al., 1998; SAMHSA, 2017; Saunders & Adams, 2014). There are three types of ACEs classifications: abuse (physical, emotional, and sexual), neglect (physical and emotional), and household dysfunction (mental illness, incarcerated relative, mother treated violently, divorce, and substance abuse; CDC 2019, Felitti, 1998); SAMHSA. 2017). These experiences contribute to individuals' development and ability to cope with a wide range of complex issues that may have occurred during childhood. Toxic stress is a type of stressful experience, particularly in childhood, that can affect brain architecture and chemistry (DNA Learning Center, 2018). Thus, there have been many movements recently to help build resilience in children who have experienced significant traumatic stress (National Child Traumatic Stress Network, 2016).

Psychological Interventions for Trauma

Several meta-analysis studies have shown that trauma-focused cognitive behavioral therapy (CBT) and Eye Movement Desensitization and Reprocessing (EMDR)

are efficacious for the treatment of PTSD in adults (Ehring et al., 2014; Gutermann et al., 2016; Maxfield & Hyer, 2002; Roberts et al., 2010; Seidler & Wagner, 2006). EMDR is a comprehensive method of psychotherapy that utilizes bilateral stimulation of the brain as a means of processing thoughts. The treatment method for EMDR was originally developed by Shapiro (1995) to treat traumatic memories in adults with PTSD. EMDR focuses on reprocessing the dysfunctionally stored memories of the traumatic experience, enabling individuals to progress through the appropriate stages of affect and insight while processing the traumatic event (Solomon et al., 2009). Treatment involves three main concentrations that consist of past memories, present disturbances, and future actions. It is comprised of eight phases, and an individual may work through several phases in one session with a trained practitioner (EMDR Network, 2012). The eight phases include History and Treatment Planning (Phase 1), Preparation (Phase 2), Assessment and Reprocessing (Phase 3), Desensitization (Phase 4), Installation (Phase 5), Body Scan (Phase 6), Closure (Phase 7), and Reevaluation (Phase 8). Although EMDR is widely used and researched with adults (Chen et al., 2018; Dorsey et al., 2017; Solomon et al., 2009), the use as an effective therapeutic intervention with children and adolescents is growing as there is significant data that outlines and highlights the effects of unresolved childhood trauma that continues into adulthood (Chen et al., 2018). Therefore, this study focused on evaluating the relationship between EMDR treatment on trauma symptoms. Research in this area would help to uncover prevalent trends in the use of EMDR therapy in the treatment of children and adolescents who have suffered various forms of trauma.

Problem Statement

Many survivors of traumatic experiences develop psychological distress because of the way their brain processes the event and stores the perception of the traumatic event (Solomon et al., 2009). But there is a need for evidence-based treatment interventions for children and adolescents who have experienced trauma. Several meta-analysis studies have shown that trauma-focused CBT and EMDR are efficacious for the treatment of PTSD in adults (Ehring et al., 2014; Gutermann et al., 2016; Maxfield & Hyer, 2002; Seidler & Wagner, 2006); however, the prevalence of research and data to support the efficacy of EMDR in children and adolescents is limited. Possible causes of traumatic stress are extreme child abuse and neglect, domestic violence (witnessed and experienced), sexual assault and violence, and other violent experiences (Solomon et al., 2009). Despite the prevalence of childhood trauma, studies regarding psychotherapy for children suffering from trauma symptoms are scarce (Adler-Nevo & Manassis, 2005). The data from this study will help to fill the research gap surrounding additional forms of non-conventional therapies and treatment modalities to serve children and adolescents who have been exposed to various forms of trauma and victimization.

Purpose of the Study

The purpose of this quantitative research was to evaluate the relationship between EMDR treatment, using archival data, on the reduction of trauma symptoms among youth ages 11 to 17 years of age. The archival data variables that were considered were the pre- and post-tests scores on the Subjective Units of Distress Scale (SUDS), the classification of traumatic distress (acute, chronic, or complex) as measured by the ACEs score prior to

the start of treatment, and the total number of EMDR sessions received. Effective treatment was measured by the number of EMDR sessions obtained and a decrease in SUDS scores.

Research Question and Hypotheses

Research Question 1: Is there a relationship among EMDR therapy as an effective treatment for youth ages 11–17 years old who have experienced at least one traumatic experience?

H_{01} – Null hypothesis: There is no relationship among EMDR as an effective treatment for youth ages 11–17 years old who have experienced at least one traumatic experience.

H_{a1} – Alternative hypothesis: There is a relationship among EMDR as an effective treatment for youth ages 11–17 years old who have experienced at least one traumatic experience.

Research Question 2: Is there any difference in the relationship between EMDR treatment and (a) acute, (b) chronic, or (c) complex trauma experienced by youth ages 11–17 years old?

H_{02} – Null hypothesis: There is no difference in the effectiveness of EMDR treatment for (a) acute, (b) chronic, or (c) complex trauma experienced by youth ages 11–17 years old.

H_{a2} – Alternative hypothesis: There is a difference in the effectiveness of EMDR treatment for (a) acute, (b) chronic, or (c) complex trauma experienced by youth ages 11–17 years old.

Theoretical Foundation

The current study was grounded in Shapiro's (2007) AIP theory, which was developed to account for the effects noted with EMDR treatment in individuals who have experienced trauma (Shapiro, 1995). Shapiro developed this model for trauma and traumatic stress, defining the process by which traumatic memories are stored maladaptively in the brain. The theory emphasizes human development and the ways in which individuals process information (Shapiro, 2001). According to this theory, traumatic memories and their inherent cognitive, affective, and somatosensory components are disconnected from the brain's adaptive memory processing system (Cusack et al., 2009). Memory networks adapt to new information as memories form from interactions between the active organism of the person and the environment (Gomez, 2013); however, there is a disruption to this pattern of stored memories when the psyche is overwhelmed by trauma. Instead, the traumatic memories are stored unprocessed and disconnected from adaptive memory networks, therefore causing post-traumatic stress symptomatology (Shapiro, 2007). The AIP model also provides procedures to prompt access to the memories and force the brain to process them correctly, helping to resolve the traumatic stress symptoms (Cuijpers & Lee, 2013; EMDR International Association, 2018; Shapiro, 2012).

The theoretical framework for this study, surrounding the use of EMDR, was as closely normed to the available data and evidence-based research that has been supported by Francine Shapiro. Shapiro (1995) originally developed EMDR as a treatment method to treat traumatic memories in adults with PTSD based on the notion that traumatic

experiences affect many domains of thought, emotion, sensation, and physical parts of the self at times. Shapiro (2001) suggested that regardless of the incident that is experienced as a traumatic, any memory can be stored in a variety of ways: functional, dysfunctional, positive, or negative. Inappropriately stored memories can be targeted by EMDR treatment and therapy through the eye stimulation which activates the information processing system (Shapiro, 2001). Although there is little empirically supported research on EMDR with children and adolescents (Adler-Tapia & Settle, 2009), this allowed for this study to use the AIP theory to provide insight into the need for more evidence-based approaches to therapy that are effective with children and adolescents that are not traditional modes of therapeutic interventions such as EMDR.

Nature of the Study

A correlational, nonexperimental, quantitative study was conducted to evaluate the relationship between EMDR therapy in the treatment of children and adolescents who have suffered various forms of trauma (acute, chronic, or complex) through the use of archival data. Factorial analysis of variance (ANOVA) as well as analysis of covariance (ANCOVA) was used to examine the functional relationship between the number of EMDR sessions, therapeutic intervention, and trauma symptoms, allowing a numeric description of effects. Multiple linear regression was used to help explain trauma symptomatology scores pre and post EMDR treatment. A covariate repeated measure within subject analysis was conducted to determine pre- and post-test differences and responses to the EMDR therapy. Effective treatment was measured by the number of EMDR sessions obtained, and a decrease in SUDS scores. Pre- and post-test scores were

rated on a 10-point scale by the practitioner that has been trained by Shapiro (1995, 2001) on conducting EMDR therapy. The practitioner assesses the thought of the trauma on a scale of 1 to 10, with 10 being the most disturbing thoughts of the trauma. These scores were obtained from archival data to reduce the limitations of the generalizability of the study, to enhance the geographic region of the population, as well as to provide representation of various EMDR practitioners.

The primary purpose of methods of inquiry is to capture the meaning of psychological phenomenon and relationships among variables as they occur naturally (Nastasi & Schensul, 2005), which is supported in this retrospective approach to evaluating archival data. Quantitative research was needed to determine whether EMDR treatment is effective in the treatment of children and adolescents who have experienced significant forms of trauma. It was hypothesized that a curvilinear relationship may exist between the pre-scores of the EMDR sessions, as well as the post-tests scores. Although treatment was not conducted, other treatment components were evaluated to determine the experience of youth who have experienced trauma and undergone EMDR treatment. Use of archival data (Quantitative), built upon the experience of the youth through the course of EMDR therapy, and allowed for the incorporation of phenomenology because the research was built on the essence of the traumatic experience as expressed by the youth through the pre and post-test assessments of each EMDR session. This approach allowed for the examination of the lived experiences of individual youth, and encompass the entire experience from their own perspective.

A correlation study provided an evaluation of which variables contribute to positive treatment outcomes when using EMDR as a treatment for traumatized youth. The constructs or variables that may also be considered when conducting a quantitative study are used to investigate the factors associated with maladaptive behavior and the characteristics that may be associated with the trauma experienced. Many of these factors may include biological and environmental factors, the socialization of youth, family interaction with youth, behaviors demonstrated by youth, and academic performance. When evaluating the effects of trauma, a quantitative approach is supported, as there are multiple perspectives and differences across cultures, environments, and settings. As indicated by Nastasi and Schensul (2005) the primary purpose of methods of inquiry is to capture the meaning of psychological phenomenon and relationships among variables as they occur naturally, which is supported in this retrospective approach to evaluating archival data.

Quantitative research in this area is needed to determine whether EMDR treatment is effective in the treatment of children and adolescents who have experienced significant forms of trauma. The literature reviewed evidenced that there have been significant contributions by practitioners to enhance the use of EMDR as an effective treatment with traumatized individuals, as a treatment modality to help individuals address trauma symptoms. Quantitative analysis allowed for numerical values to be placed on the trauma experienced, which increased the validity of the study. This further enhanced social change because of the impact of having less biased data, which was taken from the perspective of the youth. The literature reviewed suggested that there have

been significant contributions by practitioners to enhance treatment modalities to help individuals address trauma symptoms. The literature and research reviewed contribute to society as a means of providing another viable tool for professionals to use in treating varying populations who have suffered significant trauma. This research only evaluated the effects of the adolescent population.

Available research was reviewed through the use of archival data, and hypothesis formed to support the use of EMDR as an effective use of therapy towards the treatment of trauma symptoms. From a review of the literature using archival data and a retrospective perspective, case method and case study was appropriate for this area of research because it provided an accurate representation of the data that supports the research question. It provided relevant information to new, current research that provided insight to the trends, as recent research has reported the effects of trauma, as a means of influencing therapy, behavior, and quality of life for individuals.

Research in this area is helpful to uncover prevalent trends in the use of EMDR therapy in the treatment of children and adolescents who have suffered various forms of trauma. The proposed research question was a preliminary examination of the relationship among EMDR therapy as an effective treatment for children and adolescents, who have experienced at least one traumatic event. Effective treatment was measured by the number of EMDR sessions obtained, and a decrease in the SUDs. The archival data variables that were considered are the pre and post-tests scores on the SUDs, the classification of traumatic distress (acute, chronic, or complex) as measured by the ACEs score prior to the start of treatment, and the total number of EMDR sessions received. Pre

and post-test scores were rated on a 10-point scale by the practitioner that has been trained by Shapiro (2001; 1995) on conducting EMDR therapy. The practitioner assesses the thought of the trauma on a scale of 1 to 10, with 10 being the most disturbing thoughts of the trauma. These scores were obtained from archival data to reduce the limitations of the generalizability of the study, to enhance the geographic region of the population, as well as to provide representation of various EMDR practitioners.

The null hypotheses was that there is no relationship among EMDR therapy as an effective treatment for youth who have experienced trauma; and that there is no difference in the effectiveness of EMDR treatment for acute, chronic, or complex trauma experienced. The number of EMDR sessions was also correlated.

Data was collected that supported the hypothesis that youth who are able to engage in EMDR treatment, will have a decrease in trauma symptoms. There is also research that supports that trauma symptoms may increase if treatment is delayed or declined; contributing to the impact of the trauma exposure.

It was hypothesized that a curvilinear relationship may exist between the pre-scores of the six-to-eight week EMDR sessions, as well as the post-tests scores. The curvilinear relationship was hypothesized that as the youth begin to explore the EMDR therapy and have intrusive thoughts of the trauma, as well as an increase in vivid dreams at the initial points of therapy. As the bilateral stimulation of the brain allows for processing of the traumatic events, the adverse effects of the therapy would be hypothesized to decrease. Repeated measures, within-between interactions, ANOVA was used because of the smaller sample size of the study. Using F-tests, the effect size would

be 0.25, and alpha would be 0.05, with a 95 percent confidence interval. A correlation study provided an evaluation of which variables contribute to positive treatment outcomes when using EMDR as a treatment for traumatized youth. Although treatment was not conducted, other treatment components may contribute to the experience of youth who have experienced trauma and undergone EMDR treatment, with using more Cognitive Behavior therapies prior to the start of EMDR treatment. Other variables that could be considered would be the socialization of youth, family interaction with youth, behaviors demonstrated by youth, and academic performance.

Definition of Terms

The following terms are defined as they are used throughout this study.

Acute trauma: Single incident or single cluster traumas that tend to elicit a traumatic stress response (American Psychiatric Association [APA], 2013).

Adaptive information processing (AIP): A conceptual theory derived from evidenced-based research into therapeutic treatment for traumatic stress. Shapiro (2007) developed a model for trauma and traumatic stress, defining the process by which traumatic memories are stored maladaptively in the brain. AIP theorized memory networks adapt to new information as memories form from interactions between the active organism of the person and the environment (Gomez, 2013). However, there is a disruption to this pattern of stored memories when the psyche is overwhelmed by trauma. Instead, the traumatic memories are stored unprocessed and disconnected from adaptive memory networks, therefore causing post-traumatic stress symptomatology (Shapiro, 2007). The AIP model also provides procedures to prompt access to the memories and

force the brain to process them correctly, helping to resolve the traumatic stress symptoms (Cuijpers & Lee, 2013; EMDR International Association, 2018; Shapiro, 2012).

Cognitive behavioral therapy (CBT): A type of psychotherapy that focuses on exploring relationships among a person's thoughts, feelings and behaviors (National Alliance on Mental Illness [NAMI], 2015).

Chronic trauma: Prolonged experiences leading to traumatic stress responses (Corrigan & Hull, 2015; Korn, 2009; Leeds & Shapiro, 2000).

Complex trauma: Exposure to varied and multiple traumatic events or experiences (Corrigan & Hull, 2015; Korn, 2009; Leeds & Shapiro, 2000).

Evidence-based treatment interventions: Treatments that have been proven effective through outcome evaluations, and are valid for a specific purpose, with a specific population (Ginwright, 2018; Shapiro & Brown, 2019; The National Child Traumatic Stress Network, 2012).

Eye movement desensitization and reprocessing (EMDR): An integrative treatment for trauma symptoms. An individual recalls a disturbing image in their mind while tracking an object, recalling the negative thoughts, and body sensations associated with a traumatic memory (Chemtob et al., 2000; Shapiro, 2000).

EMDR treatment efficacy: The predominance of research identified EMDR as being more effective in shorter treatment time than other trauma therapies (Forest & Shapiro, 2016). EMDR protocols use a subjective scale to measure the efficacy of treatment called the SUDS.

Post-traumatic stress disorder (PTSD): Persistent psychiatric distress resulting from events involving actual or threatened death or injury (American Psychological Association, 2018). PTSD is a clinical disorder representing a historic exposure to trauma, resulting in abnormal traumatic stress responses (American Psychological Association, 2018). Traumatic stress responses typically fit into one of four symptom categories, which include avoidant, intrusive, negative alterations in cognition and mood, and alterations in arousal and activity (American Psychiatric Association, 2013). The Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition (DSM-V) stated that PTSD includes but is not limited to repeated or extreme exposure to aversive details of an event or events, intense or prolonged distress, marked physiological reactivity after exposure, and intrusive memories (American Psychological Association, 2013). Recent changes to the PTSD diagnosis in the DSM-V removed it from the anxiety disorder category and placed it in the newly devised Trauma and Stressor-Related Disorders category (Cureton & Jones, 2017; U.S. Department of Veteran Affairs, 2015).

Subjective units of distress scale (SUDS): The SUDS (adapted from Wolpe as described in Shapiro, 1989) measures the intensity of subjective distress in response to a particular stimulus, such as memory. It is widely utilized and has been shown to correlate with several physiological measures of stress (Shapiro & Brown, 2019).

Trauma-focused cognitive behavioral therapy (TF-CBT): An evidence-based treatment for children and adolescents impacted by trauma. Research shows that trauma-focused CBT successfully resolves a broad array of emotional and behavioral difficulties

associated with single, multiple, and complex trauma experiences (The National Child Traumatic Stress Network, 2012).

Traumatic stress response: A term used for an individual's cognitive, affective, and physiological response to stress (Wilson et al., 2011). A significant aspect of all forms of trauma, the alteration of future stress responses is illustrated throughout trauma research, including the Adverse Childhood Experiences scale (ACEs) studies (Adler-Nevo & Manassis, 2005; CDC, 2019; Felitti et al., 1998; SAMHSA, 2017; Saunders & Adams, 2014). Abnormal traumatic stress responses are the basis for traumatic stress, as the abnormal response leads to improperly stored memories and the symptoms associated with PTSD (American Psychological Association, 2018).

Assumptions

Based on the eligibility participation and consent for treatment, it was assumed that all participants were medically cleared for treatment, and that initial sessions to help develop coping skills had been established during the preliminary sessions in preparation for the EMDR treatment. The participant data used indicates that clients were in some form of initial treatment prior to the initiation of EMDR treatment. It was assumed that all the clinicians providing EMDR treatment have been trained in the proper protocols for administration by Francine Shapiro. It was also assumed all individuals answered the questions truthfully, because of voluntarily agreeing to take part in the EMDR treatment. Lastly, it was assumed that all participants are able to read English independently and would ask questions for clarification when there is uncertainty. These assumptions were necessary because the participants' information was anonymous or confidential and

voluntary participation was important to the well-being of research participants (Kaiser, 2009).

Scope and Delimitations

The results of this study are only applicable to youth ages 11 to 17 who expressed exposure to trauma. All participants resided in the United States, although some may have been exposed to residing in other countries through the course of their lifespan. Although some of the participants may have resided in other areas outside of the United States, those individuals had been fostered or adopted into families residing in the United States who elicited treatment within the United States. There were no known language barriers and no need for an interpreter to be present for any of the sessions. The other delimitation of this study was the lack of literature documented on the subject of the use of EMDR in the treatment of children and adolescents. This population was selected because the review of the literature indicated that this was an area needing additional research. Although much of the traumatic stress indicated during sessions has occurred during childhood, many of the instances are not immediately reported, nor is treatment initially sought. Although children and adults are both affected by trauma, a higher percentage of adults have documented and reported results of trauma treatments that include EMDR. Future research continues to be needed to include the adolescent population.

Limitations

The study was limited by several factors. First, due to the lack of prior research studies on the topic of using EMDR with children and adolescents to treat trauma

symptoms, supporting current research was limited; however, the absence also indicated a need for further research for the identified gaps in the population. Additionally, because the collection of data was self-reported, it is possible that the results were influenced by the participant's bias and that individuals may not have answered honestly, may have exaggerated, and/or had selective memory to the responses provided. Lastly, although efforts were made to gain representation of participants throughout the United States, it was not certain that the results were not specific to a certain geographic area, nor can it be asserted that ethnic and gender diversity were represented in the treatment outcomes provided.

Significance

Research in the area of evidence-based approaches to treatment and forms of therapy that are effective for children and adolescents that have experienced significant forms of trauma is needed, as there is a lack in normative data to support the effectiveness of non-traditional treatment modalities, such as EMDR. There is considerable need for evidence-based treatment interventions for children and adolescents that will allow for the examination of the traumatic impact of individual youth, encompassing their entire experience from their own perspective. The significance of this study is benefiting children and adolescents that often struggle, or are less responsive to the traditional modes or forms of treatment. Studying EMDR with children and adolescents allowed opportunities and further research that is more formulated to the unique needs of younger populations. Additionally, variables that impacted treatment outcomes such as the ACEs score, the classification of traumatic distress (acute versus

chronic or complex), and the number of sessions were studied. The study provides insight to behaviors that are a direct result of experienced forms of trauma and victimization and may be used to encourage development of interventions to address the epidemic of childhood trauma and build a more resilient community.

Summary

This quantitative study was grounded in Shapiro's (2007) AIP theory to evaluate the relationship between EMDR treatment on the reduction of trauma symptoms among youth. There is little empirically supported research on EMDR with children and adolescents, although it has been reported that Shapiro included children in her original unpublished research and began presenting on the effectiveness of her work with them in 1989 (Adler-Tapia & Settle, 2009). Research on psychotherapy interventions with children and adolescents suffering from trauma is generally underrepresented in the empirical literature, which this study addressed through the review of archival data on youths ages 11–17 years of age and differences in scores on the SUDS and thus allowing for insight into the need for more evidence-based approaches to therapy. Research is evolving surrounding the short and long-term impact of unresolved trauma in individuals (Chen et al., 2018; Dorsey et al., 2017; Solomon et al., 2009). However, there is limited information surrounding the various treatment options, and therapeutic approach that is effective in treating children and adolescents who experience traumatic stress. Chapter 2 will clarify the concepts introduced in this chapter through an in-depth review of literature of previous studies as well as address the gap that remains in the literature

involving the relationship between unresolved traumatic stress, treatment options for children and adolescents, and therapeutic interventions.

Chapter 2: Literature Review

Trauma has an enormous impact on both individuals and society (Copeland et al., 2007; Hussey et al., 2012; McLaughlin et al., 2013; National Institute of Mental Health [NIMH]; 2020; U.S. Census Bureau, 2018). Many treatment approaches were designed to address the immediate issues or concerns but fail to address the root causes of trauma in communities, neighborhoods, and families (Ginwright, 2018). Additionally, by only treating the individual, treatment approaches leave the toxic system, policies, and practices in place (Ginwright, 2018). Therefore, the purpose of this quantitative research was to evaluate the relationship between EMDR treatment through the use of archival data, on the reduction of trauma symptoms among youth 11 to 17 years of age. Trauma symptoms were measured by pre- and post-test scores on the EMDR trauma SUDS. The variables that were considered were the pre- and post-tests scores on the SUDS, the classification of traumatic distress as measured by the ACEs score prior to the start of treatment, and the total number of EMDR sessions received. In this chapter, the relationship between EMDR treatment on the reduction of trauma symptoms among children and adolescents is reviewed.

As described by Solomon et al. (2009), EMDR is a comprehensive method of psychotherapy that utilizes bilateral stimulation of the brain as a means of reprocessing dysfunctionally stored thoughts of a traumatic experience. EMDR incorporates a variety of theoretical frameworks to include, psychoneurology, Cognitive Behavioral Therapy (CBT), information processing, and nonverbal representation of traumatic memories (EMDR Network, 2012). Archival data was used to evaluate the relationship between

EMDR treatment on the reduction of trauma symptoms in youth. The variables that were considered were the pre and post-test scores, age versus gender, and the total number of EMDR sessions received. Additionally, the two theoretical foundations, Aaron Beck's CBT and Francine Shapiro's EMDR have been reported to be the most effective form of evidenced based psychological intervention to reduce PTSD symptoms (Roberts et al., 2010). This research explored both theories. Following the sections on the theoretical foundation, studies that emphasize the experienced trauma of the individual, treatment of trauma symptoms, and psychological intervention in regard to the reduction of trauma symptoms was discussed, followed by a summary of the chapter.

Literature Search Strategy

The articles that were used for this literature review were peer-reviewed and scholarly. Research conducted used a search of online, electronic databases including Academic Search, ERIC, EBSCO, Google Scholar, PsychArticles, PsycINFO, Scholarly Journal, and ResearchGate. ProQuest and EBSCO databases, as well as the EMDR International Association (EMDRIA) database of research, were specifically utilized for peer-reviewed literature in the form of library journals and text. The key terms used for the literature search included *trauma*, *PTSD*, *posttraumatic stress*, *complex traumatic stress*, *traumatic stress*, *psychological trauma*, *traumatic memories*, *unresolved trauma*, *acute trauma*, *chronic trauma*, *complex trauma*, *prolonged and repeated trauma*, and *multiple traumatic experiences*. I also used a combination of terms such as *treatment of trauma with children and adolescents*; *trauma and EMDR*, *treatment of trauma and evidence-based approaches*, *posttraumatic stress versus complex stress versus*

psychological stress, EMDR protocols in children and adolescents, acute trauma versus chronic trauma versus complex trauma, EMDR and CBT, resilience and trauma, childhood trauma and treatment, Adverse Childhood Experiences (ACEs) and trauma, healing centered engagement and trauma, as well as trauma and psychological interventions. The scope of literature ranged from Herman (1992) to Boyce (2019).

As the impact of trauma is a highly regarded field of research, research from psychological journals, medical journals, and related scholarly and American Psychological Association books, magazines and newsletters were used. All materials were referenced regardless of the publication date in order to establish background on the topic, and I also referenced lists from articles found in the literature search as a source for articles. However, this research only evaluated the effects of the adolescent population.

Theoretical Foundation

Francine Shapiro's Information Processing Theory

The AIP theory is a conceptual theory derived from evidence-based research into therapeutic treatment for traumatic stress responses, including models of learning, information storage, and memory access (Shapiro, 2007). Based on the theory, traumatic memories are stored maladaptively in the brain, separate from functional memory networks (Cusack et al., 2009, Shapiro, 2001). Thus, the traumatic memories and their inherent cognitive, affective, and somatosensory components are disconnected from the brain's adaptive memory processing system (Cusack et al., 2009). Memory networks adapt to new information as memories form from interactions between the person and their environment (Gomez, 2013). Each individual processes experiences differently

based on how they determine what information is important (Gigerenzer & Goldstein, 1996; Maitland, 2015). Research into memory and decision-making also proposed that decisions about known aspects of the perceived world are made through the probability based on established information (Gigerenzer & Goldstein, 1996; Glockner et al., 2014). The processing of information memory into adaptive networks for decision-making, identifying the difference between veridical (linear, single-answer decision-making) and adaptive decision-making is explained by the AIP model (Mograbi, 2011).

AIP Model for Memory Processing and Storage

As mentioned, the AIP theory proposed that memories are not stored correctly due to an overwhelming of the psyche that inhibits proper memory storage (Cusack et al., 2009). Normal memory is broken down and unnecessary components are discarded by the hippocampus while necessary pieces are stored in working or long-term memory, integrated into adaptive networks and decision-making heuristics (Eichenbaum & Manns, 2009; Matlin, 2009; Nagireddy, 2014; Shapiro, 2001; van der Berg & van der Gaag, 2012). As traumatic experiences occur, the hippocampus and amygdala become overwhelmed with sensory, cognitive, and affective information, causing the memory to store in its original form with all the associated affective, cognitive, and somato-sensory memory components intact (Nagireddy, 2014; Shapiro & Solomon, 2008; Siegal, 2002). In other words, traumatic memories exist with all the original emotions and thoughts associated with them as well as the images, sounds, and physical sensations experienced (Korn, 2009; Nagireddy, 2014). When the brain retrieves a traumatic memory, it accesses all the cognitions, emotions, and sensory experiences associated (Nagireddy, 2014;

Shapiro & Solomon, 2008). In the most severe situations, a flashback may occur in which the mind dissociates so far as to be unable to distinguish between traumatic memory and reality, reliving the trauma (Corrigan & Hull, 2015; Forest & Shapiro, 2016). Further, each time a traumatic memory is triggered, it is further imbedded into the psyche in its maladaptive state, causing more inferential associations and increasing the likelihood and intensity of memories (Bernard et al., 2015; Cohen, 2012). However, when traumatic memories become integrated into adaptive networks, the psyche becomes more equipped to deal with similar traumas for the future; ultimately leading to an increased resilience (Bernard et al., 2015; Cohen, 2012).

Theory or Model. Originally, the AIP theory was intended as a model to address traumatic stress. However, research over the last two decades provided empirical support for treatments based on AIP to address a multitude of psychological applications including depression, anxiety, phobias, phantom limb pain, performance coaching, psychosis, and personality disorders (Cusack et al., 2009; Dogan et al., 2010; Shapiro, 2001; van der Berg & van der Gaag, 2012; Siegel, 2010). In addition, neurological research into cognition and memory showed a strong correlation to the AIP theory's core tenets regarding decision-making, memory access, and memory storage (Hase et al., 2017; Hill, 2020). The application of the AIP theory provides the most concise and effective means of conceptualizing neurological processes of arousal, activation, and processing of overwhelming experiences (Kolk, 2002; Siegal, 2002). Regardless of treatment, a fundamental understanding of the manner in which the brain stores traumatic memories in a non-maladaptive way is crucial to conceptualization and treatment of

nearly every mental disorder, including traumatic stress. The AIP model provides procedures to prompt access to the memories and force the brain to process them correctly, therefore aiding in the healing of traumatic stress (Cuijpers & Lee, 2013; EMDR International Association, 2018; Shapiro, 2012).

Literature Review Related to Key Concepts and Variables

Trauma

Trauma is often the result of an overwhelming amount of stress that exceeds an individual's ability to cope, or integrate the emotions involved with that experience (American Psychological Association, 2018). Traumatic events overwhelm the ordinary systems of care that give people a sense of control, connection, and meaning (Herman, 1992). Trauma may result from a single distressing experience or multiple, recurring events. The response of the body of being overwhelmed can be precipitated in weeks, years, or even decades as an individual struggles to cope with the immediate circumstances, eventually leading to serious, long-term negative consequences (American Psychological Association, 2008; Burke Harris, 2019; Canada, 2019; DeBellis & Zisk, 2014; Kessler et al., 1995; Lewey et al., 2009). Because trauma differs between individuals, according to their subjective experiences, people will react to similar traumatic experiences differently (American Psychological Association, 2008; Shapiro & Brown, 2019). In other words, not all individuals who experience a potentially traumatic exposure will actually become psychologically traumatized. However, it is possible for individuals to develop traumatic stress after being exposed to a major traumatic experience (American Psychological Association, 2018; DeBellis & Zisk, 2014; Hodges

et al., 2013). This discrepancy in risk rate can be attributed to protective factors some individuals may have that enable them to cope with trauma, which are often related to temperamental and environmental factors (American Psychological Association, 2018).

There are multiple types of trauma. Acute trauma is a single event that lasts for a limited amount of time (American Psychological Association, 2008). Chronic trauma is the experience of multiple traumatic events, which are often experienced over a long period of time (American Psychological Association, 2008). Complex trauma is multiple traumatic events over an extended period of time (American Psychological Association, 2008, 2018; Solomon et al., 2009; Van der Kolk, 2014). Complex trauma stems from chronic, long-term exposure to trauma, in which an individual has limited belief that the traumatic event will end or cannot foresee a time that it might (American Psychological Association, 2018; Brewin et al., 2017; Corrigan & Hull, 2015; Korn, 2009; SAMHSA, 2017).

Adverse Childhood Experiences

The Center for Disease Control and Prevention's (CDC's) epidemiological research, the Adverse Childhood Experiences (ACEs) study measured 10 types of childhood trauma in more than 17,000 people and showed a direct link between childhood trauma and the adult onset of chronic disease, which may be affected by social and economic conditions (Felitti, 1998). (Felitti et al., 1998). Researchers have promoted developmental trauma disorder to encompass the different traumatic experiences partially identified in the ACEs study (CDC, 2019; SAMHSA, 2017; Saunders & Adams, 2014), which was done due to a need for a clarified and accurate diagnosis for children and

adolescents experiencing multiple types and incidents of trauma across developmental periods, with internalized symptoms of affect dysregulation and attachment dysfunctions (van der Kolk, 2017). Similar to psychoanalytical perspectives of attachment and trauma, the developmental trauma disorder encapsulates the cognitive distortions resulting from betrayal and neglect by caregivers such as inconsistent nurturing, parental abandonment, and emotional abuse, which did not fit the DSM-IV criteria for causal trauma (van der Kolk, 2017). Research also evaluated the inclusion of the Developmental trauma disorder causal symptomatology into a PTSD diagnosis may reflect upon the criteria being too vague and therefore unreliable (Ford et al., 2013; van der Kolk, 2017).

History of Trauma Diagnoses

According to the DSM-III, trauma-producing events occur outside the realm of normal human experience (American Psychiatric Association, 1987). The DSM-IV stated that trauma may result when a:

person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self and others [and] the person's response involved intense fear, helplessness, or horror. (American Psychiatric Association, 1994, pp. 427–428)

The range of events that can be considered traumatizing has been further expanded and refined through the most recent revision to the DSM-V (American Psychiatric Association, 2013).

Although trauma has been documented throughout history, the recognition of psychological trauma became most prominent in the years after the Vietnam War,

sparkling the recognition of a common syndrome to explain the experiences of other traumatized individuals (American Psychiatric Association, 1987). This syndrome, known as PTSD, was first recognized by the American Psychiatric Association in the DSM-III (American Psychiatric Association, 1980). Since that time, clinicians and researchers have continued to investigate and expand the understanding of PTSD and trauma in general (American Psychiatric Association, 1987, 1994, 2013), expanding the conceptualization of what events may be potentially traumatic, including war, childhood abuse, natural disasters, traumatic accidents, illness, and witnessing such events (American Psychiatric Association, 1994, 2013). Events should be described as traumatic not because of the frequency of occurrence but because of their effects on human life (Herman, 1992).

Today, PTSD is diagnosed in patients with persistent psychiatric distress resulting from events involving actual or threatened death or injury (American Psychiatric Association, 2013). According to the Diagnostic and Statistical Manual of Mental Disorders-5th Edition (DSM-V), PTSD includes four symptom clusters (Criterion A, B, C, and D), and the individual diagnosed with PTSD must meet their specific symptoms and stipulations (American Psychiatric Association, 2013). The four symptom clusters include, but are not limited to, repeated or extreme exposure to aversive details of an event or events, intense or prolonged distress, trauma-related thoughts or feelings, and detachment and estrangement from others (American Psychiatric Association, 2013). Additionally, Criterion E: alterations in arousal and activity, F: duration, G: functional significance, and H: exclusion (disturbance is not due to substance use, medication, or

other illness) must also be met (American Psychiatric Association, 2013). In addition to meeting the diagnostic symptom and stipulation criterion, the treating clinician must also specify if the individual reports experiencing high levels of either depersonalization or de-realization (American Psychiatric Association, 2013). Lastly, a full diagnosis of PTSD is not determined until at least 6 months after the traumatic event occurred (American Psychiatric Association, 2013).

As the psychological effects of traumatic events have been studied, similar effects of different types of trauma have been found. These similarities have been identified as “trauma symptoms” and may include flashbacks, intrusive thoughts about the traumatic event, psychic numbing, sleep disturbances, exaggerated startle responses, increased anger, and isolation (American Psychiatric Association, 1994). These symptoms are considered post-traumatic because they occur after the traumatic event. The individual may go for years without knowing the reason for their symptoms, often feeling alone and isolated from others because of the problems experienced. According to the DSM-V, the following symptoms are associated with posttraumatic stress: persistent and recurrent invasive thoughts focused around the traumatic event and avoidance of symbolic representations related to the traumatic event, increased arousal, which can include difficulties with sleep, irritability, concentration challenges, hypervigilance, and increased startle responses (American Psychological Association, 2013a; 2018). Researchers have expressed that psychological intervention is effective and has been found to improve presenting symptoms of many mental illnesses, including trauma symptoms (Foa et al., 2010; NAMI, 2016).

Trauma in Children and Adolescents

It is estimated that on a national annual basis, approximately one million children are victims of trauma and of those, 1,500 children die due to abuse or neglect (Hussey et al., 2012; NIMH; 2020; U.S. Census Bureau, 2018). Each year in the United States, approximately five million children younger than the age of 18 years old, experience a traumatic event (Courtney, 2016). Epidemiological data indicates that nearly two thirds of individuals in the United States will experience a traumatic event before their eighteenth birthday (Copeland et al., 2007; McLaughlin, et al., 2013; NIMH; 2020; U.S. Census Bureau, 2018). The NIMH (2020) estimates that approximately four percent of individuals ages 13 to 18 years of age, are diagnosed with posttraumatic stress over their lifetime. In the United States, adolescents in particular may be a period of high risk for exposure to virtually all types of traumatic events, including interpersonal violence, accidents, injuries, unexpected loss of a loved one, and traumatic events that occur to friends or family (American Psychological Association, 2018; NIMH, 2020; SAMHSA, 2017; 2014).

Many individuals who develop posttraumatic stress due to extreme neglect or abuse, often have symptoms that are categorized as complex trauma (Courtney, 2016). Trauma that occurs during childhood is a pervasive issue with profound consequences; as the impacts of childhood trauma have lasting effects. Without intervention, there is substantial research by Burke Harris (2019), which demonstrates the significant health risk associated with adults who have experienced childhood trauma. This research has supported the conclusion that unresolved childhood trauma, can have a 20-year difference

in life expectancy (Burke Harris, 2019; Canada, 2019; DeBellis & Zisk, 2014); as such individuals with unresolved trauma have a greater propensity to experience medical problems that could have detrimental impacts on life expectancy. Early treatment is critical to improve mental and behavioral health outcomes (Burke Harris, 2019; Canada, 2019; Shapiro & Brown, 2019, Solomon et al., 2009).

Childhood is a critical period for social, emotional, and psychological development, all of which can be impaired by trauma (Kessler et al., 1995; Lewey et al., 2009). The experience of trauma during childhood not only impacts an individual's immediate functioning, but can affect long-term functioning as well (Burke Harris, 2019; Canada, 2019; DeBellis & Zisk, 2014; Kessler et al., 1995; Lewey et al., 2009). Implications of childhood trauma include altering a child's physical, emotional, cognitive, and social development, resulting in several symptoms such as post-traumatic stress (DeBellis & Zisk, 2014; Hodges et al., 2013). After a life-threatening event, some adolescents may develop a range of acute stress reactions, such as intrusive and unpleasant thoughts and distressing memories (Adler-Nevo & Manassis, 2005). Initially, acute stress reactions are a normal response to a stressful event (Foa, 2010). According to Foa (2010), only some youth will show pathological and chronic stress reactions, resulting in acute stress disorder or PTSD. Acute stress disorder refers to youth with pathologic stress reactions in the initial month after the stressful event, whereas PTSD is diagnosed if the duration of the stress reaction is 3 months or more (American Psychiatric Association, 2013). There is significant concern surrounding unresolved trauma symptoms, as research has shown that a lack of access to treatment leads to an increased

risk of developing a range of mental disorders, including personality disorders and medical conditions (Burke Harris, 2019; Canada, 2019; Howe, 2005). Research continues to emphasize the importance of providing adequate and early interventions for the treatment of trauma symptoms (Lenz & Hollenbaugh, 2005).

Traumatic experiences can have a long-term and significant impact on a child. Neuroscientists studying the impact of trauma on brain development have determined that these traumatic experiences actually alter brain structure (National Child Traumatic Stress Network, 2016). When children are exposed to chronic or ongoing trauma, their brains become wired for danger due to a heightened conditioned state and an activated fight or flight response. Brain structures that regulate emotion, memory, and behavior become smaller in size when exposed to chronic trauma in childhood. The impact of trauma on brain development leads to difficulties with attachment, behavior, emotional regulation, and learning (DNA Learning Center, 2018).

Research on stress related symptoms indicates that a variety of neurochemical and hormonal changes occur, which are adaptive when initial or mild stress occurs; however, with repeated or chronic exposure to stress, the initial coping mechanisms become ineffective and maladaptive physiological consequences result (Anisman et al., 1985; van der Kolk et al., 1984). These physiological consequences have more long-term or cumulative effects when chronic stress occurs (Paterson & Neufeld, 1989) or when there is exposure to trauma (van der Kolk et al., 1984). Research indicates "a permanent alteration of neurobiological processes, resulting in hyperarousal and excessive stimulus discrimination" (Shalev, 1996, p. 94) when traumatic stress occurs in humans. Thus, the

physiological changes that occur with trauma are extreme, persistent, and possibly irreversible.

Another key research finding is that the more adversity a child faces, the greater the odds of long-term developmental consequences (Adler-Nevo & Manassis, 2005; CDC, 2019; SAMHSA, 2017; Saunders & Adams, 2014). Trauma can result in significant developmental disruptions, long-term serious mental and physical health problems (Felitti et al., 1998) and increased involvement in child welfare and juvenile justice systems (Ford et al., 2007). Between 10% and 30% of the exposed children develop chronic psychological problems, including PTSD, affecting their development and well-being in social, emotional and physical domains (Fairbank & Fairbank, 2009; Pynoos et al., 2009). Early researchers noted that exposure to trauma may lead to feelings of anxiety, helplessness, dissociation (detachment of the mind from emotion), and behaviors, including hyper vigilance (watchfulness or awareness of one's surroundings over and above what is normal), extreme behaviors and efforts to avoid re-experiencing the traumatic event, impulsivity, and even self-inflicted injury (Pynoos et al., 2009). Due to this wide range of possible symptoms of trauma, it is important to look into various treatment options that may best help the identified needs within the population.

The social change that is needed is evidenced-based practice that has been normed for children and adolescents that will be effective in reducing trauma symptoms. The challenges will be providing insight to behaviors that are a direct result of experienced forms of trauma and victimization, which will better a societal understanding through the improvement of human and social conditions. An important aspect of social change will

be challenging society to think about the role in helping to end the epidemic of childhood trauma and building a more resilient community.

Trauma and Psychological Intervention

The past two decades have seen the development of several evidence-based psychological treatments for post-traumatic stress (Ginwright, 2018). Youth who have experienced significant trauma often experience symptoms of posttraumatic stress, depression, anxiety, and behavioral problems, which may persist for years (de Roos et al., 2011; Jeffries & Davis, 2013). The impact of these experiences potentially disrupts biological, psychological, and social development (Burke Harris, 2019; Canada, 2019; de Roos et al., 2011). Despite the enormous public health significance of this problem and the value of making effective interventions available, very few randomized controlled studies on treatment of trauma symptoms with children have been reported (de Roos, 2011). Research continues to indicate an increase of trauma symptoms. Many of these trauma symptoms are the result of unresolved trauma from childhood, as well as cyclic instances of triggered events that are overwhelmed by heightened emotional responses (Foa et al., 2010). It is imperative that professionals, who wish to meet the needs of their clients by offering diverse treatment options, be familiar with a variety of treatment approaches that are available in treatment (Foa et al., 2010; Menschner & Maul, 2016). As many researchers have explored trauma and the treatment of a variety of methodologies (DeAngelis, 2008; Foa et al., 2010; Herkov, 2015; NAMI, 2016; The Beck Institute, 2013) some methods have been reported to be more effective than others (Menschner & Maul, 2016). It has been stated the difference in approach effectiveness is

dependent on the methodological rigor (Foa et al., 2010; Menschner & Maul, 2016).

Rigor that included, but not limited to:

Evidence based on randomized, well-controlled clinical trials for individuals with trauma symptoms; Evidence based on well-designed clinical studies, without randomization or placebo comparison for people who have experienced trauma; and, Evidence based on the recently developed treatment that has not been subjected to clinical or empirical tests in individuals with trauma symptoms. (Foa et al., 2010, p. 16)

Foa et al., (2010) also suggested that it is important for the clinician to follow certain guidelines before determining the best methodology to address the individuals with trauma symptomatology. The suggested guidelines for determining the best methodology to address an individual person's reported trauma symptoms include, conducting a comprehensive diagnostic evaluation, forming, and maintaining a therapeutic alliance, and reassurance of the patient's safety and welfare (Foa et al., 2010; Menschner & Maul, 2016). Additionally, according to Foa et al., (2010) it is also imperative for the clinician to provide education, monitor the individual's symptoms, their general functioning, and to identify any comorbid conditions. Lastly, it is imperative for the clinician to assess the client for treatment readiness and resistance (Foa et al., 2010; Menschner & Maul, 2016).

According to the NAMI (2016), being led by a trained therapist to examine an individual's feelings and behaviors of the past and current problems and experiences, with hope to discover coping skills, defines psychological intervention. Researchers

indicated psychological intervention is effective and has been found to effectively improve presenting symptoms of many mental illnesses, including trauma symptoms (Foa et al., 2010; NAMI, 2016).

The steps relevant in improving trauma symptoms through psychotherapeutic methods include, but are not limited to, repeating the imagery of the traumatic event, confronting the feared memory, reliving the traumatic experience in a supportive therapeutic setting, and focusing on the traumatic memory for long periods of time (Foa et al., 2010; Menschner & Maul, 2016). Additionally, the “process of imaginal reliving helps to change the meaning of trauma symptoms from being a sign of personal incompetence to one of mastery and courage” (Cahill et al., 2010, p. 141). For the ability to evaluate the negative self-reflection regarding the trauma allows the individual to change the evaluation and reduces the risk of fearful responses to the trauma-related stimuli (Cahill et al., 2010).

The National Center for PTSD (2015) reported CBT, EMDR, medication, group therapy, brief psychodynamic psychotherapy, and family therapy are some of the best treatments available for trauma symptoms, as well as prolonged exposure therapy (DeAngelis, 2008). Although there are a variety of evidenced-based methods, it is imperative that the clinician considers their comfort, background, and training in the methodology (DeAngelis, 2008). Although EMDR is an effective treatment for young individuals who have experienced trauma, working with this population can present several challenges (Courtney, 2016). In general, while working with youth who have experienced trauma, clinicians have reported difficulty engaging them in the therapeutic

process, discomfort in holding a space for the traumatic material, lack of confidence in using trauma-informed approaches, resistance to treatment, developmentally inappropriate treatment approaches, and lack of experience in adapting treatments to be developmentally appropriate (Adler-Tapia and Settle, 2009; Courtney, 2016).

Furthermore, the clinicians' own confidence using EMDR and comfort level with child development are also factors connected to their ability to effectively use EMDR protocols with individual youth (Courtney, 2016). It is important for clinicians to find ways to combat such challenges because engagement, clinician confidence, and developmentally appropriate adjustments are essential to successful therapeutic outcomes (Courtney, 2016).

Trauma interventions must be critically examined for not only effectiveness, but also for any indication that the treatment could perhaps harm a vulnerable population. It is critically important that organizations and clinicians stay abreast of current literature regarding interventions that have the most empirical support, and go above and beyond to ensure retraumatizing practices are avoided (Butler & Wolf, 2009; Greyber et al., 2012). EMDR is particularly interesting in that it is inherently designed as an exposure therapy (Greyber et al., 2012). Typically, sources that report evidence-based practices indicate that, in cases of severe post-traumatic stress, exposure therapies would not be the primary mode of therapeutic intervention (National Institute for Clinical Excellence, 2005). However, some literature indicated that EMDR is an innovative approach for intervening with children and youth with histories of trauma (Butler & Wolf, 2009; EMDR Institute, 2016; Foa et al., 2010; Greyber et al., 2012; Menschner & Maul, 2016; Shapiro, 2002;

Shapiro & Brown, 2019). Namely, the Cochrane Collaboration has identified EMDR as an efficacious treatment for posttraumatic stress (Bisson & Andrew, 2009). While there is controversy regarding EMDR as an effective treatment method, it is extremely important to examine the use of EMDR in vulnerable populations, such as children and adolescents (Greyber et al., 2012; Menschner & Maul, 2016).

Cognitive-Behavioral Therapy

Aaron T. Beck, the founder of CBT, is suggested to be a key figure in counseling and psychotherapy (Herlov, 2015; NAMI, 2016; The Beck Institute, 2013). In 1976, psychiatrist Aaron Beck formulated cognitive-behavior approaches as a means of helping to change dysfunctional cognitions (The Beck Institute, 2013). Since that time, CBT—the more general term that subsumes Beck’s particular variant called cognitive therapy—has emerged as one of the most dominant psychotherapy modalities (The Beck Institute, 2013). Based on the cognitive model, CBT is referenced to connect how an individual’s emotions are perceived, and focuses on exploring the relationship among personal thoughts and behaviors (Herkov, 2015; NAMI, 2016; The Beck Institute, 2013). CBT is also suggested to be a modern evidence-based therapy, proven to be effective in many different mental disorders, and encompasses some diverse techniques (Cahill et al., 2013; Robertson, 2010; The Beck Institute, 2013).

Beck (2013) states that the cognitive approach to psychotherapy “is best-viewed as the application of the cognitive model of a particular disorder with the use of a variety of techniques designed to modify dysfunctional beliefs and faulty information processing characteristic of each disorder” (p. 194). More specifically, The Beck Institute (2013)

describes the fundamental aspects of the model based on its: a) theory of etiology (i.e., the psychopathological processes thought to produce disorder), b) therapeutic strategies/techniques, c) proposed mechanisms of action (i.e. the processes through which the treatment produces its effects), and d) desired outcomes. First, the CBT model proposes that psychopathology is the product of faulty information processing that manifests itself in distorted and dysfunctional thinking, which directly leads to negative emotions and maladaptive behaviors (The Beck Institute, 2013). Thus, the CBT treatment protocols help an individual to identify, evaluate, and then modify distorted cognitions to produce more realistic and adaptive evaluations.

For example, the therapist may first help a patient with social phobia review the evidence for and against the notion that her boss thinks that she is a “failure.” Then, between sessions, the therapist may ask the patient to request direct feedback from her boss about her job performance, and compare this information to her prediction about what her boss would say. It is assumed that correcting patients’ distorted cognitions in this manner will produce a direct improvement in both mood (e.g., the patient will feel less anxious) and behavior (e.g., the patient will perform better at work and be more social around coworkers). Although the cognitive techniques tend to be emphasized, CBT also incorporates a variety of other behavioral strategies, including activity scheduling for depression and exposure to feared stimuli for anxiety (Cahill et al., 2013; Robertson, 2010; The Beck Institute, 2013). Nevertheless, the primary theoretical mechanism of action in CBT is proposed to be cognitive change, which is expected to lead to improvements in other symptoms via cascading and reciprocal effects (Nilamadhab,

2011). The most immediate focus of CBT, then, is on symptom reduction; although improved functioning is also a longer-term goal of treatment (The Beck Institute, 2013).

The current literature reveals robust evidence that CBT is a safe and effective interventions for both acute and chronic PTSD following a range of traumatic experiences in adults, children, and adolescents. However, nonresponse to CBT by PTSD can be as high as 50%, contributed to by various factors, including comorbidity and the nature of the study population (Nilamadhab, 2011). CBT has been validated and used across many cultures, and has been used successfully by community therapists following brief training in individual and group settings. CBT has been found to have a preventive role in some studies, but evidence for definitive recommendations is inadequate. The effect of CBT has been mediated mostly by the change in maladaptive cognitive distortions associated with traumatic stress. Many studies also report physiological, functional neuroimaging, and electroencephalographic changes correlating with response to CBT (Nilamadhab, 2011).

CBT is suggested to be a modern evidence-based therapy, proven to be effective in many different mental disorders, and encompasses some diverse techniques (Cahill et al., 2013; Robertson, 2010; The Beck Institute, 2013). CBT is reported to be one of the most effective psychological treatment methods for many mental disorders, including trauma symptoms. CBT explores the individual's feelings and focuses on the individual's thoughts and behaviors, and researchers have investigated and reported that CBT has the ability to decrease symptoms of distress, depression, and anxiety traits, reduces the risk of trauma symptoms.

Behavioral Perspectives of Trauma

Behaviorist views of trauma are influenced by the perspective that environment, specifically the situation and nurture of the individual, define the reactions that are produced both internally and externally (Baum, 2017). Watson defined behaviorism as the objective study of external behavior, while Skinner (1974) identified the necessity to acknowledge the internal behavior, including cognitions and affect, in defining observable behaviors. However, Skinner's Behaviorism did not attend to past experiences, as necessary therapeutic focus. Rather, by modifying behavior through consequences, professionals may devalue the past experiences in an individual, causes fundamental changes in decision-making through operant conditioning rather than analysis of the psyche (Watson, 2017). Skinner (1981) dispelled beliefs of his micro view of behavior and identified three necessary components of an organism required for study: the biological construction of the individual, the recurring behavior, and the culture or social setting in which the individual exists. By acknowledging the culture and nurturing aspect of an individual's environment along with the biological composition, Skinner dispelled the impression that his work sat on one side of the nurture versus nature debate, while setting the groundwork for CBT.

Cognitive Perspectives of Trauma

Cognitive Psychology provided significant impact on all theories and therapy for the treatment of mental illness, especially trauma. Early cognitive models regarded traumatic stress as enduring trauma symptoms from individual differences in perception of experiences and storage of associated memories (Clark & Ehlers, 2000). Perceptions

and appraisals of traumatic events vary based on individual genetic and developmental constitution; therefore, cognitive approaches addressed individuals based on their individual perceptions and experiences (Marzmilller, 2014). However, cognitive theory placed heavy emphasis on empiricism to support assumptions about the relationship between individual thoughts, feelings, and behaviors (Marzmilller, 2014). Cognitive theory provided the basis for Beck's Cognitive Therapy, which was instrumental in changing the conceptualization and treatment for traumatic stress symptomatology, as it was for depression (Beck, 1979).

Beck's (1979) Cognitive Therapy seeks to explain the affective response to traumatic memories and the causes for persistent memories (Clark & Ehlers, 2000; Marzmilller, 2014; Nagireddy, 2014). A significant focus of treatment is on triggers for intense emotions to develop understanding of the inappropriate or exaggerated perceptions of the experienced trauma. Once triggers and appraisals are defined, the underlying schemas for decision-making and reactions may be explored, and then revised helping individuals to understand the relationship between stimulus, beliefs, and action (Beck, 1979). Cognitive Theory's focus on the event-belief-behavior relationship exists as a primary focus in the disputing of irrational beliefs technique, as well as trauma-focused CBT (TF-CBT). However, many modern theories of trauma continue to follow Freudian archetypes such as the id, ego, and superego concepts to address traumatic stress (Clark & Ehlers, 2000; Marzmilller, 2014; Nagireddy, 2014).

In summary, CBT is reported to be one of the most effective psychological treatment methods for many mental disorders, including trauma symptoms. CBT explores

the individual's feelings and focuses on the individual's personal thoughts and feelings, and researchers have investigated and reported that CBT decreases symptoms of distress, depression, and anxiety traits and reduces the individual's risk of developing diagnostic criteria.

A number of CBT approaches are available for treating child and adolescent traumatic stress. Rates of exposure to violence and traumatic events for children and adolescents are exceedingly high. According to Dorsey et al., (2011), in a nationally representative sample of children and adolescents in the United States, 60.4% reported exposure in the past year, with lifetime rates nearly a half to one-third higher, depending on exposure type. Many children and adolescents experience repeated exposure or multiple types of events over their lifetime. Rates of trauma exposure for youth in high conflict and high crime areas are even higher. The range of potentially traumatic events includes exposure to domestic violence, child abuse and neglect, community violence, and experiencing the violent death of a loved one, among others (Dorsey et al., 2011).

There is evidence for the effectiveness of psychological therapies, particularly CBT, for treating traumatic stress in children and adolescents. In a study conducted by Gillies et al., 2013, they reviewed fourteen studies, including 758 participants. The types of trauma participants had been exposed to include sexual abuse, civil violence, natural disaster, domestic violence and motor vehicle accidents (Gillies et al., 2013). The psychological therapies used in the studies were CBT, exposure-based, psychodynamic, narrative, supportive counselling, and EMDR. According to Gillies et al. (2013), at this stage, there is no clear evidence for the effectiveness of one psychological therapy

compared to others. There is also not enough evidence to conclude that children and adolescents with particular types of trauma are more or less likely to respond to psychological therapies than others (Gillies et al., 2013). The findings of this review are limited by the potential for methodological biases, and the small number and generally small size of identified studies. Much more evidence is needed to demonstrate the relative effectiveness of different psychological therapies or the effectiveness of psychological therapies compared to other treatments (Gillies et al., 2013).

Although CBT has been said to be the most utilized method to improve trauma symptomatology, researchers also indicate that other treatment modalities may also be effective. In comparison studies with the said methodologies, no studies that I located show a significant improvement of trauma symptoms utilizing any of the therapeutic interventions discussed.

Trauma-Focused CBT

Treatments with evidence of effectiveness for child and adolescent PTSD are available, the majority of which are Cognitive Behavioral Therapies (Dorsey et al., 2011). According to Dorsey et al. (2011) results were robust for CBT, whereas insufficient evidence was found for the other approaches. Among the CBT approaches for trauma exposure, PTSD and co-occurring sequelae, trauma-focused CBT has the most evidence of effectiveness (Dorsey et al., 2011). To date, trauma-focused CBT has six published randomized controlled trials supporting effectiveness in reducing traumatic stress symptoms and PTSD, depressive symptoms, shame, and trauma-related and general behavior problems, in comparison to non-CBT interventions (Dorsey et al., 2011). In the

most recently published multisite randomized control trial involving 229 children ages 8 – 14 years, all youth were sexually abused, with 90% of these youth experiencing a mean of 3.7 different types of traumatic events, including sexual abuse (Dorsey et al., 2011). Children who received trauma-focused CBT were half as likely as those in the client-centered comparison condition to meet full diagnostic criteria at the end of treatment (Dorsey et al., 2011).

Trauma-focused CBT is a psychotherapy approach that was developed in 1996 by Cohen, Mannarino, and Deblinger to treat children and adolescents experiencing traumatic symptoms in as few as twelve sessions. Research has demonstrated that trauma-focused CBT is comparable to many of the other treatment modalities (EMDR and CBT); however, it is reportedly the treatment of choice in young children who have experienced sexual abuse (Cohen & Mannarino, 2008; Lewey et al., 2018). This treatment modality has been effective in treating children suffering from PTSD, anxiety, depression, externalizing and/or sexualized behaviors, and feelings of mistrust and shame as a result of traumatic life events (Lewey et al., 2018; Weiner et al., 2009). It is argued that trauma-focused CBT is able to assist the child and their parents in establishing new skills to manage distressing thoughts, feelings, and behaviors (Lewey et al., 2018; Weiner et al., 2009). The World Health Organization (2013) has developed guidelines related to the management of conditions related to stress. More specifically, trauma-focused CBT and EMDR are the only psychotherapies that are recommended for children and adolescents experiencing traumatic stress (Lewey et al., 2018; World Health Organization, 2013). While studies have found both modalities to be effective in treating

post-traumatic stress symptoms, research to date has not yet determined which of these treatments is superior (Lewey et al., 2018; World Health Organization, 2013).

Eye Movement Desensitization and Reprocessing

The World Health Organization (2013) has recognized EMDR therapy as a recommended treatment for children, adolescents, and adults with posttraumatic stress symptoms. EMDR therapy has been found to reduce posttraumatic stress and other mental health symptoms, such as depression and anxiety in children and adolescents (Courtney, 2016; Shapiro & Brown, 2019). Dr. Francine Shapiro (2002) created EMDR therapy as an integrated approach for the treatment of trauma symptoms. It incorporates many modalities including cognitive behavioral, psychodynamic, and body-centered therapies and organizes them in an eight phase protocol (EMDR Institute, 2016; Shapiro, 2002; Shapiro & Brown, 2019). The current study will be grounded in Shapiro's information processing theory. Shapiro developed an information processing theory to account for the effects noted with EMDR treatment in individuals who have experienced trauma (Shapiro, 1995). The information processing theory emphasizes human development and the ways in which individuals process information (Shapiro, 2001). The theoretical framework for this study will be as closely normed to the available data and evidence-based research that has been supported by Shapiro.

Shapiro (2002) and Greenwald (2007) report that EMDR has been studied across 14 different populations and 30 studies indicate positive treatment outcomes when utilizing EMDR techniques. EMDR is reported to be a psychotherapy treatment designed to alleviate the distress associated with traumatic memories (EMDR Institute, 2016;

Shapiro & Brown, 2019). EMDR is a manualized treatment that has been shown to reduce trauma symptoms in as little as one 90-minute session (Shapiro, 2002). According to the International Society for Traumatic Stress Studies' current treatment guidelines, EMDR is designated as an effective treatment for traumatic stress (Foa et al., 2010; Menschner & Maul, 2016). Shapiro (2002) suggested that the therapeutic goal of EMDR is not only to reduce anxiety, as many researchers have suggested, but also “includes the elicitation of positive effects, evoked insights, belief alternations, and behavioral shifts” (p. 1).

The essential theory of which the application of EMDR is based and on which the treatment's cognitive action relies, is the AIP, developed over the years by Shapiro (1995-2002). According to this model, the sensorial inputs forming an experience are automatically integrated with already existing information originated from past experiences, which create the sense of the event (Shapiro, 2002). Cognitive schemes work also as filters, selecting useful information and discarding other information, codifying and categorizing them, thus guiding the attribution of meaning to an experience (Verardo & Cioccolanti, 2017). The main function of this process is to guide the future answers of the individual, along with their response to similar situations. In cases of traumatic memories this innate brain process goes through some changes, experiencing an interruption of the appropriate mnemonic neural networks (Verardo & Cioccolanti, 2017). Normal hippocampal memory storage entails the incorporation of perceived memories into associated components, and then stored into memory networks (Cusack et al., 2009). However, traumatic memories often store without this process in a separate

section of the brain, still intact and disconnected from decision-making memory networks (Cusack et al., 2009; Shapiro, 2002).

The general scope of EMDR is to exploit a brain physiological process, through which it is possible to access the recollection that has been dysfunctionally memorized, and employs the natural neural processes to memorize the same recollection adequately (Verardo & Cioccolanti, 2017). The final result is an assimilation of the new information into existing memory structures (Verardo & Cioccolanti, 2017). When this happens, individuals are typically able to verbalize coherently and logically the event, and this provides new acquisitions for their lives (Verardo & Cioccolanti, 2017). EMDR is bilateral stimulation of the brain (eye movements, tactile or auditory) while processing a distressing memory, which generally consists of six to eight, 90-minute sessions (Bae et al., 2008). This process facilitates resolution of the memory and allows for new, more positive networks and skills to develop (Shapiro, 2001; Shapiro & Brown, 2019).

According to Shapiro (2002), the eight phases of the EMDR treatment process are:

- I. History taking and treatment planning (obtaining background information, assessing suitability of EMDR, identifying potential target memories for processing).
- II. Preparation (including preparing clients for EMDR and increasing their ability to switch to positive affect states).
- III. Assessment (accessing the specific target and identifying the components of the memory)

- IV. Desensitization (reprocessing the experience to resolution with procedures that include bilateral simulation).
- V. Installation (increasing connections to positive cognitive and emotional networks).
- VI. Body scan (bringing awareness to the body and processing any residual disturbance).
- VII. Closure (ensuring stability at the end of an in between sessions).
- VIII. Reevaluation (at the next session, revisiting the processed memory to see if any residual material requires processing).

The methodology is a form of accelerated information processing, and appears to work through the brain's information processing system (Shapiro & Brown, 2019; Stewart & Bramson, 2000). The therapist uses bilateral stimulation of the brain, following various EMDR protocols, while the client focuses on an image, cognitions, and physical sensations of the incident to be processed (Stewart & Bramson, 2000). The protocol contains both exposure and cognitive components; for example, individuals are guided through a relaxation technique to assist them in visualizing a "safe place" (Ahmad et al., 2008) and asked to visualize aspects of the trauma and replace negative thoughts with positive (Adler-Nevo and Manassis, 2005). A main feature of EMDR is having an individual move their eyes rapidly while focusing on the traumatic memory until the level of distress decreases (Shapiro, 2007; Shapiro & Brown, 2019). As an individual is asked to rate distress, they are also encouraged to share negative thoughts associated with the traumatic event and use a positive cognition to replace the negative thoughts (Courtney,

2016). The session ends with reengaging in the “safe place” exercise (Ahmad et al., 2008).

During the session, the therapist evaluates the individual’s traumatic memory through a process in which is called dual attention (Bae et al., 2008; Shapiro, 2002). Dual attention is the process of paying attention to the individual’s image, cognition, emotion, and body sensations (Bae et al., 2008; Shapiro, 2002; Shapiro & Brown, 2019). The individual is asked to recall the traumatic event while both sides of the brain are being stimulated through the use of paddles that are held in both hands and alternate vibrations, following the therapist’s horizontal finger in a sequenced motion, or listening to a metronome (Bae et al., 2008; Shapiro, 2002). This exercise is continued until the memories of the traumatic event no longer causes distress to the individual (Bae et al., 2008; Shapiro, 2002). Depending on the therapist’s he or she will integrate their preferred theoretical orientation and might include, psychodynamic, CBT, or experiential, to name a few (Shapiro, 2002). These treatment modalities may also be used in sessions leading up to the start of EMDR treatment to ensure that the client has established coping skills, a safe place, as well as an established word to let the therapist know when to terminate a session.

According to Greenwald (2007) who is one of the earliest experts in the field and has employed EMDR in his counseling practice of over 1,000 people; he is a strong advocate for using EMDR with children. While most EMDR research has been conducted on adults, Greenwald (2007) believes the treatment works especially well with children, as they tend to take to the process more quickly than adults. Greenwald (2007)

also points out that EMDR has consistently outperformed CBT in providing quicker resolution to trauma victims. Many EMDR practitioners have argued that traditional talk therapies alone have not been enough to heal victims of trauma. Greenwald (2007) believes the main reason EMDR is so effective is because it happens inside the client's mind. "People think, on average, seven times faster than they talk," he points out, and since EMDR doesn't require the client to talk through everything they are mentally experiencing, it enables individuals to deal with traumatic memories more quickly (Greenwald, 2007). Greenwald (2007) says traditional talk therapy alone reaches only the left side of an individual's brain while EMDR stimulates both hemispheres. "EMDR allows us to build synapses in the brain around traumatic experiences," he explains (Greenwald, 2007). "It allows an individual to combine their experience with wisdom" (Greenwald, 2007). Greenwald (2007) says one way of understanding EMDR is to think of it like REM sleep, in the way that it helps individual's process traumatic memories. "It's about stimulating both sides of the brain," Greenwald (2007) explains. "It's similar to the eye movements we have during sleep. Like sleep, EMDR helps us process memory and move experiences into the past" (Greenwald, 2007).

Huso (2010) works with clients with what was referred to as "huge child abuse issues" and complex PTSD, and finds that bilateral stimulation, mostly bilateral tapping, helps to engage coping skills. Brain scans show the frontal lobes of the brain in trauma victims are often impaired. EMDR activates those frontal lobes in a way talk therapy cannot (Huso, 2010). "Trauma gets stuck in the primitive part of the brain, and EMDR gets into the part of the brain where those stuck things reside" (Huso, 2010). Huso (2010)

reports an 80% to 90% success rate with EMDR. While CBT encompasses many different therapeutic techniques, Greenwald (2007) says it is focused mainly on management skills. Whereas EMDR transforms how people experience and react to their own memories. "I prefer EMDR because it's well tolerated and it's faster," Greenwald (2007) explains. Once a client has completed EMDR therapy, they typically will find an ability to revisit a traumatic memory and not be bothered by it any longer (Greenwald, 2007).

Greenwald (2007) says that the children that are best suited for success with EMDR are single episode victims. He says single-episode trauma can often be worked out in one EMDR session, especially if the client has a supportive family and has experienced a generally positive childhood (Greenwald, 2007). While many researchers contend that EMDR is not appropriate for someone with seizure disorders, Greenwald (2007) says he believes just about anyone can be a candidate for the treatment. He has exercised caution and reluctance to use it with children with autism because it can be physically distressing to them (Greenwald, 2007). Greenwald (2007) advises that, the real issue is, "Is the client well prepared?" EMDR needs to be part of a larger therapy. It is a phase model of treatment, whereas the client must be stable and in a safe place before beginning the process (Greenwald, 2007). It is imperative that the client is able to build rapport with the professional administering EMDR, and a safe place is established before the initial session. Many professionals have argued that they would not administer EMDR as a treatment option if the client is unstable (Greenwald, 2007; Huso, 2010). Huso (2010) adds that EMDR will not work with people who do not have access to their

feelings. “People who are depressed or shut down won’t respond to it,” because EMDR involves putting clients in touch with their emotions so they can overcome crippling reactions to traumatic memories (Huso, 2010).

Greenwald (2007) advises EMDR practitioners to start their client off with something small and manageable as opposed to tackling an extremely traumatic experience right away. This enables the client to build upon their emotional safe place; while allowing the practitioner to assess the client’s ability to engage in the EMDR process. “Sometimes it’s best to start with the earliest memories and work your way forward,” (Greenwald, 2007). Many practitioners may accomplish this through establishing and reviewing an individual’s timeline of events that have formulated their experiences. “If the same thing happens over and over again in someone’s personal history, you don’t have to go through every single memory. You can group similar experiences together” (Greenwald, 2007). This is especially helpful when exploring difficult memories that may elicit negative thoughts or feelings. “You do not want to take someone who has experienced repeated traumas and open that up all at once,” says Greenwald (2007). Through the course of EMDR, it is important that the practitioner allow the client to explore events or emotional impacts that they feel are manageable. This allows the practitioner to build upon the success of the more manageable memories, building up to the more complicated or emotionally driven interactions. “This is where EMDR can help. It’s given therapists a way to work with so many people who could not get through trauma in other ways” (Greenwald, 2007). One of the many benefits of

EMDR treatment, is it allows individuals to process events that may elicit a heightened emotional response.

EMDR is a psychotherapy treatment designed to alleviate the distress associated with traumatic memories (EMDR Institute, 2016). Shapiro (2002) suggested that the therapeutic goal of EMDR is not only to reduce anxiety, as many researchers have suggested, but also “includes the elicitation of positive affects, evoked insights, belief alternations, and behavioral shifts” (p. 1). EMDR is bilateral stimulation that consists of 8, 90-minute sessions (Bae, Kim, & Park, 2008). During the session, the therapist evaluates the individual’s traumatic memory through a process in which is called dual attention (Bae et al., 2008; Shapiro, 2002). Dual attention is the process of paying attention to the individual’s image, cognition, emotion, and body sensations (Bae et al., 2008; Shapiro, 2002). The individual is asked to recall the traumatic event while having bilateral stimulation of the brain, at the same time (Bae et al., 2008; Shapiro, 2002). This exercise is continued until the recall of the traumatic event no longer causes distress to the individual (Bae et al., 2008; Shapiro, 2002). Dependent upon the therapist, he or she will integrate their preferred theoretical orientation and might include, psychodynamic, CBT, or experiential, to name a few (Shapiro, 2002).

Case Study: Working Through EMDR with Children

An EMDR practitioner reflected on a case that she had with a 10-year-old boy who had experienced one incident of molestation by a neighbor when he was 4 years old. While the child was treated six months after the incident occurred, he came back to his

therapist with recurring symptoms at the age of 10. He could not sleep; yelled at noises in the house, including the television; and frequently seemed disturbed.

The boy's therapist consulted with the EMDR practitioner, asking her to try EMDR with the child. The practitioner first walked the boy and his mother through the process of EMDR, explaining how it worked, and then asked the boy to find a very safe place for him to go whenever an experience became too much for him. The child came up with diorama where he was protected by some of his favorite superheroes. As a first step, the practitioner asked the boy to visualize himself in that safe place. The practitioner then installed the image by using EMDR, making his eyes follow a light back and forth.

The practitioner then asked him and his mother to tell the story of his molestation, asking the boy to give a hand signal whenever he needed to stop or go to his safe place. With the promise of receiving Batman-related items, the boy had been persuaded to go into a neighbor's basement. The 10-year-old's main issue was that he felt the incident was his fault, and it would not have happened if he had not wanted the Batman paraphernalia. As the practitioner walked the child through his experience, he was asked to consider where in his body he felt distress. "Other than that, I do not comment," explained the practitioner. "I just go with him on his journey." Gradually, the boy worked through the pain of the episode, telling himself it wasn't his fault. "I'm only a kid," he said. Each time he reached a positive resolution, the practitioner "installed" it with EMDR, asking him to follow the light with his eyes. The practitioner also found the boy was worried about the same thing happening to his little

brother, but he decided he could tell his brother what to do in a similar instance. “I know what to do now,” he told the practitioner at the end of the session.

The practitioner asked the boy to come back for a second session, after which he experienced no more symptoms, according to his mother. “It’s very rare that it goes off that well,” the practitioner reflected. “Most people take a little longer, but he was a kid with a single incident and a supportive family.” This case lends an example of the process by which EMDR can be used with a single incident trauma. The youth in this example have several resiliency factors, such as a supportive family, and he was entered into therapy within six months of the single incident trauma.

Comparative Analysis

In a systematic review of seven research studies, Seidler and Wagner (2006) compared the efficacy of EMDR and trauma-focused CBT in the treatment of trauma symptoms. The authors restricted period for the articles used was from 1989 to December 2005, and the initial literature search results yielded 1100 articles (Seidler & Wagner, 2006). However, once the author’s six inclusion criteria were defined only seven studies were included in the meta-analytic investigation (Seidler & Wagner, 2006). The authors indicated since both EMDR and CBT have already been found to be effective forms of psychotherapy interventions to treat trauma symptoms, their aim was to examine if one method was more effective than the other (Seidler & Wagner, 2006). Authors concluded that the data obtained in their meta-analytic comparison suggested EMDR and CBT are equal and effective methods to treat trauma symptoms (Seidler & Wagner, 2006). The authors also reported other researchers had found CBT to be more effective, however,

Seidler and Wagner (2006) suggested that the discrepancy might be due to the small sample size or the treatment conditions.

Trauma-focused CBT is an established treatment for children with posttraumatic stress. However, alternative treatment modalities can also be effective, and are important for a varied approach to treatment. According to Diehle et al. (2015), EMDR is a promising treatment for which sound comparative evidence is lacking. Diehle et al. (2015) conducted a randomized controlled trial that investigated the effectiveness and efficiency of both treatments. In their study, 48 children (8-18 years) were randomly assigned to eight sessions of trauma-focused CBT or EMDR. Diehle et al. (2015) reported that trauma-focused CBT and EMDR showed large reductions from pre- to post-treatment, and were noted as being effective and efficient in reducing posttraumatic stress in children.

According to Chen et al. (2018), EMDR and CBT are the most often studied and most effective psychotherapies for PTSD. However, Chen et al. (2018), also indicated that evidence is inadequate to conclude which treatment is superior. They conducted a meta-analysis to confirm the effectiveness of EMDR compared to CBT for posttraumatic stress, and included 11 studies (N = 424). Although all the studies had methodological limitations, meta-analyses for total PTSD scores revealed that EMDR was slightly superior to CBT (Chen et al., 2018). Cumulative meta-analysis confirmed this and a meta-analysis for subscale scores of posttraumatic stress symptoms indicated that EMDR was better for decreased intrusion and arousal severity compared to CBT. EMDR may be more suitable than CBT for posttraumatic stress individuals with prominent intrusion or

arousal symptoms. However, the limited number and poor quality of the original studies included suggest caution when drawing final conclusions (Chen et al., 2018).

Evidenced-Based Research Supporting EMDR

Shapiro (2012) experienced critical skepticism with the publication of her initial research. However, this proceeded nearly a decade of research, removing the label of experimental from the treatment and prompting an evidenced-based process for clinicians to be published (EMDR Institute, 2018; Shapiro, 1995; Shapiro, 1989). As of 2012, Shapiro cited over 20 randomized trials in both veteran and civilian populations supporting the process and procedures of EMDR treatment. The article cited only the original trial that was published in 1989, which was conducted by Shapiro herself. Many of the other cited research had longitudinal follow-up, with significantly improved results years after the initial treatment (Nagireddy, 2014; Shapiro, 2012). The initial two decades of research prompted EMDR from a hypothetical, new-age treatment, to an established, evidence-based treatment for traumatic stress (EMDR Institute, 2018).

Although EMDR is often contraindicated for psychotic comorbidity, van den Berg and van der Gaag (2012) used descriptive statistics to assess the efficacy of EMDR in working with individuals suffering psychosis. Within groups t-tests determined the significance of score changes pre- and posttest, and data provided a significant improvement in symptoms with only 22.73% of the participants meeting diagnostic criteria for PTSD (van der Berg & van der Gaag, 2012). Research by McDermott, Drummond, and Kemp (2009) supported the use of EMDR with children, providing a strong, positive correlation between the treatment and PTSD symptom reduction after

experiencing significant trauma symptoms. The research on EMDR supports it as a reliable treatment method, and valid across multiple populations and presentations of traumatic stress along with other forms of psychological distress (Amaya-Jackson et al., 2013; Dogan et al., 2010; EMDR Institute, 2018; Shapiro, 2012). Evidence promoting EMDR efficacy for traumatic stress cannot be effectively presented in a small venue; however, a summation of research denouncing the treatment may be presented more succinctly.

Counter-Research About EMDR

A review of counter-research about EMDR showed concerns early in the research development, but ultimately minimal factual derision for the use of AIP or EMDR as a treatment. Initial disdain for the use of EMDR, likely developed from the dramatic claims made by clinicians experiencing unprecedented success with the treatment (Edmond & Lawrence, 2015). EMDR was being compared to theories that have formed the creation of psychology and psychological treatments, which have been grounded in science and research. However, skepticism into newer treatments like EMDR appear to come from minimal attention to available research, as evidenced by arguments by Langford (2014), as well as Guadiano and Herbert (2000). Both cases identified only a small number of researchers with identified concerns surrounding sample bias, or poorly explained process and research support. Researchers specifically identified that bi-lateral stimulation of the brain was not necessary in helping to process traumatic symptoms (Edmond & Lawrence, 2015). Although research provided compelling arguments

surrounding the initial efficacy of EMDR, longitudinal research provides clear evidence of the efficacy of EMDR over other treatments of traumatic stress.

The most definitive and evidence-based research regarding EMDR came from the longitudinal studies conducted. Longitudinal reproduction studies are rarely conducted due to the lack of recognition, or financial support from the scientific community; although this was not the case with EMDR (McCauley, 2016; Reber, 2016). However, Shapiro's (1989; 2012) claims described significant support and counter-research. As clinicians continued exploring the treatment and theory, research to promote or disclaim EMDR consisted of a significant number of quantitative, longitudinal studies (EMDR Institute, 2018; Shapiro, 2012). According to researchers, longitudinal research support the efficacy of EMDR, years after treatment ended, surrounding the reduction of trauma symptoms (EMDR Institute, 2018; Han & Jeon, 2015; Shapiro, 2012). Longitudinal research supported EMDR as an effective treatment for traumatic stress. However, similar research for complex traumatic stress is lacking due to poor conceptualization, exclusionary criteria, and minimal replication of research.

Treatment of Traumatic Stress

The treatment of traumatic stress has a risk of focusing on the treatment of pathology (trauma), rather than fostering the possibility (well-being) (Ginwright, 2018; Greyber et al., 2012; Lewey et al., 2018; Seligman, 2011). This is not an indictment on well-meaning professionals who have been trained in theories and techniques designed to simply reduce negative emotions and behavior (Seligman, 2011). What is needed is an approach that allows practitioners to approach trauma from a perspective that promotes a

holistic view of healing from traumatic experiences and environments. One approach is called healing centered, as opposed to trauma informed (Ginwright, 2018). A healing centered approach views trauma not simply as an individual isolated experience, but rather highlights the ways in which trauma and healing are experienced collectively (Ginwright, 2018). The term healing centered engagement expands how we think about responses to trauma and offers more holistic approaches to fostering well-being (Ginwright, 2018). Based in positive psychology, healing centered engagement is based in collective strengths and possibility which offers a departure from conventional psychopathology which focuses on clinical treatment of illness (Ginwright, 2018).

The fields of positive psychology and community psychology offers important insight into how policy makers, and youth development stakeholders can consider a range of healing centered options for the treatment of youth. Shifting from a treatment perspective to a healing centered approach requires professionals to expand beyond a treatment based model, which views trauma and harm as isolated experiences, to an engagement model which supports collective well-being (Ginwright, 2018). An important ingredient in healing centered engagements is the ability to acknowledge the harm and injury, but not be defined by it. Research supports that the ability to dream and imagine are important factors to foster hopefulness and optimism, which contributes to overall well-being (Snyder et al., 2003). Daily survival and ongoing crisis management in young people's lives make it difficult to see beyond the present. The greatest casualty of trauma is not only depression and emotional scares, but also the loss of the ability to dream and imagine another way of living (Ginwright, 2018). Howard Thurman (1949) pointed this

out in his eloquent persistence that dreams matter. He commented, “As long as an individual has a dream, they cannot lose the significance of living” (Thurman, 1996, p.304). By creating opportunities for young people to imagine, design, and envision their lives, this process strengthens their future goal orientation (Snyder et al., 2003).

From the perspective of a healing centered engagement and trying to expand beyond a treatment based model; research in the area of evidence-based approaches to the treatment of traumatic stress are needed for children and adolescents. There is a lack in normative data to support the effectiveness of non-traditional treatment modalities. Despite the prevalence of childhood trauma, studies regarding psychotherapy for children suffering from trauma symptoms are scarce (Adler-Nevo & Manassis, 2005; CDC, 2019; Saunders & Adams, 2014; SAMHSA, 2020). Using non-traditional treatment modalities for children and adolescents offers a possibility to help the youth explore their own thoughts and feelings, as they pertain to a life experience.

Summary

The history of trauma conceptualization and treatment pervades the history of psychology itself, with words by Socrates and Freud, as well as Beck and Shapiro weighing in on its development (Friedman, 2014; Green 2017). Psychological trauma comes from a significant event that the brain struggles to process and store the memory. Childhood exposure to traumatic events is a major public health problem in the United States (CDC, 2019). Traumatic events can include witnessing or experiencing physical or sexual abuse, violence in families and communities, loss of a loved one, refugee and war experiences, living with a family member whose caregiving ability is impaired, and

having a life-threatening injury or illness (American Psychological Association, 2018; SAMHSA, 2017; 2014; NIMH, 2020; U.S. Census Bureau, 2018). It is estimated that 26% of children in the United States will witness or experience a traumatic event before the age of four years (CDC, 2019; SAMHSA, 2019). According to the CDC (2019), almost 60% of American adults say that they endured abuse or other difficult family circumstances during childhood. Research has indicated that exposure to traumatic events early in life can have many negative effects throughout childhood and adolescence, and into adulthood (Burke Harris, 2019; Canada, 2019; DeBellis & Zisk, 2014; Kessler et al., 1995; Lewey et al., 2009). The ACEs study found a strong relationship between traumatic events experienced in childhood as reported in adulthood; and chronic physical illness, and mental health concerns (Burke Harris, 2019; CDC, 2019; World Health Organization, 2013). The annual financial burden to society of childhood abuse and trauma is estimated to be \$103 billion (CDC, 2019; NIMH, 2020; SAMHSA, 2019).

Historically, data suggest that CBT is one of the most effective psychological treatment methods for many mental disorders, including trauma symptoms (The Beck Institute, 2013). However, there appears to be consensus that a combined approach with multiple treatment modalities may also be effective (National Center for PTSD, 2015). There is considerable data that supports that each client's presentation of symptoms may vary, requiring varied treatment modalities (DeAngelis, 2008). It appears that the best treatment approach is one that is able to view the presentation of symptoms and adapt the treatment approach accordingly. Based on the information provided, there is clear evidence that EMDR has proven success in some cases with a response rate of 80% to

90% (Huso, 2010). However, with all interactions there are several factors to be considered that contribute to the success of any treatment modality. There are also variables that could contribute to prolonged interactions, or even resistance in engaging in a specified treatment modality.

Based on the presented articles in this literature review more exploration studies should be done. Additionally, it is important to understand the long-term effects and if the psychological impact is associated with the development of traumatic stress. Lastly, it is important to know if therapeutic intervention decreases the psychological effects and lessens the possibility of the development of trauma symptoms. A more in-depth discussion of the methodology of this research will be addressed in Chapter 3.

Chapter 3: Research Method

The purpose of this quantitative research was to evaluate the relationship between EMDR treatment, using archival data, on the reduction of trauma symptoms among youth 11 to 17 years of age. Chapter 3 contains four sections. The first delves into the study's independent and dependent variables, research design, and the research questions. Section two explained the study's population, its sample size and method, how the participants were recruited, as well as what instruments were used to collect the data and the data analysis plan. In the third section, the threats of internal and external validity and all ethical procedures, including collection of data and confidentiality, are discussed. The last section ends with the chapter summary and introduction of Chapter 4.

Research Design and Rationale

The study used a quantitative research design. Quantitative analysis uses deductive reasoning that begins with a hypothesis, and the objective is to quantitatively assess the research question to determine whether statistical evidence supports or rejects the hypothesis (Bernard, 2012). The purpose of a quantitative design is also to learn more about a population through occurrences that affect that population (Goertzen, 2017). In this research, a quantitative method was utilized because descriptive and inferential research analysis utilized to analyze the associations among variables (Bernard, 2012). Further, to use a quantitative design, the variables must be able to be measured to produce numbered data for statistical analysis (Bernard, 2012), an established instrument was utilized along with predetermined methods for analysis and interpretation of the results. A quantitative approach allowed for the examination of traumatic experiences of

children and adolescents from their perspective. The use of archival data provided insights into the effectiveness of EMDR and thus, using archival data was a valid method to investigate the identified research topic. Quantitative analysis allows numerical values to be placed on the trauma experienced, which increased the validity of the study.

The specific design was a correlational case study, which provided an accurate representation of the data designed to answer the research question. The primary purpose of methods of inquiry is to capture the meaning of relationships among variables as they occur naturally (Nastasi & Schensul, 2005). The retrospective approach was an effective way to evaluate archival data in order to develop inferential meaning. A correlation study provided a means to evaluate which variables contribute to positive treatment outcomes when using EMDR as a treatment for traumatized youth. The variables considered were the pre- and post-tests scores on the SUDS, the classification of traumatic distress as measured by the ACEs score (see Appendix B) prior to the start of treatment, and the total number of EMDR sessions received. Pre- and post-test scores were rated on a 10-point scale by the practitioner that has been trained by Shapiro on conducting EMDR therapy (see Appendix C). The practitioner assessed the client's trauma on a scale of 1 to 10, with 10 being the most disturbing thoughts of the trauma (see Appendix D).

Quantitative research in this area is clearly needed to determine if there exist possible benefits of using EMDR as a form of therapy to treat individuals who have suffered trauma. A quantitative approach allowed for the examination of traumatic experiences of children and adolescents from their perspective. The use of archival data provided insights into the effectiveness of EMDR and thus, using archival data was a

valid method to investigate the identified research topic. Quantitative analysis allows numerical values to be placed on the trauma experienced, which increased the validity of the study.

Methodology

Population

The target population for this study are youths ages 11 to 17 who have been exposed to trauma and undergone EMDR therapy within a treatment facility. All participants currently reside in the United States, although some may have resided in other countries through the course of their lifespan. Although some of the participants may have resided in other areas outside of the United States, those individuals had been fostered or adopted into families residing in the United States who elicited treatment within the United States.

Sampling Procedure

This quantitative research evaluated the relationship between EMDR treatment on the reduction of trauma symptoms among youth ages 11 to 17 years of age. The sample for this research was at least 45 youth from the use of archival data who have been through residential treatment and undergone EMDR treatment as a component of their trauma therapy. Trauma exposure was categorized by acute, chronic, or complex. Trauma symptoms were measured by pre and post-test scores on the EMDR trauma subjective units of distress scale (SUDs; see Appendix A). The variables considered were the pre and post-tests scores on the subjective units of distress scale, the classification of traumatic distress as measured by the ACEs score (see Appendix B) prior to the start of

treatment, and the total number of EMDR sessions received. Pre and post-test scores were rated on a 10-point scale by the practitioner that has been trained by Shapiro on conducting EMDR therapy (see Appendix C). The practitioner assessed the client's trauma on a scale of 1 to 10, with 10 being the most disturbing thoughts of the trauma (see Appendix D). These scores were obtained from archival data to reduce the limitations of the generalizability of the study, which includes multiple geographic regions, as well as provides a representation of various EMDR practitioners.

For this identified population sampled, data were obtained from archival data, representing children and adolescents referred and admitted into residential treatment. All of the youth were seen for treatment at least 3 times a week by a treatment provider. Upon admission into the program, an intake assessment was conducted with the available demographic information. Youth who scored higher than a 4 on the ACEs questionnaire were recommended for EMDR treatment. Once the youth made progress in safety planning and within the therapeutic milieu within the treatment program, they were referred to the EMDR practitioner. Co-occurring treatment modalities were the standard of care to help the youth cope with any trauma echoes, nightmares, or sleep disturbances that were elicited from the EMDR treatment. Identified children and adolescents were invited to participate in EMDR treatment, with consent obtained from the parent or legal guardian. The families who did not consent for EMDR treatment were not sampled or noted in the population. Children and adolescents who were not successful in EMDR treatment and stopped the treatment prior to termination were also not included in the sample.

Power Analysis for Target Sample Size

This study utilized a factorial ANOVA as well as ANCOVA to examine the functional relationship between the number of EMDR sessions, therapeutic intervention, and trauma symptoms, allowing a numeric description of effects. Multiple linear regression was also used to help explain trauma symptomatology scores pre- and post-EMDR treatment. A covariate repeated measure within subject analysis was conducted to determine pre- and post-test differences and responses to the EMDR therapy. It was hypothesized that a curvilinear relationship may exist between the pre-scores of the EMDR sessions as well as the post-tests scores. Although treatment was not conducted, the relationship of treatment in the reduction of trauma symptoms was evaluated to determine the experience of youth who have experienced trauma and undergone EMDR treatment.

It was hypothesized that a curvilinear relationship may exist between the pre-scores of the six-to-eight-week EMDR sessions, as well as the post-tests scores. The curvilinear relationship was hypothesized as the youth begin to explore the EMDR therapy and have intrusive thoughts of the trauma, as well as an increase in vivid dreams at the initial points of therapy. As the bilateral stimulation of the brain allows for processing of the traumatic events, the adverse effects of the therapy would be hypothesized to decrease. Repeated measures, within-between interactions, ANOVA was used because of the smaller sample size of the study. Using F-tests, the current study relied on an effect size of 0.25, with an alpha of 0.05, and a 95% confidence interval.

The sample size was determined by GPower (Version 3.1.92) to identify sample size assuming a $\leq 5\%$ significance level, a $> 95\%$ power, and the potential to detect a moderate effect size of between-group variance of the identified variables. A minimum sample size of 45 youth was derived from the power analysis. In an effort to improve power and ensure all available data was analyzed, at least 45 archival youth cases were sourced and sampled.

Procedure for Recruitment, Participation, and Data Collection

Permission for this research was obtained from the Institutional Review Board of Walden University (approval no. 11-16-21-0265677). Data were culled from treatment facilities where youth received treatment. Permission to use the data of interest was requested from the treatment facilities. This data would have been collected by the EMDR trained provider at the time of treatment and then stored in archival data collection. The total number of EMDR sessions received was obtained from the available archival data as well as the corresponding treatment provider. Identifying information of the participants was deidentified.

Procedures for Data Collection

Trauma symptoms were measured by pre and post-test scores on the EMDR trauma SUDS. Pre- and post-test scores are rated on a 10-point scale by the practitioner that has been trained by Shapiro on conducting EMDR therapy. The practitioner assesses the thought of the trauma on a scale of 1 to 10, with 10 being the most disturbing thoughts of the trauma. These scores were obtained from archival data to reduce the

limitations of the generalizability of the study, to enhance the geographic region of the population, as well as to provide representation of various EMDR practitioners.

The variables that were considered are the pre and post-tests scores on the SUDS, the classification of traumatic distress as measured by the ACEs score prior to the start of treatment, and the total number of EMDR sessions received. A copy of the ACEs questionnaire is included in the appendices, as well as available and accessible online and permissible to use for research without author permission, the public permission for use is also included.

After institutional review board approval, the identified data from the treatment center was obtained. This data had been sorted according to year in which treatment was conducted, and the data was sourced with the most recent cases, followed by the older cases. The data was reviewed and those individuals who have an ACEs score of four (4) or greater upon admission into the treatment facility, and underwent EMDR treatment were selected. From the identified ACEs Questionnaire, which is located in the admissions packet, the trauma history was reviewed to classify the trauma exposure as acute, chronic, or complex. The admission criteria into the treatment program are youth ages 11 to 17 years old, and the age at treatment was reviewed to ensure there are no outliers to the data presented. Treatment scores indicated on the SUDS were noted for each session of EMDR treatment administered from the archival data. Youth who were successful at completing the full six-to-eight week recommended course of EMDR had their data evaluated to see the relationship on the SUDS score. Youth who did not

successfully complete EMDR treatment, according to the treating practitioner, did not have their data analyzed. SPSS v28 was used to correlate statistical significance.

Instrumentation and Operationalization of Constructs

Operational Definition of Variables

This case method study evaluated the relationship among variables and treatment outcomes when using EMDR for traumatized youth. The archival data variables that were considered are the pre and post-tests scores on the SUDS, the classification of traumatic distress (acute, chronic, or complex) as measured by the ACEs score prior to the start of treatment, and the total number of EMDR sessions received. Effective treatment is measured by the number of EMDR sessions obtained, and a decrease in the SUDS scores. These scores were obtained from archival data to reduce the limitations of the generalizability of the study, to enhance the geographic region of the population, as well as to provide representation of various EMDR practitioners. The null hypotheses is that there is no relationship among EMDR therapy as an effective treatment for youth who have experienced trauma; and that there is no difference in the effectiveness of EMDR treatment for acute, chronic, or complex trauma experienced.

Demographic Items

Archival data was reviewed to obtain participants' demographic information noting age, gender, and ethnicity.

SUDS

The SUDS, also called a Subjective Units of Disturbance Scale, was developed by Wolpe in 1969 (EMDR, Institute, Inc., 2016). It is a Likert type scale that ranges from 0

(no distress) to 10 (extreme distress) for measuring the subjective intensity of disturbance or distress experienced by an individual (EMDR, Institute, Inc., 2016). The individual self-assesses where they are on the scale. The SUDS was used as a benchmark to evaluate the progress of treatment. There is no hard and fast rule by which an individual can assign a SUDS rating to their disturbance or distress (EMDR Network, 2012). Despite the ubiquitous use of this scale in mental health settings, there is little research (Kiyimba & O'Reilly, 2017). The SUDS is commonly used in therapy and assessments, and is a particularly useful tool for establishing current and previous levels of distress in children and young people (Kiyimba & O'Reilly, 2017).

Shapiro (1995), the originator and developer of EMDR, incorporated the SUDS into the standard treatment protocol. She expanded the range of emotion that the scale covers to include any emotional disturbance or negative feeling (Kim et al., 2008). In EMDR, the SUDS is designed to measure the level of distress before and after target memory processing (Kim et al., 2008). The clinician initially establishes a baseline SUDS score of the target traumatic memory during the assessment phase and then reassesses the level of disturbance at the end of desensitization (Kim et al., 2008). In practice, checking the SUDS scores during EMDR treatment does more than provide a quantitative index of progress but also fosters a sense of accomplishment in an individual undergoing the process, while allowing the clinician to evaluate blocks and goals of reprocessing (Shapiro, 1995).

Research has shown that the SUDS correlates highly with certain physiological indicators of distress (EMDR, Institute, Inc., 2016). The SUDS is typically assessed at the

start of treatment to establish a baseline reading for when the client holds the representative image of a target and the negative cognition in mind (EMDR, Institute, Inc., 2016). The SUDS is checked periodically when it appears that the client's thoughts may have been desensitized or to help assess treatment progress. The Desensitization phase (Phase 4) continues until the client reports a decrease of SUDS (EMDR Institute, 2016).

ACEs

The ACEs Assessment is a ten-question assessment that was developed by the CDC and Kaiser Permanente (CDC, 2019). The CDC and Kaiser Permanente conducted the original ACE Study from 1995 to 1997, with two waves of data collection. To date, it is one of the largest investigations of childhood abuse and neglect, coupled with household challenges and later-life health and well-being studies (CDC, 2019). Over 17,000 Health Maintenance Organization (HMO) members from Southern California who received physical examinations, participated in the study by completing confidential surveys about their childhood experiences and current health status and behaviors (CDC, 2019).

ACEs are stressful or traumatic events that include abuse, neglect, household dysfunction, which includes domestic violence (Adler-Nevo & Manassis, 2005; CDC, 2019; SAMHSA, 2017; Saunders & Adams, 2014). There are three types of ACEs classifications: abuse (physical, emotional, and sexual), neglect (physical and emotional), and household dysfunction (mental illness, incarcerated relative, mother treated violently, divorce, and substance abuse). These experiences contribute to the overall functioning of

an individual, that is, their development and ability to cope with a wide range of complex issues that may have occurred during childhood (Felitti et al., 1998). All ACE questions refer to the respondent's first 18 years of life. The key features for obtaining good reliability seem to be the concreteness of the question and the accuracy of the coding categories (Hardt et al., 2006). The ACEs does not compare the scales to other similar measures, nor does it test the various forms of validity, including checks for confounding variables (CDC, 2019; SAMHSA, 2017; Saunders & Adams, 2014).

Summary of Measures and Permission for Use

The SUDS and the ACEs are available and accessible online and permissible for research. Written permission to utilize both measures was obtained. The SUDS and the ACEs are relevant to the examination of the identified population because they will assess the effects of the life experiences that could have an impact of the perception of traumatic life experiences, as well as the possibility of longer-term impact into adulthood. The SUDS will define provisional PTSD symptomatology, establish if a traumatic event occurred, and determine the worst occurred event, and if there is more than one traumatic event that is causing an individual distress (Weathers et al., 2014; see Appendix E).

Data Analysis Plan

Descriptive Statistics

Descriptive statistics were used to quantify and graphically present the data. The archival data variables that were considered are the pre and post-tests scores on the SUDS, the classification of traumatic distress (acute, chronic, or complex) as measured by the ACEs score prior to the start of treatment, and the total number of EMDR sessions

received. Effective treatment was measured by the number of EMDR sessions obtained, and a decrease in the SUDS scores. These scores were obtained from archival data to reduce the limitations of the generalizability of the study, to enhance the geographic region of the population, as well as to provide representation of various EMDR practitioners. The demographic variables that were considered are the pre and post-test scores, age, gender, ethnicity, and the total number of EMDR sessions received. Ethnicity was coded and identified as minority versus non-minority, and gender was identified and coded as male versus female.

Inferential Statistics to Test Hypotheses and Answer Research Questions

Repeated measures, within-between interactions, ANOVA was used to identify the relationship between variables. The pre-test/post-test design yielded use of covariate ANCOVA due to the pre-test. Using F-tests, the effect size was 0.25, and alpha was 0.05, with a 95 percent confidence interval. A case method study provided an evaluation of which variables contributed to any relationship among the variables of interest.

A quantitative research design was used in this study. Archival data was used to evaluate the RQs. Quantitative analysis was an appropriate manner to explore this study's RQs as a quantitative study allows numerical values to identify participants' levels of distress, leading to increased validity of the study. The specific research question was is there a relationship among evidence-based approaches to therapy (EMDR) that are affective with children and adolescents who have experienced trauma?

Research Question 1: Is there a relationship among EMDR therapy as an effective treatment for youth ages 11–17 years old who have experienced at least one traumatic experience?

H_{01} – Null hypothesis: There is no relationship among EMDR as an effective treatment for youth ages 11–17 years old who have experienced at least one traumatic experience.

H_{a1} – Alternative hypothesis: There is a relationship among EMDR as an effective treatment for youth ages 11–17 years old who have experienced at least one traumatic experience.

Research Question 2: Is there any difference in the relationship between EMDR treatment and (a) acute, (b) chronic, or (c) complex trauma experienced by youth ages 11–17 years old?

H_{02} – Null hypothesis: There is no difference in the effectiveness of EMDR treatment for (a) acute, (b) chronic, or (c) complex trauma experienced by youth ages 11–17 years old.

H_{a2} – Alternative hypothesis: There is a difference in the effectiveness of EMDR treatment for (a) acute, (b) chronic, or (c) complex trauma experienced by youth ages 11–17 years old.

Threats to Validity

As in any study, there are possible external and internal threats to validity. For instance, although efforts are made to gain a representation of participants throughout the United States, this study cannot be certain that participants will represent a generalizable

sample of the population. Additionally, the study cannot be certain that previous therapeutic interventions did not contribute to the reduction of trauma symptoms, along with EMDR treatment. Previous mental health treatment, and the availability to access specialized treatment could significantly impact the validity of this research.

Ethical Procedure

This research evaluated archival data, and therefore no interaction or manipulation of treatment was conducted. Research for this study closely adhered to Walden University's Institutional Review Board guidelines for dissertations and research. These requirements were adhered to throughout the study as necessary, as a means of protecting the data obtained and the deidentification of information.

Protecting Participants from Harm

Participant archival data was deidentified so this study has no risk of divulging personal information. Only participant demographic data were identified. As part of the standard protocol for EMDR, individuals were informed of their right to terminate sessions at any point in time, prior to engaging in any phases of the treatment process. The researcher ensured that the treatment providers from which the data was obtained followed this procedure.

Right to Privacy

All research materials were secured either online or in paper form by the researcher and only available to the researcher and dissertation committee members. Material deidentification occurred at all times, and all HIPAA and Privacy Act requirements were adhered to when accessing information and reporting research

findings within this dissertation. There was no reference to specific demographics in the study, that would identify individuals. At the conclusion of the research study, all electronic and paper materials associated with the study will be maintained and stored in a locked computer for 5 years to align with American Psychological Association guidelines. In this case, the material was stored according to those guidelines by the originating facility or researcher as appropriate until such time as the information may be destroyed (American Psychological Association, 2010; Walden University, 2020).

Summary

The purpose of this chapter was to present the research design and methodology of the study. The chapter was broken up into four sections and the studies independent and dependent variables; research design and research questions were identified and discussed in the first section. The second section explained the studies population, sample size and method, participation recruitment, and what instruments will be used to collect the data and the data analysis plan. The third section explained the threats to internal and external validity and all ethical procedures, including, but not limited to the collection of data and confidentiality. The fourth and last section ended with the chapter's summary and the introduction of Chapter 4. The impact of the independent variables on the dependent variable and the statistical analysis will be reported in Chapter 4.

Chapter 4: Results

Due to the detrimental effects of trauma, researchers have studied treatments to reduce symptoms of trauma (CDC, 2019; Chen et al., 2018; Dorsey et al., 2017; Solomon et al., 2009). However, though children and adolescents experience traumatic events that impact the rest of their lives (American Psychological Association, 2008), to date, there are limited to no published research studies on the relationship between trauma symptoms with children and adolescents (Litz et al., 2015; Shubina, 2015). Research in this area would help to uncover prevalent trends in the treatment of children and adolescents who have suffered various forms of trauma. Therefore, that was the focus of this study.

The purpose of this quantitative research was to evaluate the relationship between EMDR treatment, using archival data, on the reduction of trauma symptoms among youth 11 to 17 years of age. The archival data variables considered were the pre- and post-tests scores on the SUDS, the classification of traumatic distress (acute, chronic, or complex) as measured by the ACEs score prior to the start of treatment, and the total number of EMDR sessions received. Effective treatment was measured by the number of EMDR sessions obtained and a decrease in the SUDS.

The research questions and hypotheses for this study were:

Research Question 1: Is there a relationship among EMDR therapy as an effective treatment for youth ages 11–17 years old who have experienced at least one traumatic experience?

H_{01} – Null hypothesis: There is no relationship among EMDR as an effective treatment for youth ages 11–17 years old who have experienced at least one traumatic experience.

H_{a1} – Alternative hypothesis: There is a relationship among EMDR as an effective treatment for youth ages 11–17 years old who have experienced at least one traumatic experience.

Research Question 2: Is there any difference in the relationship between EMDR treatment and (a) acute, (b) chronic, or (c) complex trauma experienced by youth ages 11–17 years old?

H_{02} – Null hypothesis: There is no difference in the effectiveness of EMDR treatment for (a) acute, (b) chronic, or (c) complex trauma experienced by youth ages 11–17 years old.

H_{a2} – Alternative hypothesis: There is a difference in the effectiveness of EMDR treatment for (a) acute, (b) chronic, or (c) complex trauma experienced by youth ages 11–17 years old.

In this chapter, the purpose, research questions and hypotheses, along with data analysis techniques from the use of archival data are discussed. In addition, the results are presented, which include archival data collection, participant data, descriptive statistics of the scales, and the research questions and hypotheses testing. The chapter concludes with a summary of the chapter.

Data Collection and Analysis

Archival data of 52 youth were collected from a residential treatment facility. The treatment facility specializes in the treatment of the multiple effects of trauma. More than 90% of the youth admitted suffer from moderate to severe levels of trauma. These include deficient prenatal care, maternal alcohol and drug exposure, early separations and abandonment, and sustained emotional, physical and sexual abuse. The treatment facility has been in existence since the year 1855 (167 years), and holds multiple accreditations through COA, DBHDS, VAISEF and NACBH. The staff and leadership work to ensure that the mental health services provided are best-practice, safe, effective, and contribute to improvements and desired outcomes for youth in need of psychiatric residential treatment services.

For the identified population sampled from the archival data, youth were seen for treatment at least 3 times a week. Upon admission into the program, an intake assessment was conducted with the available demographic information. Youth who scored higher than a 4 on the ACEs questionnaire were recommended for EMDR treatment. Once this youth made progress in safety planning and within the therapeutic milieu within the treatment program, they were referred to the EMDR practitioner. Youth received EMDR treatment along with their three individual therapy sessions on a weekly basis. Co-occurring treatment modalities were the standard of care to help the youth cope with any trauma echoes, nightmares, or sleep disturbances that were elicited from the EMDR treatment. Identified children and adolescents were invited to participate in EMDR treatment, with consent obtained from the parent or legal guardian. During this consent

process, the possible outcomes were explored. The families who did not consent for EMDR treatment were not sampled or noted in the population. Children and adolescents who were not successful in EMDR treatment and stopped the treatment prior to termination were also not included in the sample. The sample of archival data was collected by the researcher during internship at this facility.

The participants were selected for this research based on their completion of EMDR treatment. The sample size was determined by Gpower (Version 3.1.92) to identify sample size assuming a $\leq 5\%$ significance level, a $> 95\%$ power, and the potential to detect a moderate effect size of between-group variance of the identified variables. A minimum sample size of 45 youth was derived from the power analysis, but to improve power and ensure all available data was analyzed, 52 archival youth cases were sourced and sampled, as that was the total number of youth who completed EMDR treatment.

This research evaluated archival data, and therefore no interaction or manipulation of treatment was conducted. The data were attained and secured either online or in paper form. Participant archival data were also deidentified, so the study had no risk of divulging personal information. Only participant demographic data were identified, but there will be no reference to specific demographics in the study that would identify individuals. All HIPPA and Privacy Act requirements were adhered to when accessing information and reporting research findings within this dissertation.

Quantitative research in this area is needed to determine whether EMDR treatment is effective in the treatment of children and adolescents who have experienced

significant forms of trauma. The literature reviewed will evidence that there have been significant contributions by practitioners to enhance the use of EMDR as an effective treatment with traumatized individuals, as a treatment modality to help individuals address trauma symptoms. Quantitative analysis would allow numerical values to be placed on the trauma experienced, which may increase the validity of the study.

This study utilized a factorial ANOVA as well as ANCOVA to examine the functional relationship between the number of EMDR sessions, therapeutic intervention, and trauma symptoms, allowing a numeric description of effects. For the ANOVA analysis, the archival data were divided into three groups as defined by the causal trauma identified (acute, chronic, and complex). The independent variables were the selected variable of trauma exposure (acute, chronic, and complex). For the ANCOVA analysis, the archival data included the pre- and post-test SUDS scores. A multiple linear regression helped identify the existence of any statistically significant differences in trauma symptomatology scores pre- and post-EMDR treatment. Repeated measures, within-between interactions, ANOVA was used to identify the relationship between variables. The pre-test/post-test design yielded use of covariate ANCOVA due to the pre-test. A covariate repeated measure within subject analysis was conducted to determine any statistically significant pre- and post-test differences and responses to the EMDR therapy. It was hypothesized that a curvilinear relationship may exist between the pre-scores of the EMDR sessions as well as the post-tests scores.

It was hypothesized that a curvilinear relationship may exist between the pre-scores of the six-to-eight-week EMDR sessions, as well as the post-tests scores. The

curvilinear relationship was hypothesized as the youth began to explore the EMDR therapy and had intrusive thoughts of the trauma, as well as an increase in vivid dreams at the initial points of therapy. As the bilateral stimulation of the brain allowed for processing of the traumatic events, the adverse effects of the therapy were hypothesized to decrease. Repeated measures, within-between interactions, ANOVA was used because of the smaller sample size of the study. Using F-tests, the current study relied on an effect size of 0.25, with an alpha of 0.05, and a 95% confidence interval.

For the ANOVA analysis, the archival data was divided into three groups as defined by the causal trauma identified (acute, chronic, and complex). The independent variables were the selected variable of trauma exposure (acute, chronic, and complex). For the ANCOVA analysis, the archival data included the pre and post-test SUDs scores. This case method, correlational, non-experimental, quantitative research evaluated the relationship between EMDR therapy in the treatment of youth who have experienced various forms of trauma (acute, chronic, or complex), using archival data.

Results

Validity of Data

The archival data collected from the 52 participants were recorded in SPSS for data analysis. The data were checked for accuracy by ensuring that there were no errors in transferring the archival data from Microsoft Excel to SPSS. There are a number of assumptions that should be evaluated when performing ANOVA and ANCOVA statistical analyses. These include assessing if the data is normally distributed, has homogeneity of variance, is measured on an interval scale, and adheres to the principle of

independence of variables. A box plot with diagnostics (within 1.5 interquartile range of first and third quartiles) was visually inspected, and the data did not include any extreme values as outliers. To explore the normality of the data, the Shapiro-Wilk test was used. Results identified a p -value greater than 0.05, ($p > .05$) at .021 and .711, respectively, indicating that the distribution of the data is normal, and the homogeneity of variance is met. The histogram is generally normally distributed, and a visual inspection of the data's histogram supports this conclusion.

Parametric statistical procedures rely on assumptions about the shape of the distribution (i.e., assume a normal distribution) in the underlying population and about the form or parameters (i.e., means and standard deviations) of the assumed distribution. The assumption of homogeneity of variance is the second statistical assumption that needs to be tested for when comparing three or more independent groups on a continuous outcome with ANOVA. The assumption is that the variances (and thus distributions) of independent groups on a continuous variable are similar, "equal," or "equivalent." To test the assumption of homogeneity of variance, Levene's Test of Equality of Variances was used. The assumption of homogeneity of variance is important when conducting between-subjects statistics. Homogeneity of variance essentially ensures that the distributions of the outcomes in each independent group are comparable and/or equal. ANOVA should only be conducted on continuous outcomes between groups that have "equivalent" or similar variances. To meet the assumption of homogeneity of variance, the p -value for Levene's Test should be greater than .05. If Levene's Test yields a p -value below .05, then the assumption of homogeneity of variance has been violated. For this

study, Levene's test of Equality of Error Variances was significant ($p > .05$) at 0.174, indicating the distribution is normal, and the homogeneity of variance is met.

The remaining two assumptions of parametric data analysis are the assumption of interval data and the assumption of independence. The assumption of interval data is the third statistical assumption. In this study, there were no extreme outliers, and the data point values were for numerical variables, and measured as such. The assumption of independence is the fourth statistical assumption, whereas data point values for the different groups were independent of each other.

Demographic Characteristics of Sample and Study Variables

Data was comprised from a total of 52 youth who experienced trauma and received EMDR treatment. Participants ages ranged from a minimum of 11 years, and a maximum of 17 years, and a mean age of 13.81 years. The archival data variables that were considered were the pre and post-tests scores on the SUDS, the classification of traumatic distress (acute, chronic, or complex) as measured by the ACEs score (scale of 0 to 10) prior to the start of treatment, and the total number of EMDR sessions received (see Table 1). All of the individuals sampled experienced adversity in childhood (ACEs) as the mean was 6.6. The mean of the SUDS at the start of EMDR treatment was 7.65, and the SUDS at the termination of EMDR treatment was 1.08. The mean number of sessions was 11.17.

Table 1

Descriptive Statistics (ANOVA)

	<i>N</i>	Minimum	Maximum	Mean	SD
AGE	52	11	17	13.81	1.910

ACEs	52	4	9	6.6	1.302
# SESSIONS	52	5	18	11.17	3.513
SUDS START	52	5	10	7.65	1.440
SUDS END	52	0	2	1.08	0.860

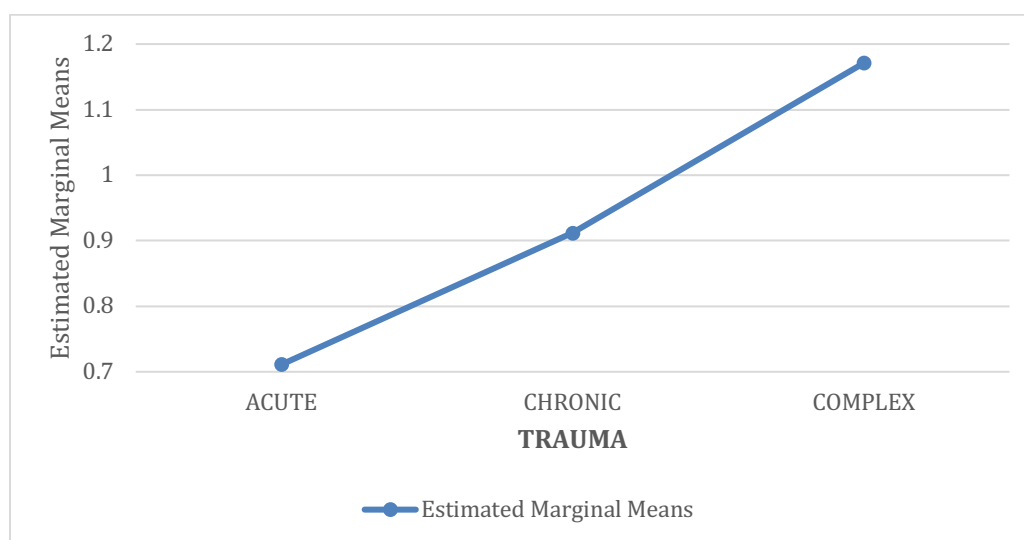
Research Questions and Hypothesis Testing

Research Question 1

The univariant Analysis of Variance (ANOVA) tested for between subjects effects; and was used to answer research question one, “Is there any difference in the relationship between EMDR treatment and the difference between (a) acute, (b) chronic, or (c) complex trauma experienced by youth ages 11-17 years old?” Data used to answer this question was analyzed by conducting a one-way ANOVA analysis of the between subjects effects (continuous dependent variable) by the independent categorical variable of trauma exposure. The independent variable was the selected variable of trauma exposure (acute, chronic, and complex); and the dependent variable was EMDR treatment efficacy as measured by SUDS scores. The ANOVA was not statistically significant, whereas the effect size did not differ depending on the trauma exposure (acute, chronic, or complex) (see Table 2). There is a statistically significant interaction ($p > .05$) at 0.521, indicating that the trauma exposure was significant, but that there is no statistically significance among group differences in terms of the results of EMDR treatment. This supports the null hypothesis that there is no significant difference in the effectiveness of EMDR treatment for (a) acute, (b) chronic, or (c) complex trauma experienced by youth (see Figure 1).

Table 2*Tests of Between-Subjects Effects*

Source	Type III Sum of Squares	df	Mean Square	F	Significance	Partial Eta Squared	Noncent. Parameter	Observed Power
Corrected Model	16.016	3	5.339	11.822	0.000	0.425	35.466	0.999
Intercept	3.593	1	3.593	7.957	0.007	0.142	7.957	0.789
SUDS START	7.663	1	7.663	16.968	0.000	0.261	16.968	0.981
TRAUMA	0.596	2	0.298	0.66	0.521	0.027	1.321	0.154
Error	21.676	48	0.452					
Total	98.000	52						
Corrected Total	37.692	51						

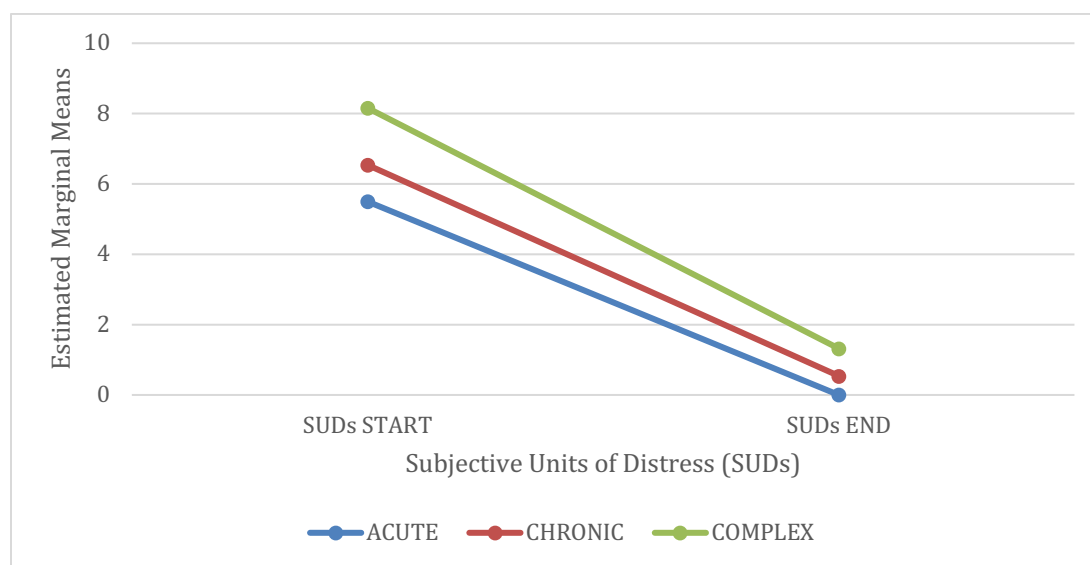
Figure 1*Estimated Marginal Means of Subjective Units of Distress Scale***Research Question 2**

The Analysis of Covariance (ANCOVA) was used to answer research question two, “Is there a relationship among EMDR therapy as an effective treatment for youth ages 11-17 years old who have experienced at least one traumatic experience?” Data used to answer this question were analyzed by covariance, which is used to test the effects of

categorical variables of trauma exposure on a continuous dependent variable (analysis of the effect size), controlling for the effects of selected other continuous variables. Control variables are called the “covariates.” The covariance in this case were the pre-test SUDS scores. The ANCOVA is used in examining the differences with the mean value of the dependent variable which was pre and post-test scores on the SUDS. The independent variables were the SUDS pre and post-test scores. The ANCOVA yielded a statistically significant difference from the SUDS pre-test to post-test scores, after controlling for the covariate of the SUDS pre-test (see Figure 2). The ANCOVA supports the alternative hypothesis that there is a relationship among EMDR as an effective treatment for youth ages 11-17 years old who have experienced at least one traumatic experience.

Figure 2

Estimated Marginal Means of Pre- and Post-Tests Subjective Units of Distress



Box’s test of equality of covariance matrices is a multivariate statistical test used to check the equality of multiple variance-covariance matrices. This tests the null

hypothesis that the observed covariance matrices of the dependent variables are equal across groups. The test is commonly used to test the assumption of homogeneity of variances and covariances in linear discriminant analysis. The test uses a chi-square approximation, which indicated a value of 0.482, *df* of three, and significance of 0.695 ($p > .05$), indicating that the covariance matrices are equal. This means that there was no statistically significant difference in the effect size between groups, and the multivariate is normally distributed. Box's test of equality of covariance matrices determines whether the covariance matrices are similar; whereas Levene's test for equality of variances assessed whether the variances are similar.

Table 3 includes descriptive statistics with the presentation of trauma symptoms at the end of treatment, as evidenced by the significant decrease in SUDS scores. The mean SUDS score for acute trauma exposure at the start of treatment was 5.50 (SUDS scores at the termination of treatment was 0.00), and there were two individuals who experienced acute trauma exposure. The mean SUDS score for chronic trauma exposure at the start of treatment was 6.54 (SUDS scores at the termination of treatment was 0.54), and there were 13 individuals who experienced this level of trauma exposure. The mean SUDS score for complex trauma exposure at the start of treatment was 8.16 (SUDS scores at the termination of treatment was 1.32), and there were 37 individuals who experienced this level of trauma exposure.

Table 3

Descriptive Statistics (ANCOVA)

	TRAUMA	Mean	SD	<i>N</i>
SUDS START	ACUTE	5.50	0.707	2

	CHRONIC	6.54	0.967	13
	COMPLEX	8.16	1.280	37
	TOTAL	7.65	1.440	52
SUDS END	ACUTE	0.00	0.000	2
	CHRONIC	0.54	0.776	13
	COMPLEX	1.32	0.784	37
	TOTAL	1.08	0.860	52

A p -value less than 0.05 at 0.021 identifies the existence of a statistically significant change from pre-test to post-test (see Table 4). It indicates strong evidence against the null hypothesis, as there is less than a 5% probability the null is correct (i.e., the results are random). Therefore, we reject the null hypothesis and accept the alternative hypothesis that there is a statistically significant difference between the pre-test and post-test SUDS scores. The F distribution is a probability distribution of the F statistic. The F-value is used along with the p -value in deciding whether results are statistically significant enough to reject the null hypothesis. A large F statistic (one that is bigger than the F critical value found in a table), means something is statistically significant, while a small p -value means all the results are statistically significant (see Table 4).

Table 4

Tests of Within-Subjects Contrasts

Source	Type III Sum of Squares	df	Mean Square	F	Significance
Time	278.397	1	278.397	509.704	0.000
Time *TRAUMA	4.583	2	2.291	4.195	0.021
Error (Time)	26.764	49	0.546		

Summary

The purpose of this quantitative research was to evaluate the relationship between EMDR treatment, using archival data, and the reduction of trauma symptoms among youth ages 11 to 17 years of age. The research question was addressed by conducting a factorial ANOVA, as well as ANCOVA to examine the functional relationship between the number of EMDR sessions, therapeutic intervention, and trauma symptoms, allowing a numeric description of effects, while also using the multiple linear regression to better understand any changes in trauma symptomatology scores pre and post EMDR treatment. The research questions were, “Is there a relationship among EMDR therapy as an effective treatment for trauma?” and “Is there any difference in the relationship between EMDR treatment and (a) acute, (b) chronic, or (c) complex trauma?” Both questions considered how effect size can differ by trauma exposure. A covariate repeated measure within subject analysis was conducted to determine pre and post-test differences and responses to the EMDR treatment, using SPSS. The assumptions were not violated, and the regression showed statistically significant results in the difference of the impact on treatment of trauma symptoms. Research results of this study were evaluated to consider how the EMDR treatment efficacy as measured by SUDS scores, can differ by categorical variables of trauma exposure, controlling for the effects of selected other variables. The current findings are consistent with research indicating that there is minimal to no difference in the trauma exposure and effect size by whether an individual was diagnosed with acute, chronic, or complex trauma. The current findings of this study

were also consistent with prior research that was conducted on trauma responses, indicating that treatment has an impact on the reduction of trauma symptoms.

In chapter 5, a summary of the findings is provided, the interpretation of those findings, and the limitations of the study. Further, the recommendations are explained, future research, and implications for social change. Chapter 5 ends with a conclusion to the research study.

Chapter 5: Discussion, Recommendations, and Conclusion

The purpose of this research was to evaluate the relationship between EMDR treatment, using archival data, on the reduction of trauma symptoms among children and adolescents. It was important to evaluate EMDR as an evidence-based approach to treatment that is effective with children and adolescents with significant trauma experiences, as this could be used to reduce trauma symptoms. The social change that is needed is evidenced-based practice (EMDR) that has been normed for children and adolescents that could be effective in reducing trauma symptoms. The challenge will be providing insight into behaviors that are a direct result of experienced forms of trauma and victimization, which may better society through the improvement of human and social conditions. An important aspect of social change will be challenging society to think about the role in helping to end the epidemic of childhood trauma and building a more resilient community.

Summary of Findings

Archival data of 52 youth were collected from a residential treatment facility that specializes in the treatment of the multiple effects of trauma. The archival data variables considered were the pre- and post-tests scores on the SUDS, the classification of traumatic distress (acute, chronic, or complex) as measured by the ACEs score prior to the start of treatment, and the total number of EMDR sessions received. Effective treatment was measured by the number of EMDR sessions obtained and a decrease in the SUDS scores. A factorial ANOVA and ANCOVA were used to examine the functional relationship between the number of EMDR sessions, therapeutic intervention, and trauma

symptoms, allowing a numeric description of effects, while also using the multiple linear regression to help explain trauma symptomatology scores pre and post EMDR treatment. A repeated measures, within-between interactions, ANOVA was used to identify the relationship between variables (i.e., youth diagnosed with chronic, acute, or complex trauma). The pre-test/post-test design necessitated use of a covariate ANCOVA due to the pre-test. A covariate repeated measure within subject analysis was conducted to determine pre and post-test differences and responses to the EMDR therapy. A case method study provided an evaluation of which variables contributed to any relationship among the variables of interest. Although treatment was not conducted for this dissertation, the archival data was reviewed from treatment that was conducted; and other treatment components were evaluated (ACEs and pre and post-test scores within the SUDs) to determine the experience of youth who experienced trauma and underwent EMDR treatment.

It was hypothesized that a curvilinear relationship may exist between the pre-scores of the six-to-eight-week EMDR sessions, as well as the post-test scores. The curvilinear relationship was hypothesized as the youth began to explore the EMDR therapy and had intrusive thoughts of the trauma, as well as an increase in vivid dreams at the initial points of therapy. As the bilateral stimulation of the brain allowed for processing of the traumatic events, the adverse effects of the therapy were hypothesized to decrease. Repeated measures, within-between interactions, ANOVA was used because of the smaller sample size of the study. Using F-tests, the current study relied on an effect size of 0.25, with an alpha of 0.05, and a 95% confidence interval.

The archival data was divided into three groups as defined by the independent variables selected of trauma exposure (acute, chronic, and complex); as well as the pre and post-test scores within the SUDs. The dependent variable was EMDR treatment efficacy as measured by SUDs scores. The case method, correlational, non-experimental, quantitative research evaluated the relationship between EMDR therapy in the treatment of youth who have experienced various forms of trauma (acute, chronic, or complex), using archival data.

Research question one was “Is there any difference in the relationship between EMDR treatment and the difference between (a) acute, (b) chronic, or (c) complex trauma experienced by youth ages 11–17 years old?” Data used to answer this question were analyzed by conducting a one-way ANOVA, testing for between-subjects effects (continuous dependent variable) by the independent categorical variable of trauma exposure. The independent variable was the selected variable of trauma exposure (acute, chronic, and complex), and the dependent variable was EMDR treatment efficacy as measured by SUDS scores. The ANOVA was not significant, whereas the effect size did not differ depending on the trauma exposure (acute, chronic, or complex). Therefore, there is a statistically significant interaction, indicating that the trauma exposure was significant but not in relation to the effect on treatment. This supports the null hypothesis that there is no statistical significant difference in the effectiveness of EMDR treatment for (a) acute, (b) chronic, or (c) complex trauma experienced by youth.

Research question two was “Is there a relationship among EMDR therapy as an effective treatment for youth ages 11–17 years old who have experienced at least one

traumatic experience?” Data used to answer this question were analyzed by using an ANCOVA analysis, which is used to test the effects of categorical variables of trauma exposure on a continuous dependent variable, controlling for the effects of selected other continuous variables. The control variables are called the “covariates.” The covariate in this case were the pre-test SUDS scores. The ANCOVA was used in examining the differences with the mean value of the dependent variable, which was EMDR treatment efficacy as measured by change in SUDS scores over the course of treatment. The effect of the independent variable on the dependent variable was identified with the effect size statistic. The ANCOVA results identified a statistically significant change in SUDS scores from pre-test to post-test. Therefore, the ANCOVA supports the alternative hypothesis that there is a relationship among EMDR as an effective treatment for decreasing traumatic stress as measured by the SUDS.

Interpretation of Findings

The theoretical framework for this study was Shapiro’s (2007) information processing theory. Shapiro developed an information processing theory to account for the effects noted with EMDR treatment in individuals who have experienced trauma (Shapiro, 1995). The information processing theory emphasizes human development and the ways in which individuals process information (Shapiro, 2001). The theoretical framework for this study, surrounding the use of EMDR, was as closely normed to the available data and evidence-based research that has been supported by Francine Shapiro. Shapiro (1995) originally developed EMDR as a treatment method to treat traumatic memories in adults with PTSD. EMDR is an eight-stage treatment approach that uses

saccadic eye movements as one treatment component to tap into images, beliefs, emotions, physical responses, awareness, and interpersonal systems (Shapiro, 2001). EMDR is based on the notion that traumatic experiences affect many domains of thought, emotion, sensation, and physical parts of the self at times. It is suggested by Shapiro (2001) that regardless of the incident that is experienced as a traumatic, any memory can be stored in a variety of ways: functional, dysfunctional, positive, or negative. Inappropriately stored memories can be targeted by EMDR treatment and therapy, specifically through the eye stimulation which activates the information processing system (Shapiro, 2001).

The Adaptive Information Processing (AIP) theory is a conceptual theory derived from evidence-based research into therapeutic treatment for traumatic stress responses (Shapiro, 2007). This process of traumatic memory storage, trauma processing, and decision-making is generated and supported by data derived from research into the therapeutic treatment for traumatic stress (Cusack et al., 2009, Shapiro, 2001). Shapiro (2007) developed the AIP theory of trauma based on established cognitive and behavioral theories in combination with models of learning, information storage and memory access. This research was expounded upon, and information gathered, developing a model by which traumatic memories are stored maladaptively in the brain, separate from functional memory networks (Cusack et al., 2009, Shapiro, 2001). The traumatic memories and their inherent cognitive, affective, and somatosensory components are disconnected from the brain's adaptive memory processing system (Cusack et al., 2009). Normal hippocampal memory storage entails the breaking down of perceived memories into associated parts

and then storage into memory networks by which schemas for decision-making may be improved (Shapiro, 2007). However, traumatic memories store without this process in a separate section of the brain, still intact and disconnected from decision-making memory networks (Cusack et al., 2009; Shapiro, 2007). Lending the need for continued research surrounding effective trauma treatment, using evidence-based practices and principles.

The general scope of EMDR is to exploit a brain physiological process, through which it is possible to access the recollection that has been dysfunctionally memorized, and employs the natural neural processes to memorize the same recollection adequately (Verardo & Cioccolanti, 2017). The final result is an assimilation of the new information into existing memory structures (Verardo & Cioccolanti, 2017). When this happens, individuals are typically able to verbalize coherently and logically the event, and this provides new acquisitions for their lives (Verardo & Cioccolanti, 2017). EMDR is bilateral stimulation of the brain (eye movements, tactile or auditory) while processing a distressing memory, which generally consists of six to eight, 90-minute sessions (Bae et al., 2008). This process facilitates resolution of the memory and allows for new, more positive networks and skills to develop (Shapiro, 2001; Shapiro & Brown, 2019).

There is little empirically supported research on EMDR with children and adolescents, although it has been reported (Adler-Tapia & Settle, 2009) that Shapiro included children in her original unpublished research and began presenting on the effectiveness of her work with them in 1989. Research on psychotherapy interventions with children and adolescents suffering from trauma is generally underrepresented in the empirical literature, and thus allowing for insight into the need for more evidence-based

approaches to therapy that are effective with children and adolescents, that are not traditional modes of therapeutic interventions such as EMDR, which was presented in this dissertation.

Research question one was “Is there any difference in the relationship between EMDR treatment and the difference between (a) acute, (b) chronic, or (c) complex trauma experienced by youth ages 11-17 years old?” The findings for Research Question 1 on the difference in treatment based on trauma type are consistent with research indicating that there is minimal to no difference in the trauma exposure and effect size by whether an individual was diagnosed with acute, chronic, or complex trauma. Under all three conditions, individuals’ group mean scores for traumatic stress improved. The current findings of this study were also consistent with prior research that was conducted on trauma responses, indicating that treatment has an impact on the reduction of trauma symptoms (Adler-Tapia & Settle, 2009; Shapiro, 2001; Shapiro & Brown, 2019). Statistical testing assumptions were not violated, and the regression showed statistically significant results in the decrease of trauma symptomology.

Despite these findings supporting previous research, they were inconsistent with research comparing treatment efficacies with adults who have experienced trauma (Eichenbaum & Manns, 2009; Matlin, 2009; Nagireddy, 2014; Siegal, 2002). This is likely because many adults may choose treatment options that are on an outpatient basis, and they have learned to adapt to their trauma responses and may be seeking treatment for other reasons, not understanding the impact of past trauma. Even adults who are hospitalized in acute settings, it is often about stabilization with medications and left to

the outpatient treating provider to uncover the underlying presentation of symptoms. Children and adolescents for this research were admitted into a residential treatment setting, where the sole focus was on treatment. They were admitted because they were exhibiting behavioral disturbances that might have been associated with past traumatic experiences. However, the findings are consistent with research indicating that there is minimal to no difference in the trauma exposure and effect size by whether an individual was diagnosed with acute, chronic, or complex trauma (Shapiro, 2001, 2007; Shapiro & Solomon, 2008). Thus, regardless of the traumatic exposure, treatment to address the traumatic stress experienced was effective in reducing the impact of the trauma symptoms. This is directly related to Shapiro's (2007) AIP model surrounding how traumatic memories are stored within the brain. Regardless of the trauma experienced, the brain is impacted such as how the brain processes information with lasting effects.

The findings for Research Question 2 on whether EMDR is an effective therapy were also consistent with prior research. The results were evaluated to consider how the EMDR treatment efficacy as measured by SUDS scores can differ by categorical variables of trauma exposure, controlling for the effects of selected other variables. The current findings of this study were consistent with prior research that indicated that treatment has an impact on the reduction of trauma symptoms (Cusack et al., 2009; Shapiro, 2007). Shapiro (2001) indicated that regardless of the incident experienced as traumatic, any memory can be stored in a variety of ways: functional, dysfunctional, positive, or negative. Inappropriately stored memories can be targeted by EMDR

treatment and therapy, specifically through the eye stimulation which activates the information processing system (Shapiro, 2001).

Both research questions identified positive outcomes for the use of EMDR treatment with children and adolescents, meaning research in this area should continue. Results indicated that early interventions may have better treatment outcomes with a greater reduction of traumatic stress. This could be because of the ability of the brain to heal from the impact of the trauma and less chance for it to be improperly stored within the brain. When a traumatic memory is improperly stored, individuals tend to continue attempting to process the traumatic memory stored within the brain. This often leads to acute traumatic responses such as sleep disturbances. With earlier intervention, this may allow for children and adolescents to progress through life with less impact from traumatic stress. Further, multiple forms of treatment may be helpful with children and adolescents because of the longer-term effects at reducing traumatic stress. As youth develop, different forms of treatment may be more effective in addressing traumatic stress. Some youth may be more willing to explore traditional talk therapy, whereas other individuals may be so impacted by a traumatic experience that they require alternative treatment modalities that will attempt to address their presentation of symptoms. EMDR could be a treatment option that could be explored as well as neurofeedback.

Overall, the current research evaluated the relationship between EMDR treatment, using archival data, on the reduction of trauma symptoms among children and adolescents. However, what was not accounted for in the research was treatment that the youth may have attained prior to offering SUDS scores pre and post-test. As the archival

data collected was from a residential treatment facility, all the youth had prior treatment, which may have impacted their responses to the experience of the traumatic stress. The youth referred for EMDR treatment had all been seen on a routine basis, at least three times a week by a treatment provider. Once the youth made progress in safety planning and within the therapeutic milieu within the treatment program, they were referred to the EMDR practitioner. Youth received EMDR treatment along with their three individual therapy sessions on a weekly basis. Some youth may have had residential treatment for a year, while others may have been within their initial six months of treatment at the facility. The impact of treatment prior to EMDR sessions could be a factor because of the youth's willingness to engage and self-awareness of the impact of traumatic stress. The youth who had been in treatment longer or had treatment prior to entering into the residential treatment facility may have had better outcomes. Regardless, the findings are supported by the research suggesting that if children and adolescents are able to receive treatment early, they could have better outcomes.

Limitations of the Study

The study was limited by several factors. First, due to the lack of prior research studies on the topic of using EMDR with children and adolescents to treat trauma symptoms, supporting current research was limited; however, the absence also indicated a need for further research for the identified gaps in the population. Additionally, because the collection of data was self-reported it is possible that the results were influenced by the participant's bias and that individuals may not have answered honestly, may have exaggerated, and/or had selective memory to the responses provided.

Although the practitioners were trained in EMDR and data collection procedures, limitations could be found in the rapport established with each individual client, and how well the practitioner worked with the individual. Children and adolescents who had better rapport with the EMDR practitioner could have had better outcomes because they were more vested in the therapeutic process. This could have influenced how open and disclosing the youth was with the practitioner, as well as their willingness to disclose the vulnerability of the true impact of the presentation of trauma symptoms. Thus, it is unknown if there were variations to the procedures followed in the administration of EMDR treatment. The limitations identified should be considered in relation to the use of the archival data obtained.

Lastly, although efforts were made to gain representation of participants throughout the United States, it was not certain that the results were not specific to a certain geographic area, nor can it be asserted that ethnic and gender diversity were represented in the treatment outcomes provided. This research considered ACEs, but there are other considerations as well, which may have a direct impact of the experience of trauma. This is paramount of populations that may be living in situations of which adverse climate experiences are an influence (environmental factors), as well as adverse community experiences (poverty and violence, disproportionate opportunities, and discrimination) and atrocious cultural experiences (genocide, forced family separation, segregation, slavery, colonization); as these individuals may have a vastly different view of society and the experience of trauma responses on a daily basis.

Recommendations

The results of this study provide information on the impact of trauma, and how EMDR treatment efficacy as measured by SUDS scores, can differ by categorical variables of trauma exposure, controlling for the effects of selected other variables. The current findings of this study were consistent with prior research that was conducted on trauma responses, indicating that treatment has an impact on the reduction of trauma symptoms (Cusack et al., 2009; Ginwright, 2018; Shapiro, 2001, 2007; Shapiro & Brown, 2019; Shapiro & Solomon, 2008). However, based on the findings, future research should be conducted to help continue narrowing down the effects of evidenced-based treatment on the impact of trauma, and the reduction of trauma symptoms. Future research could also consider combination treatments, such as EMDR and Neurofeedback. Both treatment modalities are evidence-based and operate under similar principles of bilaterally stimulating the brain, in an effort to help the hippocampus and amygdala sort and file sensory, cognitive, and affective information without the impact of the traumatic response (Eichenbaum & Manns, 2009; Matlin, 2009; Nagireddy, 2014; Shapiro & Solomon, 2008; Siegal, 2002). As traumatic experiences occur, the hippocampus and amygdala become overwhelmed with sensory, cognitive, and affective information, causing the memory to store in its original form with all the associated affective, cognitive, and somatosensory memory components intact (Nagireddy, 2014; Shapiro & Solomon, 2008; Siegal, 2002). Improperly stored, traumatic memories are attached to the inherent networks that interpret stressful experiences, although not in an adaptive manner.

It is recommended that future quantitative research is conducted to not only include the ACEs, but to also incorporate Adverse Climate Experiences, Adverse Community Experiences, and Atrocious Cultural Experiences. The ability to broaden the scope of the research, as well as the participant population, would allow for the incorporation of individuals who have experienced interpersonal trauma, as well as trauma related to repression. Many individuals are not reporting a traumatic experience, until they are able to recognize it as such. For example, those living in poverty often do not count that in their ACEs because it is seen as “a way of life.” Individuals who are being trafficked, often do not realize it is happening initially. They reflect that the perpetrator is a “friend” or “boyfriend” and view them as someone who cares about them, and not someone who does not have their best interest. A factor that continues to be incorporated, is how individuals respond to treatment, or interventions, when their brain has not reached a level of safety. Examples would be individuals living in poverty, or high crime areas; as well as individuals who enter into treatment but are still under confinement of a perpetrator. This research focused on individuals who were in a safe place to enter into treatment and did not account for individuals who may not be in a physically safe place.

Additionally, it is recommended that longitudinal research be conducted to attest to the outcomes provided in treatment, and the longer-term mental health, as well as physical health outcomes of individuals who received treatment for trauma symptoms. Factors to consider would be the time in relation to the trauma exposure. It may be important to evaluate if an individual had one trauma exposure and sought treatment, if

they had better outcomes than an individual who may have waited to seek treatment. It may be important to evaluate impact to the brain and brain development, considering any trauma exposures. There is research that shows the impact to the under stimulated and neglected brain (Burke Harris, 2019; Canada, 2019; DeBellis & Zisk, 2014; Kessler et al., 1995; Lewey et al., 2009), and it would be interesting to see if that at all parallels to a brain that has had traumatic exposure.

Lastly, this research should be conducted again on a larger scale to determine if effect size truly does not affect the categorical variables of trauma exposure. The research results of this study were evaluated to consider how EMDR treatment efficacy as measured by SUDS scores, can differ by categorical variables of trauma exposure, controlling for the effects of selected other variables. Also, future research may have more controlled variables, such as administering pre and post-test assessments at the same time (week one, two, four, six and eight) for each individual, and for an identified duration of time.

Implications for Social Change

According to Chen et al. (2018), many individuals who survive traumatic experiences may develop psychological distress because of the way their brain processes the event and stores the perception of the traumatic event. Traumatic stress often results from individual experiences of an incident or event that overwhelmed the brain's information processing system (Chen et al., 2018). Possible causes of traumatic stress are extreme child abuse and neglect, domestic violence (witnessed and experienced), sexual assault and violence, and violent experiences (Chen et al., 2018; Dorsey et al., 2017;

Solomon et al., 2009). Prolonged exposure to repetitive or severe events such as child abuse, is likely to cause the most severe and lasting effects (International Society for the Study of Trauma and Dissociation, 2009). The perpetuation of trauma has been documented in families of those who have survived the Holocaust, Hiroshima, the Vietnam War and Cambodian genocide (Schmid, 2017). The current data has the same phenomena in families entrenched in poverty, violence and neglect. A facet of the need for social change is to address the generations of unresolved trauma that continue to prevail within communities.

Bessel van der Kolk (2014) has spent his career studying how children and adults adapt to traumatic experiences, and he has argued that trauma is one of the most urgent public health issues. The impact of trauma exposure results in a fundamental reorganization in the way the brain manages perceptions. It changes not only how an individual processes information, but also their capacity to think and perceive interactions. Childhood trauma according to many researchers has been viewed as a “silent epidemic” because the prevalence rate continues to be high, and it is severely underreported. While many recognize events that have occurred in their life, they may not understand the significant impact of those events, and often view them as a “situation of life” versus an actual trauma. An epidemic occurs when the rate of disease substantially exceeds what is expected (Loudenback, 2016). In the general population, rates of PTSD range from seven to twelve percent, with higher rates reported in military personnel (Loudenback, 2016). Trauma screenings conducted in adolescents as well as

adults have indicated that at least fifty percent of individuals report moderate to severe trauma stress symptoms (Loudenback, 2016).

According to Schmid (2017), scientist have been studying how prolonged exposure to panic and stress early in life can upset hormones and neurotransmitters. An emerging topic called epigenetics, in the field of medicine has been exploring how chronic stress builds up toxins within the body and potentially can even mutate genetic codes, which are passed down in the DNA to children (Schmid, 2017). Given the information presented, it is evident that trauma is significantly under-reported, and an area that could potentially have lasting effects if not addressed. It has been concluded that the generational cycles of trauma are avoided when a resilient person or successful intervention reconstructs the cycle (Schmid, 2017). The National Child Traumatic Stress Network (2017) has recognized the staggering personal and societal costs of doing nothing to recognize and respond to children and families exposed to trauma. As a society, we can change the trajectory of lives by investing in evidence-based treatment and early intervention services for individuals who have experienced trauma. Improving the available treatment options are only one of the many significant steps that are needed as part of a true public health approach to an epidemic of trauma exposure.

This study is significant because there is a lack of information and research on the use of EMDR treatment with children and adolescents. Research in the area of evidence-based approaches to treatment and forms of therapy that are effective for children and adolescents that have experienced significant forms of trauma, are needed as there is a lack in normative data to support the effectiveness of non-traditional treatment

modalities, such as EMDR. There is considerable need for evidence-based treatment interventions for children and adolescents that will allow for the examination of the traumatic impact of individual youth, encompassing their entire experience from their own perspective. The significance of this study is benefiting children and adolescents that may be less responsive to the traditional modes or forms of treatment. Studying EMDR with children and adolescents allowed opportunities and further research that is more formulated to the unique needs of younger populations.

The social change that is needed is evidenced-based practice (EMDR) that has been normed for children and adolescents that could be effective in reducing trauma symptoms. The challenges will be providing insight to behaviors that are a direct result of experienced forms of trauma and victimization, which will better society through the improvement of human and social conditions. An important aspect of social change will be challenging society to think about the role in helping to end the epidemic of childhood trauma and building more resilient communities.

Conclusion

The impact of trauma can have lasting effects on individuals, as evidence has supported a negative influence on health, behaviors, and life potential (Corrigan & Hull, 2015; Courtois & Ford, 2009; SAMHSA, 2014). Trauma can have detrimental impact on the brain and brain development; as the stress hormones produced during a traumatic experience, interfere with the development of higher brain functions (DeBellis & Zisk, 2014). Attachment problems, combined with a history of maltreatment and trauma can result in a wide range of behavior problems (Dvir et al., 2014). Individuals have the

ability to increase, maintain, or decrease negative and positive emotions in both conscious and unconscious ways, which often affect behavior functioning. When an individual is able to work through their thoughts and emotions, it may help to reconstruct behavioral responses. Helping an individual to change a thought that is associated with a situation can help to determine the attached meaning (Dvir et al., 2014). The challenges will be providing insight to behaviors that are a direct result of experienced forms of trauma and victimization, which will better society through the improvement of human and social conditions. An important aspect of social change will be challenging society to think about the role in helping to end the epidemic of childhood trauma and building a more resilient community.

Due to the detrimental effects of trauma, researchers have studied treatments to reduce symptoms of trauma (CDC, 2019; Chen et al., 2018; Dorsey et al., 2017; Solomon et al., 2009). However, to date, there are limited to no published research studies that examine the relationship between trauma symptoms with children and adolescents (Litz et al., 2015; Shubina, 2015). Using a quantitative research approach, archival data were used to evaluate the relationship between EMDR treatment, on the reduction of trauma symptoms among youth ages 11 to 17 years of age. The archival data variables that were considered were the pre and post-tests scores on the SUDS, the classification of traumatic distress (acute, chronic, or complex) as measured by the ACEs score prior to the start of treatment, and the total number of EMDR sessions received. Effective treatment is measured by the number of EMDR sessions obtained and a decrease in the SUDS scores.

This study utilized a factorial ANOVA, as well as ANCOVA to examine the functional relationship between the number of EMDR sessions, therapeutic intervention, and trauma symptoms, allowing a numeric description of effects, while also using the multiple linear regression to help explain trauma symptomatology scores pre and post EMDR treatment. A covariate repeated measure within subject analysis was conducted to determine pre and post-test differences and responses to the EMDR therapy. The results of the ANOVA were not statistically significant, whereas the effect size did not differ depending on the trauma exposure (acute, chronic, or complex). The results of the ANCOVA were statistically significant, whereas the SUDS scores did differ, based on the pre and post-test scores.

In following with Francine Shapiro's (2007) information processing theory, trauma has a significant impact on children and adolescents. The information processing theory emphasizes human development and the ways in which individuals process information (Shapiro, 2001). The Adaptive Information Processing (AIP) theory is a conceptual theory derived from evidence-based research into therapeutic treatment for traumatic stress responses (Shapiro, 2007). This process of traumatic memory storage, trauma processing, and decision-making is generated and supported by data derived from research into the therapeutic treatment for traumatic stress (Cusack et al., 2009, Shapiro, 2001). The traumatic memories and their inherent cognitive, affective, and somatosensory components are disconnected from the brain's adaptive memory processing system (Cusack et al., 2009). Traumatic memories store without this process

in a separate section of the brain, still intact and disconnected from decision-making memory networks (Cusack et al., 2009; Shapiro, 2007).

There is significant concern surrounding unresolved trauma symptoms, as research has shown that a lack of access to treatment leads to an increased risk of developing a range of mental disorders, including personality disorders and medical conditions (Burke Harris, 2019; Canada, 2019; Howe, 2005). Research continues to emphasize the importance of providing adequate and early interventions for the treatment of trauma symptoms (Lenz & Hollenbaugh, 2005), which is especially important for children because traumatic experiences can have a long-term and significant impact on a child. Neuroscientists studying the impact of trauma on brain development have determined that these traumatic experiences alter brain structure (National Child Traumatic Stress Network, 2016). When children are exposed to chronic or ongoing trauma, their brains become wired for danger due to a heightened conditioned state and an activated fight or flight response. Brain structures that regulate emotion, memory, and behavior become smaller in size when exposed to chronic trauma in childhood. The impact of trauma on brain development leads to difficulties with attachment, behavior, emotional regulation, and learning (DNA Learning Center, 2018). Although research on psychotherapy interventions with children and adolescents suffering from trauma is generally underrepresented in the empirical literature, and thus allowing for insight into the need for more evidence-based approaches to therapy that are effective with children and adolescents.

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Appendix A: Subjective Units of Distress Scale

SUDS: Subjective Units of Distress Scale

- Scales for measuring subjective experiences and emotional responses

<u>subjective</u> adjective 1. Existing in the mind; belonging to the thinking subject rather than to the object of thought (opposed to objective). subjective in Medicine 1. Of, relating to, or designating a symptom or condition perceived by the patient and not by the examiner. 2. Existing only in the mind; illusory.	Disturbance was the original term but its more commonly thought to mean <u>“distress”</u> noun 1. extreme anxiety, sorrow, or pain. 2. synonyms: anguish, suffering, pain, agony, ache, affliction, torment, torture, discomfort, heartache, heartbreak; misery, wretchedness, sorrow, grief, woe, sadness, unhappiness, desolation, despair; trouble, worry, anxiety, perturbation, uneasiness, disquiet, angst
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10 = Feels unbearably bad, beside yourself, out of control as in a nervous breakdown, overwhelmed, at the end of your rope. You may feel so upset that you don't want to talk because you can't imagine how anyone could possibly understand your agitation.

9 = Feeling desperate. What most people call a 10 is actually a 9. Feeling extremely freaked out to the point that it almost feels unbearable and you are getting scared of what you might do. Feeling very, very bad, losing control of your emotions.

8 = Freaking out. The beginning of alienation.

7 = Starting to freak out, on the edge of some definitely bad feelings. You can maintain control with difficulty.

6 = Feeling bad to the point that you begin to think something ought to be done about the way you feel.

5 = Moderately upset, uncomfortable. Unpleasant feelings are still manageable with some effort.

4 = Somewhat upset to the point that you cannot easily ignore an unpleasant thought. You can handle it OK but don't feel good.

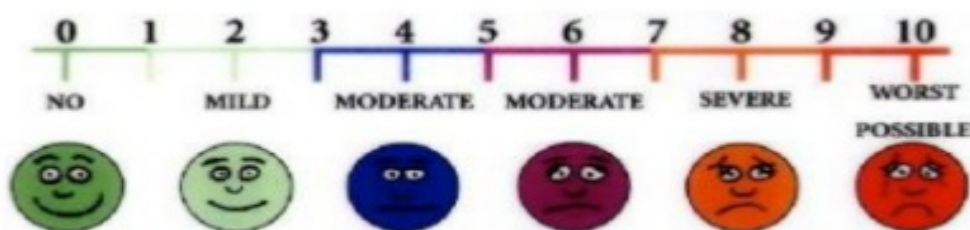
3 = Mildly upset. Worried, bothered to the point that you notice it.

2 = A little bit upset, but not noticeable unless you took care to pay attention to your feelings and then realize, "yes" there is something bothering me.

1 = No acute distress and feeling basically good. If you took special effort you might feel something unpleasant but not much.

0 = Peace, serenity, total relief. No more anxiety of any kind about any particular issue.

http://en.wikipedia.org/wiki/Subjective_units_of_distress_scale



History of Subjective Units of Distress (SUDS)

Assessing the level of subjective anxiety is an important procedural element in behavior therapy. A simple check enables clinicians to assess an individual's self-rated discomfort at baseline, to monitor any change of their status, and also to evaluate the progress of therapy (Ciminero, Nelson, & Lipinski, 1977; Sloan & Mizes, 1999; Wolpe, 1990). For this reason, the behavioral therapist Joseph Wolpe (1969) developed and introduced the Subjective Units of Disturbance Scale (SUDS). Since then, this instrument has been extensively used in the realm of behavior treatment, and is sometimes referred to as the Subjective Units of Distress Scale.

The SUDS is a one-item 11-point Likert-type subjective anxiety scale. Originally, it was defined as the self-rated current anxiety between 0 (a state of absolute calmness) and 100 (the worst anxiety ever experienced; Wolpe, 1969). Later, Wolpe (1990) also proposed the use of a more compact scale ranging from 0 to 10. The SUDS was not only used for measuring anxiety in exposure-based therapies (e.g., prolonged exposure; Foa & Rothbaum, 1998) but also adapted for describing subjective alcohol urges (Hodgson & Rankin, 1976) and even the subjective level of sexual arousal (Farkas, Sine, & Evans, 1979).

Francine Shapiro (1995), the originator and developer of eye movement desensitization and reprocessing (EMDR), incorporated the SUDS into the standard treatment protocol. Additionally, the range of emotion that the scale covers was expanded from subjective anxiety alone to any emotional disturbance or negative feelings. In EMDR, the SUDS is

designed to measure the level of distress before and after target memory processing. The therapist checks the initial SUDS score of the target traumatic memory during the assessment phase and then rechecks it to evaluate changes at the end of desensitization. In practice, checking the SUDS during the EMDR procedure does more than just provide a quantitative index of progress; it also fosters a sense of accomplishment in clients and helps clinicians evaluate blocks and goals of reprocessing (Shapiro, 1995). In fact, the SUDS serves as an important tool for therapists in the evaluation of treatment processes and is also a valuable source of information about what is happening during reprocessing with individuals.

Validity of the Subjective Units of Disturbance Scale in EMDR

Authors: Kim, Daeho; Bae, Hwallip; Chon Park, Yong

Source: Journal of EMDR Practice and Research, Volume 2, Number 1, 2008, pp. 57-62(6) Publisher: Springer Publishing Company

Appendix B: CDC-Kaiser ACE Study

About the CDC-Kaiser ACE Study

The CDC-Kaiser Permanente Adverse Childhood Experiences (ACE) Study is one of the largest investigations of childhood abuse and neglect and household challenges and later-life health and well-being.

The original ACE Study was conducted at Kaiser Permanente from 1995 to 1997 with two waves of data collection. Over 17,000 Health Maintenance Organization members from Southern California receiving physical exams completed confidential surveys regarding their childhood experiences and current health status and behaviors.

More detailed information about the study can be found in the article, “Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults.”

Study Questionnaires

The Family Health History and Health Appraisal questionnaires were used to collect information on child abuse and neglect, household challenges, and other socio-behavioral factors in the original CDC-Kaiser ACE Study.

The questionnaires are not copyrighted, and there are no fees for their use. If you include the ACE Study questionnaires in your research, a copy of the subsequent article(s) is requested (send to dvpinquiries@cdc.gov).

Data and Statistics

Adverse Childhood Experiences (ACEs) are categorized into three groups: **abuse**, **neglect**, and **household challenges**. Each category is further divided into multiple subcategories. Participant demographic information is available by gender, race, age, and education. The prevalence of ACEs is organized by category.

- a) ACEs Definitions - All ACE questions refer to the respondent’s first 18 years of life.
 - Abuse
 - **Emotional abuse:** A parent, stepparent, or adult living in your home swore at you, insulted you, put you down, or acted in a way that made you afraid that you might be physically hurt.
 - **Physical abuse:** A parent, stepparent, or adult living in your home pushed, grabbed, slapped, threw something at you, or hit you so hard that you had marks or were injured.
 - **Sexual abuse:** An adult, relative, family friend, or stranger who was at least 5 years older than you ever touched or fondled your body in a sexual

way, made you touch his/her body in a sexual way, attempted to have any type of sexual intercourse with you.

- Household Challenges
 - **Mother treated violently:** Your mother or stepmother was pushed, grabbed, slapped, had something thrown at her, kicked, bitten, hit with a fist, hit with something hard, repeatedly hit for over at least a few minutes, or ever threatened or hurt by a knife or gun by your father (or stepfather) or mother’s boyfriend.
 - **Substance abuse in the household:** A household member was a problem drinker or alcoholic or a household member used street drugs.
 - **Mental illness in the household:** A household member was depressed or mentally ill or a household member attempted suicide.
 - **Parental separation or divorce:** Your parents were ever separated or divorced.
 - **Incarcerated household member:** A household member went to prison.
- Neglect
 - **Emotional neglect:** Someone in your family helped you feel important or special, you felt loved, people in your family looked out for each other and felt close to each other, and your family was a source of strength and support.
 - **Physical neglect:** There was someone to take care of you, protect you, and take you to the doctor if you needed it, you didn’t have enough to eat, your parents were too drunk or too high to take care of you, and you had to wear dirty clothes.

A respondent would answer “Yes” or “No” to any of the above questions, and the responses would be coded accordingly. The respondent would score a “1” for an answer of “yes” and a “0” for an answer of “no.” At the conclusion of the 10 questions, the total score would be calculated. The ACE score is the total sum of the different categories of ACEs reported by participants.

Participant Demographics

Demographic information is from the entire ACE Study sample (n=17,337).

Participant Demographics	
Demographic Information for CDC-Kaiser ACE Study Participants.	
Demographic Information	Percent (N = 17,337)
Gender	
Female	54.0%
Male	46.0%
Race/Ethnicity	
White	74.8%

Participant Demographics	
Demographic Information for CDC-Kaiser ACE Study Participants.	
Black	4.5%
Asian/Pacific Islander	7.2%
Other	2.3%
Hispanic	11.2%
Age (years)	
19-29	5.3%
30-39	9.8%
40-49	18.6%
50-59	19.9%
60 and over	46.4%
Education	
Not High School Graduate	7.2%
High School Graduate	17.6%
Some College	35.9%
College Graduate or Higher	39.3%

ACEs Prevalence

The prevalence estimates reported below are from the entire ACE Study sample (n=17,337).

ACEs Prevalence			
Prevalence of ACEs by Category for CDC-Kaiser ACE Study Participants by Gender.			
ACE Category	Women	Men	Total
	Percent (N = 9,367)	Percent (N = 7,970)	Percent (N = 17,337)
ABUSE			
Emotional Abuse	13.1%	7.6%	10.6%
Physical Abuse	27%	29.9%	28.3%
Sexual Abuse	24.7%	16%	20.7%
HOUSEHOLD CHALLENGES			
Mother Treated Violently	13.7%	11.5%	12.7%
Substance Abuse	29.5%	23.8%	26.9%

ACEs Prevalence			
Prevalence of ACEs by Category for CDC-Kaiser ACE Study Participants by Gender.			
Mental Illness	23.3%	14.8%	19.4%
Parental Separation or Divorce	24.5%	21.8%	23.3%
Incarcerated Household Member	5.2%	4.1%	4.7%
NEGLECT			
Emotional Neglect³	16.7%	12.4%	14.8%
Physical Neglect³	9.2%	10.7%	9.9%

ACE Score Prevalence for CDC-Kaiser ACE Study Participants by Gender.			
ACE Score Prevalence for CDC-Kaiser ACE Study Participants by Gender.			
Number of Adverse Childhood Experiences (ACE Score)	Women Percent (N = 9,367)	Men Percent (N = 7,970)	Total Percent (N = 17,337)
0	34.5%	38.0%	36.1%
1	24.5%	27.9%	26.0%
2	15.5%	16.4%	15.9%
3	10.3%	8.5%	9.5%
4 or more	15.2%	9.2%	12.5%

Source: Centers for Disease Control and Prevention, Kaiser Permanente. The ACE Study Survey Data [Unpublished Data]. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; 2016.

Finding Your ACE Score

While you were growing up, during your first 18 years of life:

1. Did a parent or other adult in the household **often or very often**...
Swear at you, insult you, put you down, or humiliate you?
or
Act in a way that made you afraid that you might be physically hurt?
Yes No If yes enter 1 _____
2. Did a parent or other adult in the household **often or very often**...
Push, grab, slap, or throw something at you?
or
Ever hit you so hard that you had marks or were injured?
Yes No If yes enter 1 _____
3. Did an adult or person at least 5 years older than you **ever**...
Touch or fondle you or have you touch their body in a sexual way?
or
Attempt or actually have oral, anal, or vaginal intercourse with you?
Yes No If yes enter 1 _____
4. Did you **often or very often** feel that ...
No one in your family loved you or thought you were important or special?
or
Your family didn't look out for each other, feel close to each other, or support each other?
Yes No If yes enter 1 _____
5. Did you **often or very often** feel that ...
You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you?
or
Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?
Yes No If yes enter 1 _____
6. Were your parents **ever** separated or divorced?
Yes No If yes enter 1 _____
7. Was your mother or stepmother:
Often or very often pushed, grabbed, slapped, or had something thrown at her?
or
Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard?
or
Ever repeatedly hit at least a few minutes or threatened with a gun or knife?
Yes No If yes enter 1 _____
8. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?
Yes No If yes enter 1 _____
9. Was a household member depressed or mentally ill, or did a household member attempt suicide?
Yes No If yes enter 1 _____
10. Did a household member go to prison?
Yes No If yes enter 1 _____

Now add up your "Yes" answers: _____ This is your ACE Score.

Appendix C: Clinical Assessment Tools

These tools are evidence-based, and were used in the development of this dissertation. They are used to help provide additional support to children and adolescents exposed to trauma, as a means of helping to identify and more effectively support the violence exposure. This list does not include all tools but rather ones that relate most to the dissertation topic presented.

ACEs Appraisal Questionnaire

The ACEs Appraisal questionnaire developed by Dr. Vince Felitti and Kaiser Permanente were used to collect information on childhood maltreatment, household dysfunction, and other socio-behavioral factors examined in the ACE Study. The questionnaires are not copyrighted and there are no fees for their use.

ACEs screening tool for children and adolescents

The ACEs screening tool for children and adolescents was developed by Dr. Nadine Burke Harris, MD for use in her clinic. The ACE Questionnaire is free and is intended to be used solely for informational or educational purposes. Registration is required for use.

Resilience Questionnaire

This tool developed and used with permission by Dr. and Mrs. Burt and Gladys Richardson, from *Resilience Trumps Aces* assesses for parental resilience and support systems.

Child Stress Disorders Checklist (CSDC)

This checklist, developed by Dr. Glenn N. Saxe, Department of Child and Adolescent Psychiatry at Boston University School of Medicine, is used to identify stress disorders as a result of traumatic stress. The National Child Traumatic Stress Network (NCTSN) lists additional instruments for assessing traumatic stress in young children on their website.

Appendix D: Neurofeedback Quick Assessment

Name of Client: _____ Rated by: _____ Date: _____

Please rate yourself, or the person you are assessing, for each of symptoms below. If you don't know how to rate a symptom leave it blank.

Symptom Rating Scale

0 = No problem 3 = Occasional problem 5 = Frequent problem 8 = Generally a problem 10 = Major problem
You may use any number from 0 to 10.

	0→10		0→10
Symptoms		Symptoms	
Anxious, fearful, uneasy, worried, restless		Sad & angry, agitated and feeling blue	
Sad, guilt, shame, helpless, hopeless feelings		Agitated, upset, disturbed	
Cries easily, tearful		Emotionally flat to positive events	
Feelings easily hurt, vulnerable		Fearful, phobias, irrational fears	
Low self-esteem, lacks confidence, helpless		Overly focused, trouble "switching gears"	
Lack of motivation, discouraged		Aggressive, hostile, overly assertive, bold	
Poor anger management, bad temper		Racing thoughts, trouble focusing	
Inattention, daydreaming, hard to stay on task		Impulsive, rushes things, many mistakes	
Dull, slow to learn, not alert		Pressure/pain in Chest, discomfort	
Forgetful, projects unfinished		Hyperactive, fidgety, overly energetic	
Spacey, foggy, not tuned in		Teeth grinding, jaw clenching, tight jaw	
Foggy thinking, mixed up, confused, puzzled		Headaches, feelings of discomfort	
Negative thinking, pessimistic		Crawling sensations on skin, twitches	
Academic problems – esp. reading & math		Sensitivity to touch, hands, feet, face	
Nausea, sickness, upset stomach, diarrhea		Pain/achy, unpleasant sensations	
Lethargic, lazy, drowsy, sluggish, tired		Difficulty falling asleep, insomnia, restless	
Disrupted sleep, wakes often, difficulty waking		Physical tension, taut, nervous, tense	
		Nightmares, sleep-walking	
Left Subtotals		Right Subtotals	
Grand Total		Left Total	

PRESCRIPTION MEDS: _____

OVER-THE-COUNTER MEDS: _____

SCHOOL (grades, attendance, learning problems): _____

ACTIVITIES (music, art, drama, sports, Scouts, etc): _____

EXERCISE: _____

Appendix E: Adaptive Information Processing Theory

The Adaptive Information Processing (AIP) Model of EMDR Treatment

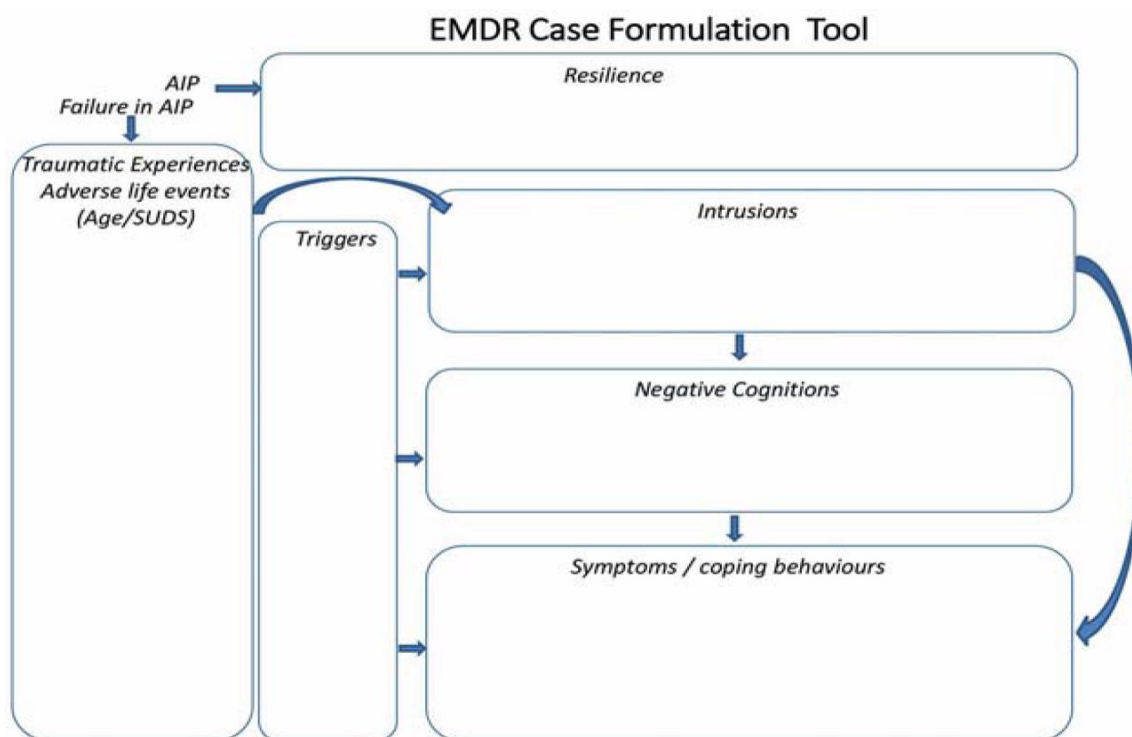
From her experiences in EMDR treatment sessions, Shapiro developed a unique theoretical model for the pathogenesis and change relating to EMDR therapy (Shapiro, 2001). Since then, EMDR therapy has been guided by the AIP model (Shapiro, 2007; Shapiro and Laliotis, 2011). The AIP model focuses on the patient's resources. Within the AIP model, one assumes that the human brain can usually process stressful information to complete integration. Only if this innate information processing system is impaired, the memory will be stored in a raw, unprocessed, and maladaptive form. A particularly distressing incident may then become stored in state-specific form. This implies also the inability to connect with other memory networks that hold adaptive information. Shapiro hypothesizes that when a memory is encoded in such excitatory, state-specific form, the original perceptions can be triggered by a variety of internal and external stimuli. In the view of the AIP model dysfunctionally stored memories form the basis for future maladaptive responses, because perceptions of current situations are automatically linked with associated memory networks of these unprocessed, dysfunctionally stored memories. For instance childhood experiences also may be encoded with survival mechanisms and include feelings of danger that are inappropriate for adults. However, these past events retain their power because they have not been appropriately assimilated over time into adaptive networks (Solomon and Shapiro, 2008). One of the key tenets of the AIP model is that these dysfunctionally stored and not fully processed memories form the basis of psychopathology. Activation of these memories, even years after the event, can lead to a spectrum of symptoms including intrusions that can range from an overwhelming experience, mostly called flashback, to barely noticeable intrusions. These memories lack the feeling of remembering, as described by Barry as memories without "memory awareness" (Barry et al., 2006). This contributes to the lively, actual experience, and sometimes makes it difficult to connect symptoms to the memories behind them.

The overwhelming experience and high amount of traumatic stress in a traumatic experience according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) (American Psychiatric Association [APA], 2013) can be assumed to explain the disruption in information processing. But there can be many more causes imaginable as clinical experiences show (Hase & Balmaceda, 2015). Intense feelings of helplessness beside traumatic events or misinterpretations of an event as being extremely dangerous could also have these consequences. Other intense emotions based in previous experiences could lead to disruption in information processing. With children and adolescents the attachment to a caregiver or a sense of meaning seems to be a prerequisite for the processing of a stressful life experience. Accordingly the absence of an attachment figure could lead to impairment in information processing and thus to the development of PTSD (Verlinden et al., 2013). Abusive behavior of an attachment figure or neglect could likely lead to such consequences. Exhaustion and physical conditions in somatic disorders could explain the disruption in information processing as well as the

influence of drugs in drug rape or during medical procedures. This list of possible causes is not comprehensive, and needs more rigorous research.

In accordance with the AIP model these dysfunctionally stored memories become the focus of EMDR protocols and procedures in order to activate the information processing system thus transmitting these memories by so-called “reprocessing.” The subsequent integration into adaptive memory networks leads to a resolution of symptoms and enables learning (Solomon and Shapiro, 2008).

Hase, M., Balmaceda, U., Ostacoli, L., Liebermann, P. & Hofmann, A. (2017). The AIP Model of EMDR Therapy and Pathogenic Memories. *Front Psychology*, 8(1578).



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