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**EFFECTIVENESS OF A COGNITIVE-BEHAVIOR THERAPY
PROTOCOL FOR POSTTRAUMATIC STRESS DISORDER AND
IMPLICATIONS FOR TRAUMA MEMORY NARRATIVES**

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ABSTRACT

Posttraumatic Stress Disorder (PTSD) is a mental disorder developed after the exposure to a traumatic event. People suffering from PTSD usually presents symptoms of re-experiencing, avoidance, hyperarousal, shame, and guilty. Several theories try to explain how PTSD is developed, but there is relative consensus about the influence of an impaired memory processing. Literature points out many types of treatments that aim to regulate this memory impairment and, therefore, reduce PTSD symptoms. Cognitive-Behavior Therapy (CBT) is considered a gold-standard treatment for PTSD. However, most studies about CBT for PTSD are developed in the military context or in developed countries. As far as we know, there is a limited number of studies exploring this subject in Brazil, even with evidence suggesting Brazilian CBT therapists have different treatment approaches when compared with American CBT therapists. Our study aimed to verify the efficacy of an adapted CBT treatment for PTSD in Brazilians regarding PTSD symptoms, cognitions, depression and trauma memory content. This dissertation is composed by (1) a brief introduction, explaining the main concepts we used to develop the study; (2) a theoretical section composed by a systematic review about CBT techniques for PTSD treatment; (3) an empirical section composed by two papers, being one regarding the efficacy of adapted CBT protocol for PTSD symptoms, cognitions and depression, another about memory content in PTSD before and after exposure tasks; and (4) final considerations summarizing our main findings. Results show that our CBT protocol successfully reduces PTSD symptomatology, patient's memory seems to be less fragmented and they tend to include less psychophysiological sensations of fear and anxiety in their trauma memory narratives after therapy. The results suggest our CBT protocol is effective on the treatment of PTSD in Brazilians and it helps patients to organize and attribute a more functional meaning to their traumatic experiences.

Key-words: Stress Disorders, Post-Traumatic; Behavior Therapy; Cognitive Therapy; Memory.

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RESUMO

O Transtorno de Estresse Pós-Traumático (TEPT) é um transtorno mental desenvolvido após a exposição a um evento traumático. Pessoas que sofrem com TEPT geralmente experienciam sintomas de revivência, evitação e excitabilidade aumentada. Diversas teorias tentam explicar como o TEPT se desenvolve, mas há relativo consenso sobre o envolvimento de processos de memória disfuncionais. A literatura aponta que existem muitos tipos de tratamento que buscam modular a memória de pacientes com TEPT e, assim, reduzir seus sintomas. A Terapia Cognitivo-Comportamental (TCC) é considerada o tratamento de escolha para o TEPT, porém a maior parte dos estudos sobre TCC para TEPT é desenvolvida no contexto militar ou em países desenvolvidos. Até onde se tem conhecimento, ainda há pouca pesquisa explorando esse assunto no Brasil, ainda que existam evidências de que terapeutas de TCC brasileiros possuem abordagens diferentes de tratamento se comparados com terapeutas americanos. Este estudo objetivou verificar a eficácia de um protocolo de TCC adaptado para TEPT em brasileiros no que se refere a sintomas e cognições de TEPT, depressão e conteúdo de memória traumática. Esta tese é composta de (1) uma breve introdução, explicando os principais conceitos utilizados para desenvolver a pesquisa; (2) uma seção teórica composta por uma revisão sistemática a respeito de técnicas cognitivo-comportamentais para o tratamento do TEPT; (3) uma seção empírica composta por dois artigos, sendo um sobre a eficácia de um protocolo de TCC adaptado para sintomas e cognições de TEPT e depressão, e o outro artigo relativo a conteúdo de memória traumática em TEPT antes e depois da terapia; e (4) considerações finais compilando nossos principais achados. Os resultados sugerem que o protocolo de TEPT adaptado diminui a sintomatologia de TEPT e a memória traumática dos pacientes torna-se menos fragmentada após a terapia. Além disso, os pacientes tendem a incluir menos sensações psicofisiológicas em suas narrativas da memória traumática após a terapia. Os resultados sugerem que este protocolo de TCC é efetivo para tratar TEPT em brasileiros e auxilia os pacientes a organizar e atribuir um significado mais funcional a suas experiências traumáticas

Palavras-Chaves: Transtornos de Estresse Pós-Traumáticos; Terapia Comportamental; Terapia Cognitiva; Memória.

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INTRODUCTION

Posttraumatic Stress Disorder (PTSD) is a mental illness developed after experiencing a traumatic event. The concept of traumatic event varies in the literature, but some examples are natural catastrophes, motor vehicle accidents, rape and assault. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association [APA], 2013), PTSD symptoms include (1) persistent re-experience of the trauma (e.g., through intrusive memories, nightmares and flashbacks); (2) avoidance of trauma-related stimuli; (3) alterations in arousal, such as intense somatic reactions of anxiety; (4) feelings of shame and guilt; and (5) negative beliefs about oneself and the world.

There are many theories that explain the development of PTSD. Mowrer (1960) suggests that the core of PTSD is fear, which is associated with neutral stimuli and maintained through operant conditioning. Therefore, during a traumatic event, different stimuli become associated with the fear experience. In order to prevent the discomfort raised by the conditioned stimuli, individuals with PTSD start to avoid them, which brings about a sense of relief. That sensation might work as a negative reinforcement, increasing the frequency of avoidance in future contact with the stimuli (Taylor, 2006).

The Dual Representation Model of PTSD (Brewin, 2001; Taylor, 2006) suggests that two separated memory systems are active during trauma. A *verbal memory system* contains memories acquired consciously, such as the evaluation of the trauma or its consequences. Information acquired through this system is attached to autobiographical memory, which allows the individual to remember some facts and interpretations they had during and after trauma. On the other hand, information processed by the *situational memory system* is unattached to autobiographical memory, being acquired without the need of focusing attention. This information is comprised mostly of feelings and sensations, which are triggered by stimuli associated with the trauma and might give PTSD patients the impression that they do not control their memories and feelings any longer, which might explain the re-experiencing symptoms of PTSD (Taylor, 2006).

Cognitive Model for PTSD suggests that PTSD develops when the individual processes information according to the idea of current threat, even knowing that the traumatic event is over. This cognitive processing happens due to a series of factors, such as (1) processing the memory event through its sensations instead of through its verbal elements, which causes (2) a poor elaboration of the traumatic event and leads to (3) an overestimation

of the probability of future threatening events and (4) an underestimation of one's skills to deal with such events. Finally, (5) one's inability to develop adaptive coping skills to handle thoughts and emotions, avoiding contact with the external world and thus confirming the idea of inability towards dealing with challenges (Ehlers & Clark, 2000; Taylor, 2006).

Emotional Processing Theory suggests that PTSD occurs due to the development of a fear network that is resistant to extinction and disturbs the ability of patients to overcome the traumatic experience (Foa, Hembree & Rothbaum, 2007). The fear network contains elements associated with the trauma, such as representations, responses to stimulus and the meaning of the trauma situation. Such information is generalized to other situations even after the traumatic event is over. Since all the elements are linked, patients understand other stimuli associated with the trauma as being as dangerous as the trauma itself and they experience psychophysiological responses in the same way as the trauma was experienced (Foa & Kozak, 1986; Foa, Steketee & Rothbaum, 1989; Taylor, 2006). The fear network occurs due to a set of neurobiological dysregulations, such as (1) Hypothalamic–pituitary–adrenocortical (HPA) dysfunction, elevated levels of corticotropin-releasing factor (CRF) and inadequate GABA-ergic performance, which are related with symptoms of dissociation, hyperarousal, anxiety and stress intolerance; (2) opioid and serotonergic receptor dysfunctions, related with symptoms of numbing, depression, and irritability; and (3) adrenergic hyperactivity and glutamatergic dysregulation, which are linked with the memory processing impairment that leads to intrusive thoughts and re-experiencing (Friedman, Davidson & Stein, 2009).

Deficits in memory processing may generate fragmented and disorganized trauma memories (Amir, Stafford, Freshman & Foa, 1998). Two studies with rape victims found that patients had more fragmented traumatic memories before therapy and that changes in these memories' content were related to treatment outcome (Foa, Molner & Cashman, 1995; van Minnen, Wessel, Dijkstra & Roelofs, 2002). Because of the neurobiological dysfunctions and the dysregulation in memory processing, patients start to interpret reality based on the impaired memory and on the somatic reactions they experience. They may come to believe that the world is dangerous, that they are not able to bear or deal with the imminent threats it presents and/or that they are responsible for the trauma. Those posttraumatic cognitions represented by the negative beliefs about oneself, the world and self-blame maintain PTSD and make it resistant to change (Foa, Ehlers, Clark, Orsillo & Tolin, 1999; Taylor, 2006).

One of the possibilities that explain PTSD recovery is the dissolution of the fear network that maintains it (Foa, Steketee & Rothbaum, 1989). Therefore, treatment should focus on (1) extinguishing fear; (2) controlling anxiety; (3) reprocessing the trauma memory;

(4) developing functional responses to stress; and (5) promoting changes in the interpretation of reality (Cahill, Rothbaum, Resick & Follete, 2009). In many studies, researchers attempted to reduce anxiety response and balance neurobiological impairments using medication (Davidson, 2006; Kasper & McEwen, 2008; Martenyi, 2002; McRae et al., 2004; Szymańska et al., 2009; Xu et al., 2006; Onder et al., 2006; Stout et al., 2002; McEwen et al., 2010; Steckler & Risbrough, 2012). There is strong evidence that benzodiazepines are not an effective treatment for PTSD, due to effects of memory consolidation impairment (Lund, Abrams, Bernardy, Alexander & Friedman, 2013). However, there are many studies favourable to the use of antidepressants such as sertraline (Brady et al., 2000; Davidson, Rothbaum, van der Kolk, Sikes & Farfel, 2001), paroxetine (Marshall, Beebe, Oldham & Zaninelli, 2001; Tucker et al., 2001) and fluoxetine (Connor, Sutherland, Tupler, Malik & Davidson, 1999; van der Kolk et al., 1994). Those are considered first line pharmacological treatments for PTSD (Diffede, Olden & Cukor, 2014). Also, studies show promising results with anticonvulsants such as lamotrigine (Hertzberg et al., 1999) and with atypical antipsychotics as risperidone (Bartzokis, Lu, Turner, Mintz & Saunders, 2005; Monnelly, Ciraulo, Knapp & Keane, 2003; Reich, Winternitz, Hennen, Watts & Stanculescu, 2004) and olanzapine (Stein, Zungu-Dirwayi, van Der Linden GJ & Seedat, 2000).

Benedek and Friedman (2009) reviewed the literature about pharmacotherapy for PTSD and argued that complete symptomatic remission only happens with 30% of patients, and that discontinuation of pharmacological treatment might result in relapse. This data suggests a need for different approaches in PTSD treatment that might complement medication, such as psychosocial interventions. There are specific psychotherapeutic techniques designed for reducing PTSD cluster symptoms and dysfunctional posttraumatic cognitions in different protocols of Cognitive-Behavioral Therapy (CBT). CBT is a type of therapy that combines components of cognitive and behavioral techniques to treat different mental illnesses (Beck, 2005; Cahill et al., 2009). Indeed, a Meta analysis on the efficacy of CBT for different psychiatric disorder showed that CBT is effective for treating mood, anxiety, substance-related, eating, and personality disorders (Butler, Chapman, Forman, Beck, 2006). Currently, CBT is a gold standard treatment for PTSD (Bisson & Andrew, 2007; Bisson et al., 2007; Diffede, Olden, Cukor, 2014; Ehlers et al., 2010)

CBT protocols for PTSD usually include elements such as psychoeducation, breathing and relaxation exercises, exposure to trauma memories and cognitive restructuring (Wampold et al., 2010; Taylor, 2006). Psychoeducation aims to familiarize the patient with the disorder and with the therapeutic process. Breathing exercises allow to control anxiety symptoms;

exposure techniques focus on stress tolerance and fear extinction, and a reduction of hyperarousal and avoidance symptoms. Cognitive restructuring focuses on the reinterpretation of trauma and modification of dysfunctional beliefs. Therefore, the interaction of those techniques should lead to a change in trauma memory processing and a reduce of PTSD symptomatology. Some CBT standardized protocols for PTSD have a major focus on behavioural components, such as in vivo and imaginal exposure, revisiting and emotional reprocessing of trauma memories (Foa et al., 1999; Wampold et al., 2010); others have more focus on cognitive restructuring (Bryant, Moulds, Guthrie, Dang & Nixon, 2003). The techniques above are used in a variety of combinations in CBT protocols. Regardless of the combination, recent studies already demonstrate that CBT protocols generate significant PTSD symptomatic remission (Mendes, Mello, Ventura, Passarela & Mari, 2008; Mello, Silva, Donat & Kristensen, 2013). Still, there is room for improvement, notably regarding specific populations.

Currently, most studies about CBT for PTSD are conducted with the military and/or in developed countries. However, some studies suggest there are cultural differences between developed countries and in-development ones regarding CBT treatment (Bakos & Kristensen, 2013). A study conducted in Brazil shows that Brazilian therapists have different approaches in their clinical practices than suggested by American CBT standardized manuals. For example, they put less emphasis in homework, they are not comfortable with structured sessions and the treatment takes longer to finish (Shinohara, Figueiredo, Rangé & Falcone, 2011). Therefore, it is unknown if CBT conducted in Brazil would show the same effect as in international studies, or if our protocols should be adapted in order to attend cultural specificities of therapists and patients. Clinical trials are necessary to answer that question.

According to Nezu and Nezu (2008, p. vii), “*we provide psychosocial treatments [...] with the hope, assumption, and intent that such treatments ‘will work’*”. However, the assumption that a specific treatment “works” and why it works could only be made after several variables are considered and controlled. While we already know how to guarantee the quality of a clinical trial, the process to assure it requires constant supervision. A clinical trial involves many therapists and researchers and they are often playing different roles during the study. The researcher must be able to deal with theoretical, methodological (eligibility, validity, fidelity), ethical, and statistical issues. The therapist must be technically able and empathic in order to promote alliance, adherence and compliance during treatment. Alliance is defined as “*a collaborative bond between therapist and patient*” (Krupnick et al., 1996). Adherence refers to how close the therapist followed the protocol, and compliance refers to

how much the patient followed the therapist's instructions during the therapy session and did the homework assigned (Nezu & Nezu, 2008).

The complexity involved in conducting a clinical trial might be the reason why we still have little research in the field of CBT for PTSD in Brazilians. Indeed, Silva et al. (2012) conducted a literature review to verify general patterns of publications in Brazil in 2010 and found that only 8% of articles were clinical trials. The lack of research is part of a scenario of limited resources for mental health care, leading to life risk and financial consequences. For example, 13.6% of the benefits for labour impairment in Brazil are granted for mental illness reasons, especially due to depression and stress disorders (Machado, 2012). A study with college students in Brasil (Netto et al., 2013) estimated that the incidence of PTSD is 14%, twice the estimative mentioned by Kessler and colleagues (2005) in a study conducted in USA. According to Netto et al. (2013), this number is probably due to the "*high frequency of exposure to violence*" in the country. In their study, college students experience an average of 5 potentially traumatic events. Crime cost Brazil R\$ 92 billion in 2004 and violence rates make Brazil the 13th most violent country worldwide (Cerqueira, Carvalho, Lobão & Rodrigues, 2007), and it's a shame that this rates leads to a banalization of urban violence, instead of more serious and committed discussions about the topic. Evidently, public security policies should propose a solution for the problem of violence, but clinical research might promote efficient mental health care. In order to contribute to that, we conducted a clinical study with patients with PTSD.

As is the case for most clinical trials, our goal in this research is to make sure that the treatment we are providing helps to reduce PTSD symptoms. We aim to verify the efficacy of a standard CBT protocol for PTSD, in order to investigate if (1) CBT as generally conducted is capable of modifying the core symptoms of PTSD, associated symptoms (such as depression) and cognitions; and (2) alter trauma memory narratives in our sample. Specifically, we are interested in which set of techniques (i.e., breathing exercises, psychoeducation, exposure or cognitive restructuring) might have more influence in modifying posttraumatic symptoms and cognitions. Additionally, we want to verify if changes in memory processing are correlated with specific PTSD symptom and cognition modifications.

We hypothesize that the CBT protocol we have built might significantly alter PTSD symptoms and cognitions. We also hypothesize that our patients present more acute changes due to exposure techniques because those are the ones that promote habituation to the trauma memory and with anxiety, which decreases symptoms of hyperarousal that lead to avoidance.

We consider that the exposure techniques also organize the trauma memory. We hypothesize some aspects of trauma memory described in patients' narratives during imaginal exposure are fairly related to specific symptoms: (1) desperate thoughts, related with anxiety symptoms; (2) negative feelings, related with depression, avoidance and numbing; (3) sensation descriptions, related with hyperarousal. At last, we hypothesize that cognitions about self tend to change more than cognitions about the world.

Our first research problem was whether CBT would have a similar effect for Brazilians as it has for international samples. To answer this question, first we needed to have an adapted CBT protocol that could aggregate the core techniques of a standard effective CBT treatment. Our choices of which techniques we should include in our protocol should be supported by the literature. We reviewed the papers published in the field and found that the last study about CBT protocols and their effectiveness was from 2008 (Mendes et al., 2008). To have more update data, we decided to conduct a systematic review named "**An Update on the Efficacy of Cognitive-Behavioural Therapy, Cognitive Therapy and Exposure Therapy for Posttraumatic Stress Disorder**".

After the Mendes et al. (2008) study, we found 29 new clinical trials that matched their criteria and that we included in our systematic review. Our results showed a large range of different foci of CBT treatments, but all with similar and significant encouraging effects concerning PTSD symptomatic remission. The core techniques mentioned in most treatments were variants of psychoeducation, relaxation, exposure, cognitive restructuring and processing of trauma memory. The theoretical session of this dissertation is composed of this systematic review it was published in the Journal of Psychiatry in Medicine (Mello, Silva, Donat & Kristensen, 2013; Attachment A).

Our protocol was largely based on the standard protocols of Taylor (2006), Ehlers and Clark (2000), and Foa, Hembree and Rothbaum (2007). The protocol is composed of four sessions of psychoeducation, six sessions of exposure, and six sessions of cognitive restructuring and relapse prevent. After each block of sessions, patients were re-evaluated to investigate changes in PTSD and depression symptoms and posttraumatic cognitions. We also conducted follow-up assessments 3 and 6 months posttreatment to verify whether the gains would be maintained. All our sessions were recorded with patients consent.

After the protocol was build, we developed our second study named "**Efficacy of a Cognitive-Behavioral Therapy Protocol in modifying Posttraumatic Symptoms and Cognitions in Brazilians**". This study will be submitted to a scientific journal, where it will be available in its full version. This is the main study we conducted and it is an open clinical

trial with PTSD patients (n = 33; 54.4% female) victims of different types of trauma. In our trial, we investigated the role of each protocol's set of sessions and techniques in reducing symptoms of PTSD, depression and posttraumatic cognitions. Our pre-post test analyses showed remission of all PTSD symptoms with effect sizes similar to international studies. One of the results we found in our second study was the acute change in symptoms after the block of exposure sessions. Our question regarding this result was whether or not the memory itself was altered in patients' accounts after the exposure and if that could be one of the reasons for such a clinical gain (for each PTSD symptom), and if different patterns in narrative changes could be related with dropouts. That question led us to our third study.

Our third study is named **“Trauma Narratives of Brazilian Patients with Posttraumatic Stress Disorder: A Content Analysis”**, and as well as the main study, the paper will be submitted to a scientific journal, where it will be available in its full version. This study includes a content analysis using some of our patients' first and last description of the trauma during exposure therapy sessions. We did not use the full sample for this study because technical issues (problems with the audio of the recordings and storage issues that lead to data lost) precluded some of the sessions to be properly recorded. Our results showed that memory fragmentation decreases over time, as well as narratives of actions during trauma. On the other hand, feelings and sensations narratives seem to be more detailed and increase after exposure.

Conducting this research depended on the aid of a variety of sources. Theoretical and procedural matters were our first concerns. We understood that the lack of experience in the field of clinical research would demand us to consult with more specialized sources. Therefore, we decided to contact competent international facilities, which develop clinical trials for PTSD in order to allow us understand better its idiosyncrasies. We contacted Professor Lori A. Zoellner from the Centre of Anxiety and Traumatic Stress at the University of Washington (UWCATS), who specializes in clinical psychology research in PTSD and was keen to help us in our study. She authorized the visit of the doctoral student responsible for this thesis to join UWCATS for a period of six months of enhanced tutoring. The “Sandwich Doctorate” was an imperative experience that helped us to understand better how to handle all the variables presented in a clinical study. Additionally, the doctorate student had the opportunity to join the UWCATS team and its fellow partners from the Western Case University for training in Prolonged Exposure Therapy with Professor Edna B. Foa. Professor Foa is one of the most important experts in PTSD worldwide and, during training, she provided us with a few theoretical insights that helped to improve our research. Finally, the

doctoral student had the opportunity to present preliminary data of our clinical trial in the International Society for Traumatic Stress Studies (ISTSS) Annual Meeting in a poster session, when we received more useful feedbacks.

Besides the theoretical part, the project itself is part of a larger study of the research group “Cognition, Emotion and Behaviour” (CEC) named “Use of Virtual Reality in the Cognitive-Behavioral Treatment for Posttraumatic Stress Disorder”. The project’s goal is to develop and to verify the efficacy of a virtual reality technique (VR) for patients diagnosed with posttraumatic stress disorder (PTSD) when compared with traditional therapeutic techniques. The Ethic Committee of Research (CEP) approved the project (CEP 08/04338; see proof in Attachment B) and all of its ramifications, such as this dissertation.

CEC is inserted at the Centre of Studies and Research in Traumatic Stress (NEPTE) of the Pontifical Catholic University of Rio Grande do Sul (PUCRS) in Brazil. NEPTE is a mental health care facility composed by professionals and students of different areas of expertise, such as psychology and medicine. NEPTE provided the treatment site and the therapists that were responsible for our patient’s therapy sessions. Although NEPTE is a research facility, trauma victim patients find in the facility a specialized centre for treatment, and not only data collection.

With the protocol, site and therapists set, we needed to recruit participants. According to Festinger and DeMatteo (2008), most studies select samples of convenience because they are easily accessible. However, samples of convenience are not indicated if the goal of the study is to generalize the results. In that case, a randomized sample is recommended because it tends to be more representative of the population. The authors also suggest that inclusion and exclusion criteria should not be too narrow or too broad. It is a matter of validity, i.e., if it is possible to generalize the results to the population (external validity), or if the results only apply for people who match the sample specific characteristics (internal validity). In this study we are particularly interested in internal validity, so we chose to use a sample of convenience. We decided to establish a network of services that could refer NEPTE to victims of different traumatic events. For that, we contacted public services of mental health that receive patients with trauma history and advertised in local newspapers. We also established a covenant with a bank employees’ union that referred NEPTE to employees who were victims of robbery.

Once the participants contacted NEPTE, they scheduled assessments with trained interviewers free of charge, where they were offered participation in the study through signing the consent form (Attachment C). Our assessment measures were composed by instruments

that (1) diagnose psychopathologies according to the DSM-IV-TR (American Psychiatric Association [APA], 2002) - which was the current edition at the beginning of the research -; (2) measure PTSD and depression symptoms severity; (3) assess posttraumatic cognitions; and (4) assess cognitive functioning. After assessment, we discussed the case with our team to decide if the patient would be included in the CBT treatment protocol. Our inclusion criteria were to be between 18 and 65 years old and to be a victim of a traumatic event. Our exclusion criteria included (1) mental retardation; (2) presence of psychotic symptoms; (3) substance dependence; (4) unstable bipolar disorder; and (5) use of benzodiazepines. Subjects that met our criteria were invited to participate in the study and were allocated to a trained therapist that conducted sixteen sessions of CBT.

During our study we were also concern about integrity (or validity), i. e., if the treatment was conducted according to the manual and competently (Nezu & Nezu, 2008). The idea of following the protocol is about therapist adherence. For that to happen, it is possible to use measures in order to verify if the core elements of a protocol were included during therapy sessions. There are measures designed to assess therapist adherence in depression (Elkin, Parloff, Hadley & Autry, 1985; Markowitz, Spielman, Scarvalone & Perry, 2000) and family therapy (Henggeler, Pickrel & Brondino, 1999). We could not find any specific measure for PTSD treatment that could be applied in Brazilian samples; nevertheless, the protocol developer himself can build this type of measure, once the items that must be followed are related with the protocol's manual. We developed this measure according with our CBT protocol (Attachment D).

Evidence shows that treatment outcome is related with adherence (Barber et al., 2006; Bright, Baker & Neimeyer, 1999; Henggeler et al., 1999). Therefore, we took 20% of the sessions reports and gave it to an experience CBT psychotherapist not related to the project so he could assess the adherence of the therapist to the protocol. Additionally, all of our therapists received weekly supervision.

After three and a half years of research, we present this dissertation to discuss our main findings trough the three articles previously mentioned. With this dissertation we hope to contribute for the clinical psychology field in PTSD, and for the improvement of mental health care in Brazil.

REFERENCES

- American Psychiatric Association. (2002). *Diagnostic and Statistic Manual of Mental Disorders: DSM-IV* (4th ed.). Washington, DC: Author.
- American Psychiatric Association. (2013). *Diagnostic and Statistic Manual of Mental Disorders: DSM-5* (5th ed.). Washington, DC: Author.
- Amir, N., Stafford, J., Freshman, M. S. & Foa, E. B. (1998). Relationship between trauma narratives and trauma pathology. *Journal of Traumatic Stress*, *11*(2), 385-392. doi: 10.1023/A:1024415523495.
- Bakos, D. S. & Kristensen, C. H. (2013). Supervising Cognitive Behavioral Therapy Practitioners in Urban Brazil. *Journal of Cognitive Psychotherapy*, *27*(1), 42-50. doi: <http://dx.doi.org/10.1891/0889-8391.27.1.42>.
- Barber, J. P., Gallop, R., Crits-Christoph, P., Frank, A., Thase, M. E., Weiss, R. D. & Beth Connolly Gibbons, M. (2006). The role of therapist adherence, therapist competence, and alliance in predicting outcome of individual drug counseling: Results from the National Institute Drug Abuse Collaborative Cocaine Treatment Study. *Psychotherapy Research*. doi:10.1080/10503300500288951.
- Bartzokis, G., Lu, P. H., Turner, J., Mintz, J. & Saunders, C. S. (2005). Adjunctive risperidone in the treatment of chronic combat-related posttraumatic stress disorder. *Biological Psychiatry*, *57*(5), 474–9. doi:10.1016/j.biopsych.2004.11.039.
- Beck, A. T. (2005). The Current State of Cognitive Therapy: A 40-Year Retrospective. *Archives of General Psychiatry*, *62*(9), 953-959. doi:10.1001/archpsyc.62.9.953.
- Benedek, D. & Friedman, M. (2009). Guideline watch (March 2009): Practice guideline for the treatment of patients with acute stress disorder and posttraumatic stress disorder. *FOCUS: The Journal*, *VII*(2), 204–213. Retrieved from <http://journals.psychiatryonline.org/article.aspx?articleid=52871>.
- Bisson, J. & Andrew, M. (2007). Psychological treatment of post-traumatic stress disorder (PTSD). *Cochrane Database of Systematic Reviews (Online)*, CD003388. doi:10.1002/14651858.CD003388.pub3.
- Bisson, J. I., Ehlers, A., Matthews, R., Pilling, S., Richards, D. & Turner, S. (2007). Psychological treatments for chronic post-traumatic stress disorder. Systematic review and meta-analysis. *The British Journal of Psychiatry : The Journal of Mental Science*, *190*, 97–104. doi:10.1192/bjp.bp.106.021402.

- Brady, K., Pearlstein, T., Asnis, G. M., Baker, D., Rothbaum, B., Sikes, C. R. & Farfel, G. M. (2000). Efficacy and Safety of Sertraline Treatment of Posttraumatic Stress Disorder. *Jama*, 283(14), 1837-1844. doi:10.1001/jama.283.14.1837.
- Brewin, C. R. (2001). A cognitive neuroscience account of posttraumatic stress disorder and its treatment. *Behaviour Research and Therapy*, 39(4), 373–393. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/11280338>.
- Bright, J. I., Baker, K. D. & Neimeyer, R. A. (1999). Professional and paraprofessional group treatments for depression: a comparison of cognitive-behavioral and mutual support interventions. *Journal of consulting and clinical psychology*, 67, 491–501. doi:10.1037/0022-006X.67.4.491.
- Bryant, R. A., Moulds, M. L., Guthrie, R. M., Dang, S. T. & Nixon, R. D. V. (2003). Imaginal exposure alone and imaginal exposure with cognitive restructuring in treatment of posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology*, 71, 706–712. doi:10.1037/0022-006X.71.4.706.
- Butler, A. C., Chapman, J. E., Forman, E. M. & Beck, A. T. (2006). The empirical status of cognitive-behavioral therapy: a review of meta-analyses. *Clinical Psychology Review*, 26(1), 17-31. doi: 10.1016/j.cpr.2005.07.003.
- Cahill, S. P., Rothbaum, B. O., Resick, P. A. & Follette, V. M. (2009). Cognitive-behavioral therapy for adults. In E. B. Foa (Ed.), *Effective treatments for PTSD: Practice guidelines from the International Society for Traumatic Stress Studies* (2 ed., pp. 139-222). New York, NY: Guilford Press.
- Cerqueira, D. R., Carvalho, A. X., Lobão, W. J. & Rodrigues, R. I. (2007). Análise dos custos e conseqüências da violência no Brasil, *Instituto de Pesquisa Econômica Aplicada (Ipea)*. doi: <http://hdl.handle.net/11058/1824>.
- Connor, K. M., Sutherland, S. M., Tupler, L. A., Malik, M. L. & Davidson, J. R. (1999). Fluoxetine in post-traumatic stress disorder. Randomised, double-blind study. *British Journal of Psychiatry*, 175, 17–22. doi: 10.1192/bjp.175.1.17.
- Davidson, J. (2006). Pharmacologic treatment of acute and chronic stress following trauma: 2006. *Journal of Clinical Psychiatry*, (suppl 2). Retrieved from http://breathofhopefoundation.org/articles/v67s0205_PharmcoTx.pdf.
- Davidson, J. R., Rothbaum, B. O., van der Kolk, B. a, Sikes, C. R. & Farfel, G. M. (2001). Multicenter, double-blind comparison of sertraline and placebo in the treatment of posttraumatic stress disorder. *Archives of General Psychiatry*, 58(5), 485–492. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/11343529>.

- Diffede, J., Olden, M. & Cukor, J. (2014). Evidence-based treatment of post-traumatic stress disorder. *Annual Review of Medicine*, 65, 319–332. doi:10.1146/annurev-med-051812-145438.
- Ehlers, A., Bisson, J., Clark, D. M., Creamer, M., Pilling, S., Richards, D... & Yule, W. (2010). Do all psychological treatments really work the same in posttraumatic stress disorder? *Clinical Psychology Review*, 30(2), 269-276.
- Ehlers, A. & Clark, D.M. (2000). A cognitive model of posttraumatic stress disorder. *Behavioral Research and Therapy*, 38(4), 319-345. doi:10.1016/s0005-7967(99)00123-0.
- Elkin, I., Parloff, M. B., Hadley, S. W. & Autry, J. H. (1985). NIMH Treatment of Depression Collaborative Research Program. Background and research plan. *Archives of general psychiatry*, 42, 305–316. doi:10.1001/archpsyc.1985.01790260103013.
- Festinger, D. & DeMatteo, D. (2008). Subject Selection. In Nezu, A. M. & Nezu, C. M. (2008). *Evidence-based outcome research: a practical guide to conducting randomized controlled trials for psychosocial interventions*. New York, NY: Oxford University Press.
- Foa, E. B., Ehlers, A., Clark, D. M., Orsillo, S. M. & Tolin, D. F. (1999). The Posttraumatic Cognitions Inventory (PTCI): Development and Validation, *Psychological Assessment*, 11(3), 303–314. doi: 10.1037/1040-3590.11.3.303.
- Foa, E. B., Hembree, E. A., Cahill, S. P., Rauch, S. A., Riggs, D. S., Feeny, N. C. & Yadin, E. (2005). Randomized trial of prolonged exposure for posttraumatic stress disorder with and without cognitive restructuring: outcome at academic and community clinics. *Journal of Consulting and Clinical Psychology*, 73(5), 953-964. doi:10.1037/0022-006x.73.5.953.
- Foa, E. B., Hembree, E. A. & Rothbaum, B. O. (2007). *Prolonged exposure therapy for PTSD: Emotional processing of traumatic experiences: Therapist guide*. New York: Oxford University Press.
- Foa, E. B. & Kozak, M. J. (1986). Emotional processing of fear: exposure to corrective information. *Psychological Bulletin*, 99, 20–35. Retrieved from: <http://www.ncbi.nlm.nih.gov/pubmed/2871574>.
- Foa, E. B., Molnar, C., Cachman, L. (1995). Change in rape narratives during exposure therapy for posttraumatic stress disorder. *Journal of Traumatic Stress*, 8(4), 675-690.

- Foa, E. B., Steketee, G. & Rothbaum, B. O. (1989). Behavioral/cognitive conceptualizations of post-traumatic stress disorder. *Behavior Therapy*, 20(2), 155–176. doi:10.1016/S0005-7894(89)80067-X.
- Friedman, M. J., Davidson, J. R. T. & Stein, D. J. (2009). Psychopharmacotherapy for adults. In E. B. Foa (Ed.), *Effective treatments for ptsd: Practice guidelines from the International Society for Traumatic Stress Studies* (2 ed., pp. 563-567). New York, NY: Guilford Press.
- Henggeler, S. W., Pickrel, S. G. & Brondino, M. J. (1999). Multisystemic Treatment of Substance-Abusing and -Dependent Delinquents: Outcomes, Treatment Fidelity, and Transportability. *Mental Health Services Research*, 1, 171–184. doi:10.1023/A:1022373813261.
- Hertzberg, M. a, Butterfield, M. I., Feldman, M. E., Beckham, J. C., Sutherland, S. M., Connor, K. M. & Davidson, J. R. (1999). A preliminary study of lamotrigine for the treatment of posttraumatic stress disorder. *Biological Psychiatry*, 45(9), 1226–1229. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/10331117>.
- Kasper, S. & McEwen, B. S. (2008). Neurobiological and clinical effects of the antidepressant tianeptine. *CNS Drugs*, 22, 15–26. doi:10.2165/00023210-200822010-00002.
- Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R. & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*, 62, 593–602. doi:10.1001/archpsyc.62.6.593.
- Krupnick, J. L., Sotsky, S. M., Simmens, S., Moyer, J., Elkin, I., Watkins, J. & Pilkonis, P. A. (1996). The role of the therapeutic alliance in psychotherapy and pharmacotherapy outcome: findings in the National Institute of Mental Health Treatment of Depression Collaborative Research Program. *Journal of Consulting and Clinical Psychology*, 64, 532–539. doi:10.1037/0022-006X.64.3.532.
- Lund, B. C., Abrams, T. E., Bernardy, N. C., Alexander, B. & Friedman, M. J. (2013). Benzodiazepine prescribing variation and clinical uncertainty in treating posttraumatic stress disorder. *Psychiatric Services (Washington, D.C.)*, 64(1), 21–27. doi:10.1176/appi.ps.201100544.
- Machado, M. H. (2012). Trabalho e emprego em saúde. In *Políticas e sistema de saúde no Brasil* (pp. 259-276). Fiocruz.
- Markowitz, J. C., Spielman, L. A., Scarvalone, P. A. & Perry, S. W. (2000). Psychotherapy adherence of therapists treating HIV-positive patients with depressive symptoms. *The*

- Journal of Psychotherapy Practice and Research*, 9(2), 75–80. Retrieved from <http://vuir.vu.edu.au/19368/29/00jpr075.pdf>.
- Marshall, R. D., Beebe, K. L., Oldham, M. & Zaninelli, R. (2001). *Efficacy and safety of paroxetine treatment for chronic PTSD: a fixed-dose, placebo-controlled study. The American journal of psychiatry* (Vol. 158, pp. 1982–1988). doi:10.1176/appi.ajp.158.12.1982.
- Martenyi, F. (2002). Fluoxetine v. placebo in prevention of relapse in post-traumatic stress disorder. *The British Journal of Psychiatry*, 181(4), 315–320. doi:10.1192/bjp.181.4.315.
- McEwen, B.S., Chattarji, S., Diamond, D.M., Jay, T.M., Reagan, L.P., Svenningsson, P., Fuchs, E., (2010). The neurobiological properties of tianeptine (Stablon): from monoamine hypothesis to glutamatergic modulation. *Mol. Psychiat.* 15, 237e249.
- McRae, A. L., Brady, K. T., Mellman, T. a, Sonne, S. C., Killeen, T. K., Timmerman, M. A. & Bayles-Dazet, W. (2004). Comparison of nefazodone and sertraline for the treatment of posttraumatic stress disorder. *Depression and Anxiety*, 19(3), 190–6. doi:10.1002/da.20008.
- Mello, P. G., Silva, G. R., Donat, J. C. & Kristensen, C. H. (2013). An update on the efficacy of cognitive-behavioral therapy, cognitive therapy, and exposure therapy for posttraumatic stress disorder. *The International Journal of Psychiatry in Medicine*, 46(4), 339-357. doi:10.2190/pm.46.4.b.
- Mendes, D. D., Mello, M. F., Ventura, P., Passarela, C. D. M. & Mari, J. D. J. (2008). A systematic review on the effectiveness of cognitive behavioral therapy for posttraumatic stress disorder. *International Journal of Psychiatry in Medicine*, 38, 241–259. doi:Doi 10.2190/Pm.38.3.B.
- Monnelly, E. P., Ciraulo, D. A., Knapp, C. & Keane, T. (2003). Low-dose risperidone as adjunctive therapy for irritable aggression in posttraumatic stress disorder. *Journal of Clinical Psychopharmacology*, 23, 193–196. doi:10.1097/00004714-200304000-00012.
- Mowrer, O. H. (1960). *Learning Theory and Behavior*. Hoboken, NJ: John Wiley & Sons.
- Netto, L. R., Cavalcanti-Ribeiro, P., Pereira, J. L., Nogueira, J. F., Santos, L. L., Lira, S. B., ... Quarantini, L. C. (2013). Clinical and socio-demographic characteristics of college students exposed to traumatic experiences: a census of seven college institutions in Northeastern Brazil. *PloS One*, 8(11), e78677. doi:10.1371/journal.pone.0078677

- Nezu, A. M. & Nezu, C. M. (2008). *Evidence-based outcome research: a practical guide to conducting randomized controlled trials for psychosocial interventions*. New York, NY: Oxford University Press.
- Onder, E., Tural, U., Aker, T., (2006). A comparative study of fluoxetine, moclobemide, and tianeptine in the treatment of posttraumatic stress disorder following an earthquake. *Eur. Psychiat.* 21, 174-179.
- Reich, D. B., Winternitz, S., Hennen, J., Watts, T. & Stanculescu, C. (2004). A preliminary study of risperidone in the treatment of posttraumatic stress disorder related to childhood abuse in women. *Journal of Clinical Psychiatry*, 65, 1601–1606. Retrieved from http://article.psychiatrist.com/dao_1-login.asp?ID=10001152&RSID=55495661726456.
- Shinohara, H., Figueiredo, C., Rangé, P. & Falcone, E. (2011). A prática da terapia cognitiva no Brasil. *Psicoterapias cognitivo-comportamentais: um diálogo com a psiquiatria*. Porto Alegre, RS, BR: Artmed.
- Silva, T. L. G. D., Capra-Ramos, C., Victorazzi, A. R., da Silva, F. C., Lima, C. W. M., Brunnet, A. E. & Pizzinato, A. (2012). Análise temática e metodológica da publicação científica em Psicologia no Brasil. *Psicologia em Revista*, 18(2), 330-346. doi: <http://dx.doi.org/10.5752/P.1678-9563.2012v18n2p330>.
- Steckler, T. & Risbrough, V. (2012). Pharmacological treatment of PTSD - established and new approaches. *Neuropharmacology*, 62(2), 617-627. doi: 10.1016
- Stein, D. J., Zungu-Dirwayi, N., van Der Linden GJ & Seedat, S. (2000). Pharmacotherapy for posttraumatic stress disorder. *Cochrane Database of Systematic Reviews (Online)*, CD002795. doi:10.1002/14651858.CD002795
- Stout, S.C., Owens, M.J., Nemeroff, C.B. (2002). Regulation of corticotropin-releasing factor neuronal systems and hypothalamic-pituitary-adrenal axis activity by stress and chronic antidepressant treatment. *J. Pharmacol. Exp. Ther.* 300, 1085e1092
- Szymańska, M., Budziszewska, B., Jaworska-Feil, L., Basta-Kaim, A., Kubera, M., Leśkiewicz, M., ... Lasoń, W. (2009). The effect of antidepressant drugs on the HPA axis activity, glucocorticoid receptor level and FKBP51 concentration in prenatally stressed rats. *Psychoneuroendocrinology*, 34(6), 822–832. doi:10.1016/j.psyneuen.2008.12.012.
- Taylor, S. (2006). *Clinician's guide to PTSD: A cognitive-behavioral approach*. New York, NY: Guilford Press.

- Tucker, P., Zaninelli, R., Yehuda, R., Ruggiero, L., Dillingham, K. & Pitts, C. D. (2001). Paroxetine in the treatment of chronic posttraumatic stress disorder: results of a placebo-controlled, flexible-dosage trial. *The Journal of Clinical Psychiatry*, 62, 860–868. Retrieved from: <http://www.ncbi.nlm.nih.gov/pubmed/11775045>.
- Van der Kolk, B. A., Dreyfuss, D., Michaels, M., Shera, D., Berkowitz, R., Fislser, R. & Saxe, G. (1994). Fluoxetine in posttraumatic stress disorder. *The Journal of Clinical Psychiatry*, 55(12), 517–522. doi:10.1037/t04100-000.
- Van Minnen, A., Wessel, I., Dijkstra, T. & Roelofs, K. (2002). Changes in PTSD patients' narratives during prolonged exposure therapy: a replication and extension. *Journal of Traumatic Stress*, 15(3), 255–258. doi:10.1023/A:1015263513654
- Wampold, B. E., Imel, Z. E., Laska, K. M., Benish, S., Miller, S. D., Flückiger, C., ... Budge, S. (2010). Determining what works in the treatment of PTSD. *Clinical Psychology Review*, 30(8), 923–933. doi:10.1016/j.cpr.2010.06.005.
- Xu, L.-F., Chu, W.-J., Qing, X.-Y., Li, S., Wang, X.-S., Qing, G.-W., ... Guo, L.-H. (2006). Protopine inhibits serotonin transporter and noradrenaline transporter and has the antidepressant-like effect in mice models. *Neuropharmacology*, 50(8), 934–940. doi:10.1016/j.neuropharm.2006.01.003.

FINAL CONSIDERATIONS

With the violence rates growing progressively in the last decades, PTSD is becoming a more common disorder, which implicates in more research and advances in the field. Considering that in Brazil we have twice the prevalence of PTSD (Netto et al., 2013) than international studies estimate in foreign countries (Kessler et al., 2005), it is concerning that we still have so little research in the clinical field in Brazil. In this dissertation, we aimed to contribute to change this reality by trying to understand (1) what types of CBT interventions are more effective for PTSD symptoms; (2) if our patients would benefit from a CBT protocol; and (3) how the process of therapy influence trauma memory content.

In our systematic review we found there are many standard techniques used to decrease each of the components of PTSD, including (1) relaxation exercises; (2) in vivo and imaginal exposure; (3) and cognitive restructuring techniques. We also found that studies that used those techniques seem to be very effective for PTSD treatment. However, most studies we found compared those techniques with (1) less effective treatments, such as supportive therapy or counseling; or with (2) no treatment at all, such as repeated assessments or wait-list conditions. Thus, it is necessary to develop studies comparing those techniques against each other to verify (1) which ones are more effective (2) for which patients, and (3) in which order.

In our study we were able to design a method to start exploring this field, by dividing our sessions on three blocks and using different CBT techniques in each block. By the end of treatment, we could see that our patients had significantly reduced their symptoms of PTSD and depression after therapy and that they maintained those gains at the 3-months follow-up. However, since we did not have a control group, we were not able to compare our protocol with other treatment conditions. Additionally, we may hypothesize that our results could have been influenced by all techniques combined during treatment (a cumulative effect), which made difficult to correlate specific symptoms changes to specific CBT techniques. Nevertheless, our results showed our protocol could treat PTSD patients in order to overcome the disorder after 16 CBT sessions and that exposure is one of the core techniques responsible for this improvement. This result corroborates with the international literature about the topics.

Although there is little doubt in the literature about the effect of exposure in reducing PTSD symptoms, there is still need to understand its process regarding memory content. Our third study tried to explore this field by conducting a content analysis about memory narratives before and after therapy. Previous studies already did this with trauma victims by

using Prolonged Exposure (PE) and found similar results to ours (Foa, Molnar & Cashman, 1995; VanMinnen et al., 2002). As far as we know, there is a lack of research exploring if the same would happen with fewer exposure sessions with less time dedicated to imaginal exposure, such as it happens with CBT protocols. There were studies exploring the effect of CBT in memory, but those were focused on memory intrusions as in re-experiencing symptoms of PTSD (Hackman, Ehlers, Speckman and Clark, 2004). We were interested in understanding how patients process and remember the experience *per se*, i.e. the memory of the trauma when voluntarily evoked. We found there is a difference in the content remembered/recounted before and after therapy, especially concerning physiological sensations. We also found patients start treatment with memory narratives very fragmented and sensorial, and after exposure, their memory narratives become more coherent and rational. As a qualitative research, our goal was to understand the process of change in memory narratives and our sample was enough to raise interesting hypothesis, but we understand there it is necessary to increase our sample size so we can also conduct more complex analysis to be able to generalize our results.

As well as other studies about CBT for PTSD (Bryant, Moulds, Guthrie, Dang & Nixon, 2003; Foa et al., 1999; Mello, Silva, Donat & Kristensen, 2013; Mendes, Mello, Ventura, Passarela & Mari, 2008; Wampold et al., 2010) our research show Brazilian patients diagnosed with PTSD show important symptom changes after therapy and that this change might be influenced by the exposure to the traumatic memory, so its content becomes less threatening after a few sessions. Apparently, more or less 6 sessions of 30 minutes of exposure are enough to organize memory and to orient patient to process it differently.

Our results add to the literature more evidence of CBT efficacy and the influence of exposure in PTSD treatment. Thus, we think it is concerning that therapists are still resistant to CBT and its components. Some would say some degree of experience is necessary to conduct a session of exposure. However, in our study our therapists had different degrees of expertise and with training and supervision they showed enough ability to achieve the results we presented.

We understand clinical research is a field that needs to be further explored in Brazil, especially concerning PTSD. Accordingly, so far we had little research in Brazil to support evidence-based treatments for PTSD, and those studies are what help our mental health professionals to be more confident about CBT efficacy in Brazilian patients. With our study we hope to give these professionals more empirical evidence to treat the ones suffering with PTSD.

REFERENCES

- Bryant, R. A., Moulds, M. L., Guthrie, R. M., Dang, S. T. & Nixon, R. D. V. (2003). Imaginal exposure alone and imaginal exposure with cognitive restructuring in treatment of posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology, 71*, 706–712. doi:10.1037/0022-006X.71.4.706.
- Foa, E. B., Ehlers, A., Clark, D. M., Tolin, D. F. & Orsillo, S. M. (1999). The Posttraumatic Cognitions Inventory (PTCI): Development and validation. *Psychological assessment, 11*(3), 303. doi 10.1037/1040-3590.11.3.303.
- Foa, E. B., Molnar, C., Cashman, L. (1995). Change in rape narratives during exposure therapy for posttraumatic stress disorder. *Journal of Traumatic Stress, 8*(4), 675-690.
- Hackmann, A., Ehlers, A., Speckens, A. & Clark, D. M. (2004). Characteristics and content of intrusive memories in PTSD and their changes with treatment. *Journal of traumatic stress, 17*(3), 231-240. doi 10.1023/B:JOTS.0000029266.88369.fd
- Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R. & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry, 62*, 593–602. doi:10.1001/archpsyc.62.6.593.
- Mello, P. G., Silva, G. R., Donat, J. C. & Kristensen, C. H. (2013). An update on the efficacy of cognitive-behavioral therapy, cognitive therapy, and exposure therapy for posttraumatic stress disorder. *The International Journal of Psychiatry in Medicine, 46*(4), 339-357. doi:10.2190/pm.46.4.b.
- Mendes, D. D., Mello, M. F., Ventura, P., de Medeiros Passarela, C. & de Jesus Mari, J. (2008). A systematic review on the effectiveness of cognitive behavioral therapy for posttraumatic stress disorder. *The International Journal of Psychiatry in Medicine, 38*(3), 241-259. doi 10.2190/PM.38.3.b
- Netto, L. R., Cavalcanti-Ribeiro, P., Pereira, J. L., Nogueira, J. F., Santos, L. L., Lira, S. B., ... Quarantini, L. C. (2013). Clinical and socio-demographic characteristics of college students exposed to traumatic experiences: a census of seven college institutions in Northeastern Brazil. *PLoS One, 8*(11), e78677. doi:10.1371/journal.pone.0078677
- Van Minnen, A., Wessel, I., Dijkstra, T. & Roelofs, K. (2002). Changes in PTSD patients' narratives during prolonged exposure therapy: a replication and extension. *Journal of Traumatic Stress, 15*(3), 255–258. doi:10.1023/A:1015263513654

Wampold, B. E., Imel, Z. E., Laska, K. M., Benish, S., Miller, S. D., Flückiger, C., ... Budge, S. (2010). Determining what works in the treatment of PTSD. *Clinical Psychology Review, 30*(8), 923–933. doi:10.1016/j.cpr.2010.06.005.