Consensus on Best Practices in Neuroscience-Informed Treatment of Combat-Related Posttraumatic Stress in Military Veterans: A Delphi Study of Experts in the Field of Mental Health

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CONSENSUS ON BEST PRACTICES IN NEUROSCIENCE-INFORMED TREATMENT OF COMBAT-RELATED POSTTRAUMATIC STRESS IN MILITARY VETERANS: A DELPHI STUDY OF EXPERTS IN THE FIELD OF MENTAL HEALTH

by

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A Dissertation Submitted to the Faculty of Old Dominion University in Partial Fulfillment of the Requirements for the Degree of

DOCTOR OF PHILOSOPHY in EDUCATION COUNSELING

OLD DOMINION UNIVERSITY
May 2024

Approved by:

Shana Pribesh (Chair)

Sonya Lorelle (Member)

Alan “Woody” Schwitzer (Member)
ABSTRACT

CONSENSUS ON BEST PRACTICE IN NEUROSCIENCE-INFORMED TREATMENT OF COMBAT-RELATED POST TRAUMATIC STRESS IN COMBAT VETERANS: A STUDY OF EXPERTS IN THE FIELD OF MENTAL HEALTH

Danielle Lauren Winters
Old Dominion University, 2024
Chair: Dr. Shana Pribesh

The purpose of this study was to capture consensus among mental health professionals who work with combat trauma-afflicted veterans and/or utilize a neuroscience-informed counseling approach, about a set of best practices for uniting neuroscience-informed treatment modalities with the treatment of veterans who present with Post Traumatic Stress (PTS). A multi-round Delphi study was used to elicit information from mental health professionals, which led to the proposition of ways in which mental health professionals may more efficiently work with combat veterans while utilizing neuroscience-informed treatments such as Prolonged Exposure Therapy, Eye Movement Desensitization and Reprocessing (EMDR) neuro-informed Cognitive Behavioral therapy (nCBT), neuro-informed group work (NIGW), and other neuro-informed treatment methods currently being utilized by practitioners in the field.
Copyright, 2024, by Danielle Lauren Winters, All Rights Reserved.
To my Mom, Christel, and my Dad, Mark, for whom there are not enough words in existence to express my love and gratitude. Thank you for never, ever doubting my potential, for always encouraging me to pursue anything I set my heart on, for teaching me to stay strong and true to myself even in the face of profound adversity, and for being my biggest, loudest cheerleaders. This would not have been possible without you. Everything I am and everything I have done, I owe to you and your unending love and support. I love you both so incredibly much and I am grateful every day that you are the ones I was born to.

In fond memory of Dr. Lori Russell-Chapin, the mother of neurocounseling, who remotely attended my defense of this research, which was largely inspired by her, two weeks prior to her passing. I will never forget the honor of having her present at the biggest moment of my life to this point. Lori has my profound gratitude for her mentorship and support, and the field of counseling will forever be indebted to her for bringing the brain to the forefront of counseling practice.

To my Lila Bug – I wish you had lived to see this come to fruition, sweet girl. Thank you for “fetching” participants for my study from the Rainbow Bridge and for showing me the true meaning of courage and loyalty. To Breezy – thank you for listening to all of my ideas and enthusiastically chirping back your approval even if you didn’t like them.
ACKNOWLEDGEMENTS

So many individuals affirm themselves as encouraging waypoints on a long and challenging journey such as this, and it has been incredibly challenging. Sometimes I truly believed I would never finish, but I did, and I owe my success to some key individuals who never let me down.

First and foremost, the biggest “thank you” goes to my chair and guardian angel, Dr. Shana Pribesh. Dr. Pribesh, I went kicking and screaming into your statistics class in the first semester of my PhD program, and who knew that this boho dress-wearing, orienteering, statistics genius would become the single most important source of support, direction, and encouragement in my academic life? Dr. Pribesh, you’ve been the one to focus, encourage, reframe, gently discipline, and listen to me during this process. You’ve been a true mentor and friend, and I’m grateful every day for you and your guidance, compassion, collaborative spirit, and partnership.

To the other members of my committee – Drs. Woody Schwitzer and Sonya Lorelle - a couple of brilliant, insightful, compassionate, and dedicated educators who inspire me and my work every single day: thank you for guiding me, supporting me, challenging me, and joining me on this journey. I appreciate you both so very much and will never stop looking up to you and aspiring to be the kind of person and educator you both exemplify.

To Dr. Tim Grothaus – you supported me in a time when no one else did, and when I felt completely abandoned and without support. Thank you for being a calming, comforting, and encouraging presence in my life when everything felt very dark and hopeless. I like to joke that you’re the academic version of Miss Peregrine’s Home for Misfit Children because you are always willing to support those who lack support elsewhere. You started me on this journey, and I will always be grateful to you for the work you did with me on this project.
To my professors from the Masters in CMHC program at the University of Dayton, particularly Dr. Doug Cook, Dr. Scott Hall, Dr. Alan Demmitt, Dr. Patricia Polanski, and Cara Sussman – I loved every moment of my time at UD. I learned so incredibly much from all of you, felt mentored and supported, and left your program feeling ready to not only be a competent practitioner but a future educator. Thank you for laying the groundwork for what I hope will be a long and fruitful career. I’m lucky yours was the program I decided to join for my first exposure to counseling.

To the educators from my earlier academic experience who have remained my friends and mentors – Miss Dorothy van Antwerp, Miss Elsie Scott, and Dr. Jeff Peake:

Miss Van, you taught me how to be a diligent student, how to invest myself, and how to work for what you expect to earn. You were the first teacher I had who had any real expectations of me, and I still find myself, 30 years later, considering those expectations and attempting to meet them. I hope I am. Thank you for being a phenomenal teacher turned phenomenal friend. Your continued presence in my life is a gift I cannot even begin to express my gratitude for.

Miss Scott – I still have my “Me Book” from your Freshman year Psychology class at La Cueva. Your class was my first exposure to the field I ended up falling in love with, and even though I didn’t realize it at the time, you planted seeds that grew into a Sequoia-sized passion. Thank you for all of your encouragement and for being a fun and validating presence in my life!

Dr. Peake – I will never stop telling you this, but if I had not had your class in the Summer of 2004, there is a very good chance I would not be here. You took a smart kid who had failed, repeatedly, and had no clue what to do with her life and bestowed upon her the kind of confidence, focus and direction that only comes from learning how to combine passion with
hard work. You will always be one of the most important people in my life, and you will always have my gratitude for helping me get my act together. Thank you, beyond measure.

To Mrs. Bostick – my elementary school counselor – thank you for seeing in me what I didn’t see in myself until I was in my 30s. It was a relief to take that challenging childhood and turn it into a bright future. Thank you for being the one who held my hand while I navigated the perils of childhood social adjustment and the struggles that come with being a very sensitive child who frequently relocated. You were my only friend in elementary school, and there isn’t a day when I’m not grateful for you. It is because of you that I emerged from a very challenging time in my life with the capacity for great empathy, which ultimately brought me to where I am today.

To my friends and family members who have served, along with everyone else who has ever worn a uniform and journeyed to places far away in the name of our safety and security – this is for you. Your devotion to your country and the sacrifices you have made to serve it are admirable and worth so much more than this small study, but I hope that this work is the undergirding of a future where our servicemembers always come home to a system that is ready and able to support them in every way.

Thank you, God, for giving me everything I needed to succeed in this world – a smart brain, a compassionate heart, an incredible family, and the assertive stubbornness of an “obstinate, headstrong girl.”

“Failure is the mother of all success”
- Chinese Proverb
NOMENCLATURE

ACTH  Adrenocorticotropic Hormone
APRN  Advanced Practice Nurse Practitioner
BCN   Board Certified in Neurofeedback
CACREP  Council for Accreditation for Counseling and Related Educational Programs
CBT   Cognitive Behavioral Therapy
CPT   Cognitive Processing Therapy
CRF   Corticotropin Release Factor
CR-PTS  Combat-Related PTS
DCEPS  Darden College of Education and Professional Studies
DoD   Department of Defense
DSM-V  Diagnostic and Statistical Manual of Mental Disorders (5th Edition)
DSPO  Defense Suicide Prevention Office
EEG/QEEG  Electroencephalography/Quantitative Electroencephalography
HPA Axis  Hypothalmic-Pituitary-Adrenal Axis
LMHC  Licensed Mental Health Counselor
LPC/LPCC  Licensed Professional Counselor/Licensed Professional Clinical Counselor
LSW/LISW  Licensed Social Worker/Licensed Independent Social Worker
MFT/IMFT  Marriage and Family Therapist/Independent Marriage and Family Therapist
MRI   Magnetic Resonance Imaging
NBCC  National Board for Certified Counselors
nCBT  Neuro-Informed CBT
NCC   Nationally Certified Counselor
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<tr>
<td>NFB</td>
<td>Neuro Feedback</td>
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<tr>
<td>NIC</td>
<td>Neuro-Informed Counseling</td>
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<td>NIGW</td>
<td>Neuro-Informed Group Work</td>
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<tr>
<td>OIF/OEF</td>
<td>Operation Iraqi Freedom/Operation Enduring Freedom</td>
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<tr>
<td>PE</td>
<td>Prolonged-Exposure Therapy</td>
</tr>
<tr>
<td>PhD/PsyD</td>
<td>Doctor of Philosophy/Doctor of Psychology</td>
</tr>
<tr>
<td>PMHNP</td>
<td>Psychiatric-Mental Health Nurse Practitioner</td>
</tr>
<tr>
<td>PTS/D</td>
<td>Post-Traumatic Stress (Disorder)</td>
</tr>
<tr>
<td>SAMHSA</td>
<td>Substance Abuse and Mental Health Services Administraion</td>
</tr>
<tr>
<td>TF-CBT</td>
<td>Trauma-Focused Cognitive Behavioral Therapy</td>
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<td>VA</td>
<td>Department of Veterans Affairs</td>
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CHAPTER 1
INTRODUCTION

Background Overview

The United States has been in some manner of combat-related foreign conflict for over two decades. Children who were not yet born when the attacks of September 11, 2001 occurred are now old enough to fight in the wars their parents pioneered. With prolonged conflict comes a variety of well-documented physical risks, such as grievous bodily injury and dismemberment.

However, for the purposes of this research, the focus was on the mental and emotional effects of war—the prolonged trauma that burrows itself in the brains of some veterans and has caused life-altering repercussions. These repercussions frequently manifest themselves in family, work, relational, and financial realms, and cause great post-military service incapacitation at times.

According to SAMHSA (2014), members of the military, particularly those who have served in combat roles, experience greater incidences of suicide, trauma, substance abuse, homelessness, and involvement with the law.

The impacts of these special combat-related mental health issues cannot be understated—the Department of Veterans Affairs publishes an annual report detailing statistics on veteran deaths, particularly those associated with suicide. According to the 2022 National Veteran Suicide Prevention Annual Report, in 2020, “suicide was the 13th leading cause of death among Veterans overall, and it was the second leading cause of death among veterans under age 45” (p. 5). The report also detailed that, in every year since 2001, the suicide rate (age-and sex-adjusted) among veterans was higher than non-veterans. For context, the highest disparity between veterans and non-veteran suicides occurred in 2017, when veteran suicide rates were 66.2% higher than non-veterans, and was lowest in 2002, at 12.1%. In 2020, the last year when
statistics were made available, the disparity was 57.3% (p. 5). The encouraging statistic from the report, however, is that between 2018 and 2020, veteran suicide rates dropped by 9.7%, a nod to the efficacy of veteran suicide prevention initiatives such as “Anchors of Hope” and “Operation Resiliency” which are both aimed at providing hope and strength to veterans post-military service (National Veteran Suicide Prevention Annual Report, 2020, p. 6).

In addition to considering the disparities between the rate of suicide in combat service vs. non-combat service populations, the differences in statistics between branches was also considered. For example, according to 2020 statistics from the Defense Suicide Prevention Office (DSPO) of the Department of Defense (DoD), there were 377 total deaths by suicide between active duty elements from four of the five services (Army, Marines, Navy, and Air Force). The Army had the greatest number of suicides, at 173, and the next two highest numbers were represented by the Air Force and Navy, with 81 and 63 deaths by suicide respectively. The Marines reported 60 deaths by suicide (Orvis, 2020, p. 4).

In considering the role counselors and other mental health professionals have in the remediation of some of the most common and damaging issues relating to combat service and trauma, neuroscience-informed treatment must be considered as an option for treating both the mental/emotional manifestations of combat-related posttraumatic stress that are often experienced after military service.

**Statement of the Problem**

Posttraumatic stress (PTS) is a diagnosis that has received much focus and research in the field of mental health – an occurrence that has only manifested due to the attention paid to veterans who experienced mental health problems following the Vietnam war (Bryant, 2019). However, much of the research surrounding combat related posttraumatic stress has failed to
acknowledge the use of neuroscience-informed counseling techniques, which is surprising considering only two-thirds of veterans are responding to conventional treatments for PTS, such as Trauma-Focused Cognitive Behavioral Therapy (TF-CBT) (Bryant, 2019). Given that prolonged exposure to combat and resulting combat trauma can lead to neurobiological changes in the brain, there is a dearth of research making the connection between combat related posttraumatic stress and the efficacy, from an expert perspective, of neuroscience-informed counseling techniques aimed at alleviating biologically-based symptoms of combat related posttraumatic stress. The idea of using neuroscience-informed counseling practices in treatment of combat trauma was discussed in a 2010 article, *Clinical Practice Guidelines*, which was a joint effort between the Department of Veterans’ Affairs and the Department of Defense. In this article, the VA (2010) proposed using several forms of neuroscience-informed treatment with combat veterans, including Prolonged Exposure Therapy (PET) and Eye-Movement Desensitization and Reprocessing (EMDR).

In terms of existing best practices in neuroscience-informed counseling, there is a lack of information in this area, and the few studies that have been completed have focused mainly on the educational side of neurocounseling – or “neuroeducation” - how to teach, rather than apply to practice. Miller (2016) posits that counselor competence in neuroscience-informed therapy and client readiness to receive neuroscience-informed interventions are the two of the best practices to consider when teaching students how to approach their work from a neuro-informed lens. Some authors feel that increased knowledge of neuroscience-informed counseling has led to better and more comprehensive best practices in other theoretical approaches (Russell-Chapin, 2016) instead of there actually being neurocounseling best practices. With this in mind, Field, Beeson & Jones (2016) still claim that “many of the theoretical models of helping and best-
practices taught in counselor education programs overlook current findings in neuroscience research” (p. 140). While there have been very few studies in neuroscience-informed counseling, there has never been a study that has addressed the best practices to utilize when implementing neuroscience-informed treatment methods with a military population, which is why this study exists.

**Purpose of the Study**

The purpose of this study was to glean from expert practitioners across the mental health spectrum an understanding of the essential elements for successful neuroscience-informed treatment of combat-related posttraumatic stress in military veterans. In addition to a lack of general understanding regarding mental health practitioners’ opinions on neuroscience-informed interventions, there was also a dearth of information regarding how practitioners feel about utilizing neuroscience-informed counseling modalities in the context of trauma treatment with combat veterans.

The outcomes of this research have a wide range of uses, including an increased focus on creating curriculum materials for universities, greater awareness and competency regarding military issues in the field of mental health, and training opportunities for practices. The aforementioned idea that there has not been the establishment of neuroscience-informed counseling best practices with veterans, combined with the assertion of Burgin, Prosek and Atkins (2017) that there is a lack of information on military culture and trauma, made this study vital to conduct. This topic is very important and yet also under-researched, which provided excellent rationale for completing the proposed research.
Research Question

The question that guided this research was: what do expert licensed mental health practitioners consider to be best practices for successful neuroscience informed treatment of combat-related posttraumatic stress in military veterans?

Guiding this research was the desire to understand the perspectives of mental health professionals who practice from a neuroscience-informed lens when using this modality to work with clients who are 1) military veterans and 2) experiencing symptoms of combat-related post-traumatic stress. Beyond seeking understanding of perspectives on neuroscience-informed counseling in treatment of combat-related post-traumatic stress, this research also aimed to gather and create a compendium of “best practice” techniques, qualities, educational foundations, and other important aspects of this type of treatment with this particular population.

Significance of Study

Studying expert opinions on use of neuroscience-informed counseling techniques is vital to the profession of counseling and its work with those presenting with combat-related posttraumatic stress disorder because many of the side effects of exposure to trauma in a combat environment are felt biologically, and thus neuroscience-informed intervention can be beneficial even if not everything is known about it (Matthews, 2014, p. 88). In a search of information regarding the intersection of neuroscience-informed counseling and its use in military combat trauma afflicted populations, little information could be found. Responsible practitioners must understand, through examination of neuroscience-informed approaches used in other fields, how to model this in the counseling profession as well as in other mental health related fields where work with military veterans is common.
Operationalization of Terms

This dissertation will contain many different terms that facilitate the descriptions of the ideas, elements, and variables that were integral to this study. In this section, these terms will be defined clearly for understanding.

Combat

Combat, as a term, can be operationalized in a variety of ways, depending on the individual/organization quantifying it. For example, in a study conducted by Strong, Findley, McMahon, and Angell (2015) combat falls into three categories – “experiencing combat-related events, witnessing combat-related events, and feeling threatened” (p. 489).

Posttraumatic stress

Clinically, the Diagnostic and Statistical Manual of Mental Disorders – Fifth Edition (DSM-V) considers the guidelines for a diagnosis of posttraumatic stress to include exposure to “actual or threatened death, serious injury, or sexual violation” by experiencing, witnessing and/or learning of an event (Luke, 2020, p. 224). In addition, the event can be the source of re-exposure, through details of the trauma (Luke, 2020, p. 224). Criterion A of the DSM-V definition of posttraumatic stress disorder applies to those who have experienced combat, either as a combatant or a civilian (American Psychiatric Association, 2013). The criteria that must be met for an individual to receive a diagnosis of posttraumatic stress disorder that are typically relevant to combat veterans are:

A. Exposure to actual or threatened death, serious injury, or sexual violence in one (or more) of the following ways:

1. Directly experiencing the traumatic events.

2. Witnessing, in person, the event(s) as it occurred to others.
3. Learning that the traumatic event(s) occurred to a close family member or close friend. In cases of actual or threatened death of a family member or friend, the even(s) must have been violent or accidental.

4. Experiencing repeated or extreme exposure to aversive details of the traumatic event(s) (e.g. first responders collecting human remains; police officers repeatedly exposed to the details of child abuse) (American Psychiatric Association, 2013, p. 271).

In recent years, more organizations and researchers in the field of posttraumatic stress have been “dropping the D” from the official DSM-5 diagnostic name of posttraumatic stress disorder. Smith & Whooley (2015) detail the work done by Army General Peter Chiarelli, who has discontinued use of the term “PTSD” in favor of “PTS” due to the stigmatizing effects of the word “disorder”. Instead, the symptoms associated with posttraumatic stress are being referred to as an “injury” rather than a “disorder” – as “injury can be overcome, disorder implies something permanent” (p. 37). It is for this reason that posttraumatic stress may interchangeably be referred to in this document in different ways depending on the source material, however, the author will use the abbreviation “PTS” when possible.

Combat-Related Posttraumatic Stress

Combat-related posttraumatic stress, also known as combat trauma or combat-related posttraumatic stress (CR-PTS) is the presence of PTS symptoms following combat exposure. In a study conducted by Maguen, et. al. (2010), “16% of soldiers reported being injured, 77% reported seeing dead bodies, 56% reported witnessing killing, and 40% reported killing in combat” (p. 88). This study also revealed that, of the participants in this study, “22% [of participants] met threshold screening criteria for PTSD” (Maguen, et. al., 2010, p. 88). It
therefore follows that combat trauma differs from civilian trauma due to the likely exposure to “… death, witnessing death, and exposure to death…” (Maguen, et. al., 2010). The idea of combat trauma:

…has been re-defined by the counseling and psychology fields in varying manners over the course of over the years, and with increased awareness of symptomatology and presentation. The definition has mainly addressed combat-related posttraumatic stress as being tangential to the typical definition of posttraumatic stress. However, combat-related posttraumatic stress is now its own definition, because combat-related PTS is different from the type of PTS that is experienced by civilian populations (Peterson, Niles, Young-McCaughan & Kenae, 2021, p. 2).

**Neuroscience-informed counseling**

Neuroscience-informed counseling, also referred to as neurocounseling, has been integrated into traditional counseling since the 2016 standards of the Council for the Accreditation of Counseling and Related Educational Programs (CACREP) “stipulate[d] that an understanding of client biological, neurological, and physiological processes” is necessary, and even that it is “foundational knowledge required of all entry-level counselor education graduates” (Field, Beeson & Young, 2016, p. 139). These terms, used interchangeably, ostensibly mean the same thing – “the integration of neuroscience into the practice of counseling, by teaching and illustrating the physiological underpinnings of many of our mental health concerns (Russell-Chapin, 2016, p. 93).
**Veteran**

A veteran is, by definition, a former member of the United States armed forces who has served in any branch of the military honorably (Army, Marines, Navy, Air Force, or Coast Guard) and has been honorably discharged or retired from service.

**Brief Review of Literature**

Combat-related posttraumatic stress is a unique phenomenon that manifests itself in service populations that have been exposed to training exercises and combat which servicemembers alone are exposed to (Nash, 2007). In fact, servicemembers often create their own trauma and do this by actively engaging in situations which might bring about traumatic reactions (Van Winkle & Safer, 2011). Exposure to combat or training events that are defining enough to lead to posttraumatic stress reactions also leave veterans with a heightened sense of caution, anger, and reactionary behaviors (Van Winkle & Safer, 2011). According to Sherin & Nemeroff (2022) many of these particular reactions are caused by the neurobiological changes that occur in the brain as a result of combat trauma exposure, especially prolonged combat exposure: “the signs and symptoms of PTSD, therefore, appear to reflect a persistent, abnormal adaptation of neurobiological systems to the stress of witnessed trauma” (p. 264). Individuals who have experienced a neurobiological change in the brain as a result of combat trauma exposure often experience typical symptoms of hypervigilance – increase in heart rate, higher blood pressure, and an emphasis on a “fight or flight” response that drives a more aggressive behavioral presentation (van Der Kolk, 2000 & Siegel, 2010).

Some commonly utilized neuroscience-informed interventions from previous decades are now receiving increased attention due to the emerging emphasis on neuroscience-influenced
counseling techniques in the field of mental health, such as biofeedback and neurofeedback (Myers & Young, 2012 & Beeson & Field, 2017).

**Overview of Methodology**

This research study utilized the Delphi Method to assess the opinions of mental health experts who work with combat veterans presenting with combat-related post-traumatic stress, and who use methods consistent with and under the umbrella of neuro-informed counseling. These individuals were asked to opine as to best practices when working with veterans who present with combat-related posttraumatic stress, after which several rounds of theme development and consensus building among participants occurred. The sample for this research, which started at 51 individuals interacting with the first round of data collection, and concluded with 7 individuals who participated in the major data collecting rounds (rounds 2-4), was procured through the use of a maximum variation snowball sample, which “is a purposive sampling technique used to capture a wide range of perspectives relating to the thing that researchers are interested in studying” (Rai & Thapa, 2015, p. 6). The maximum variation snowball sample served to ensure participants met a certain set of criteria necessary for the research while also representing diversified and unique perspectives, career fields, and experiences. Participants were also asked to recommend someone to the study who has a different perspective or practice focus than them, to ensure this wide range of perspectives.

**Targeted Practice Areas**

To procure the sample suggested above, practitioners of several key neuroscience-informed methodologies were sought for the study. In addition to practitioners who work in the field of neuroscience-informed counseling, those who focus on military counseling were also recruited for a healthy combination of experiences and specializations. The modalities
considered and included in the criteria for the study included but were not limited to:

Neurofeedback (NFB), Prolonged Exposure Therapy (PE), Eye Movement Desensitization and Reprocessing (EMDR), Neuro-Informed Cognitive Behavioral Therapy (n-CBT), and Neuro-Informed Group Therapy (NIGT). Participants who possessed experience in these treatment modalities were sought for the study, however, areas of practice not delineated in the study structure were also considered and accepted into the process as the rounds of data collection and verification took place.
CHAPTER 2
LITERATURE REVIEW

Since it first became a priority to treat service members returning home from war with posttraumatic stress or any of its manifestations, a variety of traditional methods have been used to facilitate treatment. The advent of neuroscience-informed methods of counseling into the world of trauma treatment is relatively new and was preceded by the use of more traditional methods of mental health treatment. With the realization that many trauma related conditions also contribute to physiological changes in the brain and body, neuroscience-informed techniques are beginning to replace those traditional methods of counseling.

Mental Health Professionals and Working with Military Veterans

In 2017, Burgin, Prosek & Atkins proposed the need for military-specific competencies for practicing counselors – an idea that had not been widely explored in the profession due to bureaucratic barriers that made it challenging for counselors to work with military personnel. Until very recently, counselors were hired in much lower numbers compared to other mental health professionals, mainly because they were also excluded from the VA’s trainee program. Organizations like the National Board for Certified Counselors have advocated on behalf of counselors to improve this situation.

Counselors and other mental health professionals working with military veterans do so in a variety of settings. Some work at universities, where they counsel veterans returning to school following service. Others specialize in family dynamics such as marriage counseling. To work effectively with military veterans, counselors, especially those who are civilians, must be aware of the effects of war, and the most effective way of doing this is to read firsthand accounts of those who have experienced it. Burgin, Prosek & Atkins (2017) also discuss the “dearth of
literature regarding the unique features, clinical needs, and culture of the military population, coupled with the counseling profession’s recent inclusion in more mental health settings with the military.” (pp. 12-13) that then led to the same authors publishing a list of actual competencies the following year. In their 2018 article, Burgin, Prosek & Atkins teamed with Wehrman, Fenell, Carter & Green to create a comprehensive list of “Competencies for Counseling Military Populations.” In this iteration of their research, they created several subcategories of military consideration that counselors should be educated on: military culture, identity development, systems, treatment, ethics, and advocacy (Prosek, et. al., 2018, pp. 92-93).

The Transition to Post-Combat Life

Mental health practitioners play an instrumental role, both in private practice and in government practice, when aiding combat veterans in a successful return to civilian society. In many cases, veterans have been in military service since graduation from high school, and understanding the ways in which military-acquired skills can apply to civilian life is crucial. In addition, it is incumbent upon counselors to understand the ramifications of combat exposure and the extra challenges incurred by those who present with combat related posttraumatic stress following one or more deployments. Therapy is especially important with those who have served multiple deployments, as the likelihood of experiencing combat PTS is far greater when an individual has been exposed repeatedly to war-related trauma (Vincenzes, 2013). With this in mind, ensuring that mental health practitioners are, “on the same page” regarding new treatment methods and how to use those methods with certain populations, is vitally important. This is done by engaging practitioners, researchers, and educators alike to understand the aspects of neuroscience-informed counseling that they feel would best benefit this population.
One of the primary roles mental health professionals specifically play in working with veterans is focusing on reintegration to society following service – this involves helping them to help re-develop “positive relationships with their significant others, family, friends, and community” (Vincenzes, 2013, p. 5). In addition, veterans frequently experience “checking behaviors” that mimic obsessive-compulsive disorder and can look very much like hypervigilance, a common symptom of PTS (Tuerk, et. al., 2009; Vincenzes, 2013). Finally, and perhaps most importantly, mental health professionals must engage in advocacy for veterans and their families, which can be done by heightening awareness of severe PTS symptoms and how these symptoms present (Vincenzes, 2013) in addition to sharing information about the war experience and how it impacts those who serve.

**Firsthand Accounts of Combat and the Aftermath**

Mental health professionals who have not served in the military might struggle with understanding the combat veteran experience. For this reason, reading these firsthand accounts of combat service is encouraged for better military cultural competence and understanding of combat-related issues.

Renowned war writer Sebastian Junger provides some of the most gripping experiences related to war and the after-effects of experiencing combat and the presence of combat related posttraumatic stress in one’s life. In his book, *Tribe: On Homecoming and Belonging*, he writes of how “war makes you an animal” and compares men to dogs. In one particularly gripping section of the book, he describes a moment that occurred following a deployment – a deployment which did not even occur during wartime. In fact, it occurred a year before the attacks of September 11, 2001. After providing background on the events of his deployment, he details a
reaction he experienced when he was home, which he later realized was the manifestation of combat related posttraumatic stress he did not even realize he was experiencing:

By the time I got home, though, I’d stopped thinking about… any of the horrific things we’d seen – casualties from an infantry assault through a minefield, starving civilians, MiG jets circling us, looking for a place to drop their bombs. I mentally buried all of it until one day a few months later when I went into the subway at rush hour to catch the C train downtown. Suddenly I found myself backed up against an iron support column, convinced I was going to die. For some reason everything seemed like a threat: there were too many people on the platform, the trains were moving too fast, the lights were too bright, the world was too loud. I couldn’t really explain what was wrong, but I was more scared than I’d ever been in Afghanistan (Junger, 2016, pp. 72-73).

Karl Marlantes, in his book, *What it is like to go to War*, discusses “shadow issues” that “come around and around. There is no defeating the shadow” (Marlantes, 2011, p. 87). Marlantes also shares that “the more you deny the shadow warrior, the more vulnerable you become to it” (Marlantes, 2011, p. 87). Marlantes is likely discussing the shadow as a part of oneself that exists after experiencing combat trauma.

**Moral Injury**

When discussing the result of exposure to a traumatic event, particularly in terms of military work, the term “moral injury” has been increasingly used to describe this phenomenon. According to scholars at the Center for Post Traumatic Growth, moral injury involves the violation of deeply held “moral values and expectations” of an individual who is considered to be “highly competent and principled (people of service)” (Keenan, Williams & Echevarria, 2020, p. 5). The authors also detail that, due to the nature of work done by “people of service” – the
propensity to run *toward* danger rather than away from it, this population is especially vulnerable to moral injuries due to the virtues that attract them to this type of profession (Keenan, Williams & Echevarria, 2020, p.5). The very nature of war and combat service necessitates some treatment for moral injuries upon completion of military service.

**Combat-Related Posttraumatic Stress (Combat Trauma)**

For the purposes of this research, the terms “combat-related posttraumatic stress” and “combat trauma” will be used interchangeably depending upon the source material. Military veterans, like many other “first responder” individuals, are used to running *toward* danger and a fundamental part of their work. This becomes a personality trait – a way of being for these individuals. However, it also comes with “environmental stressors, as well as physical, cognitive, and emotional stressors” (Jordan, 2011, p. 263).

In the past, combat-related posttraumatic stress has been known by varying terms such as “nostalgia or “Soldier’s heart” (Department of Veterans Affairs), “shell shock” (Mosse, 2000, p. 101) and “battle fatigue” (Solomon, Weisenberg, Schwarzwald & Mikulincer, 1988, p. 3675). When combat trauma is considered, its existence is usually linked back to major conflicts the United States has participated in – World Wars I and II, Korea, Viet Nam, the Gulf War, and Operations Iraqi Freedom and Enduring Freedom. However, the actual presence of combat trauma existed long before there was a name to describe it. Greek and Roman soldiers, for example, experienced almost constant combat engagements, which led to a heightened vigilance, desire to fight for honor, and intensity that would, today, most likely be considered to be symptoms of what we now know as combat trauma or combat-related PTS (Meineck & Konstan, 2015, p. 8). In recent years, however, the diagnosis has taken on a more serious connotation with the realization that the condition experienced by many combat veterans is, in fact, posttraumatic
stress. This shift in nomenclature regarding a condition that was previously considered to be temporary but is, in fact, more enduring, has increased the need for further research and greater vigilance among counselors.

Per Fragedakis & Toriello (2014) and also Richardson, Frueh, & Acierno (2010), CR-PTS occurs more frequently in military populations than regular PTS occurs in civilian populations. This can be attributed to military-specific stressors that are not frequently experienced by the general population, including, but not limited to: extreme temperatures, windstorms, rugged climates, limited sleep, carrying additional weight, and overall physical and emotional exhaustion (Jordan, 2011, p. 263). Also noted in the literature, further emphasizing the need for a new and revolutionary approach, one that can be provided by neurocounseling, are the statistics: “Between 12 and 30% of war fighters returning from deployment in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) experience combat-related PTSD” (Hoge, et al, 2006). Further emphasizing this need, according once again to Hoge et al. (2006) and Hoyt & Candy (2011) is the fact that fewer than half of veterans who experience combat-related posttraumatic stress actually report challenges following deployment.

**Effects on the brain**

To some extent, the neurobiological effect of posttraumatic stress on the brain is still a mystery. What is known are the symptoms one experiences, particularly following exposure to combat-related posttraumatic stress, such as, “intrusive thoughts, hyperarousal, flashbacks, nightmares and sleep disturbances, changes in memory and concentration, and startle responses” (Bremner, 2006, p. 446). Many servicemembers exposed to traumatic events will continue to experience a sense of hypervigilance and startle responses, in particular, as if they were still in theater. The areas of the brain most steadily impacted by physiological structure and function
changes following exposure to traumatic events are the hippocampus (the timekeeper of the brain), the amygdala (the genesis of fight-or-flight responses), and the medial prefrontal cortex (Bremner, 2006, p. 446). When exposed to stressful triggers, the hypothalamic-pituitary-adrenal (HPA) axis responds by releasing corticotropin-releasing factor (CRF) into the brain via the hypothalamus, and the pituitary gland releases adrenocorticotropic hormone (ACTH). Following the release of both neurochemicals into the brain, the adrenal gland releases glucocorticoid (or cortisol). The release of these stress-induced neurochemicals have a negative effect on the HPA axis and also other areas of the brain such as the hippocampus and hypothalamus (Bremner, 2006). Memory issues, changes in brain circuitry between vital structures such as the amygdala, hippocampus, and medial prefrontal cortex can take place, among other yet-to-be realized physiological impacts (Bremner, 2006).

**Posttraumatic Stress and the Brain**

In the early 2000s, particularly, understanding of war/combat related trauma and its impact on the brain changed dramatically (Philipps, 2010). Now, as Philipps also mentions, it is widely known that PTS – or what was earlier known as shell shock – is an actual biological syndrome and a “physical wound of war” (2010, p. 80). Research has shown that PTS does impact the brain and its functioning. It has been discovered through analyzing MRI images and other brain scans, that “… the prefrontal cortex and hippocampus in combat veterans seems to shrink” (Philipps, 2010, p. 83). Sherin & Nemeroff (2011) agree that one of the “hallmarks” of PTS in brain images is “reduced hippocampal volume” (p. 270). This is significant because “the hippocampus is implicated in the control of stress responses, declarative memory, and contextual aspects of fear conditioning” (Sherin & Nemeroff, 2011, p. 270). Consequently, individuals experiencing traumatic reactions and thus the shrinking of the hippocampus can also be expected
to exhibit symptoms of “limited capacity for discerning threat [and] paranoia, hypervigilance, behavioral activation, exaggerated stress responses, and further acquisition of fear associations” (Sherin & Nemeroff, 2011, p. 270).

Another major impact of PTS is the disruption of the electrical circuitry of the brain. In individuals who are not experiencing trauma, “the regions of the brain collaborate in a synchronized pattern, while the brain waves in [individuals with] PTSD are less well coordinated” (Van der Kolk, 2014, p. 313). For some time, there was much unrealized potential in the use of neuroscience-informed techniques such as Electroencephalography (EEG), which makes it possible to assess brain wave patterns and notice brain functioning abnormalities (Van der Kolk, 2014). It is only because of a greater use of EEG that we now know that the aforementioned loosely coordinated brain patterns in individuals with PTS are responsible for preventing the brain from adequately processing information and sorting through relevant and irrelevant information, creating a state of disorganization in the brain (Van der Kolk, 2014). This lack of organization in the brain “could explain why so many traumatized people have trouble learning from experience and fully engaging in their daily lives” (Van der Kolk, 2014, p. 313).

**Neuroscience-Informed Treatments**

In this section of the literature review, several key methods of neuroscience-informed therapy will be discussed. These methods are not all-encompassing, but rather represent some of the more popular methods being used in mental health, particularly with combat trauma exposed populations.

*What is a neuroscience-informed treatment?*

For the purposes of this study, “neuroscience-informed treatments” will be narrowed to several different neuroscience-informed modalities currently being used in the counseling field.
These include Neurofeedback (NFB), Prolonged Exposure (PE), Eye Movement Desensitization and Reprocessing (EMDR), Neuro-Informed Group Work (NIGW), and Neuro-Cognitive Behavior Therapy (n-CBT). All of these interventions are different in their own way, and reflect the “appearance in recent decades of major technological advances such as MRIs, CAT scans, and other tools for measuring and mapping our neurochemical circuitry” which has led to a situation where, “our knowledge of brain development and function[ing] has really taken off” (Schwitzer, 2015, p. 25).

Neurofeedback. Biofeedback has been used in counseling since the 1960s and was meant to “teach self-regulation of physiological processes” (Myers & Young, 2012, p. 21). However, in modern brain-based psychotherapy, experts are typically using more of a Neurofeedback (NFB) model. One of neurofeedback’s greatest assets is its ability to “provide the brain with a mirror of its own function” (Van der Kolk, 2014, p. 315). In addition, neurofeedback takes the disorganized brain waves associated with trauma and is able to create new brain patterns by encouraging the brain “to make more of some frequencies and less of others…. that enhance its natural complexity and bias toward self-regulation” (Van der Kolk, 2014, p. 315. With the understanding that much of the brain-based work occurring in counseling is related to trauma, specifically PTS, it makes sense that a more physiologically based method of counseling would be more effective to resolve neurobiological changes in the brain over merely using talk therapy. Although biofeedback is the more well-known of the two, there are no tremendous differences between biofeedback and neurofeedback. In fact, neurofeedback is simply biofeedback for the brain (Myers & Young, 2012, p. 20), and it is also widely considered by most experts researching the counseling/neuroscience overlap to be the best possible use of neuroscience in counseling due to its tangible applications.
One of the leading forms of NFB being used in counseling practice right now is Quantitative Electroencephalography, or QEEG/brain mapping. QEEG is attractive as a method of connecting the worlds of counseling and neuroscience, since many practitioners will conduct therapy while simultaneously administering QEEG. Some practitioners begin NFB without QEEG, but it is not advised. In this method of NFB, “a cap is placed over the client’s head, conductive paste is applied to holes matched to the 19 sites, and electrodes or sensors are attached at the sites” (Myers & Young, 2012, p. 22). With the client’s eyes both open and closed, the electrical activity taking place in the brain is closely monitored. Much more of a neuroscientific application than a counseling one, an electrical current is applied and then later analyzed for wave dominance, frequency, and amplitude (Myers & Young, 2012). When considering the counseling applicability of EEG, scientists indicate that the EEG shows them the true nature of brain functioning and shows a colored map of function at every point of the brain that has been analyzed.

Understanding areas of the brain that have been biologically altered can then help those on the counseling side of practice know which modalities of counseling treatment to use in order to target the areas of the brain that are being affected neurobiologically.

Counselors wishing to use NFB in their practice are up against a major hurdle, however. Most states are not legislating NFB practice, and consequently insurance issues are
rampant for clinicians working in this domain, as many insurance companies do not cover NFB. Hammond et. al. (2011) also discuss the fact that there are many individuals providing neurofeedback services without appropriate training and licensure, and doing so with individuals who have conditions that are challenging to treat, meaning that the process goes largely unregulated in those situations. This is likely because training through the Biofeedback Certification Institute of America (BCIA) is costly and requires a significant time commitment. Yet, at every juncture, it becomes impossible for counselors to ignore that the work is inherently biological and does have an impact. Myers & Young (2012), who arguably penned the most comprehensive analysis of NFB in counseling practice, indicate that psychotherapy is, by default, a biological intervention. In particular, certain types of psychotherapy used to reduce anxiety, such as CBT, show an actual effect in the brain that links counseling work directly to biological effects in the brain’s anatomy.

**Neuro-Informed Cognitive Behavioral Therapy (n-CBT).** Neuroscience-informed counseling techniques can be used as standalone therapies, or in conjunction with other modalities commonly used by mental health practitioners. An example of this is the development of neuro-informed cognitive behavioral therapy, or “n-CBT.”

Neuro-informed CBT “integrates current research from neuroscience into the practice of CBT and accounts for automatic responding, implicit memory, and the role of the counselor in breaking automatic cycles of responding” (Field, Beeson & Jones, 2016, p. 211). To do this, n-CBT takes concepts from Albert Ellis’ Rational Emotive Behavior Therapy (REBT) and re-imagines the “ABCDE” approach with the “Waves of the New ABCs” (Field, Beeson & Jones, 2016, p. 211). n-CBT contains two “waves” that both represent brain processes that actively interact with one another (Field, Beeson & Jones, 2016). The first wave is as follows: there is
an activating event (A1) that stimulates the individual in some way, which is followed by the brain interpreting the stimulus (B1), and then the body’s response to the brain’s processing of the stimulus (C1) (Field, Beeson & Jones, 2016). In wave two, the individual becomes aware of the physiological response of wave 1 (A2), which is then followed by the brain evaluating the situation and planning a course of action (B2). This is then followed by the final movement of wave 2, which involves the brain creating an emotional response that then triggers a physiological reaction (C2) (Field, Beeson & Jones, 2016). The process involves different parts of the brain, and ultimately helps the practitioner better understand the emotional and physiological responses to triggering stimuli. To prepare for using an n-cbt approach, counselors using a CBT modality are encouraged by the authors of this new theoretical approach to become trained in a neuroscience-informed treatment such as neurofeedback, which they can then use in conjunction with their CBT skills (Field, Beeson & Jones, 2016).

**Prolonged Exposure (PE).** Prolonged Exposure (PE) is “an empirically supported efficacious treatment for posttraumatic stress disorder” and is commonly used in treatment with combat veterans (Stojek, McSweeney & Rauch, 2018, p. 1). Especially where posttraumatic stress is concerned, PE is considered to be the best treatment for “increasing the connectivity” between areas of the brain that are disrupted by having experienced PTS (Stojek, McSweeney & Rauch, 2018, p. 1). The DoD and the VA both recommend PE as a first line treatment for combat trauma (Reisman, 2016).

A branch of Emotional Processing Theory, PE can encourage neurobiological changes due to its “extinction learning” element, which changes “maladaptive cognitive-emotional connections” (Stojek, McSweeney & Rauch, 2018, p. 3). The ultimate aim of PE is to re-configure the fear circuitry in the brain, which primarily involves the amygdala, hippocampus,
and prefrontal cortex. In fact, differences in these brain structures can even indicate an increased vulnerability to trauma-related complications such as posttraumatic stress.

One of the most enticing aspects of Prolonged Exposure therapy for veterans presenting with posttraumatic stress disorder is its status as an evidence-based treatment, something that has allowed the VA to feel confident using it as a “first-line treatment [for] PTSD” (Wolf, Strom, Kehle & Eftekhari, p. 27, 2012).

Enhancing Prolonged Exposure therapy’s usefulness and relevance is the fact that it is a manualized treatment. Typically, the therapy is performed in nine to twelve sessions that each last about 90 minutes. When beginning PE, the goal of the counselor is to gather as much information as possible from the individual regarding the stress they are experiencing, while also providing psychoeducation to the client. The client is also provided with a “toolbox” of relaxation techniques in these earlier sessions, as well. After rapport has been sufficiently built and the client has been provided with ways to relieve agitation and stress that may arise from the process of PE therapy, the counselor will begin introducing exposure to traumatic events to the client’s remaining sessions (Makinson & Young, 2012).

**Eye Movement Desensitization and Reprocessing (EMDR).** EMDR is a psychotherapy approach that is performed in eight phases and “addresses the experiential contributions of both health and dysfunction” (Shapiro, 2013). According to the Adaptive Information Processing model, by which EMDR is guided, disorders of a psychological nature that are not due to an organic cause are usually caused by unprocessed memories being stored in the brain (Shapiro, 2013). Also according to Shapiro (2013), these memories carry with them the beliefs, feelings, and emotions that were present in the body and the mind when the catalyzing event was processed by the brain. EMDR was created to work through these memories and
experiences and instead of these memories being allowed to cause destruction and distortion of feelings, beliefs, and somatic responses, they instead become a source of strength and resilience in the client’s life.

EMDR exists in eight phases and is a highly procedural form of therapy. The initial phase of therapy mimics the early phases of most typical forms of therapy, and includes information gathering, assessment, creating a treatment plan, and working with the client to determine actual readiness for the intervention. The second phase focuses on rapport building, psychoeducation, and developing safety in the therapeutic relationship. Much like PE therapy, this phase of EMDR also involves developing coping skills for the inevitable challenging emotions that will arise from the therapeutic process, one such coping skill being “safe place visualizations.” Beginning in phase three, the counselor and client will explore the traumatic incident. Memories are rated on a Likert scale, and in the next few phases the images, beliefs, and sensations of these memories are focused on and targeted using a technique called “dual attention stimuli,” as the overriding goal of EMDR is to stimulate both hemispheres of the brain, either through use of light, tapping, or hand movements. By the time the client is in phase seven, if they are still not fully processing memories, the counselor will re-direct them to phase two, in which coping skills and self-calming techniques are focused upon. The reason for revisiting this phase is so that the client can strengthen these techniques and feel safer exploring challenging experiences and emotions. Phase eight involves re-evaluation and effectiveness, stability, change, and other areas for further integration (Makinson & Young, 2012).

**Neuro-Informed Group Work.** The importance of neuro-informed work can be found in every aspect of counseling, including group work. A neuro-informed group modality recommends a combination of process and psychoeducational components (Field, Jones &
Russell-Chapin, 2017). Ramachandran (2000) writes that human brains are best suited to be observed and analyzed in a group environment; observing relationships and interactions between individuals tells a neuro-informed therapist more than simply observing a lone individual’s behavior and how they respond to others. Neuro-informed group work is not significantly different from typical group work, but does serve as a microcosm for the larger type of work done in neurocounseling. As Field, Jones, and Russell-Chapin (2017) note, neuro-informed work focuses on bilateral integration in the brain, which is also known as interhemispheric integration and interhemispheric transfer. This process causes both sides of the brain to work together - the left hemisphere with its logical capacity works in a complementary fashion with the right hemisphere, which is more creative and emotional. This balance in the brain is mimicked in the group environment, wherein the goal is balance. Much like the hemispheres of the brain must work in a complementary fashion, so must the members of the group in order to achieve cohesion and success.

In order to successfully implement a neuro-informed modality into group work, leaders of groups must “attend to the space between clients… because of the implicit receptivity people’s brains have to one another” (Schermer, 2010). When an individual witnesses the behavior of another, mirror neurons in the motor cortex fire as if the observer had actually initiated the action themselves (Iacoboni, 2009). This is a key component in a human’s ability to infer and understand the emotions of others, which is vitally important in group work. While this is an advantage in group work, it can also be a hindrance, however, and it is important for group leaders to be aware of the potential for contagious behavior and “excessive exposure” (Ramachandran, 2000). Attending to the processes that occur in a group from a neurobiological point of view can take the group dynamic to a more elevated and complex place that helps clients
understand their own behavior, but also their interpretation of others’ behaviors. In fact, some neuro-informed therapists believe that the mirror neurons that aid in behavioral mirroring are the genesis of empathy, helping us to understand the experience of another while also maintaining separation and individuation.

**Barriers to Practice with Neuroscience-Informed Techniques**

Integrating neuroscience into mental health work is generally well-supported by individuals in the field, as it is considered to be “the next frontier” (Strege, et. al., 2021, p. 1). At the same time, there is also reluctance to make this integration more enduring due to some specific barriers. There are quite a few different mental health professions considering or actively implementing the integration of neuroscience-informed work into their professions, and because of this, there are sometimes discrepancies in the way certain neuroscience-informed terminologies are being used across mental health disciplines (Siegle, et. al., 2019). In addition, some practitioners feel as though they need more education and knowledge before being able to use neuroscience-informed methods competently in a clinical setting (Fung, et. al., 2015). Perhaps most importantly, in a study focused on the ethical perceptions of integrating neuroscience into counseling practice, around 78% of study participants “indicated some level of ethical concern regarding the integration of neuroscience in counseling (Luke, et. al., 2021). This study also revealed some barriers from within counseling, specifically: that some counselors are concerned about the breadth of the field of neurocounseling and the rapidity of research dissemination, proper administration of neuroscience-informed techniques/potentially harming clients and maintaining the scope of counseling practice and a unique “counselor identity” that is separate from other fields (Luke, et. al., 2021).
Using Neuroscience-Informed Treatment with Combat-Related Posttraumatic Stress

The justification for this research lies in the lack of research being completed to indicate how, when, and why neuroscience-informed modalities are being used to treat combat-related posttraumatic stress. The only modality discussed in this study that has been specifically researched for its efficacy with combat trauma is Prolonged Exposure (PE) Therapy. Tuerk, et. al. (2011) performed a study that dovetailed with an initiative by the Veteran’s Health Administration (VHA) to promote PE therapy in veterans. The study indicates that PE has promise as a treatment for CR-PTS and is also well-tolerated by veterans, as was indicated by a decent rate of retention among Operation Iraqi Freedom and Operation Enduring Freedom veterans.

The Delphi Method and the Importance of Consensus Building

Creating consensus among experts in mental health is an important part of creating best practices, and ultimately, an evidence-based form of practice (Lehman & Steinwachs, 1998). Whenever change or evolution is to be experienced and accepted within an organization, group, or career field, it is important to ensure that the entities within are prepared and willing to accept and implement the change (Marshall, Solomon & Steber, 2001, p. 107). As this study aims to establish best practices for a relatively new intersection of population and treatment technique, the “wisdom of crowds” associated with the Delphi Method is a helpful way to hear from multiple sources across multiple disciplines (Jorm, 2015). As Jorm (2015) also mentions, sometimes consensus-related methods like Delphi are considered as weaker methods of building evidence-based practice; however, he also states that Delphi studies “underpin the methodologies of evidence-based medicine” (p. 895). Sometimes, Delphi studies and the expert opinions they unearth can actually lead to debate and disagreement that temporarily hamper implementation of
different techniques and theories (Morrison & Barratt, 2009). Based on this research, it would seem reasonable to expect an outcome, even in an attempt to standardize certain aspects of mental health treatment, where some aspects of the proposed intervention are accepted and others are at least temporarily rejected. For the purposes of this study, the Delphi Method contributes a very important aspect in developing new best practices, especially in two under-researched realms that there is an attempt to interpose. Kazantis, et. al. (2018) declare that the Delphi Method and its use of expert opinions to determine implementations and functions (i.e. how neuroscience-informed counseling techniques would work best with combat trauma treatment), “is important for training, supervision, accreditation [and] the next generation of research…” (p. 158). In mental health practice, in order to prepare professionals for new and innovative types of therapy and ongoing multicultural improvement, these facets must be considered – how will programs teach students to use the technique with the population? How will clinicians be trained and supervised? Who should do the accreditation? While, as some have said, the Delphi Method can lead to disagreements – it is also vital in making sure professionals agree and are committed to implementing new ideas.

The Process of Consensus Building

Consensus building does not mean that “a consensus” has been created – rather, it is the process of a selected group of individuals coming together to “actively participate in finding a decision together that all members can feel comfortable with” (Madden, 2017, p. 2). The process, as it is explained by Madden (2017) involves determining how the majority of the participants feel about a given topic or proposal and does not require complete unanimity by the participants. This idea is further advocated for by Linstone & Turoff (2002) who explain that “consensus on a single definition is not the goal, at least not in the initial stages, but rather, the
eliciting of many diverse points of view and potential aspects of the problem” (p. 27). The most fundamental element of the Delphi Method – the process wherein a diverse panel of experts is asked, through a series of data collection rounds, to discuss their feelings on a given matter, also prevents poor performance in the group. As explained by Jorm (2015), “a crowd where everyone uses the same model or a small range of models will perform worse than a crowd with a more diverse range” (p. 888). Linstone & Turoff (2002) also emphasize that the flexible nature of the Delphi Method is what makes it so useful, as participants can “modify or refine their judgments based upon their reaction to the collective view of the group (p. 22). This allows for a fluid, participatory structure wherein participants do not feel wedded to a certain idea and can allow the arguments and views of fellow group members to impact them at varying stages of the data collection process. The focus, rather than coming to “a consensus” is the “degree of consensus” (Linstone & Turoff, 2002, p. 22). Ultimately, the goal is to achieve a broad consensus, not a specific one, and not on every single idea proposed to the group of experts (Linstone & Turoff, 2002). In reality, a Delphi study completed effectively also has a byproduct of celebrating divergence and includes commentary on the opinions that do not align with the generally agreed upon conclusion of the overall group (Linstone & Turoff, 2002). It should also be noted that the experts themselves, while being relied upon for their testimony and opinions, are also human and fallible. Their opinions can be based on a wide array of sources, including “systematic reviews, individual experiments, qualitative studies and personal experience” (Jorm, 2015, p. 887).
CHAPTER 3
METHODOLOGY

Research Design and Tradition

In this study, the Delphi Method was used to solicit the thoughts and recommendations of “experts” in the field of counseling, social work, psychology, advance practice nursing, and marriage and family therapy. The term “expert,” prone to different definitions depending on the type of research performed, was specifically delineated for the purposes of this study to create a qualified and experienced panel of individuals with a combination of experience in the areas of consideration for this study – neuroscience-informed counseling and combat-related trauma.

Developing an idea of what “standard practice” should be requires the solicitation of expert opinions, which are often subjective. The Delphi Method allows for the use of subjective expert opinions but also leads to the quantitative evaluation of these opinions that lead to real, concrete, and feasible ideas that are useful in policymaking and development of new methods of practice and engagement. Developed in the 1950s through a series of studies conducted by the RAND corporation, “its object was to develop a technique to obtain the most reliable consensus of opinion of a group of experts” (Dalkey & Helmer, 1963, p. 458). At the time, the RAND corporation was performing studies for the United States Air Force, which relegated it to research that, for some time, was strictly within the defense industry (Linstone & Turoff, 2002, p. 10). The Delphi Method lent itself to the research performed in this study for several reasons: the topic is military focused, which fits with the original purpose of the Delphi Method; there is incomplete knowledge about the use of neurocounseling interventions in the use of treatment for combat-related trauma (Adler & Ziglio, 1996); and the information sought in this study is entirely judgmental in nature (Okoli & Pawlowski, 2004).
While Delphi studies can often be focused in more of a quantitative technique (Rowe & Wright, 1999) there are also ways of approaching research using Delphi that integrate more qualitative research techniques.

To properly conduct a Delphi study of any kind, as there are variants, the following elements are typically involved:

1. A facilitator who organizes the study
2. A group of individuals recruited by the facilitator
3. The development of a questionnaire that the experts will then rate for levels of agreement.
4. Gathering of the expert responses by the facilitator
5. Feedback is given to the individuals to inform them how their own answers compare to the other experts.
6. Group members are able to revise their responses to the questionnaire after receiving feedback
7. Rounds of questionnaires are administered to build consensus – and are tested statistically to determine what “consensus” looks like (Jorm, 2015, p. 889)

Study Timeline

The research portion of this study involved procuring Institutional Review Board (IRB) approval from the Human Subjects Review Committee of the Darden College of Education and Professional Studies (DCEPS) at Old Dominion University (ODU), which occurred in June of 2023. This study was deemed to be exempt due to its use of surveys and interviews and posing of minimal risk of psychological impact or stress on the participants and was “sufficiently low
risk as to be deemed exempt from … regulations” (Walch-Patterson, 2020, p. 87). Exempt studies, at Old Dominion University, are processed at the college level.

Following the receipt of IRB approval, participation selection began. A working list of individuals who met the criteria of being an “expert” was regularly maintained during the proposal process and was originally thought to be the best method for gathering “experts.” However, it was later decided that the best method for gathering experts was to give them the option to self-identify. Some participants were still recruited due to their expert status, but most participants were given the option to self-identify. Participants were primarily acquired in several ways: online recruitment (social media, listservs or message boards), word-of-mouth, or referral from other individuals who worked with or around those who met the criteria for the study, or who were directly referred to the study by an individual who was already recruited.

In what is being called “Round 1-A” the initial recruitment materials were distributed to e-mail lists, specific individuals who were known to be “experts,” or individuals who could possibly know practitioners interested in participating. Contained in the Round 1-A material was a link to a Qualtrics study which functioned as “Round 1-B.” In this round, participants were asked for specific information regarding their experience working with neuroscience-informed modalities and combat trauma, particularly any advanced trainings or certifications they possessed in either area. They were also asked to provide information about their educational background and licensure, in addition to their contact information for further involvement in the study. After a strong enough number of participants was secured, to account for potential attrition, the second round of the study began.

In the second round, individuals who provided their contact information were sent another Qualtrics survey encouraging them to provide deeper information about their knowledge
and their work as experts. First, they were asked to read a vignette about a combat member who exhibited symptoms of PTS after multiple tours of duty in both Iraq and Afghanistan and was interested in seeking services with a clinician who used neuroscience-informed treatment methods. Following the vignette, the participants were asked to provide a brief treatment plan using a form of neuroscience-informed treatment they felt would be most beneficial to this client, as well as a series of questions regarding why they chose this particular method. Questions included whether they had used this method before, their perception of treatment efficacy with this method (both during and after therapy) and which neuroscience-informed therapy method they would use instead of their chosen method. They were also asked what they felt would be the generally agreed upon method of neuroscience-informed treatment in this situation by their peers, an initial rating scale to gauge their preferred neuroscience-informed treatment modalities, in order from most preferred to least preferred, and additional questions regarding their practice (a reiteration of their licensure, length of time in the field, and type of clientele).

Round three included active but asynchronous engagement between the participants and the researcher using VoiceThread. During this round, they were provided with slides detailing the thematic results from Round 2, and asked to interact with the slides, the researcher, and each other to discuss the outcomes of the previous round(s).

Finally, Round Four involved re-administering the initial rating scale provided to participants in Round Two, questions on any changes of opinion that resulted from the study, as well as any additional information they gleaned from being participants in the study and how they felt it would influence their own practice. They were also asked to indicate what they felt was necessary to help develop best practices in neuroscience-informed combat trauma treatment within their own profession. After Round Two, it was decided to add a question for the
participants in Round 4 that addressed an interesting development that was noted in Round Three - how participants endorsed using neurofeedback but felt that their peers would be more inclined to use EMDR. It was important to find the reason for this because it was an important and unexpected discrepancy.

Development of themes took place between each round of from participants and was completed by the researcher and a data analyst. The data analyst is a graduate of a Masters program in Clinical Mental Health Counseling, is a military veteran, and has experience practicing with neuro-informed therapy techniques. After each round of solicitation of opinions and theme development, another round occurred until a total of four rounds took place and there was sufficient thematic development to aid in the creation of overall themes, which were an integral part in developing consensus on potential best practices.

**Participant Selection**

This study initially aimed to include 40-50 expert participant opinions; however, it quickly became obvious that this number was relatively infeasible given the current skill sets and research areas of practicing therapists and academics. Therefore, the study was right-sized and aimed at including closer to 15-20 participants at the start of data collection, which was accomplished although the number later dwindled. According to Chalmers & Armour (2019) a Delphi study can be completed with as few as 4 participants and as many as thousands, giving credibility to this Delphi study of 7 participants even though 17 individuals provided their contact information with their answers to the survey administered in Round 1-B. The fields included in the study were: counseling, marriage and family therapy, psychiatric nurse practice, and psychology. It was decided to source experts from different fields because psychology, especially, has been able to work with veterans for a much greater amount of time than many of
the other mental health fields by virtue of their greater presence as practitioners for the Department of Veterans Affairs. A variety of participants from multiple mental health professions also provided a greater diversification of opinions and perspectives.

Prior to beginning participant selection, general research was completed to create a list of individuals who met the criteria of “expert.” The initial goal was to contact these chosen “experts” to assess their interest in the study, after which they would be asked to recommend others whom they would also recommend for participation (Wester & Borders, 2013). However, after feedback was considered, the majority of participants were individuals who were solicited from various outreach measures (CESNET, for example) and therefore self-identified as an “expert” rather than being identified as one.

**Defining “Expert”**

For the purposes of this study, the concept of an “expert” must first be defined in order to delineate a specific sample of individuals qualified to engage in the research process. An “expert” is deemed to be an individual who, widely considered at the top of their field, holds a specific combination of educational, licensure, and experiential achievements and is currently practicing in the United States. In addition, they must specialize in the areas of neuroscience-informed counseling and combat-related trauma in veterans.

**Education.** Counselors practicing in the United States must obtain at least a Master’s degree (typically a Master of Science in Education or Master of Arts) in Clinical Mental Health Counseling or another Counseling related field (including social work, psychology, and/or psychiatric nursing). In terms of education, this is the minimum qualification for participation in this study. While individuals who have earned Masters degrees are qualified for this study, preference will be placed on those who have earned a Doctorate degree (Doctor of Philosophy or...
Doctor of Education) in the fields of Clinical Mental Health Counseling, Counseling, Counselor Education and Supervision, Social Work, Psychology, or an advanced practice nursing program. This is due to the likelihood of these individuals having advanced experience in performing in-depth research and practice in the areas relevant for this study, neuroscience-informed counseling and/or military combat trauma. In addition, counselors who have earned their degrees from Council on Accreditation of Counseling and Related Educational Programs (CACREP) are preferred, but this is not an exclusionary factor in selection for this research. CACREP is the accreditation board for counseling graduate programs, and ensures that certain standards are met during the course of a student’s studies – including some education in biological/brain based topics.

**Licensure.** Practicing mental health experts in the United States possess a wide range of licensures depending on the states and fields in which they practice. Acceptable licensures for the purpose of this study are as follows: Licensed Professional Counselor (LPC), Licensed Professional Clinical Counselor (LPCC), Licensed Mental Health Counselor (LMHC), Licensed Social Worker (LSW), Licensed Independent Social Worker (LISW), Marriage and Family Therapist (MFT), Independent Marriage and Family Therapist (IMFT), Clinical Psychologist (PsyD), Psychologist (PhD), and Psychiatric Mental Health Nurse Practitioner (PMHNP). Including this extensive list of licensures in the possible sample of the study allows for a diversification of perspectives and practice approaches. Due to the inconsistent nature of licensures in the United States, other types of licensures were considered on a case-by-case basis.

**Certifications.** Certifications exist for work in specific neuroscience-informed fields and these certifications are an important aspect of being qualified as an “expert” especially in the realm of neuroscience-informed practitioners who are participating in this study. Certification in
neurofeedback is completed through the Biofeedback Certification International Alliance (BCIA), and EMDR certification can be pursued through the Eye Movement Desensitization and Reprocessing International Association (EMDRIA). Neither of these certifications was mandatory for using these treatment techniques in clinical practice, but they enhance a practitioner’s credibility due to the training required to acquire them, and consequently are considered to be an essential quality for experts participating in this study.

In terms of certifications for military counseling, the Star Behavioral Health Providers network provides multiple levels of training for clinicians who wish to work more effectively and competently with military personnel and veterans. It is preferred that participants have this training, but it is not exclusionary, and will not prevent a military counselor with the requisite experience (3 years) and who meets other necessary criteria from participation in the study.

**Experience in Neuro-Informed Counseling Work with Veterans.** For the purposes of this study, acceptable experience using neuro-informed mental health practice will equal to no less than 3 years working with both this modality and this population. The parameter of three years’ experience includes work in both or either neuro-informed work and combat trauma work. Three years has been chosen for the minimum threshold for practice due to the independent licensing requirements of most mental health professions – this is adequate time for a practitioner to be in the field and have an unencumbered (independent) license that allows them to practice without the oversight of a supervisor.

**Extenuating Circumstances.** It is important to note that some individuals who have achieved a doctoral degree in a counseling-related field may not hold a state license. For this reason, case-by-case assessments were made regarding an individual’s qualification to
participate in this study, but at least one of the educational or licensure parameters must be met in order for the individual to be eligible to participate.

**Nationally Certified Counselors (NCCs).** In lieu of a license or a doctoral-level education, individuals from the counseling field with sufficient experience using neuro-informed techniques to treat combat-related trauma will be considered for participation if they hold an NCC designation through the National Board of Certified Counselors (NBCC). According to a fact sheet distributed by the NBCC (2020) The NCC designation requires the certified counselor to:

- Earn a Masters, Education Specialist, Certificate of Advanced Study, or a Doctoral Degree in counseling from a CACREP or regionally accredited degree program.
- Pass the National Counselor Examination (NCE) or the National Clinical Mental Health Counseling Examinations (NCMHCE).
- Complete forty-eight semester hours of graduate level counseling work in nine different areas:
  - Human growth and development theories in counseling
  - Social and cultural foundations in counseling
  - Helping relationships in counseling
  - Group counseling theories and processes
  - Career counseling and lifestyle development
  - Assessment in counseling
  - Professional orientation to counseling
  - Counseling field experience
- The positive endorsement of a professional colleague who holds a graduate degree in a mental health field.
- Completion of at least three thousand hours of post-Masters counseling work experience and one hundred hours of supervision over a period of twenty four months following graduation (this may be waived if a counselor is a graduate of CACREP accredited program).
Data Collection

A mixed methods approach, the Delphi Method utilizes both qualitative research and quantitative evaluation to acquire results. Qualitative research requires thick, rich descriptions of a participant’s experiences. To accomplish the requisite level of experiential depth, the following methods of data collection will be utilized:

- Electronic surveys (through a medium such as Qualtrics)
- VoiceThread for round two, when the goal is interaction between participants
- A second electronic survey for round three, when final opinions and potential changes will be assessed.

The Delphi Method, while containing different iterations, usually involves questionnaires and controlled opinion feedback, which can be accomplished using interviews and focus groups, in addition to surveys. Of great importance is that the experts utilized for the purpose of the study do not feel as though they are being directly confronted, as confrontation often leads to “hasty formulation of preconceived notions, an inclination to close one’s mind to novel ideas, a tendency to defend a stance once taken … [and] a predisposition to be swayed by persuasively stated opinions of others” (Dalkey & Helmer, 1963).

Data Analysis

Per Linstone & Turoff (2002) in their seminal work, *The Delphi Method: Techniques and Applications*, there are four phases of the Delphi Method that take place as part of the research methodology. These phases are as follows:

1) Exploring the subject and inviting each “expert” to present information they think is important to the study.
2) Working to come to an understanding of how the group, in general, perceives the issue.

3) Addressing any significant disagreements from the second phase to better understand why the disagreements exist, and evaluating them more closely.

4) Final evaluation, during which all of the information that has been gathered is analyzed made into common themes from the rounds of expert participation.

**Researcher Background and Potential Bias**

Several potential biases existed in my approach to this topic. First, after having researched military populations for several years and developing a high level of empathy for servicemembers and traditional challenges they face by virtue of being employed by the United States Armed Services, I have become an advocate for this population and may be prone to favoritism or blindness regarding the realities of military life and culture that could potentially enhance the likelihood of a servicemember experiencing combat trauma. Second, I approach my work from a clinical mental health counseling perspective and have been a Licensed Professional Counselor and am now working as a Licensed Professional Counseling Resident. It is possible my tendency will be to overtly focus on counselors in the research simply due to availability and professional engagements. Third, regarding research approach and methodology, I am certainly more qualitatively focused and could potentially favor this research method in the finished project, relegating the quantitative aspects of the Delphi Method to a lesser degree of importance.

Linstone and Turoff (2002) discuss these potential biases and their potential effects on research in their seminal work on the Delphi Method, wherein they describe common sources of disappointment with those who decide to use the Delphi Method for their research. The authors claim that Delphi is a profoundly effective means by which to gather consensus and opinion
from a group of individuals, but also that a researcher’s own biases can destroy the effectiveness of the research. Research can easily be derailed by, “imposing monitor’s views and preconceptions of a problem upon the respondent group by over-specifying the structure of the Delphi and not allowing for contribution of other perspectives related to the problem” (Linstone & Turoff, 2002, p. 6). Given the reality of my own interest in the profession and my own background as a counselor, I determined that the best way to bracket my own biases was to recruit at least one individual to evaluate and provide feedback on my work. This individual, Jeff Rockwell, was one of my former students during my tenure teaching at another institution, who happens to have both experience as a military veteran and has done extensive work with neuroscience-informed care. He was added to the IRB application prior to beginning data analysis. During our collaborative analysis, we worked together to share themes and information received from the participants. Following each round, we each created our perceived themes from the results, and collaborated to ensure that we were both finding the same themes from the results. There was no influence exerted on my data analyst, and he made his own assessments without my intervention. In addition, we did not encounter any situations where we did not have either exact or similar theme congruence.
CHAPTER 4
RESULTS

Introduction

This Delphi study, which aimed at developing consensus in potential best practices when treating combat trauma with neuroscience-informed therapy techniques, spanned the course of six months between July of 2023 and January of 2024 and included four rounds. The first recruitment survey respondent accessed the survey on July 11, 2023, and the last survey respondent accessed the survey on January 1, 2023. The four rounds of the Delphi contained various means of interacting with participants, or potential participants, and covered:

- Initial recruitment (Round 1 - A)
- Gathering of respondent demographics/qualifications (Round 1-B)
- Presentation of a scenario to aid in determining the respondents’ chosen neuroscience-informed therapy techniques, as well as some other relevant questions (Round 2)
- Participant interaction via VoiceThread (Round 3)
- A concluding round that asked the respondents to once again rank the techniques they would use in their practice of neuroscience-informed work with a client who presented with combat trauma (Round 4)

Prior to filling out any information pertaining to the study, all respondents were provided with an informed consent document to inform them of the time commitment, potential challenges with the study, and ways to achieve recourse if the study caused them harm.

Delphi Study, Round One - A: Call for Participants

The initial round of the Delphi study focused on seeking participants, which was initially completed by reaching out to various E-Mail lists, such as the “CESNET-L” list, researching agencies and practitioners who met the criteria, and exploring potential participants by
networking with experts already in the field. A recruitment e-mail with details of the study (appendix 1) was sent to each potential source of study participants. The initial source of participants, CESNET-L, is commonly utilized by those in counseling, counselor education, and adjacent fields to communicate with one another and recruit for studies, including dissertation studies. The three recruitment E-Mails sent to CESNET-L yielded some respondents, but not enough to fulfill the requirements of a Delphi Study. In order to secure more participants for the study, research was performed to find practices and individuals both in the area (Hampton Roads, Virginia) and nationally, to attempt to recruit more practitioners that would meet the requirements of the study. As was mentioned in chapter 3, the goal was to contact known experts, first for their potential recruitment, and also for their insight into more individuals who might be qualified. The prominent experts themselves, as expected, were all willing to pass on information for the study but did not have the availability in their busy schedules to participate, as many of them are authoring advanced materials on neuro-informed therapy or are running neuro-informed clinics/research institutes. One expert that was contacted forwarded the study information to a neuro-informed interest network, another forwarded the study recruitment materials to other neuro-informed practicing individuals in their sphere of influence, and a local practice known to focus only in treatment of military personnel was also contacted for potential participation among their practitioners.

Delphi Study, Round One - B: Initial Gathering of Demographic/Career Data

After the recruitment efforts of round one, a total of 51 individuals engaged with the subsequently distributed recruitment/demographic survey, and the engagement included various levels of survey completion that ranged from those who seemed to open the survey to read it but not complete it, to those who completed the survey in its entirety. The data provided regarding
round one are presented with this in mind, and also represent the survey’s goal of seeking experts in both neuroscience-informed therapy techniques and combat trauma-related therapy. Some individuals only filled out questions about neuroscience-informed therapy and some individuals only filled out questions about combat trauma-related therapy.

**Information Sought in Round One - B**

Round one focused on understanding the following information about potential study participants:

- Expertise in military/combat trauma issues
- Expertise in neuro-informed therapy techniques
- Time spent in the profession
- Relevant training/certifications

**Response to Recruitment Materials**

In the first round, a total of 51 individuals accessed the Recruitment Survey.

<table>
<thead>
<tr>
<th>Type of Response</th>
<th>No. of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondents who partially completed the survey but provided no contact information</td>
<td>26</td>
</tr>
<tr>
<td>Respondents who completed the survey to the point of providing contact information</td>
<td>17</td>
</tr>
<tr>
<td>Respondents who opened the study but did not complete any questions</td>
<td>3</td>
</tr>
<tr>
<td>Duplicate survey submissions</td>
<td>1</td>
</tr>
<tr>
<td>Total survey engagement</td>
<td>51</td>
</tr>
</tbody>
</table>

It became clear, upon analysis of the data, that some individuals began the survey and only answered one or two of the first questions, then presumably ceased completing the survey due to a feeling that they were not qualified after reading the questions about combat trauma therapy experience, and some individuals did not fill out the first set of questions on combat trauma therapy experience but answered later questions on experience with neuroscience-
informed therapy experience/training/licensure. It was not common for the entirety of the survey to be completed, and Some individuals looked through the survey in its entirety but did not fill out any questions.

Over half of the initial survey respondents filled out the survey partially, most likely after they began to answer questions and determined that they did not meet the criteria for the study. Individual responses reveal that respondents who did not fill out the survey completely usually ceased their participation after questions about their expertise in either military/combat trauma and did not proceed to the section on experience with neuro-informed therapy techniques, even though the instructions for the study asked for expertise in either/or area. This would indicate that respondents likely self-selected out of the study based on their own perception of their status as an “expert” as they filled out the survey, something that was anticipated and expected prior to beginning the study.

Experience Working with Military Veterans Presenting with Combat Trauma.

Respondents were first asked for the length of time they have spent working with military personnel in a capacity specific to treating combat trauma and were provided with several categories to choose from: 3-5 years, 6-10 years, and 11+ years.

Table 2. Years of Experience Working with Combat Trauma Afflicted Veterans

<table>
<thead>
<tr>
<th>Years of Experience</th>
<th>No. of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-5 years</td>
<td>7</td>
</tr>
<tr>
<td>6-10 years</td>
<td>5</td>
</tr>
<tr>
<td>11+ years</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
</tr>
</tbody>
</table>
The results of this question revealed that there is a great deal of career longevity among those who are working with this population. Among those who filled out this question in the initial recruitment survey, the breakdown of experience revealed that the majority of individuals who provided this information have been in the profession for 11+ years, with the second highest group being the 3-5 year category. Generally, survey respondents did not disclose their years of experience if they did not feel they were a good fit for the study, and thus the number of individuals who disclosed this information is 22, which is one less than the number of respondents who completed the survey in its entirety. This is due to the fact that one individual who otherwise completed the survey did not disclose their longevity in the profession.

**Advanced training/certifications.** Of the individuals who responded to this question, 7 endorsed having some type of advanced training or certifications in working with military personnel and combat trauma. Of the 28 respondents who answered this question, 12 answered that they had taken either continuing education on military and combat trauma related topics, or that they had a certification. Training for combat trauma treatment is different from neuroscience-informed treatment and is provided usually by one agency, STAR behavioral health. It is also not as regulated as neuroscience-informed therapy training but has multiple tiers of information and learning for participants.

Most of the respondents who engaged with this question took their advanced learning class/training separate from a learning institution, which is consistent with self-completed research on the number of CACREP-accredited schools that offer military-related classes. Only one respondent was able to take a military-related class as part of their MA program, while the others completed their training through the Veterans Administration (VA), during their own service, or through a separate training organization, of which there are several.
Experience using neuroscience-informed therapy techniques. The purpose of the study was to combine knowledge bases in both neuroscience-informed counseling and combat trauma, and therefore respondents were also asked to provide information regarding their experience using neuroscience-informed therapy techniques in their practice. The question posed to participants specifically asked if they consider themselves someone who specializes in neuroscience-informed counseling. Of the original 53 individuals who engaged with the study, 24 individuals shared their perception of their own “expert” status in working with neuroscience-informed therapy modalities. Of the 24, 18 regarded themselves as experts. The other 6 responded that they did not consider themselves in the expert category when utilizing neuroscience-informed therapy techniques. Respondents were also asked to indicate which areas of neuroscience-informed therapy they have experience with, with the breakdown as follows:

Table 3. Areas of Neuroscience-Informed Therapy Experience

<table>
<thead>
<tr>
<th>Therapy Modality</th>
<th>No. of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurofeedback</td>
<td>11</td>
</tr>
<tr>
<td>Another method not listed here</td>
<td>9</td>
</tr>
<tr>
<td>Neuro-Informed Cognitive Behavioral Therapy (n-CBT)</td>
<td>5</td>
</tr>
<tr>
<td>Eye Movement Desensitization and Reprocessing (EMDR)</td>
<td>5</td>
</tr>
<tr>
<td>Neuro-Informed Group Work (NIGW)</td>
<td>3</td>
</tr>
<tr>
<td>Prolonged Exposure Therapy (PE)</td>
<td>1</td>
</tr>
<tr>
<td>Total Respondents</td>
<td>34</td>
</tr>
</tbody>
</table>

This number is higher than the actual number of respondents at this stage in the study because there are clinicians who practice more than one form of neuroscience-informed therapy, and they were encouraged to select all of the modalities they utilize. In addition, “Another method not listed here” was a popular
answer, but did not achieve any consensus in terms of the methods these respondents were using. The other methods they indicated included:

- Neuromodulation
- Integration of nutrition, psycho-pharmacology, biofeedback, CBT for PTSD
- Audio visual entertainment, photobiomodulation
- Sensorimotor Psychotherapy
- Neuropsychological assessment and treatment

Of note is that choosing “another method” did not preclude respondents from also selecting methods that were already provided to them. Most individuals who indicated that they use another method of treatment also disclosed that they use one of the above techniques.

From the initial gathering of this information from those who responded, it is clear there was an early preference for neurofeedback, with n-CBT and EMDR being second in preference. Several participants, rather than stating their use of neurofeedback, said they used “QEEG” which is a form of neurofeedback, and when this appeared in a respondent’s statement, it was inferred by the researcher that they meant neurofeedback.

Neuroscience-Informed Therapy Certifications/Continuing Education/Training. The respondents were asked, as a matter of learning more information about depth of specialization, whether they had participated in any continuing education, advanced training, or certification in a neuroscience-informed field. The two most prominent ways to become certified or trained in neuroscience-informed modalities is through the BCIA, which regulates neurofeedback trainings/certifications, and EMDRIA, which regulates EMDR trainings/certifications. Quite a few individuals in round one disclosed some type of training and seven endorsed being certified, something that is not only costly but takes a devoted amount of time.

Educational programs. Respondents were asked to disclose the educational background/degree that led to their practice of mental health, with a total of 19 individuals
answering this question. Of the 19 respondents, 16 indicated currently holding a Masters degree in a therapy-related field. One individual selected “no” but indicated that they hold a degree in nursing instead. The types of educational programs respondents graduated from was almost completely congruent to the type of licensure they held.

In addition, one respondent has both a Masters level degree in Marriage and Family Therapy and was working on a PhD in Counselor Education and Supervision at the time of the study.

Table 4. Respondent Degree Type

<table>
<thead>
<tr>
<th>Respondent Education</th>
<th>No. of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marriage &amp; Family Therapy</td>
<td>3</td>
</tr>
<tr>
<td>Counseling</td>
<td>6</td>
</tr>
<tr>
<td>Social Work</td>
<td>2</td>
</tr>
<tr>
<td>Psychology</td>
<td>3</td>
</tr>
<tr>
<td>APRN</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
</tr>
</tbody>
</table>

*One individual had a degree in MFT and is working on a CES degree

Licensure. In addition to seeking understanding of respondents’ degree status and area of study, it was also crucial to glean the licensure status of individuals in the study to ensure they met the requirements put forth in both the initial proposal for research and the Institutional Review Board application. A total of 19 respondents also replied with their licensure status, with
17 indicating that they do hold a license to practice a therapy-related profession in their place of residence, and two individuals denying the current status of a license to practice.

Table 5. Licensure Types

<table>
<thead>
<tr>
<th>Licensure Type</th>
<th>No. of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPC, LPCC, LCPC, LCMHC (or related professional counseling licensure)</td>
<td>8</td>
</tr>
<tr>
<td>MFT, LMFT, IMFT (or related marriage and family counseling licensure)</td>
<td>3</td>
</tr>
<tr>
<td>MSW, LISW (or related social work licensure)</td>
<td>2</td>
</tr>
<tr>
<td>Licensed Psychologist - PhD or PsyD (or related psychology licensure)</td>
<td>2</td>
</tr>
<tr>
<td>Nursing</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total Respondents</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

The breakdown of licensure areas in the first round of data collection represents the outcome of the next round, as well, since counselors were once again the majority of respondents in the next round, as well.

**Delphi Study, Round Two - Vignette, Treatment Plan, and Initial Preference Ranking**

Following the information received in Round One, the 17 respondents who filled out enough of the survey to be able to provide their contact information were sent information on how to participate in Round 2, as well as a link to a Qualtrics survey where the second round of
data collection would be taking place. At this point, those who filled out this Qualtrics survey became known as “participants.” Of the initial 17 individuals who provided their contact information in the first round, a total of 7 individuals who were qualified for the study and were interested in participating remained. The reduction of potential participants from 17 to 7 could potentially be attributed to the fact that participants became more aware of the multi-round nature of the Delphi study or felt the time commitment was too much for their current work/family/school obligations. These final 7 participants were given unique identifiers to allow for the ability to track their responses through the research process, while also preserving the privacy and confidentiality they were promised during the informed consent process.

**Demographic/Experience Information of Final Sample**

While the respondents to the initial survey spanned the entirety of the mental health career spectrum, the final sample of participants represented three different professions on the mental health career spectrum and ranged in experience from 1-3 years to 11+ years’ experience working with combat veterans, with the majority having at least 11 years of practice experience. In addition, several participants also disclosed their own military experience, although to preserve confidentiality their branches of service will not be disclosed. The following make up the final sample group of the study:

- Tara - an LCMHC who is Board Certified in Neurofeedback through BCIA, and is a QEEG Diplomate Licensed Candidate.
- Christian - Board Certified in Neurofeedback and through BCIA and the International Society for Neuroregulation & Research, with a background in psychology and 6-10 years of experience in treating combat trauma.
- Betty - an LMFT with 3-5 years of experience in treating combat trauma, who has served as both active duty and a reservist in the military, and received education via a “military focus trauma class in MA program.”
• Rachel - an LPC with 3-5 years of experience in treating combat trauma, who is Board Certified in Neurofeedback.

• Richard - an LPC with 11+ years of experience who is Board Certified in Neurofeedback through BCIA and has taken courses through the VA to help veterans with PTSD.


• Ryan - an LPC with 11+ years of experience and service in the military, as well as being a “graduate of US Army Sexual Assault and Harassment Prevention (SHARP) Academy” who is also a National Victim Advocate, Nationally Board Certified in Clinical Hypnosis, and a Certified Clinical Trauma Professional.

These participants represent over 100 years of experience in different areas of neuroscience-informed therapy and treating individuals who present with combat trauma. As was originally outlined in chapter 3, it was acceptable for participants to meet “expert” criteria either with their experience in neuro-informed therapies or their work with clients who present with combat trauma. Experience in both was preferred, however, part of the goal of this research was also to better understand how many individuals are working in both capacities, and at this point the results indicate that more individuals are focusing in both areas than one specific area, as two individuals each specialized in neuroscience-informed therapies or combat trauma treatment, and three individuals had experience in both:
This round was much more focused on individual responses and tracking a particular participant’s opinions throughout the survey. While the first round began to show some degree of consensus on the effectiveness of neuro-informed practice types in the treatment of combat trauma, this did not become fully relevant or clear until round 2, when participants began addressing in-depth questions. In addition, Round 2 revealed more in-depth information about the “other” modalities participants discussed in Round 1.

In part 1 of the second round of data collection, participants were provided with a vignette that portrayed the story of a war veteran presenting with combat trauma following military service. He had unsuccessfully been treated with other methods, such as CBT, and was curious about neuroscience-informed counseling techniques:

A combat veteran who served multiple tours of duty during Operation Iraqi Freedom and Operation Enduring Freedom presents for therapy with continued complaints of common symptoms associated with Post Traumatic Stress Disorder. These include, but are not limited to: hypervigilance, nightmares, irritability, depression, anxiety, and changes in
pre-deployment personality and behavior. The client has been to therapy before and was primarily treated with Cognitive Behavioral Therapy (CBT) but reports little to no improvement in symptoms following this course of therapy. The client has come to you, curious about neuroscience-informed therapy, and has asked you to determine if you feel this method would be a good fit for them, and which type of neuroscience-informed counseling method you would suggest.

Based on this vignette, several questions/tasks were asked of the participants:

- Please create a treatment plan using the specific method of neuroscience-informed counseling you feel would be most beneficial.
- Why did you select this particular method?
- Have you used this method before?
- What are your impressions of the success rates of your clients who have been treated with this method:
  - During therapy
  - After therapy
- If you were to utilize another neuroscience-informed therapy method other than the one you selected, which would it be?
- What do you perceive to be the generally agreed upon or popular methods of neuroscience-informed treatment being utilized by your peers?

Aside from the questions pertaining to the vignette, some additional questions were asked in parts 2 and 3 of the survey:

- Please rank the following neuroscience-informed counseling techniques according to your perception of their efficacy, with 1 being the most effective, and 6 being the least effective:
  - Neurofeedback
  - Eye Movement Desensitization and Reprocessing (EMDR)
  - Prolonged Exposure Therapy (PE)
  - Neuro-Informed Cognitive Behavior Therapy (n-CBT)
  - Neuro-Informed Group Therapy (NIGT)
  - Another method not mentioned here

Part 3:

- Please indicate your license type (LPC, LPCC, LCSW, LMFT, etc…)
- How long have you been a therapist?
- What type of clientele do you typically work with?
Round two is where the bulk of the information came from regarding how the participants felt about utilizing neuroscience-informed treatments in their work with combat veterans. There was a great deal of information to sort through, as many participants provided elaborate and thoughtful answers, even creating entire treatment plans in some cases.

**Part I: Creation of Treatment Plans**

All 7 participants answered this question, but to varying degrees. Some made very cursory comments on how they would begin treatment and the types of modalities that would guide their work with the hypothetical client in the vignette. Others made comprehensive, step-by-step treatment plans with the use of multiple forms of neuroscience-informed therapy, as well as other techniques. In terms of the neuroscience-informed methods they would use, 5 of 7 endorsed using neurofeedback in the treatment of combat trauma, which reflects the preference for neurofeedback that was present since the beginning of data collection, even among respondents who did not end up participating in the study. In terms of initial assessments of the hypothetical client, 4 of the 7 participants also included QEEG in their treatment plans, which is an integral part of the neurofeedback assessment process when utilizing a neurofeedback treatment modality. In many cases, neurofeedback was also suggested in concert with other forms of neuroscience-informed treatment, as well, or with other more holistic forms of work, such as mindfulness or other ways of calming the parasympathetic nervous system. All participants, regardless of their feelings on which form of neuroscience-informed therapy to use, emphasized the importance of performing an initial assessment and using an integrative approach with a variety of methods, something that is integral to the mental health profession especially as integrative behavioral health becomes more of a focus and a means by which different mental health and medical professions can interface. The two individuals who did not endorse using
neurofeedback both advocated for EMDR, as well as other methods, such as Cognitive Processing Therapy (CPT) and narrative therapy in concert with grounding techniques and a technique called pendulation theory.

Of note is that several of the original choices (Prolonged Exposure, n-CBT and neuro-informed group work) were not mentioned when participants considered this question, yet several of the initial respondents to the survey endorsed using neuro-informed group work and n-CBT. n-CBT is still a newer modality and is built on the principles of an evidence-based and well-known type of therapy, Cognitive Behavioral Therapy that has been relied upon heavily by therapists for many years. The development of n-CBT is evidence of the growing trend of integrating neuroscience-informed principles into already-existing therapy theories and techniques, a trend which will likely continue in the future. Prolonged Exposure has existed for much longer than some other types of brain-based therapies and, based on both this study and general feelings from the mental health community, seems to be less of a focus now, especially when working with combat trauma.

**Participant Feedback on Chosen Treatment Method.** When discussing the reasons for choosing their specific approach to creating their client-specific treatment plan based on the client vignette provided, the participants all provided different treatment suggestions and rationales for their suggested treatments.

The majority of the participants agreed that utilizing some form of neurofeedback was preferential. In fact, 5 of the 7 participants (Tara, Christian, Rachel, Ryan and Richard) agreed that treatment with some form of neurofeedback was part of an effective treatment for managing combat trauma. 4 of the 5 individuals who endorsed using neurofeedback (Tara, Christian, Rachel, and Richard) also noted that quantitative electroencephalography (QEEG) would be an
integral part of their treatment process when considering the hypothetical client. The general consensus is that neurofeedback, particularly QEEG, is an important part of the assessment process and helps the neurofeedback-practicing clinician develop a baseline of brain functioning that can then inform future therapy techniques, which usually include other forms of neurofeedback, or the incorporation of other forms of neuroscience-informed treatment. An important factor to note is that none of the participants who suggested using neurofeedback or any of its elements encouraged using it in isolation. Tara, Rachel, Richard and Ryan all suggested comprehensive treatment plans that included using a battery of psychoeducation, as well as mental, emotional, and physiological assessments to create a baseline and to help measure progress during treatment once neurofeedback is introduced. Christian also suggested the use of neurofeedback, beginning with QEEG like his peers to determine areas of brain dysfunction, and focusing mostly on integrating biofeedback, neurofeedback, and neuromodulation to focus on the dysregulated areas that are revealed by performing the QEEG assessment. The idea of blending neurofeedback assessments and interventions with standard forms of assessment was an ingrained idea in the group of experts and was consistently reiterated throughout the 4 rounds of data collection.

There were two participants who did not endorse using neurofeedback in their proposed treatment plans for the hypothetical client. These participants (Kristine and Betty) focused more on using other interventions. Kristine still suggested using EMDR and other treatments such as Cognitive Processing Therapy (CPT), and Betty preferred to use Narrative Therapy to “connect the prefrontal cortex to the hippocampus,” the pendulation theory intervention mentioned previously to “switch from right lobe to left lobe” and grounding practices to “calm down the [parasympathetic] nervous system.”
The participants were all asked for a rationale for choosing their specific method of treatment and they seemed to fall into two similar but distinct rationales - either they chose their treatment modality because the science reports good outcomes and provides them with evidence-based practices with which to approach their clients (Tara and Kristine) or they feel that their neuroscience-informed treatment of choice is crucial in treatment because a traumatized nervous system is in a reactive and non-receptive state and must be calmed down before further interventions are pursued (Betty, Rachel, and Ryan). Harking back to the holistic idea that continually presented itself in the participants’ answers, Richard and Rachel both explained that targeting sleep patterns using neurofeedback was the most effective way to prepare the clients to be receptive to talk therapy. The participants described neuroscience-informed treatments, particularly neurofeedback, as a way to soothe the brain and prepare it for talk therapy, which is still a vital element of therapy even when using neuroscience-informed treatments.

Prior Experience and Success with Chosen Neuroscience-Informed Therapy Choice.

For the most part, the clinicians involved in the study reported having used the treatment methods they endorsed. One participant disclosed that she had used some of the methods she suggested, but not all of them. When asked about their perceived success rates both during therapy and after therapy with their chosen interventions, the participants report that both research and personal experience indicate high success rates.

During Therapy. Participants were first asked to describe their perception of client progress using their chosen modality during the therapeutic process and report such experiences as having their patients show “steady reduction in symptoms with consistent training” (Tara), 80% improvement (Christian) and 100% self-awareness and processing (Betty), and “significant improvement” of presenting symptoms (Richard). Others, such as Rachel and Ryan, indicated
that their clients are often surprised at how effective the treatment is, and that the process of using neuroscience-informed modalities helps them realize that they have more power than they think.

After Therapy. Study participants disclosed that, in the time after treatment using their chosen neuroscience-informed therapy method, their clients continued to see improvement. The general consensus is that clients maintain either the same level of progress they made during therapy, and some even reported an increase in therapeutic efficacy after therapy commenced. The lowest reported estimation of post-therapeutic progress was 87% (Christian), which is still an exceptionally high number and indicates that participants have confidence in the modalities they are choosing. Individuals endorsing neurofeedback, buoyed by their perception of the science behind neurofeedback, typically felt their chosen modality was highly effective, with treatment being “very successful” (Rachel) and leading to repeated referrals for treatment.

Alternative Neuroscience-Informed Therapy Model Choice. The participants mentioned some newer and lesser-known methods of treatment in this round when they were asked to disclose which method they would use if they did not use their primary choice. They mentioned these alternative methods both in this round, and in others, usually as adjuncts to their primary choice, which emphasizes the overall theme of integrative behavioral health that combines multiple forms of therapy and mental/emotional/physiological work and monitoring.

Tara utilizes Photic glasses, the New Mind System, and Heart Rate Variability, for example, and says that both increase the success of her neurofeedback sessions and even inform them. She also mentioned, however, that Heart Rate Variability can be challenging for clients who present with trauma due to the stress of breathing steadily when activated physiologically. This is another example of a trend that emerged in this study that “one size does not fit all.”
New Mind System is a good way of combining a holistic biopsychosocial approach into therapy with individuals who have experienced trauma, as it addresses neuroscience themes while also considering all of the other aspects of the client and their history, and is backed by science and research. In addition, other participants use vagal nerve stimulation to increase parasympathetic nervous system responses and reduce sympathetic nervous system responses (Christian). Further emphasizing the multi-faceted approach, Kristine indicates that she would likely refer out for psychotropic medications. Even when considering the possibility of using alternatives, two participants resolutely said they would not consider another approach, and two others indicated they are using a variation of neurofeedback that they approve of, as well.

**Perception of “Generally Agreed Upon” Neuroscience-Informed Therapy Techniques.** As was mentioned previously, the majority of the participants said they would use Neurofeedback as their preferred neuroscience-informed modality when treating combat trauma in veterans. They also agreed that, given another option, they would still choose Neurofeedback. In one of the most fascinating results to come of this study, most of those participants, when asked which modality they believe is used and preferred by their peers, felt that their other peers working with combat trauma victims would prefer to use EMDR. This was a finding that was revealed during data analysis when round three was already in progress, however, it was important enough to circle back to. This occurred in Round 4, as a separate question that tied in the results of these earlier rounds and will be detailed in the results for that round. At this point, there was the potential for several different reasons to emerge for this cognitive dissonance - the cost associated with neurofeedback vs. EMDR, the availability of training and materials, or simply the perception of one method being more “en vogue” than the other. EMDR is an evidence-based treatment, and therefore even individuals who are using NFB might assume their
peers are using EMDR because of its current status as a well-known and frequently used method for working with trauma.

**Part II: Ranking**

The participants were asked to rank their preferred method of neuroscience-informed therapy in the use of combat trauma treatment. The options were provided in the following order: Neurofeedback, Eye Movement Desensitization and Reprocessing (EMDR), Prolonged Exposure (PE), Neuro-Informed Cognitive Behavioral Therapy (n-CBT), Neuro-Informed Group Work (NIGW) or another method not listed. In this round, the participants were asked to provide an initial ranking, and in round 4 they were again administered this same ranking system and asked to provide a new ranking following the interactions they had with their expert peers to gauge potential change in opinion or information.

Table 6. Initial Neuroscience-Informed Treatment Preferences

<table>
<thead>
<tr>
<th></th>
<th>NFB</th>
<th>EMDR</th>
<th>PE</th>
<th>n-CBT</th>
<th>NIGW</th>
<th>Other</th>
<th>Other (list)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tara</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Christian</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>5</td>
<td>2</td>
<td>Parasympathetic Stimulation</td>
</tr>
<tr>
<td>Betty</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td>Combination of techniques</td>
</tr>
<tr>
<td>Rachel</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Richard</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Kristine</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Ryan</td>
<td>1</td>
<td>2</td>
<td>6</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>DBT/Mindfulness</td>
</tr>
</tbody>
</table>

One anomaly that occurred in this ranking process was noted after this round had commenced and others had also been completed. Tara, who had mentioned her enthusiasm for
neurofeedback many times, rated it a “5” for efficacy, which was inconsistent with what she had previously said. Feeling this was perhaps an error, the researcher reached out to Tara and she said her intention was to rank neurofeedback “1” and that she must have made a mistake. She then sent over a more accurate ranking:

In round 4, when the ratings between rounds are compared, this ranking will be used to accurately describe Tara’s initial ranking, although it was important to note the first ranking she submitted.

**Delphi Study, Round Three - Collaborative Discussion on Round 2 Results**

This round was conducted with the same 7 participants from round 2 and involved each participant interacting with a series of VoiceThread slides made by the researcher that provided information on the areas of consensus from round 2 (Please see [https://odu.voicethread.com/myvoice/create/25893335](https://odu.voicethread.com/myvoice/create/25893335) for the entirety of this process). At this point in the study, the participants’ responses were slightly more minimal than in round 2, which might be attributed to survey fatigue and balancing both the obligation of the study with other responsibilities. In addition, the three slides containing interaction between participants were slides 4, 5, and 6. As the slides progressed, the comments by the participants decreased. Some participants were more active than others in the VoiceThread - for example, participant Ryan was the most interactive in the study and commented 4 times on the VoiceThread. Richard said he engaged with the Round 3 VoiceThread apparatus, but it appears he was not able to complete this round of data collection, meaning only 6 of the participants engaged in the discussion.

While VoiceThread offers the opportunity for participants to engage either by voice, text, or video, all participants elected to engage with the slides and each other through text. The researcher provided several slides with different findings from Round 2 and invited the
participants to engage with the slides and opine on the themes proposed by the researcher following analysis of round 2 contributions. While the slides all had different primary topics, the themes that developed not only crossed from Round 2 to Round 3, but also between slides.

**Participants’ Feedback on Round 2 Findings - Majority Opinions**

In slide 4 of the VoiceThread, participants were informed that Neurofeedback was the most popular modality chosen among them, whether it was neurofeedback, functional neurofeedback, QEEG, or another neurofeedback-related modality. In addition, they were also informed that EMDR was the next most popular modality. With this information, they were asked for their overall opinions of this, as well as for their feelings on the accuracy of the findings. Individuals who were not part of the majority opinion were also asked to provide their feedback about the findings that neurofeedback was the most popular with EMDR being second. There were ten total interactions with this slide, between six participants.

Many of the same themes that emerged in Round 2 also emerged in Round 3, chief among them the importance of the therapeutic alliance. Several participants mentioned this, with one participant (Tara) mentioning that, “we know from research the relationship will always be more powerful than any modality, even when the modality is strong and the professional relationship is too.” Kristine and Betty also echoed the importance of the therapeutic relationship and tout this aspect of therapy work as integral to ensuring the success of higher-order interventions, such as neuroscience-informed therapies.

Another prominent theme in Round 3 was the importance of the integrative approach to treating combat trauma and using multiple forms of therapy to engage the client for optimal success. Some of the participants, including Christian and Ryan, also discussed working with clients from a somatic lens in order to “stimulate” (Christian) and “engage” (Ryan) the
parasympathetic nervous system, which will lead to greater physiological and emotional regulation, making the client more receptive to other interventions.

Two of the participants, both either servicemembers or veterans themselves, discussed “command climate” as being an important consideration for treatment. Command climate is defined as, “… the culture of a unit. It is the way a unit ‘conducts business’” (Doty & Gelineau, 2008, p. 22). The participants, Betty and Ryan, engaged in a discussion about command climate and the importance of having a strong, positive command climate to help 1) avoid PTSD, 2) manage it effectively if it does occur, and 3) foster an atmosphere of positivity surrounding mental health issues in servicemembers, particularly if there is a group trauma (i.e. loss of a colleague, experiencing the same explosion, etc…).

There was also discussion in this round about EMDR - specifically strong negative feelings about it from Betty, a statement from Ryan informing fellow participants that he does not use it and has not been trained in it, and Kristine also mentioned that she has not been trained in EMDR, either. The participants did not focus specifically on endorsing a preferred modality, but Rachel did reiterate that she was, “glad to see that Neurofeedback won the day,” as she was resolutely an advocate of neurofeedback from start to finish in the study. It was also once again reiterated by the participants that there is a considerable amount of situational awareness needed to know which neuroscience-informed modality to use, specifically with trauma. Even within the area of combat trauma, it is still heavily dependent on the client, the situation, the amount of rapport between client and therapist, and also history of other trauma (for example, childhood trauma).

Finally, in terms of neurofeedback, Tara, Christian and Rachel reiterated their unequivocal support for the modality when treating combat trauma. Tara lauded the approach
for allowing her to spend a great deal of time with her clients, which also aids in development of
the therapeutic alliance. Rachel also commented on an issue that was discussed earlier in this
paper, which was the lack of effectiveness of other common modalities like mainstream CBT. In
her experience, she has done, “... a deep dive into neurofeedback and [has] been thrilled with the
results for [her] trauma clients” after years of doing talk therapy and using other modalities with
minimal success. Christian agreed and mentioned that neurofeedback “addresses root causes of
issues, including trauma.”

*Participants’ Feedback on Round 2 Findings - Minority Opinions*

Although the majority of participants endorse neurofeedback as their chosen
neuroscience-informed modality when treating combat trauma, there is still plenty of diversity in
their practice when considering how many other modalities they use. There were four total
interactions with slide 5 of the VoiceThread, spread between three participants. In Round 2, the
participants were asked which alternative techniques they would use, and the list overlaps
significantly with the feedback received in this round regarding minority techniques. Rather than
discussing the minority opinions in-depth, there was confirmation of which lesser-known
modalities are being used, and there was some reiteration between Rounds 2 and 3 in this regard.
Some worthy minority opinions on treatment include Peter Levine’s pendulation theory, which
he used with 9/11 survivors. This modality, as related by Betty, helps the client remember a time
when they felt “really safe” and attempts to swing a client in a state of physiological distress
back to a place where they feel safe by using left-right brain integration. As was previously
mentioned, Tara utilizes both Heart Rate Variability and Photic glasses with her clients but
acknowledges that there are limitations to both, particularly Heart Rate Variability, as trauma
clients tend to struggle with interventions that rely on specific types of breathing.
Participants’ Feedback on Round 2 - Changes in Opinion

The final slide presented to the participants in Round 3 asked them to consider if they would change their minds about any practice modalities they are using, after hearing the minority and majority opinions from Round 2. Three participants interacted with this slide. The most profound element to come from this particular slide, and possibly the round, is that both therapists who are also veterans were highly critical of current practice techniques for treating combat trauma. The following is an interaction that occurred between Betty and Ryan during this discussion:

Betty: “Treating trauma is a fascinating and complex non-linear process. The current research, in my opinion, is flawed in its application of treatment by scheming the effectiveness or ineffectiveness of veteran trauma treatments. The majority of the research uses trauma treatments either designed for a one-time trauma or civilians. Complex trauma in veterans is similar to that of prolonged trauma in children. This is why I feel that the effectiveness of current modalities is inconsistent. According to the VA website, EMDR has received mixed reviews in the treatment of PTSD, while prolonged exposure therapy has been reported to be 60% effective, SSRIs are 20-30% effective, while CBT may show marginally better results than other treatments, it also has higher dropout rates and lower tolerability.”

This comment was followed up by a comment of agreement by the other veteran in the study, Ryan:

Ryan: I agree with Betty's comment that there is not a definitive treatment modality for PTSD or Complex PTSD. The way I view it, every person who has an experience with PTSD got to that situation with variations of temperament that gave them a high degree of resilience or a lower degree of resilience. One size definitely does not fit all. The key as I see it in any PTSD treatment is the relationship between the client/patient and the therapist. Establishing trust and a safe environment is the first step. You cannot get anywhere if the client does not have trust.

Neither of these participants seemed to change their mind or opine particularly strongly on the majority or minority opinions in this exchange, but they did highlight the importance of understanding the military experience. Both feel that current trauma treatments, as they exist,
are more aimed at civilians and are not as effective as they should be with a veteran population. In addition, they highlight that individuals in the military or post-military, have a specific type of experience and also a specific level of trauma tolerance and resilience. The general idea from these comments is that the individuals who are primarily working with those who serve and have experienced combat trauma, are not fully satisfied with the current offerings for treating their clients in a way that is culturally sensitive to the military experience. Following both Betty and Ryan’s comments was Rachel, who said that she feels all of the participants in the study were “results based.” In other words, “if one modality is not working, it would surprise me if each of us isn’t looking for something that would work.” This further emphasized the idea that even the most popular or frequently used modality might still not be right for everyone, and that it is very individualized how a clinician chooses to work with a client with combat trauma. Like many of the other participants in the study, she then goes on to say that if one modality is not working, she will look for another one. If she does not possess another one that works, she will learn a new one. This is the role therapists commonly play - consistent evolution in practice for the sake of working with their clients competently and effectively.

**Delphi Study, Round Four - Re-Ranking Preferences, Gleaning Takeaways**

In this final round of the study, the goal was to bring the participants full circle and engage them in answering some key questions that would further aid in the development of consensus regarding potential best practices in using neuroscience-informed therapy in the treatment of combat trauma.

They were asked to re-visit the ranking system that was initially presented to them in round 2, to determine whether any of the study rounds impacted their feelings or opinions regarding their preferred neuroscience-informed treatment method. They were once again given
5 choices (Neurofeedback, EMDR, n-CBT, Prolonged Exposure, and Neuro-Informed Group Work) with a 6th choice available for those who preferred a neuroscience-informed modality that is different from those offered in the original list.

*Comparison of Rankings from Round 2 to Round 4*

It was initially anticipated that there would not be significant differences between the participants’ answers from round 2 to round 4 since everyone seemed fairly committed to their particular choices. Overall, there was not a broad change between rounds, but some participants changed their first pick, which was significant. Kristine, who initially ranked neurofeedback as her fourth choice, changed it to her first choice in the 4th round. Ryan, who endorsed a variety of methods and an integrative approach, changed his first pick from neurofeedback in round 2 to neuro-informed CBT in round 4. It is important to note that Richard again elected not to fill out the ranking system, which he also did in round 2. Therefore, it cannot be known how he would have ranked his preferences. However, he did speak strongly in favor of neurofeedback in his narrative answers, which indicates that if he had filled out the ranking, he might have made it his first choice.

Table 7. Comparison of Round 2 and Round 4 Rankings

<table>
<thead>
<tr>
<th>Participant</th>
<th>Round</th>
<th>NFB</th>
<th>EMDR</th>
<th>PE</th>
<th>n-CBT</th>
<th>NIGW</th>
<th>Other</th>
<th>(Detail)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Betty</td>
<td>Round 2</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td>Combination of techniques</td>
</tr>
<tr>
<td></td>
<td>Round 4</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td>Combination of techniques</td>
</tr>
<tr>
<td>Christian</td>
<td>Round 2</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>5</td>
<td>2</td>
<td>Parasympathetic Stimulation</td>
</tr>
<tr>
<td></td>
<td>Round 4</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>
Another interesting takeaway from comparing the rankings from round 2 and round 4 is the variation in answers. While only two participants changed their number one choice, there was quite a bit of movement among the other choices for all of the participants. There was not a single participant who kept the same ranking in both rounds. The three participants who were most committed to practicing neurofeedback, Rachel, Tara, and Christian, all kept neurofeedback as their first choice between the two rounds where ranking occurred. Incidentally, they also all ranked EMDR as their 3rd choice in round 2 but promoted it to their 2nd choice in round 4. The two least popular modalities across both ranking rounds were prolonged exposure and neuro-informed group work. There are a few possible reasons for this. First, prolonged exposure is an older modality that has been eclipsed by EMDR and neurofeedback, especially in combat trauma.
circles. Second, neuro-informed group work is still relatively unknown and although it has some potential, not many practitioners are using it at the moment. Outside of these findings, it also seemed that n-CBT was at least moderately popular with the participants, as some of them practice CBT and like the addition of neuro-informed aspects into a practice they already use. As was mentioned in chapter 2, CBT is not particularly effective with trauma and only benefits about \( \frac{2}{3} \) of traumatized individuals who are exposed to it in the therapeutic setting, but the addition of neuro-informed aspects to what is already a popular and evidence based practice may see n-CBT gaining in popularity based on the outcomes of this study.

**Neurofeedback, EMDR, and Cognitive Dissonance Among Practitioners**

In round 2, a trend emerged wherein the participants themselves endorsed neurofeedback as their method of choice, but when asked what they felt their peers preferred, the majority said that they believed that other neuroscience-informed practitioners were using EMDR. This was a fascinating revelation, and it was important to address, so in round 4 they were asked to try to explain why they felt this schism existed between their preference and what they felt others preferred. Some of the reasons are as follows:

- There are times when one intervention is more effective, appropriate, or useful than the other when it comes to EMDR (specific incidents) and neurofeedback (multitude of incidents, i.e. combat trauma) - Rachel
- Many clinicians are combining neurofeedback and EMDR in their practice and should have a toolbox of potential treatments - Christian & Richard
- More clinicians have heard of EMDR than neurofeedback - Richard
- EMDR is covered by insurance (neurofeedback often isn’t) - Tara
- EMDR is less intimidating than neurofeedback - Tara
- There is a misunderstanding of neurofeedback and how to use it and sometimes EMDR is described in the same way as neurofeedback, making it confusing for clinicians - Kristine
These are all logical and likely reasons for why a clinician might choose neurofeedback as their own personal modality of choice when treating combat trauma, but they assume others are using EMDR (or even other modalities). The participants taking the time to explain this can be a very useful part of this research when considering future directions for work in this realm.

**Newly Gleaned Insight and Potential Changes to Practice**

The participants provided a wide array of responses when asked if participating in this study has changed the way they think about neuroscience-informed interventions in treating combat trauma, or if they are considering any changes to their own practice. One participant highlighted that, with neurofeedback, the “personal” aspect of the counseling relationship is often not as emphasized as it might be with other neuroscience-informed or regular counseling interventions. Therefore, the participant indicated that they will reconsider focusing on the therapeutic relationship with their neurofeedback clients more than they did prior to participation in the study. A couple of participants acknowledged that this study will not change anything about how they currently practice, for a variety of reasons. Betty mentioned that she was not enticed by any of the modalities being used at this time, Richard is preparing to retire and is not considering integrating new practices into his work, and Kristine is comfortable with her current clinical approach. Some of the other participants said they would integrate other types of neuro-informed practice into their existing work, which was usually with neurofeedback. Overall, there was no significant movement in terms of newly gleaned insight, but it seems that participants are open to the idea of learning new modalities and adjusting their practice to make it as effective as possible.
Suggestions for Future Development of Best Practices

When asked about suggestions for future development of best practices, the response was nearly unanimous from the participants - they all agree that the area of using neuroscience-informed therapy techniques with combat trauma treatment is:

1) Under-researched
2) Not widely known
3) In need of significantly more studies to be performed
4) Deserving of an effort to make individuals, particularly those who work in the field, aware of different techniques with which to help veterans who present with combat trauma.

The evidence exists from this round, in particular, that these clinicians want other individuals, both clinicians and potential clients, to know the innovative treatment methods available to them. They suggested doing this by launching news, research, educational, and clinical practice initiatives.

As therapists, it is imperative for us to understand culture and the populations with which we work. One participant emphasized at the end of the study how important it is to “understand the population - military and veterans do not think the same as their civilian counterparts due to the intensity of their experiences” (Betty). This study - meant to understand this population and how to treat them using innovative neuroscience-informed techniques - is entirely predicated on that knowledge, compassion, and understanding.

Overall Consensus

In Round 4, it became clear that consensus occurred in several different ways in this study. For 5 of the 7 participants, neurofeedback was either their first or second choice, with a 6th participant (Richard, who did not fill out the rankings either in Rounds 2 or 4) endorsing
neurofeedback in his narrative answers. With the exception of Betty and Richard, everyone else ranked EMDR as 2nd or 3rd. Unsurprisingly, many of the participants also reported that if they were to combine more than one method, they would do so with neurofeedback and EMDR. In addition, participants also mostly agreed on the less-popular modalities, such as prolonged exposure and neuro-informed group work. They also endorsed the importance of the therapeutic relationship and using it as a springboard with which to increase effectiveness of neuroscience-informed therapy techniques in the treatment of combat trauma, specifically because of how important the relationship is between therapist and client when trauma has occurred. Finally, there was unanimous support for greater clinician education, as well as performing significantly more research on both neuroscience-informed techniques, combat trauma, and the two together.
CHAPTER 5
DISCUSSION

Introduction

The purpose of this four-round Delphi study was to glean, from expert practitioners across the mental health spectrum, an understanding of the essential elements for successful neuroscience-informed treatment of combat-related posttraumatic stress in military veterans. The larger goal of the research, in addition to understanding the opinions of individuals working in these areas, was to begin developing some consensus on the best practices when treating combat trauma with neuroscience-informed treatments. The research question guiding this research was: “what do expert licensed mental health practitioners consider to be best practices for successful neuroscience informed treatment of combat-related posttraumatic stress in military veterans?” This research question was ultimately answered in a variety of ways throughout the multi-round process of data collection.

In addition to a lack of general understanding regarding mental health practitioners’ opinions on neuroscience-informed interventions, there has also been a lack of information regarding how practitioners feel about utilizing neuroscience-informed counseling modalities in the context of trauma treatment with combat veterans. Prior to beginning this research, the bulk of the existing information concentrated on either neuroscience-informed therapy techniques, or combat PTSD, but not both.

The outcomes of this research will have a wide range of uses that reach into a variety of settings and areas of focus including, but not limited to:

- Academia
- Clinical Practice
- Research
Military Mental Health

Reaching further into both of these areas and influencing how they approach implementing, teaching, and researching neuroscience-informed therapy techniques with patients who present with PTSD, will lead to greater service to veterans and active duty service members who present with psychological injuries following one or more deployments. In addition, this will create an increased focus on creating curriculum materials for universities, greater awareness and competency regarding military and neuroscience-informed issues in the field of mental health, and training opportunities for practices. The aforementioned idea that there has not been the establishment of neuroscience-informed counseling best practices with veterans, combined with the assertion of Burgin, Prosek and Atkins (2017) that there is a lack of information on military culture and trauma, makes this topic crucially important and yet also under-researched, which provided an excellent rationale for completing this research.

Key Takeaways

Perhaps the most pronounced takeaways from Chapter 4 (and the study) were:

1) The majority of practitioners in the study chose neurofeedback as their preferred method of working with combat trauma afflicted veterans in a neuroscience-informed capacity.

2) There is a schism between the type of neuroscience-informed method of treatment being used by the experts, and the method they feel other experts in the field are using in their own practice.

3) Practitioners believe that, whichever neuroscience-informed therapy method they use with their combat trauma afflicted clients, it should be in concert with other assessments, psychoeducation, grounding/calming techniques, and perhaps even other neuroscience-informed therapy methods.

4) There is not a “one size fits all” approach to working with neuroscience-informed therapy or combat trauma. Every client should be treated as an individual and the therapist must be flexible and explore all options.
5) Much more research needs to be completed into military culture, the needs of the combat trauma afflicted veteran, and civilians who treat servicemembers require knowledge of the military lifestyle to be able to adequately treat this population.

These takeaways indicate that those who are using neuroscience-informed treatments when working with combat trauma are choosing Neurofeedback as their preferred method over any other type of neuroscience-informed modality, as is reflected in Chapter 4. The other takeaways are just as relevant, however, and warrant attention, time, and dedication from the field of therapy.

Implications

Informing the possible implications of this research are the five aforementioned takeaways from the research. Some of these results were anticipated, and others were surprising and novel, which was exciting and provided hope for the future of this work.

Of the modalities offered to the participants to choose from, and after allowing them to choose a method not provided to them, neurofeedback “won the day” in the words of Rachel, one participant. This implies that many other individuals in neuroscience-informed mental health are likely also using neurofeedback in their practice, or at the very least, they are considering it.

There are several implications for this finding, particularly when addressing neurofeedback’s use with trauma therapy.

Neurofeedback “Wins the Day”

Neurofeedback has been found to have positive impacts on individuals with trauma – however, as research has revealed, “if it is practiced by someone lacking appropriate training there is a potential for harm” (Hammond, et al., 2011 as cited in Tsuji-Lyons & White, 2023, p. 220). However, even with this in mind, most studies show that the risk of damage to clients who receive NFB treatment is minimal. A meta-analysis performed by Rahman, et al. (2023) of
articles addressing the risks of neurofeedback shows that of neurofeedback’s greatest assets as a treatment modality for combat trauma is that it allows therapists to help clients relieve some primary PTS symptoms while relieving them of the stress of having to re-experience some of their traumatic memories (Chiba et al., 2019) it still presents some important challenges for clinicians who wish to practice it. Neurofeedback comes with a steep learning curve and requires hours of training. In addition, it is also very expensive to integrate into a practice, and that cost is usually passed on to the client who wishes to engage in NFB. There are many different companies that provide equipment for neurofeedback, and in a brief examination of their websites it was found that the low end of a beginning NFB system is at least $2,500 with the high end of the price range topping $11,000. A practice that is implementing NFB consistently and with multiple patients will experience an addition to their budget of between $10,000 and $20,000 conservatively, depending on how many sets of equipment they own. Some practices will own several sets of NFB equipment which is then available to all of the qualified practitioners who work in the practice, which makes using the equipment much more manageable for practitioners who would otherwise not be able to afford the equipment on their own. Added to the cost of the equipment is also the cost of potentially training the staff – although, some individuals complete the training at their own expense or benefit from reduced prices offered by their practice.

The true implication of neurofeedback’s effectiveness in the clinical environment is that practitioners still endorse and use it despite the cost of materials and training associated with it, and they are willing to do this because their clients are willing to pay for the effectiveness of the modality. In this study, every individual who strongly endorsed neurofeedback was also certified with the Biofeedback Certification International Alliance, which is a lengthy process of
classes, mentorship, practice, applications, and exams. On the client end, the average range of
treatment cost for neurofeedback is from $800 to $4,000, depending on the type of equipment
that is used, how many sessions are recommended by their practitioner, and whether a QEEG
brain mapping is included in the treatment plan. Neurofeedback is an investment for both the
clinician and the client, and this study is evidence that the investment is valued and
acknowledged by both those who provide the service and those who receive it.

What the Government Recommends vs. What Practitioners Implement

It was first mentioned in chapter 2 that the VA and the DoD have both recommended
Prolonged Exposure as their neuro-informed therapy of choice. The VA published a document
in 2010 exhorting PE’s efficacy and encouraging its use in the treatment of combat trauma, and
numerous other publications, such as Stojek, McSweeney & Rauch (2018) and Reisman (2016)
have also lauded PE as an intervention. For a neuroscience-informed treatment method that has
received such acclaim and has been lauded as a “first line treatment [for] PTSD” (Wolf, Strom,
Kehle & Eftekhari, p. 27, 2012) due to its status as “an empirically supported efficacious
treatment for posttraumatic stress disorder (Stojek, McSweeney & Rauch, 2018, p.1), Prolonged
Exposure (PE) was at the bottom of neuroscience-informed treatment methods the participants in
this study would use in their practice, which was revealed in chapter 4 and was one of the more
surprising findings given how the government has endorsed it. It is unknown why this is the
case, but probable reasons include the fact that there are other methods that can be just as
effective but do not force the combat trauma-afflicted veteran to have to re-experience traumatic
memories.

Differences Between Chosen Modality and Anticipated Modality of Others

Another implication that arose from this study is the difference between the modality
most practitioners selected (neurofeedback) and the neuro-informed modality they believe other practitioners are using. This finding is significant because it implies that there is, at the very least, some potential cognitive dissonance in therapists who are practicing neuro-informed therapy with combat trauma clients. The majority of participants typically felt that, if someone was not using neurofeedback, they would most likely be using EMDR. When asked about this inconsistency, the practitioners did provide reasons they felt this might be the case, including a lack of knowledge, issues with insurance coverage for those pursuing NFB treatment, and others.

If one considers the processes of change and innovation, it would seem that this is likely a normal evolution. EMDR has been in use for roughly 31 years (Navarro et al., 2018). The concept of Neurofeedback has been acknowledged for quite a bit longer, as it was first used in a version of its current iteration in the late 1960s (Othmer, 2015). In 1987, Dr. Francine Shapiro created EMDR through the process of integrating multiple different facets of therapy, and it was quickly found to be useful in trauma treatment (Oren & Solomon, 2012). Mental health, in particular, has a tendency as a field to determine that a certain treatment modality is useful and then depend heavily on that modality. An example of this is CBT, which is an evidence-based therapy but is also one of the more popular modalities and most therapists would likely tell you that they use a version of CBT. The field was likely ripe for the development of a new trauma treatment, and when EMDR was first developed it answered questions for those who were unsatisfied with the then-current techniques. The use of neurofeedback and the belief that others are using EMDR may be evidence of this belief – that those who are using neurofeedback are novel and have begun to use technology others are not aware of or able to use, and are thus still using a model that has been used for quite some time to resolve or alleviate trauma symptoms. Brooks, et al. (2011) wrote about innovation in mental health and opined that implementation
processes in mental health are still a mystery for those who study implementation. The authors also go on to write that mental health innovation, “… includes, from the outset, the implicit notion that more can and should be done at odds with tradition” (Brooks, et al., 2011, p. 7) which is an idea that conflicts with their overall study result that innovation is often impeded at the organizational level in mental health settings, unless the possibility exists that most of the innovation and change in mental health is occurring at the individual practitioner level rather than the organizational level. It is possible, then, given the results of this study and the results of the Brooks study that NFB practitioners think that EMDR practitioners are still using EMDR because there might be organizational barriers. What this does portend, however, is that there is possibly a current conflict between what practitioners would like to do, and what practices will “allow.” Most of the practitioners in this study who endorsed neurofeedback have their own practices, which is a possible result of being interested in neurofeedback but encountering resistance. With this in mind, it is very likely that a change in approach is possible, but it will take movement from individuals who wish to move the pendulum in the direction of NFB to shift the existing and accepted method, if that is what practitioners decide to work toward.

**The Importance of an Integrative Approach**

The experts in the study repeatedly emphasized the importance of using an integrative approach that spans different interventions and professions under the mental health umbrella. This is particularly relevant when considering most of the participants achieved consensus on the idea that neurofeedback or any other neuroscience-informed treatment does not exist in isolation. In fact, even the devoted neurofeedback practitioners agreed that there is a pattern – usually utilizing QEEG (neurofeedback) brain mapping to assess the malfunctioning areas of the brain, followed by a battery of other traditional assessments, which can then guide the type of therapy
the clinician performs. This study integrated professionals from a very diverse set of mental health fields. In fact, most of the major mental health disciplines were included in this study (counseling, marriage and family therapy, and psychology). All of these areas of practice offer different but specifically relevant skills and practice approaches that are beneficial to implementing neuroscience-informed practice with combat veterans. For example, social workers bring a special skill set in case management, psychologists are highly adept at testing and assessment, counselors specialize in ongoing talk therapy, and marriage and family therapists look at the couple and family unit, which is especially beneficial to a family where there is a servicemember or veteran suffering with PTSD. The increasing focus of mental health is on integrative behavioral health, and using the specific skills of each mental health profession in an integrative approach not only creates a higher quality of care, but a more diverse one, as well.

Within the context of neuroscience-informed therapy, ensuring the diversity of neuroscience-informed approaches to treating combat trauma is vital in encouraging the ongoing development and effectiveness of treating clients in this area. The participants agreed that being aware of the client’s needs on an individual level is the most important part of this kind of work. For some clients, neurofeedback will work. For other clients, they will require neurofeedback and talk therapy. Yet other clients will respond better to EMDR. While there was a consensus that neurofeedback is the most popular, there is still room in most of the participants’ schedules and clinical approaches to include other methods of treatment, both mainstream and neuroscience-informed.
The Importance of Advanced Research and Training

While all of the takeaways from this research are significant and have their own implications for the practice of neuro-informed therapy in the treatment of combat trauma, the most significant result indicates that there is a great deal of room in the field for advanced research and studies to be performed in both the knowledge of military combat trauma and neuroscience-informed therapy techniques. From the results of the study, however, it appeared that more individuals feel comfortable with their ability to learn and understand combat trauma without any advanced education or training than they do their ability to differentiate between types of neuroscience-informed therapy without training or further knowledge. There was almost unanimous consensus on the fact that both of these areas require much more research, with consensus also being achieved in the area of training and research particularly pertaining to neuroscience-informed therapy modalities. For example, this picture represents the QEEG brain mapping of an individual with combat trauma:

![QEEG brain mapping](https://www.neurogrove.com/ptsd)

While it was discussed earlier among the implications that it is not easy to do irreparable harm with neurofeedback, it is possible to not do effective treatment if one does not understand the meaning of images such as this and then attempts to perform therapy using brain wave stimulation to the incorrect areas of the brain. Research into the areas of the brain is commonly
affected by trauma, how those areas respond to trauma exposure as well as interventions, and the long-term impacts of trauma on the brain, are all essential if an individual wishes to engage in the administration of neuroscience-informed therapy.

This research and awareness starts at the educational level, in programs for budding therapists. For the most part, students are not being taught either of these facets of practice while in their graduate programs. When speaking from a counseling perspective, the Council on Accreditation of Counseling and Related Educational Programs (CACREP) instituted changes in 2016 that made it mandatory for programs with a CACREP accreditation to include brain-based or physiological education as part of a course of study for Masters level Clinical Mental Health Counseling students, in particular. When CACREP changed these requirements to include a class on biological bases of behavior for counseling programs, universities complied by adding classes or components to classes that met this requirement. There is also room in other courses in the counseling-specific curriculum. For example, “the master’s-level human growth and development course covers many stages of life-span development and is a fitting class to integrate learning about neuroscience (Lorelle & Michel, 2017, p. 107). While integrating brain-based lessons into the Masters curriculum was an important start, there are only a few programs that rigorously attend to the idea of “neuro-informed” work. Two of these schools include The Family Institute at Northwestern University, and Bradley University, both located in Illinois. Other programs tend to include the barest of information on either of these areas, with military and combat trauma counseling being the most ignored because there is no accreditation standard that forces its integration into programs. As will be discussed in the section on limitations, these programs are also highly vulnerable to faculty attrition due to the niche expertise of the faculty members who teach the classes and run the programs.
In terms of programs that address military issues, unpublished exploratory research from 2021 indicates that, in terms of counseling programs, of the 345 CACREP-accredited universities in the United States, only four schools had Masters in Counseling-related programs that also provided students with the opportunity to explore military counseling, in particular. These schools either had specialized Masters programs that provide students with concentrations in military counseling (The College of William & Mary, Walden University), or specific classes tailored to advanced education in military counseling (Liberty University, Regis University). The College of William and Mary in Williamsburg, VA currently offers a program that other universities could consider when creating programs that contain military counseling components. In addition to regular counseling courses, students are also exposed to classes in working with military and veterans counseling, along with having the opportunity to work with military-affiliated individuals and their families (The College of William & Mary, 2023).

Most academic programs have room in their curricula for electives or weekend seminars for students who wish to become further trained in either neuroscience-informed therapy and/or combat trauma treatment. In addition, counseling military populations should become a key component in multicultural counseling classes, as the United States military, for example, is one of the most diverse organizations in the world and includes a diversity of age, race, culture, education, status, and mental health conditions. In addition, the military is considered its own culture, with each branch having its own subculture. To not include the study of counseling military populations in multicultural classes borders on negligent and is not preparing students for the reality of working with these individuals in their careers. The most effective time for a student to begin learning about both combat trauma and neuroscience-informed therapy modalities is in their graduate program, when they are exposed to expertise from various
professors who have considerable career experience and are in a position to provide students with at least cursory knowledge and competency when working in these areas. In the context of a graduate program, they are also being exposed to classes on therapy skills, theories, and other important facets of therapy work and can begin conceptualizing how both neuroscience and military focused work would look in a practice situation.

With this in mind, there are several implications for academia that must be considered. First, greater focus must be placed on encouraging Masters level students and clinicians to focus their efforts in pursuing advanced training in either military or neuroscience-informed counseling. Second, graduate programs in therapy-related fields must prioritize hiring faculty qualified to teach in these areas. Third, students must have the opportunity, while in graduate school, to take classes that can lead to education and even certifications that prepare them for practice in both of these areas. Finally, programs should work diligently to connect to practicum and internship sites that encourage students to delve into their curiosity in both neuroscience-informed therapy and also military populations.

The research performed in this study indicates that individuals do not feel confident in their understanding of either combat trauma or neuroscience-informed therapy, but particularly the latter. More individuals endorsed understanding how to treat combat trauma than they did neuroscience-informed therapy or its various modalities. In addition, several of the participants expressed confusion over the delineation between types of neuroscience-informed therapy techniques. It is not expected that the standard Masters or even PhD program would have the time and content availability to be able to delve deeply into both of these areas, however, as was previously mentioned, it is important to allow students to explore the possibility of specializing in these areas prior to graduation. The realization that professionals in mental health disciplines
feel insecure, especially in neuroscience-informed treatments, indicates that there has to be a more rigorous post-Masters training regimen. This training may come from community organizations or even be provided by the practices themselves.

**Limitations**

This study presented several issues that ultimately became limitations in the research. These limitations included a lack of individuals who self-identify as “experts,” difficulty finding participants who are deeply entrenched in the fledgling field of neuro-informed counseling, and the original criteria for participation excluding many people who would have ordinarily fit either category. In addition, it became clear that there is a clear divide between individuals who work with military personnel/veterans in a “wellness” capacity, and those who work specifically with combat trauma.

**Participant Recruitment**

I approached this study anticipating that it would be easy to find participants who were expert-qualified in either military combat trauma counseling, neuro-informed counseling techniques, or both. The reality, after performing the research, is that there are not many individuals who work in either of these arenas, especially not in an area that crosses over between both areas and brings them together. Thus, it was necessary to adjust my expectations and parameters for who my participants would be. I drew from academia and clinical practice, and there was still a challenge associated with finding individuals who felt they were qualified as an “expert” in either area.

**Sample Size**

Prior to beginning this study, it was unknown how many individuals would meet the expert criteria set in chapter 3. The initial anticipated goal was at least twenty participants,
however multiple attempts at recruitment were made with very slow recruitment progress. It was discovered that this was due in large part to some of the inclusion criteria being too rigid, and the fact that these two areas (neuro-informed therapy techniques and military trauma research/practice) are still experiencing a lack of either interest or skill development. The study was “right-sized” during the development of the sample to reflect this, and to focus more on a sample that adequately represented the opinions of true experts, rather than striving to achieve a certain number of participants. The original goal was 40-50 participants and the realistic goal ended up being around 10, with the actual final number being 7.

**Availability of Experts**

As the name “expert” implies, individuals who have postured themselves as meeting expert criteria in the fields of either neuro-informed therapy or military/combat trauma counseling are busy individuals with a great deal of demands on their time. This study asked them to create a very short treatment plan as part of the first round of data collection, and also asked them to commit to participating in several rounds of data collection, each of which would become progressively shorter. As was previously mentioned in chapter four, it is possible that the attrition in the first two rounds of the study are directly related to the time commitment experts knew participation in the study would take, and thus many of them filled out partial information but did not participate fully in the study. Among the participants were educators, practice owners, and individuals with esteemed practices, and these individuals were likely too busy to be able to participate in a study requiring multiple rounds of participation.
A Shortage of Individuals Focusing on Neuro-Informed Therapy Techniques and Combat Trauma

There is a growing number of individuals focusing on neuro-informed therapy techniques, between active and robust practices of EMDR and NFB in particular. There is also a growing number of individuals focusing on combat trauma and military issues. However, these issues have not been crossed frequently and have existed largely in isolation from one another even though using neuro-informed techniques in the treatment of prolonged trauma exposure situations (like combat trauma) makes sense.

Inclusionary/Exclusionary Criteria

Evidence that the inclusionary and exclusionary criteria may have deterred some individuals from participating is present in the first round of data collection, in which 51 individuals started filling out the recruitment survey and only seven completed it. There is a possibility that respondents initially began filling out the recruitment survey, then approached questions about military/combat-trauma counseling and felt they were unqualified for the study. In all of the recruitment materials, it stated clearly that the study was seeking individuals who had expertise in either combat trauma work or neuroscience-informed therapy work, but it is possible that participants did not see this and instead disqualified themselves early, after answering only a few questions.

Uneven Distribution of Experts

It became clear that the majority of participants in this study focused on Neurofeedback as their primary therapeutic technique, which makes sense given Neurofeedback’s established usefulness in trauma and its status as a brain-based intervention. Another presenting limitation was the “pockets” that formed as a result of who was contacted for the study. For example, if
one individual was located and asked to recruit others they knew who were also doing work with neuro-informed interventions in the treatment of combat trauma, the individuals they contacted usually exhibited similar practice and interest characteristics. The final sample of experts exhibited a bias toward counselors, who made up 4/7 of the participants.

**Attrition Among Faculty with Expertise in an Academic Setting**

The research revealed that there are very few academic programs in mental health related disciplines, leaving a gap that, when filled, could provide education for students in addressing the needs of military-affiliated individuals and their families. Based on self-sourced research from the last couple of years, several programs have ended either classes, certifications, or full-scale military counseling programs due to faculty attrition. Old Dominion University is an example of this, as they offered a program in military family life counseling but ended the program when the faculty member leading the program left for another university. These specialized programs are especially vulnerable to this attrition, and it seems as though the majority of them rely on one or two faculty members to carry the mantle of the program, and when those faculty members leave or become overburdened, the programs are eliminated. This leaves students who wish to learn about working with this population in a frustrating and unfulfilling spot, and also creates a vacuum in the field because there are fewer students to become practitioners in this area.

The same challenge exists with neuroscience-informed counseling and academic programs. The cost of administering and outfitting a clinic with the necessary materials to perform various forms of neuroscience-informed types of therapy (particularly forms of neurofeedback such as Quantitative Electroencephalography or LORETA) would be
prohibitively expensive, especially for academic programs that are not privy to large endowments, public funding, or alumni who regularly contribute to the university.

Conclusion

This study revealed numerous trends and clinical behaviors that can be used to inform the future of how neuroscience-informed treatment techniques can be utilized with combat veterans experiencing posttraumatic stress. Implications include developing more intentionality with providing education in both of these areas in the academic and clinical settings, as well as providing military stakeholders with advanced education on how to identify combat trauma and which neuroscience-informed treatment methods are available and feasible for treatment.

Overall, participants agreed that neurofeedback is the most useful modality for treating combat trauma, but there are other views that are still important. Most practitioners, while favoring a specific modality, also appreciate the importance of combining therapeutic alliance, somatic work, and other neuroscience-informed treatments to provide a healthy, holistic and effective toolbox capable of assisting military veterans with the emotional care they need and deserve following traumatic deployments.
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DATE: November 7, 2023

TO: Shana Pribesh, PhD
FROM: Old Dominion University Education Human Subjects Review Committee


REFERENCE #: 
SUBMISSION TYPE: New Project

ACTION: DETERMINATION OF EXEMPT STATUS
DECISION DATE: June 6, 2023

REVIEW CATEGORY: Exemption category #3

Thank you for your submission of New Project materials for this project. The Old Dominion University Education Human Subjects Review Committee has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations.

We will retain a copy of this correspondence within our records.

If you have any questions, please contact John Baaki at (757) 683-5491 or jbaaki@odu.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Old Dominion University Education Human Subjects Review Committee’s records.
Appendix B: Informed Consent Document

Introduction: My name is Danielle Winters, and I am the primary investigator for this study. I am a Resident in Counseling in Virginia and I am currently pursuing my doctoral degree at Old Dominion University. This project will be supervised by Dr. Shana Pribesh, a faculty member in the Department of Educational Foundations and Leadership. This form is intended to provide you with information to help you decide if you would or would not like to participate in this research.

Description of the Study: I am asking for your participation because you have been identified as an expert in neuroscience-informed counseling and/or counseling with military veterans. The purpose of this study is to build consensus among experts in the development of best practices when treating combat trauma in military veterans, using neuroscience-informed counseling interventions. If you agree to participate, you will be asked to participate in four distinct rounds:

- Round 1: Initial recruitment/demographic information for inclusion
- Round 2: Completion of a survey consisting of:
  - A relevant vignette, after which you will be asked to develop a brief treatment plan using a neuroscience-informed treatment method of your preference.
  - Questions about your method of choice.
  - A ranking of neuroscience-informed counseling techniques based on your perceptions and opinions.
  - An inventory of your practice (license type, duration of practice, client base).
- Round 3: A conversation and exchange of ideas with other participants intended to spark debate on majority and minority methods, which will take place asynchronously using VoiceThread.
• Round 4: A final ranking of neuroscience-informed counseling techniques based on your perceptions and practice and a reflection on newly gleaned insight.

Following each round, the research team will gather and assess responses, and will provide participants with assembled themes to ensure development of proper thematic development.

**Risks and Benefits:** If you agree to participate, you risk loss of time, and potential interruptions to your schedule. As with any research, there is some possibility that you may be subject to risks that have not yet been identified. The benefit to participating in this research will be your contribution to the potential development of best practices when using neuroscience-informed counseling techniques in treatment of combat trauma. It is possible your own preferred method of neuroscience-informed counseling treatment or commitment to military counseling will be enhanced. There is some possibility that you may be subject to other benefits as a result of participating in this research.

**Compensation:** Your participation in this study is completely voluntary. There will be no compensation provided.

**Confidentiality:** Your identity and participation in this research will be kept confidential. You will not be informed of others who are participating. At the completion of the project, you will be given the option of having your name listed as a research participant.

**Withdrawal Privilege:** You may withdrawal from this research at any time for any reason, without penalty.

**Illness or Injury:** Agreeing to participate in this research does not waive any of your legal rights. However, in the event of any harm arising from this study, neither Old Dominion University nor the researchers are able to give you any money, insurance
coverage, free medical care, or any other compensation for such injury. In the event that you suffer injury as a result of participating in this study, you may contact Danielle Winters at (614) 288-7675/dwinters@odu.edu, or Dr. Shana Pribesh at (757) 683-6684/spribesh@odu.edu.

**Consent:** By completing the Informed Consent section of the survey, you are indicating that you would like to participate in the current study, that you understand the contents of this document, and are familiar with the purpose, risks and benefits of this research. You are also indicating that you understand what is being expected of you as a research participant. If you ever have questions about the study, you may contact Danielle Winters at dwinters@odu.edu. If you have questions about your rights or this form, you should contact Dr. John Baaki, the current chair of the Darden College of Education and Professional Studies Human Subjects Review Committee at Old Dominion University, at jbaaki@odu.edu.

**Institutional Review Board Approval:** This exempt study has been approved by the Institutional Review Board at Old Dominion University ([1560668-1]).
Appendix C: Survey Instruments

Round 1a – Initial Recruitment E-Mail

My name is Danielle Winters and I am a doctoral candidate in Counselor Education and Supervision at Old Dominion University in Norfolk, Virginia. I am conducting a study, under the supervision of Dr. Shana Pribesh (spribesh@odu.edu), aimed at building consensus for potential best practices among mental health professionals who utilize neuro-informed therapy methods, especially in the treatment of combat trauma in military veterans, and you are invited to participate in the study. You do not have to be an expert in both neuro-informed counseling and military; expertise in either area is acceptable.

The study has been approved by the Institutional Review Board at Old Dominion University ([1560668-1])

I am seeking self-identified experts in either military and/or neuro-informed counseling who have a conferred Masters degree from an accredited school in any of the following areas:
- Counseling
- Social Work
- Marriage and Family Therapy
- Psychology
- Psychiatric Nurse Practice (or a related area).

Participants in this study should have either three years of experience in military-related counseling (particularly with combat trauma) and/or training in a neuro-informed therapy modality (BCIA, EMDRIA, etc.). Neuro-informed certification is preferred, but training is acceptable.

If you agree to participate, you are invited to participate in a four-round Delphi study.

The four rounds of the Delphi study are anticipated to take no more than four to five hours cumulatively. Round one will include the creation of a short treatment plan based on a vignette, followed by a survey and method ranking list; round two will be an exchange of ideas using VoiceThread asynchronously; and round three will revisit the ranking list from the first round to assess for any change in opinion.

Participation in this study is voluntary. Your identity as a participant will remain confidential during and after the study, unless you consent to your name being used for specific examples to highlight results. Individual participant identifiers will be provided to track opinions from round one to round three. The identifiers will ensure tracking is possible, but also that confidentiality is maintained.

If you have questions or would like to participate, please fill out this short recruitment survey or contact me at dwinters@odu.edu or (614) 288-7675.
Round 1b – Qualtrics Recruitment Survey

Information on Survey: This recruitment survey is being performed for the purposes of completing a dissertation study, which has been approved by the Old Dominion University IRB [1560668-1]. The goal of this study is to identify potential best practices in the treatment of combat-related posttraumatic stress disorder (CR-PTSD) using neuroscience-informed counseling (neurocounseling) techniques. You will be asked about your experience with military personnel and/or neurocounseling methods and for brief demographic information (that will be kept confidential). Your participation in this study is entirely voluntary and poses minimal risk, but may yield important outcomes in this area of study. Thank you for your time and consideration.

Part 1: Questions about Military Counseling Expertise

Q1: Do you have at least three years’ experience performing therapeutic interventions with military veterans who present with CR-PTSD? (Answer Yes/No)

Q2: If YES to Q1: How long have you been working with military veterans?
Options:
- 3-5 years
- 6-10 years
- 11 or more years

Q3: Do you have any advanced certifications in military counseling (for example, STAR Behavioral Health) or have you taken military related counseling continuing education? (Answer Yes/No)

Q4: If YES to Q3: Please detail your military-related certifications or continuing education.

Part 2: Questions about Neurocounseling Expertise

Q5: Do you consider yourself someone who specializes in neurocounseling?

Q6: If YES to Q5: What kind of neurocounseling do you have experience with?
Options:
- Prolonged Exposure Therapy
- Eye Movement Desensitization and Reprocessing (EMDR)
- Neurofeedback
- Neuro-Informed Cognitive Behavioral Therapy (n-CBT)
- Neuro-Informed Group Work
- Another method not listed here

Q7: If participant selected “other” as a method to Q6: Please elaborate on the “other” method(s) of neurocounseling you practice.
**Q8:** If **YES** to Q5: Do you have any training OR special certifications to practice neurocounseling techniques (for example, either classes taken or a certification through EMDRIA, etc…)?

**Q9:** If **YES** to Q8: Please note whether you have training or a full certification (Answer “training” or “certification”)

**Q10:** If **Training** to Q9: Through which organization do you have neurocounseling-related training?

**Q11:** If **Certification** to Q9: Through which organization do you have a neurocounseling certification?

**Part 3: Education/Demographic Questions**

**Q12:** Do you have a Masters degree in a therapy-related field? (Answer yes/no)

**Q13:** If **YES** to Q12: Please indicate your field of study:

*Options:*
- Counseling
- Social Work
- Psychiatric Mental Health Nurse Practice
- Marriage and Family Counseling
- Psychology
- Other

**Q14:** If “**other**” to Q13: If you answered “other” please indicate your field of study.

**Q15:** Do you currently have a license to practice in your field? (Answer yes/no)

**Q16:** Please indicate your current licensure.

*Options:*
- LPC, LPCC, LCPC, LCMHC (or related professional counseling licensure)
- MSW, LISW (or related social work licensure)
- MFT, LMFT, IMFT (or related marriage and family counseling licensure)
- PMHNP (or related advanced practice psychiatric nursing license)
- Licensed Psychologist – PhD or PsyD (or related psychology licensure)

**Q17:** Contact Information (will be kept confidential)

**Q18:** What is your name? (request to fill in first and last names)

**Q19:** What is your preferred method of contact?

*Options:*
- Phone number
- E-Mail address
Round 2 – Vignette, associated questions, and initial ranking of preferred neuroscience-informed therapy techniques

A combat veteran who served multiple tours of duty during Operation Iraqi Freedom and Operation Enduring Freedom presents for therapy with continued complaints of common symptoms associated with Post Traumatic Stress Disorder. These include, but are not limited to: hypervigilance, nightmares, irritability, depression, anxiety, and changes in pre-deployment personality and behavior. The client has been to therapy before and was primarily treated with Cognitive Behavioral Therapy (CBT) but reports little to no improvement in symptoms following this course of therapy. The client has come to you, curious about neuroscience-informed therapy, and has asked you to determine if you feel this method would be a good fit for them, and which type of neuroscience-informed counseling method you would suggest.

Part 1:

1) Please create a treatment plan using the specific method of neuroscience-informed counseling you feel would be most beneficial.
2) Why did you select this particular method?
3) Have you used this method before?
4) What are your impressions of the success rates of your clients who have been treated with this method:
   a. During therapy
   b. After therapy
5) If you were to utilize another neuroscience-informed therapy method other than the one you selected, which would it be?
6) What do you perceive to be the generally agreed upon or popular methods of neuroscience-informed treatment being utilized by your peers?

Part 2:

Please rank the following neuroscience-informed counseling techniques according to your perception of their efficacy, with 1 being the most effective, and 6 being the least effective:

- Neurofeedback
- Eye Movement Desensitization and Reprocessing (EMDR)
- Prolonged Exposure Therapy (PE)
- Neuro-Informed Cognitive Behavior Therapy (n-CBT)
- Neuro-Informed Group Therapy (NIGT)
- Another method not mentioned here

Part 3:

Please indicate your license type (LPC, LPCC, LCSW, LMFT, etc…)

How long have you been a therapist?

What type of clientele do you typically work with?
Round 3: Exchange of ideas

In phase 2 of the Delphi process, participants will be asked to exchange ideas. They will be presented with topics to spark debate via VoiceThread (https://voicethread.com), which allows for asynchronous interactions.

Process will follow this model:

Disclose majority and minority opinions to participants – ask for their opinions

“What do you think of the majority opinion?”

“What do you think of the minority opinion?”

Why do you agree or disagree with the majority opinion?

What types of cases would necessitate you to use the minority opinion?

After hearing the results from your expert colleagues, how have your opinions changed?
Round 4: Reflection of Process

Part 1:
Please rank the following neuroscience-informed counseling techniques according to your perception of their efficacy, with 1 being the most effective, and 6 being the least effective:

- Neurofeedback
- Eye Movement Desensitization and Reprocessing (EMDR)
- Prolonged Exposure Therapy (PE)
- Neuro-Informed Cognitive Behavior Therapy (n-CBT)
- Neuro-Informed Group Therapy (NIGW)
- Another method not mentioned here

Part 2:
Q1: In Round 2, the majority of participants said they would personally use Neurofeedback to treat combat trauma, but they also feel others are primarily using EMDR. What are your thoughts on this?

Q2: How do you feel this process and your newly gleaned insight will impact your practice?

Q3: What suggestions would you make about developing best practices in neuroscience-informed combat trauma treatment within your profession?
DANIELLE L. WINTERS, M.S.Ed, MPA

EDUCATION

Old Dominion University, Norfolk, VA
Doctor of Philosophy in Education - Counselor Education and Supervision
May 2024

University of Dayton, Dayton, OH
Master of Science in Education – Clinical Mental Health Counseling
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Bowling Green State University, Bowling Green, OH
Master of Public Administration
May 2008

Bowling Green State University, Bowling Green, OH
Bachelor of Arts – Political Science
May 2006

TEACHING EXPERIENCE

At Regent University:
• COUN 521 – Counseling Skills and Techniques
• COUN 538 – Psychopathology and Diagnosis
• COUN 540 – Human Growth and Development
• COUN 562 – Crisis and Trauma Counseling (Course Content Expert)

At Northwestern University:
• COUN 414 – Human Growth and Lifespan Development
• COUN 422 – Family, Marital and Couples Counseling
• COUN 423 – Assessments in Counseling (Child & Adolescent)
• COUN 426 – Assessment in Counseling (Adult)
• COUN 482 – Supervised Internship in Counseling
• COUN 486 – Supervised Practicum in Counseling

PUBLICATIONS


