What Predicts the Acceptability of Exposure Therapy for Posttraumatic Stress Disorder in the General Public?

What Predicts the Acceptability of Exposure Therapy for Posttraumatic Stress Disorder in the General Public?

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Abstract

Introduction: Post Traumatic Stress Disorder (PTSD) can develop after a person experiences severe trauma which can occur in many ways. Randomized controlled trials of exposure therapy (ET) have repeatedly documented this therapy as the most effective treatment for PTSD. Yet despite this evidence, ET is sought less by PTSD patients and used less often by mental health care professionals to treat PTSD compared to other types of less effective treatments. Method: Two hundred and three U.S. adults in the general public between the ages of 19-73 years completed a confidential, online survey via Amazon MTurk. Participants rated the appropriateness of three different types of PTSD treatments including alternative therapies, medication and ET for both men and women in different trauma examples. Half of the survey participants were randomly provided with information on the effectiveness of ET in the treatment of PTSD compared to the other two less effective treatment types. Correlation analysis assessed the relationship between ET's appropriateness rating by trauma type, patient gender, and knowledge of ET's clinical effectiveness compared to the other two forms of treatment. Results: Knowledge of ET's clinical effectiveness and gender of the trauma victim did not have significant effects on ET's appropriateness rating for treating PTSD among participant groups. Conclusions: Results of this study suggest that the perception of ET as an appropriate treatment for PTSD is negative, especially for certain forms of trauma such as rape. These findings may provide some insight into why ET is used less often than it should be to treat PTSD most effectively.

Dedication

For James

Acknowledgments

First, I would like to sincerely thank my supervisor, Professor Richard J. McNally, for taking the time to supervise my thesis project and for always providing me with expert advice and knowledge on the subject matter, study design and analyses.

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Chapter I.

Introduction

Post-Traumatic Stress Disorder (PTSD) affects 5%-10% of the general population in the U.S. The highest rates of adults with PTSD in the U.S. (ranging from one-third to more than one-half of those exposed to trauma) are found among survivors of rape, military combat, captivity, and ethnically or politically motivated internment and genocide (American Psychiatric Association, 2013). Estimates are as high as 20%-30% in populations consistently exposed to trauma and severe stress such as U. S. combat soldiers (APA, 2014). Individuals with PTSD are 80% more likely than those without PTSD to have symptoms that meet diagnostic criteria for at least one other mental disorder such as depressive, bipolar, anxiety, or substance use disorders (American Psychiatric Association, DSM-V, 2013) and are at a higher risk of suicide and substance abuse, particularly within the active-duty military and combat veteran population (Keane, 2015). Victims of violent crime, residents of war/combat zones, and combat soldiers are among the populations at high-risk for trauma exposure and thus the development of PTSD. There are also differences among males and females in terms of the types of trauma they may experience that lead to the development of PTSD and how the symptoms of the disorder present differently in the sex populations (Wade, et al., 2016).

People with PTSD have symptoms that often include intrusive memories and nightmares about the trauma, startle reactions, irritability, insomnia, and difficulty experiencing positive emotions among others. And, various types of everyday stimuli

may serve as triggers for these symptoms. Sometimes, PTSD triggers can expand, encompassing additional stimuli and making PTSD symptoms more severe and pervasive over time. Due to the severity of this disorder's symptoms, and its prevalence in the U.S. population within different subpopulation groups, treating PTSD patients with the most effective treatment possible is crucial.

PTSD was once conceptualized as a "transient response that would abate shortly after the trauma exposure" (Foa, Gillihan, Bryant, 2013, pp. 65). However, after decades of research, PTSD is now understood to be a monumental public health challenge because of its negative effects on mental, emotional and physical health as well as on social relationships. Often chronic, PTSD is far from a transient response that will subside over time. PTSD affects active military personnel, veterans, and civilians who have been directly exposed to threatened or actual harm to the self or others and who experienced intense fear, helplessness, or horror from the traumatic experience(s). War, disaster, rape, accidents and other traumatic events are some examples of the kinds of traumatic experiences that may lead one to develop PTSD (Foa, Gillihan, Bryant, 2013).

Research into treatments for PTSD disorder in the U.S., especially among the veteran population, is incredibly timely and very well supported by the public. The establishment of Home Base Veteran and Family Care in 2007 at Massachusetts General Hospital in Boston, Massachusetts is a testament to the priority of treating PTSD, especially in the combat veteran population. Dr. Terrence Keane, an expert in the use of exposure therapy and a pioneer in the field of treating combat-veterans with PTSD has been using exposure therapy methods for decades, including VRE exposure therapy. Dr.

Keane helped establish and serves as director to the National Center for PTSD for the U.S. Department of Veterans Affairs. Among U.S. military personnel and combat veterans who have been deployed to recent wars in Afghanistan and Iraq, co-occurrence of PTSD and mild traumatic brain injury (TBI) is 48% (American Psychiatric Association, DSM-V, 2013). The neural circuitry underlying the fear response, exposure and fear extinction has been empirically studied and there is sufficient clinical evidence to support the premise that fear extinction therapy is the most effective, especially long term, treatment for severe anxiety disorders and PTSD (Morrison, Ressler, 2014; Maren, Phan, Liberzon, 2013).

Exposure Therapy

Among treatments for PTSD, the most successful is clinically proven to be exposure therapy (ET), a form of cognitive behavior therapy (CBT). In clinical studies, the use of ET to treat PTSD has proven to be very effective and is often referred to as the "gold star" treatment method for anxiety disorders and PTSD in particular (Abramowitz, 2013; Rauch, Eftekhari, & Ruzek, 2012). Yet, despite the existence of this highly effective treatment method, the majority of individuals with PTSD receive treatments of another kind with unknown or lesser known efficacy (Foa, Gillihan, & Bryant, 2013). Other PTSD treatments include pharmacotherapies, other forms of psychotherapy and alternative therapies which are more commonly used by mental health care practitioners to treat patients with PTSD than ET (Richard et al., 2006).

ET used in the treatment of anxiety disorders and PTSD approaches treatment by characterizing the maladaptive response(s) or chain of behaviors triggered by the anxiety

inducing stimulus. These maladaptive avoidance and/or escape responses are reinforced by their supposed effects on the patient. The feared stimuli can be presented in reality (in vivo), imaginably, virtually (in virtuo) or as part of a writing exercise. Repeated systematic exposure to the stimuli rather than incidental exposure is the key component to exposure therapy treatment (Richard, et.al, 2006). ET is also based on our memory mechanisms and processes, specifically, how we process and remember traumatic experiences which are unique to different types of memory formations (McNally, 2013).

ET involves the deliberate and planned exposure(s) to a feared stimulus or representation of the stimulus until the intensity of their distress declines to a level that is more acceptable or at least not debilitating in some cases. ET treatment methods are essentially based on the fear-extinction conditioning and treatment model which has been extensively studied in the neurobiology field as well as psychology (Morris and Ressler, 2014; Abramowitz, 2013; Maren, 2013; Delgado, 2008; Richard et al., 2006; Labar et al., 1998). ET treatment gradually increases in intensity over prolonged sessions to try and reduce and ultimately extinguish the trauma stressor(s) that the patient fears (Rabinak et al, 2014).

Exposure Therapy and Veterans

A comprehensive study conducted by the National Academy of Sciences, Institute of Medicine, Committee on Treatment of Posttraumatic Stress Disorder commissioned by the U.S. Department of Veterans Affairs published in 2008 assessed the scientific evidence on treatment modalities for PTSD. The study examined 37 random controlled trials (RCT) on pharmacotherapies and 52 studies on psychotherapies used to treat PTSD.

The study excluded nonrandomized and uncontrolled studies in order to preserve the reliability of the study's findings with respect to the most efficacious treatment(s) for PTSD among the RCT's examined. This study provides many important findings pertaining to the effectiveness of treatment methods for PTSD. One of the most important findings to be that ET is indeed an efficacious if not the most efficacious PTSD treatment method among the 87 RCT's they examined (Institute of Medicine, National Academies of Medicine, 2008).

Evidence-based psychotherapies (EBP) for PTSD, such as ET, are effective at reducing symptoms and improving quality of life for those with the disorder. However, despite their effectiveness, few veterans or civilians actually receive evidence-based psychotherapy treatments. A study in 2015 interviewed veteran participants who completed at least eight sessions of prolonged exposure or cognitive processing therapy. Veteran participants reported learning about EBP from therapists, psychiatrists, and other veterans. Ambivalence and delaying EBP initiation were common. Barriers included fears the EBP would increase symptoms, beliefs that avoidance was helpful, disbelief of the therapy rationale, particularly for prolonged ET and less commonly, lack of knowledge about EBP. The results highlighted the importance of "word of mouth" about EBP among the veteran community and identifying provider behaviors that may promote EBP initiation (Hundt, et al., 2015). If the effects of "word of mouth" have proven clinically significant in this study among veterans, it is likely that "word of mouth" about ET to treat PTSD in the general public also exists and could be negatively impacting treatment participation if the shared beliefs are negative.

PTSD does not just negatively affect the person with the disorder. One recent study found that secondary traumatization among former U.S. prisoners of war (POW) adult children occurred. The adult children of the ex-POWs had a higher number of secondary trauma symptoms and lower levels of emotional cutoff differentiation (managing unresolved emotional issues with family members by reducing or severing contact with them) compared with control group's children (Zerach, 2015). It is likely that other groups of patients with PTSD who experienced different traumas such as sexual assault or terror acts may have symptoms that in turn disturb their children. There is still much to be learned about this debilitating condition, especially how best to treat it for long term recovery and its effects on social and familial dynamics. Therefore, there exists an even more urgent need to treating those individuals with PTSD as efficiently and effectively as possible using the best form of treatment, which is ET.

Exposure Therapy and Mental Health Care Professionals

A reluctance to use ET for patients with PTSD appears to exist among mental health care providers as well. Research has found that mental health practitioners may be reluctant to use ET in the treatment of PTSD, particularly with patients who experienced more severe traumas. This tendency may be due to psychologists' possible fears about upsetting vulnerable patients, worsening their symptoms, patient discontinuation of treatment or having lawsuits brought against them (Morrison, Ressler, 2014). This is also referred to as an iatrogenic effect. Although the situation has improved in the last 15-20 years, there continues to be insufficient numbers of behavioral scientists who are experts

in the underpinnings of ET or at least sufficiently comfortable using ET in the treatment of their patients with PTSD (Sloan, et al., 2015).

One study found that the majority of mental health care providers were favorable toward EBP for treating PTSD, with 49% selecting cognitive processing therapy as the first-line intervention, 25% selecting prolonged exposure (PE), and 8% selecting eye movement desensitization reprocessing therapy (EMDR). While these numbers were higher in 2016 than they were a decade or more ago, only 25% of practitioners in the study used ET (prolonged exposure) as a first line treatment method for PTSD. The study found that provider characteristics, but not patient characteristics, influenced treatment selection. Provider characteristics of younger age, a cognitive-behavioral therapy orientation, fewer years of overall experience and also more time spent treating patients with PEBTSD were positively related to the practitioner's EBP selection. The study also found that provider training in specific EBPs such as cognitive processing therapy and prolonged ET increased the likelihood of recommending these treatments as first-line interventions. Therefore, continued dissemination efforts to increase provider familiarity and comfort with these treatment protocols will likely improve the rate of EBP use, particularly ET, across practice settings (Hundt, et al., 2016).

Exposure Therapy Dropout Rates

Another issue with ET in the treatment of PTSD is the patient drop-out rate. Could this be a potential reason for ET being viewed as inappropriate in the treatment of PTSD? Research investigating who drops out of PTSD treatment has been conducted, however the question of when dropout occurs has received far less attention despite its

importance to better understanding treatment success. A recent study found that few veterans are initiating prolonged exposure and cognitive processing therapy and that dropout levels are high among those who do start these therapies. This study also found that age was a significant predictor of treatment dropout as younger veterans were more likely to drop-out of treatment than older veterans (Kele-Forbes et al., 2016).

Another recent study examined when individuals drop out of cognitive behavioral therapy, including ET for PTSD. In the study, women participants were randomized to one of several PTSD treatment conditions including: prolonged exposure, cognitive processing therapy, cognitive only therapy, and written accounts. The study found that 39% of participants dropped out of treatment, and those who dropped out tended to do so by mid-treatment. Notably, the National Academy of Sciences study commissioned by the Department of Veterans Affairs found high dropout rates, particularly in the domain of psychotherapies, among their study of 89 PTSD treatment studies (National Academy of Sciences. 2008). Therefore, perhaps the issue of high drop-out rates is not unique to ET itself, but rather to PTSD treatment of any kind in general.

A pattern of PTSD treatment dropout was consistent across cognitive behavioral conditions (Gutner, et al., 2016). Also, another study found that women with PTSD benefit more from psychotherapy than men, particularly when ET is a central part of the treatment (Békés, et al., 2016). Research suggests that this gender difference may be attributed to tendencies men with PTSD often have to avoid thinking about or discussing the trauma and its triggers compared to women with PTSD who are more inclined to discuss the trauma and its triggers. Discussion of the trauma experience and the triggers

associated with it during ET treatment minimizes the recurrence of intense, persistent, and intrusive thoughts that PTSD patients experience (Wade, et al., 2016). So, an apprehension to do so by male PTSD patients is challenging, particularly with respect to minimizing PTSD patient dropout rates.

Virtual Reality Exposure Therapy

The use of VRE exposure therapy in the treatment of PTSD is significantly more effective than fear-extinction based talk psychotherapy--such as narrative ET alone--and it may be most effective in prolonged ET for patient groups potentially at risk for treatment drop-out or who may be more vulnerable due to the type of trauma they experienced (Morkved. et al., 2014: McLay, et al., 2001). Fear-extinction based ET, specifically VRE ET, immerses a patient into an environment with triggers that are produced, manipulated and controlled in a clinical setting (Huff, et al., 2010; Botella, et al., 2015). Through repeated, prolonged planned and controlled exposure to anxiety triggering stimuli in exposure therapy, and VRE therapy specifically, patients with PTSD should experience a reduction in their experience of traumatic triggers, panic and anxiety (Richard, et al., 2006).

VRE ET has proved to be significantly effective in the treatment of patients with anxiety disorders and PTSD, particularly among combat veteran populations with PTSD (Maples-Keller, et al., 2017). This is likely due to the fact that VRE ET permits for the re-experiencing of certain stimuli often associated with these patients' trauma triggers (sounds of explosions, gun fire, smells and visuals), which wouldn't otherwise be possible to ethically re-create during treatment. One study on fear reactivation prior to ET

found that phobia patients benefitted significantly from fear activation prior to VRE therapy (Shiban et al., 2015).

Another study on the use of VRE therapy in the treatment of agoraphobia found that VRE therapy used alone or absent of a combined treatment found that VRE therapy alone is significantly effective in treating the agoraphobia. These studies' findings with respect to treating phobia disorders lends support to the use of VRE therapy in the treatment of PTSD as well. Yet, despite the innovative advancements in ET methods, such as VRE, the U.S. general public still appears to have negative connotations about the use of ET in its use to treat PTSD. This is troubling since evidence- based psychotherapies and their effectiveness such as ET in the treatment of PTSD is consistently well documented in clinical research findings (Richard et al, 2006).

Study Aims and Hypotheses

This study aims to examine what the predictors of acceptability are for the use of exposure therapy in the treatment of PTSD according to adults in the U.S. general public for trauma type, gender of patient, and knowledge of ET's effectiveness at treating PTSD. My first hypothesis is that there is a relationship between ET's appropriateness rating and the type of trauma experienced in given trauma examples. My second hypothesis is that gender of the PTSD patient being treated may relate to ET's appropriateness rating for given trauma examples. And, my third hypothesis is that knowledge of ET's clinical effectiveness compared to two other less effective treatments may impact ET's appropriateness ratings for given trauma examples.

Terminology

Anxiety Disorders: includes separation anxiety disorder, selective mutism, specific phobia, social anxiety disorder (social phobia), panic disorder, agoraphobia, generalized anxiety disorder, and disorder specific scales. They are often co-morbid with trauma- and stressor-related disorders which includes reactive attachment disorder, disinhibited social engagement disorder, posttraumatic stress disorder (PTSD), acute stress disorder, and adjustment disorders (American Psychiatric Association, DSM-V, 2013.

Combat Veterans/Veterans: are members of all branches of the U.S. armed services military who experienced/completed enlistments, tours of duties, or military combat missions (United States Department of Veterans Affairs, 2017).

Post-Traumatic Stress Disorder (PTSD): is the development of characteristic symptoms following exposure to one or more traumatic events. Emotional reactions to the traumatic event (e.g., fear, helplessness, anxiety, horror) are risks. Protective and prognostic factors for PTSD are divided into "pretraumatic, peritraumatic, and posttraumatic factors" (American Psychiatric Association, DSM-V, 2013).

Exposure therapy: is a type of cognitive behavioral therapy used to treat patients with anxiety, fear and trauma-stressor related disorders (Anxiety and Depression Association of America website, 2016, https://www.adaa.org/finding-help/treatment/therapy). The feared stimuli can be presented in reality (in vivo), imaginably, virtually (in virtuo) or as part of a writing exercise. Repeated systematic

exposure to the stimuli rather than incidental exposure is the key component to exposure therapy treatment (Richard, et.al, 2006).

Iatrogenesis: Negative psychological symptoms or condition induced inadvertently by a physician or medical treatment (Barlow, 2010).

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Chapter II.

Research Method

The target population in this study was adults in the U.S. general public. To sample such a large population practically, a confidential, self-reported online survey was created in Qualtrics and administered to participants via Amazon's Mechanical Turk (MTurk).

Participants

To qualify for completion of this study, participants had to be English speaking adults residing in the U.S. Participant criteria was integrated into the study's requirements in an effort to control for administering the survey to only this target population. Two hundred and seven participants completed the study. However, four surveys were excluded from data analyses due to non-completion of the survey per the instructions.

Demographics

Participants provided information about their gender, race/ethnicity, and age. The final sample consisted of 203 English speaking adults in the U.S. general public aged 19-73 years, consisting of 60.10% males (n= 122), and 39.90% females (n= 81). Participants reported their race/ethnicity as 10.84% African American (n= 22), 5.42% Asian/Southeast Asian (n=11), 71.43% Caucasian (n=145), 6.90% Hispanic (n=14), and 5.42% Multi-racial/Other (n=11).

Design

I conducted a 2 (Information: Informed, Not Informed) X 2 (Gender of Victim: Male, Female) X 3 (PTSD Treatment Type: Alternative, Medication, Exposure) mixed analyses of variance (ANOVA) with repeated measures on the second and third factors. I repeated this analysis for each of the five trauma types (Car Accident, Bombing, Shooting, Rape, Combat Veteran). I also conducted a 2 (Information: Informed, Not Informed) x 3 (Treatment Type: Alternative, Medication, ET) repeated measures ANOVA to test within subject effects to analyze response data from survey question fourteen only where participants rated their likeliness to participate in ET treatment should they experience a trauma and develop PTSD. The dependent variable was *appropriateness rating of exposure therapy in treating* PTSD. The independent variables were *gender of the trauma victim* in the trauma examples, whether or not the participant was *informed or not informed* about the effectiveness of the three PTSD treatments, and *treatment type* consisting of the three different PTSD treatments. This study was approved by the Harvard Committee on the Use of Human Subjects.

Measures

All measures were assessed using participant responses to the online survey via Qualtrics, with questions randomized for counterbalance, posted on Amazon MTurk. Data analysis was conducted using SPSS software.

Materials

Two forms of a confidential, online survey created in Qualtrics was administered to Amazon MTurk survey participants in this study (See Appendix A). The administration of the surveys, and survey questions was randomly done for counterbalance. The two forms of the survey consisted of a total of fifteen questions and were identical in every way but for either the inclusion or omission of a statement made about the effectiveness of exposure therapy in the treatment of PTSD compared to other PTSD treatments, including those described in the informative statements section of the survey.

The survey begins with participants consenting to the study, then being provided with general informative statements about what PTSD is and descriptions of three common forms of PTSD treatments including alternative therapies, medication, and ET. One form of the survey includes an additional statement about the efficacy of exposure therapy in the treatment of PTSD
compared to other forms of PTSD treatment, while the other form of the survey omits this statement. Qualtrics randomly administered one of the two survey forms to participants in equal numbers with 101 participants not receiving the additional statement and 102 receiving the statement.

The first three survey questions pertained to the participants demographical information, including sex (male, female, or other), race/ethnicity, and age in years. The

next ten randomly administered questions consisted of vignettes illustrating different trauma examples using trauma victims with PTSD, counterbalanced with five questions for each victim being a man and a woman. Participants were instructed to rate the appropriateness of the three different PTSD treatments (alternative therapies, medication, and ET) on a scale from 0- 100 with 0 being not at all appropriate and 100 being very appropriate.

The last two survey questions pertained directly to the participant. The first of the two questions asked participants to rate how likely they would be to participate in each of the three treatment types if they suffered a trauma and developed PTSD using a scale from 0- 100 with 0 being not at all appropriate and 100 being very appropriate. The second of the two questions, and last question of the survey, asked participants whether the type of trauma they experienced could influence their likeliness to undergo exposure therapy with the following response options: Yes, no, possibly, and unsure.

Procedure

As the only researcher on this study, I implemented and administered all measures personally by designing and posting the Qualtrics online survey, accessed by participants via Amazon MTurk. All participant responses were recorded in Qualtrics and I downloaded them directly from Qualtrics, and analyzed them using the statistical analysis software, SPSS.

Statistical Analysis

To test my hypotheses, I conducted 2 (Information: Informed, Not Informed) X 2 (Gender of Victim: Male, Female) X 3 (PTSD Treatment Type: Alternative, Medication, Exposure) mixed analyses of variance (ANOVA) with repeated measures on the second and third factors. I repeated this analysis for each of the five trauma types (Car Accident, Bombing, Shooting, Rape, Combat Veteran). I also conducted a 2 (Information: Informed, Not Informed) x 3 (Treatment Type: Alternative, Medication, ET) repeated measures ANOVA to test within subject effects to analyze response data from survey question fourteen only where participants rated their likeliness to participate in ET treatment should they experience a trauma and develop PTSD. All analyses were performed using SPSS.

Chapter III

Results

The final sample consisted of 203 English-speaking adults in the U.S. general public aged 19-73 years consisting of 122 males, and 81 females. Participants reported their race/ethnicity as being primarily Caucasian/White, and the median participant age was 35.22 years (see Table 1).

Table 1. Participant Characteristics

Variable		**Study Sample**
Informed on PTSD Treatment Effectiveness	Yes	102 (50.25%)
	No	101 (49.75%)
Age: Mean (SD)		35.22 (10.71)
Gender: Total (%)	Female	81 (39.90%)
	Male	122 (60.01%)
Race/Ethnicity: Total (%)	African American	22 (10.84%)
	Asian	11 (5.42%)
	Caucasian	145 (71.43)
	Hispanic	14 (6.90%)
	Multi-racial/Other	11 (5.42%)

The assumption of equal variance was met, and using the Greenhouse-Geyser correction, the overall results showed that the acceptability ratings of the PTSD treatment types did not differ significantly between the two participant groups (those who received the additional information on the effectiveness of the PTSD treatments and those who did not) for the trauma examples, $F=0.29, p= 0.59$. Also, there was no significant effect on

treatment acceptability ratings based on the victim's gender (male, female) in the trauma examples, *F= 1.89, p= 0.17* (see Table 2).

Table 2. Means and Standard Deviations of Treatment Ratings by Group and Victim Gender

	Informed Group		**Not Informed Group**	
Treatment Type	**Female Victim**	**Male Victim**	**Female Victim**	**Male Victim**
Alternative Therapies	65.40 (26.75)	67.56 (26.76)	67.94 (24.75)	71.96 (23.51)
Medication	65.10 (24.77)	65.23 (24.57)	68.26 (23.61)	67.27 (24.43)
Exposure Therapy	60.37 (26.16)	60.30 (27.29)	58.9248 (27.76)	56.28 (26.59)

Note: Participants rated appropriateness of therapies using a sliding scale from 0 (not at all appropriate) – 100 (very appropriate).

The variance of means between the two participants groups for treatment type appropriateness ratings by gender of the trauma victim are very close. This also indicates that the gender of the trauma patient does not significantly affect how appropriate participants from either group rated the appropriateness of the treatment types, with ET being the lowest rated treatment type for both genders, across both participant groups (see Figures 1 and 2).

There was a significant effect on the acceptability ratings of treatment types based on the different trauma types in the examples for both participant groups according to the gender of the victim, F=7.78, p=0.001. ET was rated as the least appropriate treatment type for the trauma of rape, being least appropriate for female victims in particular.

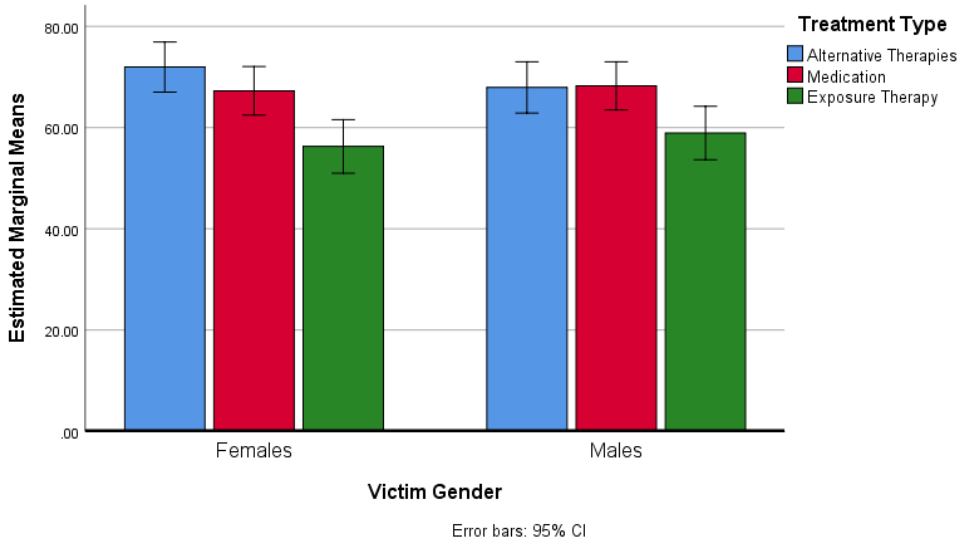


Figure 1. Treatment Type Appropriateness Ratings for Uninformed Group by Victim Gender

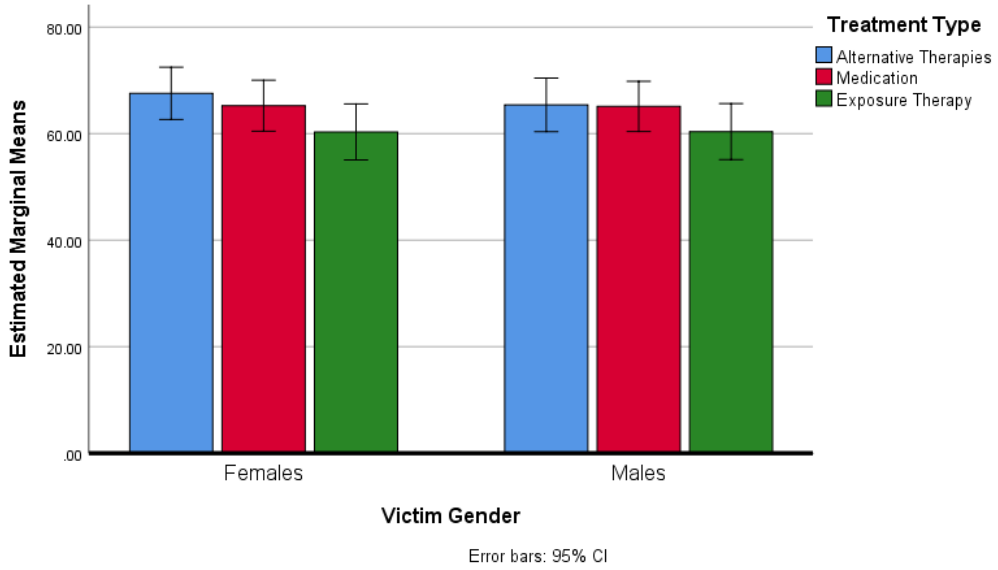


Figure 2. Treatment Type Appropriateness Ratings for Informed Group by Victim Gender

ET was rated as a more appropriate treatment type for the trauma of bombings, followed closely by car accidents, regardless of the victim's gender (see Table 3).

Table 3. Means and Standard Deviations of Treatment Ratings for Trauma Type by Group and Victim Gender

	Informed Group	Not Informed Group
Female Victim Trauma Types		
Car Accident	64.87 (16.09)	65.78 (16.92)
Bombing	65.66 (16.27)	67.56 (17.14)
Shooting	64.27 (16.43)	64.19 (16.92)
Rape	62.15 (16.12)	60.98 (16.70)
Combat Veteran	64.88 (16.46)	67.33 (15.58)
Male Victim Trauma Types		
Car Accident	64.56 (15.00)	67.25 (16.53)
Bombing	66.39 (16.39)	65.74 (17.13)
Shooting	62.96 (16.42)	65.15 (16.67)
Rape	60.01 (16.43)	61.24 (17.65)
Combat Veteran	64.20 (15.10)	65.83 (17.42)

Note: Participants rated appropriateness of therapies using a sliding scale from 0 (not at all appropriate) – 100 (very appropriate).

The variance of means between the two participants groups for ET treatment appropriateness ratings by gender of the trauma victim and trauma type also indicates that participants view ET as the least appropriate treatment for the trauma type of rape and more appropriate for bombings, followed closely by car accidents, regardless of the victim's gender (see Figure 3 and Figure 4).

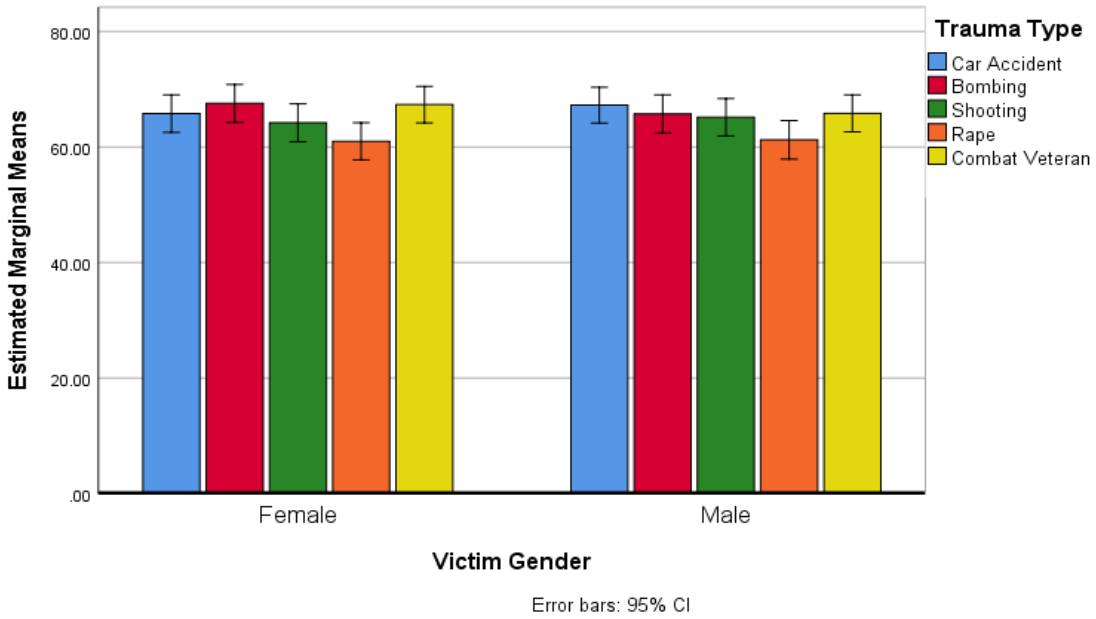


Figure 3. Treatment Appropriateness Ratings for Uniformed Participant Group by Trauma Type and Victim Gender

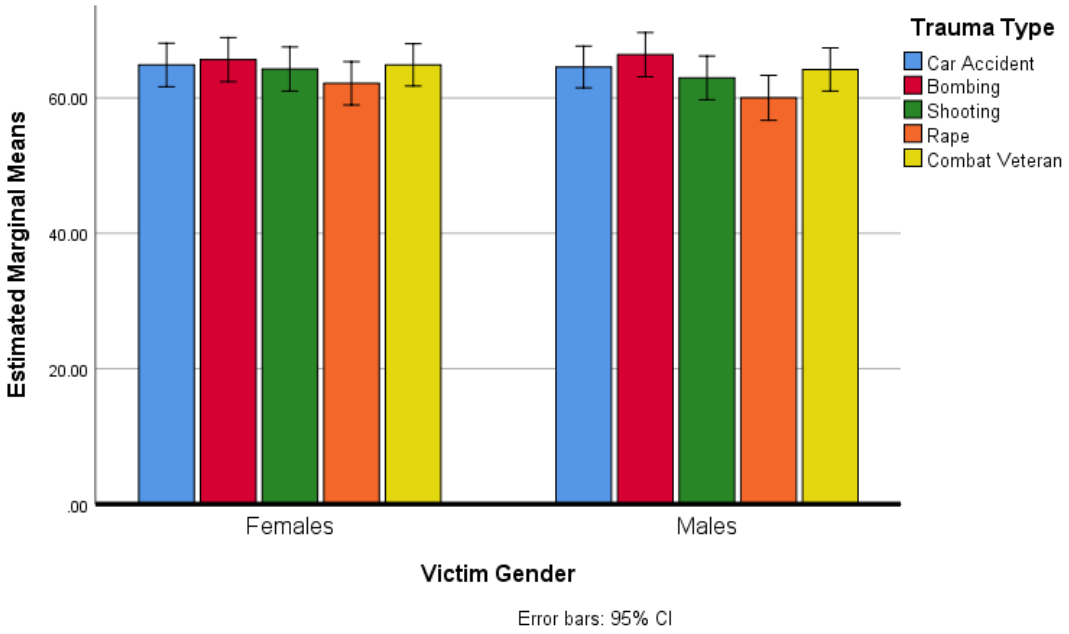


Figure 4. Treatment Appropriateness Ratings for Informed Participant Group by Trauma Type and Victim Gender

The interactions between the independent variables was also tested. The interaction between the two participant groups and their acceptability ratings for the three PTSD treatment types was not significant, F= 0.91, p=0.40. Additionally, the interaction between the two participant groups and the gender of the victims in the trauma examples was not significant, F= 0.94, p= 0.33. However, the interaction between the victim's gender and the PTSD treatment type was significant, F= 13.15, p= 0.001. And, the interaction between the victim's gender, PTSD treatment type, and participant group was also significant, F= 3.08, p= 0.05.

Question 14 asked participants how likely they would be to participate in each of the three PTSD treatment types should they suffer a trauma and develop PTSD. A repeated measures ANOVA analysis was used to analyze the responses for this question. There was no significant between-subjects effect for participant likeliness to participate in the three different treatment types by participant group, F= .024, p= 0.63.And, the results found an overall significant within-subject effect for participant likeliness to undergo the three different treatment types, F=5.99, p=0.001. Participants indicated that they would be much more likely to participate in alternative therapies over medication or ET therapies in the event they suffered a trauma and developed PTSD, regardless of participant group (see Table 4).

Interestingly, participants indicated a strong preference for participating in alternative therapies for treatment of PTSD, should they develop it, over either medication or exposure therapy treatments. And, the means between medication therapy and exposure therapy where close for both participant groups, with the not informed group rating medication therapy higher than the informed group, though not by much.

Table 4. Participant Likeliness to Undergo PTSD Treatment Types by Group

	Informed Group	Not Informed Group
PTSD Treatment Type		
Alternative Therapies	70.50 (31.30)	71.04 (28.95)
Medication	60.22 (34.28)	63.59 (31.49)
Exposure Therapy	60.56 (32.63)	60.08 (30.46)

Note: Participant responses for Question 14 only. Participants rated appropriateness of therapies using a sliding scale from 0 (not at all appropriate) – 100 (very appropriate).

Also, the means between medication therapy and exposure therapy where close for both participant groups, with the not informed group rating medication therapy higher than the informed group, though not by much. Therefore, it appears that participants highly favor alternative therapies over medication, especially ET, despite being informed of its lack of clinical evidence on its effectiveness in the treatment of PTSD, and having knowledge of ET's clinically proven effectiveness on the contrary (see Figure 5).

Question 15 in the survey asked respondents if they suffered a trauma and developed PTSD, would the type of trauma they experienced influence their likelihood to participate in ET. All participants were given the following response options to this question: Yes, No, Possibly, and Unsure. The results from both participant groups were more than half of participants said that, "yes", the type of trauma they experienced would influence their likeliness to undergo ET. About one-third of participants said that the trauma type they experienced would, "possibly", influence their likeliness to undergo ET. Less than 5% of participants were, "unsure", if their trauma type would influence their likelihood to participate in ET. And, less than 5% of respondents from either participant group indicated that, "no", the type of trauma they experienced would not influence their likeliness to undergo ET at all. Interestingly, while most participant responses were

almost equal in distribution between the two participant groups, the informed group had three times the number of, affirmative, “no”, responses to whether their trauma type would influence their likeliness to participate in exposure therapy compared to those not informed of ET’s effectiveness (see Table 5). This finding shows that within the small response group of participants (informed and uninformed), who answered, “no”, to this question, the informed participants were more than three times likely to believe this than participants who were uninformed. Indicating that knowledge of ET may somehow influence the likelihood of a PTSD patient to undergo ET.

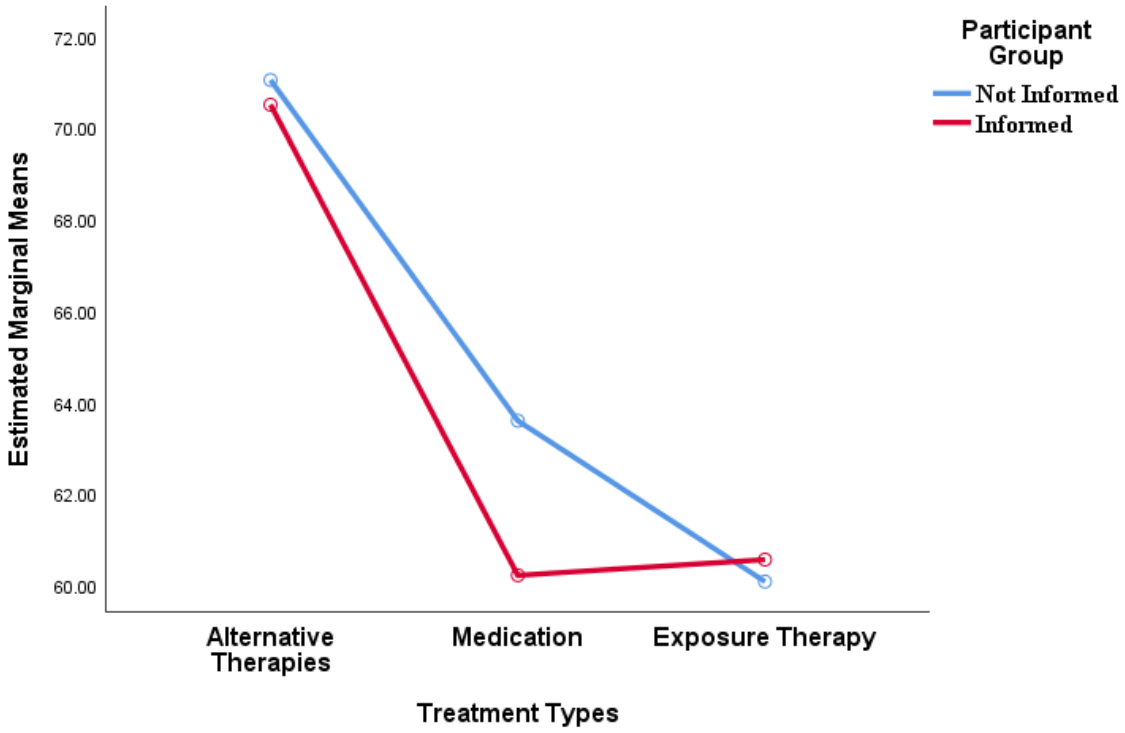


Figure 5. Participant Likeliness to Participate in PTSD Treatments by Participant Group

Table 5. Influence of Trauma Type on Exposure Therapy Participation Likeliness

	Informed	**Not Informed**
Yes	53 (51.96%)	59 (58.42%)
No	14 (13.73%)	4 (3.96%)
Possibly	31 (30.39%)	34 (33.66%)
Unsure	4 (3.92%)	4 (3.96%
Total	**102 (50.25%)**	**101 (49.75%)**

Note: Question 15 participant responses only

Chapter IV.

Discussion

In this study, I made three predictions: The first was that participants would rate ET treatment appropriateness differently among the different trauma types in the vignette examples. Second, that the gender of the PTSD patient in the trauma examples would impact participant ET appropriateness ratings for its use in the treatment of the different trauma examples. Third, that participants who received the additional statement on the effectiveness of the treatment types would, overall, rate ET treatment appropriateness higher than participants who did not receive the statement. The results of this study found that participants, regardless of whether or not they received additional information on the effectiveness of exposure therapy, and whether or not the victim in the trauma examples was a man or woman, rated the appropriateness of using exposure therapy lower than both alternative and medication therapies for the trauma examples.

Further, this study found that trauma type, as described in the trauma examples, did have a significant effect on the participant's rating of ET as an appropriate treatment type though ET was consistently rated lower than the other two treatment types, regardless of whether or not the victim was a man or a woman, trauma type, and whether or not the participant randomly received the informative statement on the effectiveness of the three treatment types. Therefore, trauma type as described in the vignette examples, was the most significant predictor of participants rating exposure therapy as more or less appropriate for treating PTSD.

These results partly supported my hypotheses. My first hypothesis was confirmed, i.e., the trauma type described in the survey examples correlated with higher and/or lower ET appropriateness ratings for the treatment of PTSD, and my second and third hypotheses pertaining to patient gender and additional statement on effectiveness of ET were not confirmed by this study.

Research Limitations

Research studies on the beliefs and attitudes held by the U.S. general population are inherently challenging to navigate. This is due to the diverse landscape of the U.S. which is one vastly different from region to region as the demographics within these regions can be wildly varied. This study collected response data from those participants who are registered survey takers or "workers' with the online Amazon MTurk program. Use of online research findings has grown significantly over the years as our lives and behaviors are becoming increasingly influenced by access to the internet, despite geographic and demographic factors. Scientific research on the reliability of web-based studies has been taking place for more than a decade and the findings support the use of such research. Especially, in obtaining data from the public using online surveys. One study in particular found that, "internet data collection methods, with a focus on self-report questionnaires from self-selected samples are comparably evaluated and compared with traditional paper-and-pencil methods" (Gosling, et al., 2004, pp.94).

There is an inherent difficulty in conducting studies that attempt to obtain reliable data on perceptions and beliefs held by the general public and why they may exist. This is

likely due to the large population size (reported to be 322,761,807 as of January 1, 2016 per the U.S. census bureau), regional population differences (Northeast, Midwest, West and South) (U.S. Department of Government, U.S. Census Bureau, U.S. Population Clock, https://www.census.gov/popclock/). Differences in demographics such as sex, race, ethnicity, socioeconomic status, education level and religious affiliation across a vast geographical area totaling 3,794,100 square miles (U.S. Department of Government, U.S. Census Bureau , U.S. Population Growth by Region, https://www.census.gov/popclock/; U.S. Department of Government, U.S. Census Bureau Geography, Maps and Data, https://www.census.gov/geo/maps-data/). However, the use of internet based studies provides a scientifically proven effective and practical solution to obtaining reliable data from such diverse populations. (Gosling, et al. 2004). Internet based studies appear to provide a solution to this problem for researchers, especially since so many Americans have access to and frequently use the internet proficiently especially on major sites such as Amazon.

While this study attempts to best sample the general population within the United States, only those who use Amazon's MTurk program as "workers" had access to the survey. This may be viewed as a limitation to the study population, however, not more so than would be case if I administered the data in person using pencil and paper to random participants at selected locations. Unfortunately, it was unfeasible to travel to different states in the country to collect this study's survey data. Therefore, an electronic online survey is the most effective and reliable means to obtain this study's survey responses from a diverse sample such as the U.S. general public Thankfully, scientific studies using online surveys are gaining in popularity and reliance. As found in the Gosling, et al. study

cited above, internet study samples are indeed relatively diverse accounting for gender, socioeconomic status, geographic region, and age. Further, this study found that internet studies, "generalize across presentation formats, are not adversely affected by non-serious or repeat responders and are consistent with findings from traditional methods" (Gosling, et al. 2004).

One limitation of this study is that participants' election for use of exposure therapy as a more appropriate treatment for the PTSD patients in the trauma examples may not translate to their personal election for such treatment should they experience a trauma and develop PTSD. Though an unavoidable limitation, it is a genuine one that is difficult to test in this study given the subjectivity of this variable for each participant. This is because participants may select a PTSD treatment differently for fictional victims in vignette examples than they would select for themselves or even someone close to them. Also, there are many different types of trauma that can lead to the development of PTSD. The perceived severity and relatability to these traumas may influence how participants respond to their favored PTSD treatment in vignette questions. Most adults can conceivably imagine the scenarios in the vignette examples happening to them or even someone close to them (i.e. car accident, or mass violent attack) but some participants may not be able to conceceptualize some traumatic events as ever happening to them. So, although the vignette situations in this survey do not illustrate all possible traumatic events that could lead to the development of PTSD in all types of people, they are general, evocative and relatable enough to properly test participant's selection of exposure treatment therapy in the treatment of PTSD for the most commonly experienced traumas.

The second limitation of this study is the existence of evidence that other types of effective PTSD treatments which do not include exposure or pharmacological treatments and are not avoidant in nature as the survey responses include can be effective or examples where exposure therapy treatment failed to be most appropriate for some patients with PTSD. One study in particular asserts that the most effective treatments for PTSD are cognitive behavioral therapy (exposure therapy) and eye movement desensitization and reprocessing (EMDR). This follow-up study specifically tested the efficacy of EMDR in the treatment of PTSD finding that patients who received this treatment were stable 35 months after treatment (Högberg, et al. (2008). EMDR's effectively in treating PTSD is also discussed in detail and favorably in David Morris's book, *The Evil Hours*. In the book, Morris describes his negative experience with exposure therapy in the form of prolonged exposure therapy for treatment of his PTSD but expresses a positive outlook on EMDR's effectiveness though he concedes that the reasons for EMDR's effectiveness in the treatment of PTSD is still poorly understood/explained, even by clinical researchers (Morris, 2013).

Future Research Directions

This study's findings are both interesting and troubling for a few different reasons. This is because changing the general public's acceptance of ET as an appropriate PTSD treatment needs to occur but educating them on its clinical effectiveness appears to be insufficient to accomplish this goal. And, mental health care providers who could also aid in the improvement of ET's acceptability by using it more often to successfully treat their PTSD patients, use ET less often than they should (likely for fear of losing those

patients), which leads to less success stories being experienced and shared with the public.

Regardless of a patient's disorder(s) or corresponding treatment(s), not all patients/therapist pairings work well together. This reality may explain why ET treatment works well for many PTSD patients but not others. Also, individual personalities, cognitions and temperament likely play in role in PTSD patients selecting and succeeding in ET treatment. One study on the use of imaginal exposure therapy to treat PTSD found that, "Patients who worsened (from the treatment) showed a greater tendency to miss treatment sessions, rated therapy as less credible, and were rated as less motivated by the therapist" (Tarrier, et al., 1999, pg.13). Perhaps some PTSD patients, such as David Morris for example, are not psychologically well-suited for ET or they perceive the therapy's use in the treatment of their trauma experience negatively and do not respond to ET treatment as they otherwise would with a different perspective (Tarrier, et al., 1999). Future research should also investigate potential indicators for patient suitability for ET treatment for PTSD, so that these patients can be treated with altered ET methods or another form of CBT first, before they may be later treated with ET. This may also aid in the improvement of ET's acceptability among the public and mental health care providers in the treatment of PTSD.

Future research should examine how to better improve ET's image in the treatment of PTSD among both the public and mental health care providers alike. To accomplish this, future research directions should examine how to best educate and influence the public's perception of ET directly, and improve ET's use by mental health

care professionals. If mental health care professionals feared losing their PTSD patients less for treating them with ET, then perhaps they would use ET more often to successfully treat their PTSD patients. The benefits of this approach could be two-fold since more PTSD patients would receive the best form of PTSD currently available, and those patients could share their success with participating in ET for their PTSD with the public. Therefore, it may be most beneficial for future research to first seek to improve ET's use among mental health care professionals, then focus on ways to better distribute information to the public on ET's benefits, success and experience both in repeated clinical trials, and by mental health care professionals who use it to treat their PTSD treatments.

Conclusion

This study's findings confirm that the public views ET in the treatment of PTSD as a less acceptable form of PTSD treatment, and prefers other, less effective treatments over it. So, how can the public perception of ET in the treatment of PTSD be improved? Is additional education and dissemination of its clinical effectiveness needed? If so, how may this best be done? And, if the public does not accept ET as the best treatment for PTSD despite knowing it is the most clinically effective treatment for the disorder because they are concerned about ET causing further upset to vulnerable PTSD patients, then how may these concerns be remedied? Future research will need to address these questions and attempt to provide solutions to these challenges in order to improve ET's acceptability in the treatment of PTSD.

Therapists who treat PTSD patients are tasked with a very important and unique challenge. Though not a panacea, ET is currently the most clinically effective treatment available for PTSD and should be used more often by mental health care professionals to treat this disorder. There are likely a few different reasons for the underuse of ET in the treatment of PTSD by mental health care professionals which certainly includes the public's negative perception of it. As this study found, the public views ET as a less acceptable method of PTSD treatment despite its clinical effectiveness. This means that either the public does not believe that the ET is a very effective PTSD treatment despite clinical proof, or the public does not care about ET's proven clinical effectiveness due to outweighing concerns about ET being too upsetting or perhaps even unethical in the treatment of PTSD patients. And, since anyone has the potential to experience serious trauma and possibly develop PTSD, or have a loved one who does, changing the public's mind about using ET is a very important challenge for the mental health care profession to overcome.

In closing, no one therapy will successfully treat all patients with a particular disorder to the same degree. This limitation is one that likely exists in all scientific research on the efficacy of psychological treatment methods. And, ET is no exception to this reality. If the public, PTSD patients and mental health care professionals view exposure therapy negatively, inappropriate or unacceptable for treating PTSD patients, even if for just some trauma experiences, then PTSD patients may not benefit from ET's very effective treatment of the disorder. Clinical research has proven many times over that ET is the most effective PTSD treatment. Therefore, improving the public's acceptance of this fact is imperative to providing the most effective care possible to

patients who are vulnerable, deserving, and certainly in need of the best care possible to help improve their lives.

Appendix 1.

Participant Survey on Appropriateness Ratings of PTSD Treatments

Question #1.) What is your gender?

1	2	3
Male	Female	Other

Question #2.) What is your ethnicity/race?

1	2	3	4	5	6	7	8
African-American	Asian	Caucasian	Hispanic	Middle Eastern	Multi-racial	South Asian	Other

Question #3). What is your age in number of years?

Please read the following statements:

1.) Posttraumatic stress disorder (PTSD) can develop after a person experiences severe trauma. People with PTSD have symptoms that often include intrusive memories and nightmares about the trauma, startle reactions, irritability, insomnia, and difficulty experiencing positive emotions.

2.) Below are three of the most common types of PTSD treatments:

A.) Alternative therapies such as relaxation therapy, acupuncture, massage, and yoga which aim to promote positive feelings in the patient.

B.) Medication treatments prescribed by doctors to reduce PTSD symptoms.

C.) Exposure therapy which entails desensitizing PTSD patients to the distress triggered by their memories of trauma by having them close their eyes and repeatedly recall and describe their trauma in the presence of a supportive therapist until their distress diminishes.

***THIS ADDITIONAL STATEMENT WAS RANDOMLY INCLUDED IN HALF OF SURVEYS ONLY ***

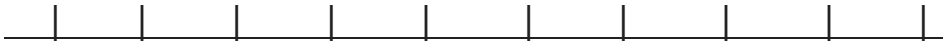
3.) There has been very little research testing the effectiveness of alternative therapies for the treatment of PTSD. Some randomized controlled trials have

suggested that certain medications can reduce some symptoms of PTSD. Randomized controlled trials of exposure therapy have repeatedly documented this therapy as the most effective treatment for PTSD.

With the above information in mind, please read the following questions and indicate your response:

Question #4.) A PTSD patient was in a car accident where a passenger died. The patient sustained serious injuries that required a lengthy hospital stay, surgeries, and extensive physical therapy. Since the accident, the patient is terrified of driving a car. Below are three different PTSD treatment options. If this PTSD car accident patient is a woman, please rate the appropriateness of using each of these treatments on a scale of 0-100 with a rating of 0 being *not at all appropriate* and 100 being *very appropriate*.

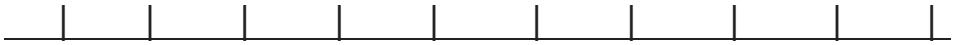
Alternative therapies:



0 100

Not at all appropriate Very Appropriate

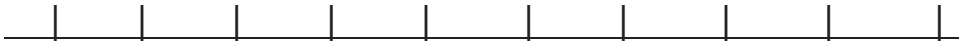
Medication:



0 100

Not at all appropriate Very Appropriate

Exposure therapy:



0 100

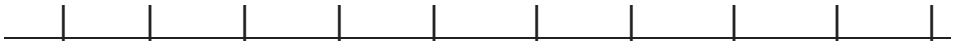
Not at all appropriate Very Appropriate

Question #5.) A PTSD patient was in a car accident where a passenger died. The patient sustained serious injuries that required a lengthy hospital stay, surgeries, and extensive physical therapy. Since the accident, the patient is terrified of driving a car. Below are three different PTSD treatment options. If this PTSD car accident patient is a man, please rate the appropriateness of using each of these treatment types on a scale of 0-100 with a rating of 0 being *not at all appropriate* and 100 being *very appropriate*.

Alternative therapies:

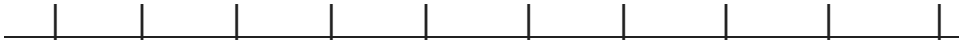
0 100
Not at all appropriate Very Appropriate

Medication:



0 100
Not at all appropriate Very Appropriate

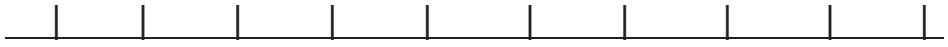
Exposure therapy:



0 100
Not at all appropriate Very Appropriate

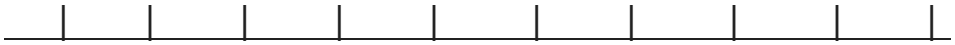
Question #6.) A PTSD patient was at the Boston marathon in 2013 when a terrorist bombing attack occurred. The patient's friend died in the bombing. Since the trauma, the patient is scared of being in public, especially in large crowds. Below are three different PTSD treatment options.
If this PTSD bombing patient is a woman, please rate the appropriateness of using each of these treatment on a scale of 0-100 with a rating of 0 being *not at all appropriate* and 100 being *very appropriate*.

Alternative therapies:



0 100
Not at all appropriate Very Appropriate

Medication treatments:



0 100
Not at all appropriate Very Appropriate

Exposure therapy:

0 100

Not at all appropriate Very Appropriate

Question #7.) A PTSD patient was at the Boston marathon in 2013 when a terrorist bombing attack occurred. The patient's friend died in the bombing. Since the trauma, the patient is scared of being in public, especially in large crowds. Below are three different PTSD treatment options. If this PTSD bombing patient is a man, please rate the appropriateness of using each of these treatments on a scale of 0-100 with a rating of 0 being *not at all appropriate* and 100 being *very appropriate.*

Alternative therapies:

0 100

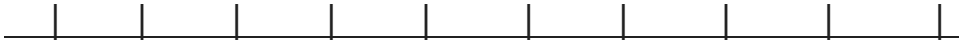
Not at all appropriate Very Appropriate

Medication treatments:

0 100

Not at all appropriate Very Appropriate

Exposure therapy:



0 100

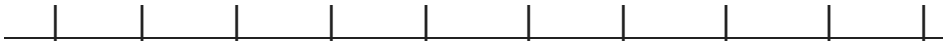
Not at all appropriate Very Appropriate

Question #8.) A therapist is treating a PTSD patient who witnessed a drive-by shooting where the patient's best friend was shot and killed by a stray bullet. Since the shooting, the patient has frequent nightmares, trouble concentrating, and has had negative behavior changes. Below are three different PTSD treatment options. If this PTSD shooting patient is a woman, please rate the appropriateness of using each of these treatments on a scale of 0-100 with a rating of 0 being *not at all appropriate* and 100 being *very appropriate*.

Alternative therapies:

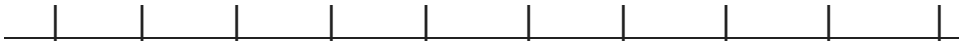
0 100
Not at all appropriate Very Appropriate

Medication treatments:



0 100
Not at all appropriate Very Appropriate

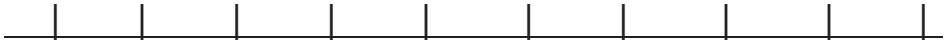
Exposure therapy:



0 100
Not at all appropriate Very Appropriate

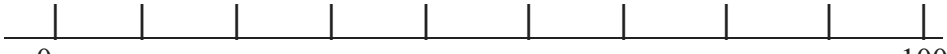
Question #9.) A therapist is treating a PTSD patient who witnessed a drive-by shooting where the patient's best friend was shot and killed by a stray bullet. Since the shooting, the patient has frequent nightmares, trouble concentrating, and has had negative behavior changes. Below are three different PTSD treatment options. If this PTSD shooting patient is a man, please rate the appropriateness of using each of these treatments on a scale of 0-100 with a rating of 0 being *not at all appropriate* and 100 being *very appropriate*.

Alternative therapies:



0 100
Not at all appropriate Very Appropriate

Medication treatments:



0 100
Not at all appropriate Very Appropriate

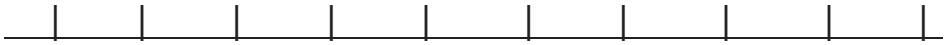
Exposure therapy:

0 100

Not at all appropriate Very Appropriate

Question #10.) A therapist is treating the victim of a violent rape attack with PTSD. Below are three different PTSD treatment options. If this PTSD rape patient is a woman, please rate the appropriateness of using each of these treatments on a scale of 0-100 with a rating of 0 being *not at all appropriate* and 100 being *very appropriate*.

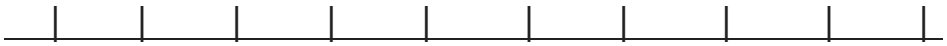
Alternative therapies:



0 100

Not at all appropriate Very Appropriate

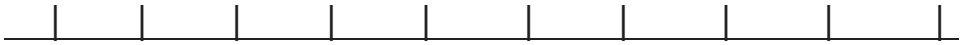
Medication treatments:



0 100

Not at all appropriate Very Appropriate

Exposure therapy:



0 100

Not at all appropriate Very Appropriate

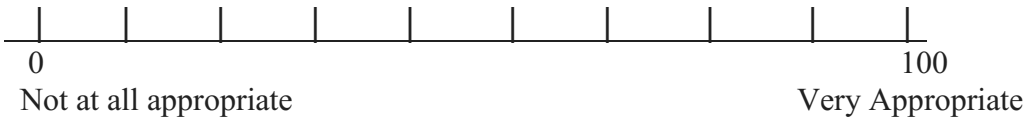
Question #11.) A therapist is treating the victim of a violent rape attack with PTSD. Below are three different PTSD treatment option. If this PTSD rape patient is a man, please rate the appropriateness of using each of these treatment types on a scale of 0-100 with a rating of 0 being *not at all appropriate* and 100 being *very appropriate*.

Alternative therapies:

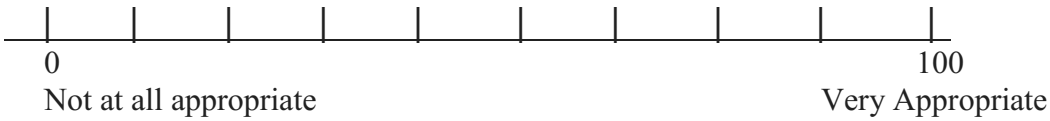
0 100

Not at all appropriate Very Appropriate

Medication treatments:

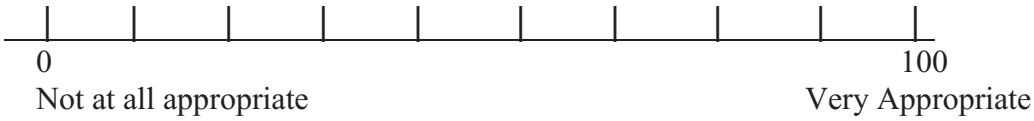


Exposure therapy:

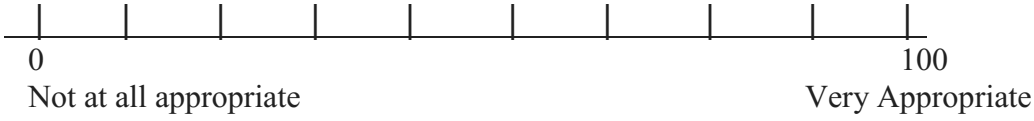


Question #12.) A therapist is treating a U.S. combat veteran with PTSD who was stationed in Afghanistan. If this PTSD veteran patient is a woman, please rate the appropriateness of using each of these treatment types on a scale of 0-100 with a rating of 0 being *not at all appropriate* and 100 being *very appropriate*.

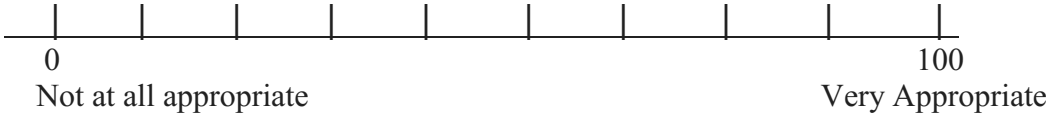
Alternative therapies:



Medication treatments:



Exposure therapy:

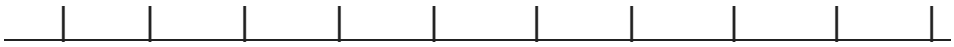


Question #13.) A therapist is treating a U.S. combat veteran with PTSD who was stationed in Afghanistan. If this PTSD veteran patient is a man, please rate the appropriateness of using each of these treatment types on a scale of 0-100 with a rating of 0 being *not at all appropriate* and 100 being *very appropriate*.

Alternative therapies:

0 100
Not at all appropriate Very Appropriate

Medication treatments:



0 100
Not at all appropriate Very Appropriate

Exposure therapy:

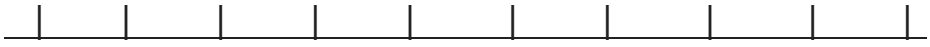
0 100
Not at all appropriate Very Appropriate

Question #14.) If you suffered a trauma and developed PTSD, how likely would you choose to undergo each of the following treatments? Please rate them on a scale of 0-100 with a rating of 0 being *not at all* and 100 being *very likely*:

Alternative therapies:

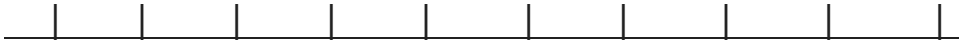
0 100
Not at all Very Likely

Medication:



0 100
Not at all Very Likely

Exposure therapy:



0 100
Not at all Very Likely

Question #15.) If you suffered a trauma and developed PTSD, do you think that the type trauma you experienced could influence how likely you would be to undergo exposure

therapy compared to alternative therapies or medication treatments?

1	2	3	4
Yes	Possibly	No	Unsure

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