

**Media Induced Anxiety in the Active Duty**

**Medical Clinic Setting: A Pilot Study**

Copyright

by

Jonathan M. Strobel, D.O.

2009

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**Media Induced Anxiety in the Active Duty**

**Medical Clinic Setting: A Pilot Study**

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**Medical Clinic Setting: A Pilot Study**

**by**

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**Capstone**

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## **Dedication**

I would like to dedicate this project to the men and women in uniform, who serve the United States with dedication and commitment. Their unselfish acts have always and will always inspire me to be a better citizen and not take our freedoms for granted.

## **Acknowledgements**

I would like to thank the men and women of the Troop Medical 4 clinic at Fort Gordon, Georgia. I appreciate your time, efforts, and assistance in accomplishing this research. I would also like to acknowledge my mentor Dr. Christine Choi, my co-investigator 1LT Melissa Francisco, statistician Dr. Richard Topolski, and my Capstone committee members Dr. Laura Rudkin, Dr. Dan Freeman, and Dr. Ruth Levine. Thank you for your time, direction, and insight.

# **Media Induced Anxiety in the Active Duty**

## **Medical Clinic Setting: A Pilot Study**

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Jonathan M. Strobel, D.O., MPH

The University of Texas Medical Branch, 2009

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Media stimuli have long been used in the research community to evaluate autonomic responses among subpopulations. Prior to the terrorist attacks of 9/11, the majority of research had been focused on war veterans, rape/crime victims, and vehicle accident victims. Post- 9/11, a new surge of research has been focused on survivors, eyewitnesses, and media watchers to the extraordinary events that occurred on that historic day. The current news media stimuli of violent activities and economic and political turmoil are potential stressors for active duty soldiers who have faced or will face similar events in the near future. These types of media stressors could potentially lead to unnecessary autonomic response in the active duty soldiers who are a susceptible population. Currently there is no policy in place to regulate what is being shown in the waiting rooms of clinics attended by these soldiers. The aims of this Capstone are twofold. The first aim is to assess the impact of current news media coverage on the anxiety levels of active duty soldiers in the clinical setting. The second aim is to propose recommendations regarding the types of media that should be restricted in the military medical clinic setting.

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## CHAPTER 1: INTRODUCTION

Stress inducing stimuli and their effects on the human body have long been studied by the research community. The majority of the research has been focused on subpopulations that have been exposed to extraordinary events. These subpopulations include accident victims, crime/rape victims, war veterans, and most recently survivors of terrorist attacks. These subpopulations have been exposed to different forms of experimental stimuli to evaluate the effects that the stimuli have on autonomic response. Researchers have utilized vital signs including pulse rate, blood pressure, and respiratory rate to evaluate signs of induced anxiety/stress (e.g., Goldfinger et al., 1998; McFall et al., 1990; Orr et al., 1995). Other physiological sympathetic responses (i.e. skin conductance, orbicularis oculi electromyogram/plasma epinephrine/blood cortisol levels/CSF norepinephrine/CSF CRH) have also been employed to evaluate evoked anxiety (Geraciotti et al., 2008; Goldfinger et al., 1998; McFall et al., 1990; Orr et al., 1995; Ragonesi et al., 2008). These responses were monitored after subpopulations had been re-exposed to an extraordinary event that they had experienced earlier in their life through audio, visual, or tactile stimuli.

Scientific study of combat-related anxiety disorders has been around since the mid-1980s with the evaluation of Vietnam Veterans readjusting to civilian life (Friedman, 2004). Since that time, numerous randomized controlled trials have evaluated the effects of violence-related stimuli on the physiologic response in combat veterans with Post-

Traumatic Stress Disorder (PTSD) (e.g., Goldfinger et al., 1998; Klaric et al., 2007; McFall et al., 1990; Orr et al., 1993; Orr et al., 1995; Pitman et al., 1987). In one randomized trial, Vietnam veterans with PTSD demonstrated significantly larger physiological responses in response to personal combat imagery compared to non-PTSD subjects (Orr et al., 1993). Several other trials also demonstrated an elevation in fight or flight symptoms in individuals with diagnosed PTSD following exposure to auditory and visual stimuli (Goldfinger et al., 1998; McFall et al., 1990; Orr et al., 1995; Pitman et al., 1987). Even though most of these individuals had been out of the combat environment for many years and have presumptively developed coping mechanisms (Friedman, 2004), they continue to show signs of elevated autonomic nervous system activation (McFall et al., 1990; Orr et al., 1993; Orr et al., 1995; Pitman et al., 1987).

After September 11<sup>th</sup>, 2001, media coverage of horrific events was instantaneous, intense, and graphic. Daily coverage of the attacks on the World Trade Center Towers and the eventual collapse of the structures were live, un-edited, and constantly broadcasted. The research done after these attacks have shown that increasing levels of visual and auditory stimuli from TV media, like terrorist attacks, raises an individual's stress levels (Bernstein et al., 2007; Comer et al., 2008; Schuster et al., 2002; Slone et al., 2006; Slone et al., 2008). Typical symptoms of psychological disturbances include depression, anxiety, impaired concentration, sleep disturbances, and somatic symptoms of headache, chest pain, dyspnea, dizziness, and insomnia. Traumatic stress is also

associated with an increase in harmful behaviors such as alcohol use, poor diet, and smoking (Bock et al., 2003).

America has been in a high tempo struggle with war fronts in both Afghanistan and Iraq since the terrorist attacks on 9/11. Since that time, the United States Armed Forces have deployed hundreds of thousands of young soldiers, including National Guard and Reservists, to advance U.S foreign policies. In their duties, these service men and women have witnessed extra-ordinary and traumatic events. These traumatic events are not new threats that face the active duty soldier. There is, however, a new potential stressor that faces them – the around the clock news media, with vivid reminders of traumatic events. Though much of the past research since the 1980s has assessed service members 10 to 20 years after their service (Friedman, 2004), little research has been focused on the current active duty soldier and the type of media that they perceive as stressful. Like the images from 9/11, many of the current news channels broadcast daily depictions of violent activities and economic and political turmoil with little consideration of the potential effects the sights and sounds of these broadcasts might have on the active duty soldiers. With such a young and potentially vulnerable population, with uprooted social support groups and underdeveloped coping strategies, it is highly possible that exposing active duty soldiers to such dramatic footage could have far worse ramifications than just providing them with current news updates. Thus, the extensive media coverage of violence and political and economic crisis could have a profound effect on the anxiety the active duty soldiers' experience during their military service.

## A. SPECIFIC AIMS:

The findings from this pilot study evaluating the effects of current media on the autonomic response of the active duty soldier are intended to inform recommendations for the types of media that should be restricted in the military medical clinic setting to minimize stress induction. The first part of this paper will be a basic science review defining the major types of anxiety disorders, how these disorders are expressed in humans, and the most current research methods of measuring anxiety in humans. The second part of this paper will be a literature review of past research on veterans with media induced anxiety disorders and recent research on media induced anxiety in multiple subpopulations. These two sections will guide my capstone into my current research question aim 1: Determine the impact of current news media coverage on the anxiety levels of active duty soldiers in the clinical setting. This study is designed to test the hypothesis that active duty soldiers may experience elevated autonomic nervous system activation in response to current news media stimuli compared to exposure to The Food Channel Network. From the results of aim 1, aim 2 will establish recommendations for the types of media that should be restricted in the military medical clinic setting.

## B. MAJOR TYPES OF ANXIETY DISORDERS

Anxiety is an expression of the fight or flight response which has a biological purpose of self-preservation. This idea was first described in 1914 by Walter Cannon, an

American physiologist at Harvard Medical School. When an individual is presented with a perceived or real threat, the sympathetic nervous system is activated resulting in a constellation of physiological responses. Once removed from the threat, the parasympathetic nervous system takes over and restores the body to a normal level of arousal. In some individuals, however, the parasympathetic nervous system has a limited ability to return the body back to normal and these individuals are more prone to developing a variety of physiological problems, as well as some of the anxiety disorders. Anxiety disorder is a psychiatric term covering a number of psychiatric diagnoses: Generalized Anxiety Disorder, Panic Disorder, Social Phobia, Specific Phobia, Obsessive-Compulsive Disorder, Post-Traumatic Stress Disorder (PTSD), and Acute Stress Disorder. The anxiety disorders of greatest concern to the combat veteran include acute stress disorder and PTSD (Gaylord, 2006). Since 1914, diagnostic criteria have been established for the identification of anxiety disorders. The description of anxiety disorders that follow are diagnostic criteria obtained from the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) established by the American Psychiatric Association.

Posttraumatic Stress Disorder is an anxiety disorder that can develop after a traumatic experience such as combat, rape, hostage situations, or even serious accidents. These traumatic episodes can lead to individuals re-experiencing the event with symptoms of increased arousal (Frances, 2000). Persistent avoidance of stimuli associated with the trauma and numbing of individual's general responsiveness is also typically seen. For an

individual to be diagnosed with PTSD, symptoms must be present for at least one month (Frances, 2000).

Acute Stress Disorder is characterized by symptoms very similar to PTSD and occurs immediately in the aftermath of a traumatic event. The individual is exposed to a traumatic experience that results in an intense fear, helplessness, or horror causing dissociative symptoms either during or after experiencing the distressing event (Frances, 2000). These dissociative symptoms can include: detachment, reduction in awareness of surroundings, derealization, depersonalization, and dissociative amnesia. Acute stress disorder differs from PTSD in the duration of symptoms. Whereas PTSD has to be present for at least one month, Acute stress disorder is defined as disturbance lasting from 2 days to 4 weeks in duration (Frances, 2000). During these episodes of intense fear, individuals can experience symptoms of accelerated heart rate/palpitations, trembling or shaking, sensation of shortness of breath, choking sensation, chest pain, nausea or abdominal distress, dizziness, lightheaded or faint, derealization, fear of dying, paresthesias, and chills/hot flashes (Frances, 2000).

### C. MEASURING ANXIETY IN HUMANS

Human anxiety is an adaptive process that has evolved as a way to protect an individual from danger. Anxiety evokes a fight or flight autonomic response that has beneficial effects on the body to enable protection from harm. Anxiety symptoms can be either cognitive/emotional and/or physiological in nature. Cognitive and emotional symptoms include feelings of apprehension or dread, trouble concentrating, feeling tense

or jumpy, anticipating the worst, irritability, or restlessness (Tierney Jr. et al., 2005). Physiological symptoms include tachycardia, sweating, stomach upset, dizziness, frequent micturation or diarrhea, tremors, twitching, muscle tension, headaches, fatigue or insomnia (Tierney Jr. et al., 2005). In limited duration and amount, these effects can be very beneficial to an individual in a dire situation. Tachycardia is vital for a flight or fight response because it forces blood to circulate rapidly to important regions of the body allowing for a quick response. Tachypnea is crucial in supplying much needed oxygen to the organs required for immediate action. Sweating prevents the body from overheating, while temporary memory impairment shifts the mind away from higher order thinking towards the immediate dangerous surroundings resulting in poor concentration and recall. Many of the symptoms that rise from a fight or flight response are routinely used by researchers to evaluate for anxiety disorders (Goldfinger et al., 1998; McFall et al., 1990; Orr et al., 1995). The evaluation of the fight or flight response is not limited to visible symptoms. During a fight or flight response, the body also expresses stress through elevation in serologic markers like cortisol, corticotrophin-releasing hormone (CRH),  $\alpha$ -amylase, norepinephrine, and epinephrine. Researchers have used this knowledge to better understand the anxiety response. Grillon et al. used a combination of subjective questionnaires, vital signs, and hypothalamic-pituitary-adrenal response (e.g., salivary cortisol,  $\alpha$ -amylase) to determine autonomic nervous system activation (Grillon et al., 2007). Other researchers have employed skin conductance, orbicularis oculi electromyogram, plasma epinephrine, blood cortisol levels, cerebrospinal fluid (CSF) norepinephrine and CSF CRH to evaluate for autonomic response (Geraciotti

et al., 2008; Goldfinger et al., 1998; McFall et al., 1990; Orr et al., 1995; Ragonesi et al., 2008).

#### D. PAST RESEARCH OF MEDIA TO INDUCE ANXIETY IN VETERANS

The use of media to induce anxiety symptoms in sub-populations is not a novel ideal. Numerous controlled trials have evaluated the effects of violent stimuli on the physiologic response in combat veterans diagnosed with PTSD (Goldfinger et al., 1998; Klaric et al., 2007; McFall et al., 1990; Orr et al., 1993; Orr et al., 1995; Pitman et al., 1987).

One study that evaluated the autonomic response in Vietnam combat veterans diagnosed with PTSD was conducted by McFall and colleagues (1990). They studied the sympathetic nervous system activation of 10 veterans in response to war-related films and compared them to a control group of 11 subjects. Measured variables included circulating plasma catecholamines, blood pressure, heart rate, respiratory rate, and subjective anxiety. In this study, they showed that PTSD diagnosed veterans had an elevated autonomic response compared to controls and that the response was longer lasting following viewing of combat footage (McFall et al., 1990).

Pitman and colleagues utilized descriptive reading to evaluate the psychophysiological response of PTSD Vietnam combat veterans. Eighteen combat veterans diagnosed with PTSD were compared to 15 veterans without PTSD. Each subject was exposed to a “scripted” combat experience and asked to imagine the events the script portrayed. Heart rate, skin conductivity and frontalis electromyogram were

monitored during readings. Results showed a consistent exaggeration of physiologic arousal during recollection in the PTSD group compared to the control group (Pitman et al., 1987).

Orr and colleagues (1995) utilized Dr. Pitman's script-driven imagery techniques to study the psychophysiological response of World War II and Korean War combat veterans that possessed the diagnosis of PTSD. They assessed heart rate, skin conductivity, and left lateral frontalis electromyograph in eight PTSD and twelve non-PTSD veterans, and had similar results to Dr. Pitman. They concluded that PTSD veterans had a markedly larger physiological response during personal combat imagery compared to non-PTSD subjects (Orr et al., 1995).

Murphy and colleagues (2008) wrote a review article in the Army Medical Corps Journal about the mental health of veterans. The authors explained that although the majority of military personnel lead productive lives, there is a minority who have difficulty reintegrating into normal life. And while most of the research is focused on PTSD, the majority of issues come from service personnel with alcohol dependence, depression and anxiety disorders. To make matters worse, most of these individuals are reluctant to seek medical care for their mental health issues. Dr. Murphy et al. concludes it is imperative steps be taken to improve the knowledge and expertise of primary care workers about veteran's mental health issues (Murphy et al., 2008).

## E. MEDIA INDUCED ANXIETY IN NON-VETERAN POPULATIONS

News media displaying war, violence, and disturbing news have been known to induce psychological effects on the human mind and mood (Villani, 2001; Earles et al., 2002; Huesmann, 2007). As television watching has increased over the past decade, it is conceivable that the human psyche is experiencing difficulty maintaining balance (Strasburger et al., 2000). Since 2001 there has been a new focus of research devoted to evaluating the adverse side effects arising from diverse media shown on network television. Noteworthy are the fact many research results show a high correlation between violent acts portrayed on media and anxiety symptoms (Comer et al., 2008; Szabo et al., 2007).

Bernstein and colleagues (2007) evaluated the relationship between viewing news media of the September 11<sup>th</sup> terrorist attacks and the development of new-onset probable PTSD. All patients utilized in the study were individuals without a diagnosis of probable PTSD at the onset of the study. Probable PTSD cases were identified through the use of a modified National Women's Study module for PTSD based on DSM-III-R criteria. Of the 1787 subjects analysed in the cohort study, 99 (5.6%) had developed criteria for probable PTSD at the 1-year follow-up. Subjects exposed to 12 or more hours of terrorist attack news demonstrated a 3.4 fold increased risk of developing PTSD symptoms. Results of their study suggest that traumatic news media exposure may influence the development of psychopathology in the average population (Bernstein et al., 2007).

This study was followed up by another that looked at news broadcasts and psychological outcomes. Ragonesi (2008) looked at the relationship between news

watching and the autonomic response. Ragonesi utilized a questionnaire and cortisol saliva sample on 33 subjects prior and after exposure to news and comedy media. The results failed to show an increase in cortisol levels associated with news media, however subjects reported a significant increase in restlessness and a decrease in joy when exposed to news media as compared to comedy media (Ragonesi et al., 2008).

Bock et al. (2003) conducted research to evaluate the stress and anxiety effects of the September 11th attacks on individuals who were already under surveillance in a smoking-cessation treatment study. In the study, she was able to capitalize on the opportunity to re-assess subjects before and after the attacks on the World Trade Center. Bock evaluated 80 men and women who were participating in two studies of smoking cessation and had completed data collection six weeks prior to September 11<sup>th</sup> attacks. Six weeks after the attacks, the 80 subjects were mailed an assessment questionnaire to evaluate how they had been affected by the attacks and their stress reaction. Seventy-five subjects responded to questionnaire with some interesting results. She demonstrated that physician visits increased 30% from pre-attack levels and emergency room visits more than doubled. Subjects also reported an increase in both somatic and psychological symptoms including sleep disturbances and disturbing dreams. However, unlike previous studies of traumatic event visualization, stress, anxiety, and depression levels did not show a significant increase among subjects. This study demonstrates an individual does not need to have first hand experience of a vivid televised event to have psychological and somatic impact (Bock et al., 2003).

## F. ASSESS IMPACT OF CURRENT NEWS MEDIA COVERAGE ON ACTIVE DUTY SOLDIERS

With America's struggle between two war fronts in both Afghanistan and Iraq, a new threat potentially faces the American Service Member, the news media. Present scientific knowledge has yet to determine the effect that news media has on the current active duty soldier. Many current news channels, like CNN and Fox News, broadcast daily images of graphic violence and economic and political turmoil that could potentially have a negative effect on the active duty soldier. The current research will evaluate the stress response of the active duty soldier in the clinical setting through a subjective questionnaire and evaluation of vital signs (i.e. pulse rate and blood pressure). The study will test the hypothesis that active duty soldiers experience an elevation in sympathetic nervous system activation and subjective stress in response to current news media stimuli compared to a non-threatening media like The Food Channel Network.

## CHAPTER 2: DATA AND METHODS

To answer aim 1, the author of this paper conducted a study that employed active duty soldiers who are military health care beneficiaries assigned for primary medical care at the Troop Medical Clinic 4, Fort Gordon, Georgia. The study received Institutional Review Board (IRB) approval from Dwight D. Eisenhower Army Medical Center in February 2008. A total of 500 current active duty soldiers were recruited for the study with 250 subjects in each of the two study groups – the intervention group and the control group. The sample size projection was conducted by calculating weighted averages and standard deviations across three previous studies (Bernstein et al., 2007; Krakoff et al., 1988; Shimada et al., 1990). The weighted averages and standard deviations were then entered into G-Power (Buchner et al., 2009) to calculate the appropriate sample size to achieve a power of 0.80. Groups were formed by alternating days of exposure to either CNN News or Food Channel Network scheduling on subjects' random clinic visits. The experiment evaluated 350 current active duty soldiers from February 2008 to May 2009 who were seeking care for non-acute medical issues (see Figure 1). Inclusion criteria included active duty soldiers assigned to Troop Medical 4 clinic at Fort Gordon Georgia. Exclusion criteria include currently on blood pressure medications, acute illness, unwilling to participate, and medical history of anxiety disorder diagnosis. Seventy-eight percent (n=274) were included in this analysis. The remainder of subjects (n = 76) were excluded because of incomplete questionnaires, medication conflicts, or history of anxiety disorder diagnosis (see Figure 1). Patients remained in the clinic waiting room

for their scheduled appointment with the standard protocol of the clinic. Clinics were alternately assigned a potentially stressful or non-stressful media broadcast which was played in the background of the clinic waiting room. Fewer subjects were exposed to The Food Channel Network (n = 108) compared to CNN news (n =166) because of broadcast schedules in the morning preventing the Food Channel Network from being seen each scheduled day for about one hour (see Figure 1). The previously mentioned factors prevented the study from reaching its statistical power goal of 0.80, and left it with a rather low power of 0.18.

The study utilized similar physiological measures (i.e., blood pressure and heart rate) as previous researchers to evaluate for signs of a stress response (e.g., McFall et al., 1990; Orr et al., 1995). All subjects' vital signs (blood pressure and pulse rate) were taken after exposure to the media and prior to seeing the physician. Blood pressure and heart rate were obtained with a Welch Allyn 300 Series sphygmometer serial number ja050447. The data was recorded on the back of a demographic questionnaire given to each subject and was collected upon the end of clinic visit for analysis. Media stimuli had been switched daily throughout the data collection period to eliminate any difference in day-to-day events. Questionnaires took approximately 2-5 minutes to complete and included the following information: age, gender, race, past medical and surgical history and past, recent, or future deployments; TV media shown during waiting room visit, duration of exposure, and if they found the media subjectively stressful and why (see Figure 2). A research statement was provided to each subject at the end of the clinic visit

that explained the purpose of the study and provided contact information if any adverse symptoms from the independent variable were experienced (see Figure 3). De-identified data analysis was conducted at the University of Texas Medical Branch after IRB exemption was obtained in December 2008.

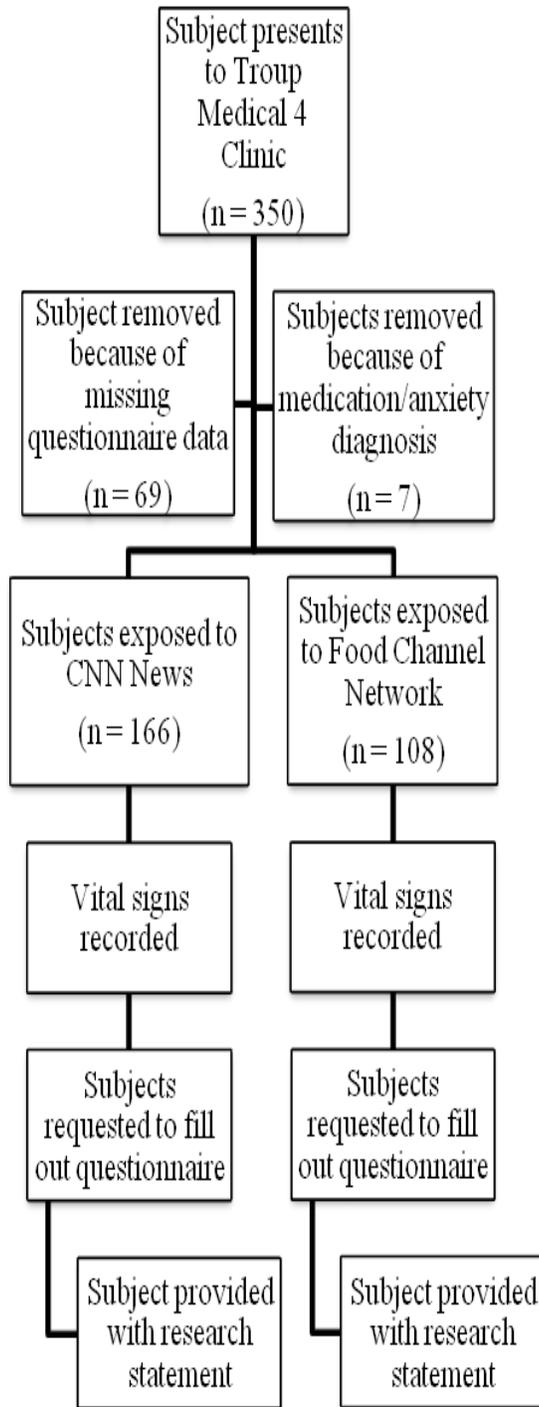


Figure 1: Algorithm of Procedures of Troop Medical 4 Clinic for Stress Screening

Environmental Induced Hypertension in the  
Active Duty Soldier in the Clinical Setting

**Patient Questionnaire: (Only Fill Out Once) Location: TMC 4 Clinic**

**Please fill in blanks or mark answers as appropriate.** Date: \_\_\_\_\_

Reason for doctor's visit? Injury / Acute Illness / Other (please specify): \_\_\_\_\_

Age: \_\_\_\_\_ Sex: M / F Race: \_\_\_\_\_

Current Status:  Active Duty- MOS: \_\_\_\_\_  Warrior in Transition?

1. What is your current living situation?  Private home/apartment  
 Barracks  
 Other (please specify) \_\_\_\_\_

2. Have you or do you currently have high blood pressure? Yes No  
If so, do you take blood pressure medication? Yes No

3. Do you currently use tobacco products? Yes No  
If you answered yes: Smoke / Smokeless tobacco / both

How many years have you used tobacco? 0-1 1-5 6-10 >15  
How much did you smoke (i.e. 1 pack/day) 0-1 1-2 >2

4. Have you been deployed during OLF/OIF? Yes No  
If so, please specify country and dates \_\_\_\_\_

5. Are you scheduled to be deployed to a combat zone within the next two years?  
Yes / No / Don't know  
If so, when? \_\_\_\_\_

6. Have you been diagnosed with: major depression / Anxiety / Post Traumatic Stress Disorder?

7. Approximately how long was your wait before being seen by physician? \_\_\_\_\_

8. What did you occupy yourself with until being seen?  
 reading/magazine?  
 Television/Movie?  
 Other: \_\_\_\_\_  
What was the content/channel of media? (i.e. politics/war/market/news/etc) \_\_\_\_\_

9. Did you find the media disturbing/stressful in nature? Yes No  
If yes, Why? \_\_\_\_\_

Thank you very much for your participation!!

Figure 2: Media Induced Anxiety in the Active Duty Soldier in the Clinical Setting Questionnaire

Jan 2, 2008

Dear Participant:

My name is Dr. Jonathan Strobel and I am an interning physician at Dwight D. Eisenhower Army Medical Center. In order to finish my internship I must conduct a research project. As part of my research, I am gathering data to determine the impact of TV media on blood pressure in the clinical setting at the Troop Medical Clinic 4. The data collection includes a survey intended to examine soldier's personal views on the media they observed while in clinic and how stressful they perceived the material. This study may offer some insight into how the army can better serve the soldier medically and prevent any undo stress/anxiety on the active duty soldier. The research experiment is designed to ensure that neither individuals nor their positions can be identified. Additionally, all information will be secured and destroyed upon completion of the survey. I am inviting you to participate in this research study by completing the attached survey during your TMC-4 visit.

The attached questionnaire will require approximately ten to fifteen minutes of your time to complete. There is no compensation for responding nor is there any known risk associated with completing the survey. Participation is strictly voluntary and you may refuse to participate at any time. In order to ensure that all information remains confidential, please **do not** include your name. Copies of the project will be provided to the Clinical Investigator monitors and will be offered to the Information Management Division at DDEAMC. All survey results are presented in aggregate form only, so no individual responses are revealed in the project. If you choose to participate, please answer the questions as honestly as possible and return the completed survey promptly to the TMC-4 front desk staff. You may skip any questions that you are not comfortable answering.

Thank you for taking the time to assist me in my educational endeavors. The data collected will provide useful information to help me finish my project. Completion of this survey will indicate your willingness to participate in this study. If you require additional information, have questions, or would like feedback about the findings of the study please contact me at the number or email listed below.

Sincerely,

Dr. Jonathan Strobel  
(706)-787-0321  
Jonathan.Strobel1@us.army.mil

Dr. Christine Choi Faculty Monitor  
(706) 854-1682  
fekul1mj@cmich.edu

Figure 3: Impact Statement Distributed to Participants of Study.

## CHAPTER 3: RESULTS

Of the 274 subjects that were included in the analysis, sixty-five percent (n=179) were men, the average age was 30.77 years, forty percent (n=110) had never been deployed while on active duty, and sixty percent (n = 164) were white/Asian/other (see Table 2). Fifty-one percent (n = 141) of the subjects were between the ages of 21 and 30 years old while one percent (n =3) were over the age of 50. There was no statistically significant differences between subjects of CNN news media compared to The Food Channel Network, suggesting successful randomization of groups (see Table 2).

### A. PSYCHOPHYSIOLOGIC RESPONSES TO MEDIA

A series of t-tests were utilized to evaluate the effects media type had on each dependent variable including systolic blood pressure (SBP), diastolic blood pressure (DBP), and heart rate (HR) while controlling for other demographic variables like age, gender, and ethnicity. These t-Tests failed to show any significant differences between the independent variables of CNN news and The Food Channel network media exposure groups on the dependent variables of systolic blood pressure ( $p = 0.48$ ), diastolic blood pressure ( $p = 0.74$ ), and heart rate ( $p = 0.49$ ). Interestingly, there was a significant statistical difference ( $p = 0.04$ ) between subjects' measured heart rate and history of being deployed ( $M = 76.28$ ,  $SD = 13.14$ ) or non-deployed ( $M = 80.00$ ,  $SD = 15.80$ ) (see Table 1).

A  $X^2$  test was utilized to evaluate the effects media exposure had on the reported stress experienced by subjects with the assumptions that 1) The samples were independent of each other; 2) the sample tested was randomly selected from a fixed distribution; and 3) the sample size was sufficiently large (Riffenburgh, 2006). With respect to subjective stress experienced by CNN news and The Food Channel, it was observed that significantly more individuals reported experiencing stress with CNN news. CNN news broadcasts elicited sixteen cases of subjective stress (9.6%), compared to two cases (1.9%) of subjective stress experienced in The Food Channel exposure ( $p = 0.01$ ).

Table 1: Mean Physiologic Heart Rate Comparing Media Exposure to Deployment Status

<b>Food channel</b>	<b>Mean (BPM)*</b>	<b>SD</b>	<b>p</b>
Deploy	74.53	13.14	0.04
Not deployed	80.00	15.80	
<b>News</b>			
Deploy	76.28	13.48	>0.05
Not deployed	74.14	13.83	

\*BPM = Beats Per Minute

Table 2: Demographic Distribution by Media Exposure in Percentages

<b>Characteristics</b>		<b>Total (%)</b> (n = 274)	<b>News Media (%)</b> (n = 166)	<b>Food Media (%)</b> (n = 108)
<b>Sex</b>	Male	<b>65</b>	<b>64</b>	<b>68</b>
	Female	<b>35</b>	<b>36</b>	<b>33</b>
<b>Average Age (Years)</b>		<b>30.77</b>	<b>30.72</b>	<b>30.86</b>
<b>Age</b>	0-20 years	<b>6</b>	<b>7</b>	<b>5</b>
	21-30 years	<b>51</b>	<b>51</b>	<b>52</b>
	31-40 years	<b>29</b>	<b>29</b>	<b>29</b>
	41-50 years	<b>13</b>	<b>13</b>	<b>13</b>
	51-60 years	<b>1</b>	<b>0</b>	<b>1</b>
<b>Deployment History</b>				
	Never Deployed	<b>40</b>	<b>41</b>	<b>39</b>
	Deployed	<b>60</b>	<b>59</b>	<b>61</b>
<b>Race/ethnicity</b>				
	White/Asia/other	<b>60</b>	<b>61</b>	<b>59</b>
	African-American	<b>33</b>	<b>32</b>	<b>33</b>
	Hispanic	<b>7</b>	<b>7</b>	<b>8</b>
<b>Reported Stress</b>				
	Yes	<b>7</b>	<b>10</b>	<b>2</b>
	No	<b>93</b>	<b>90</b>	<b>98</b>

Table 3: Group Means, Standard Deviations, and Results of t-Tests for the Demographics for the Physiologic Measures

Dependent Variable	News Media Mean (SD)	Food Media Mean (SD)	t-value	p-value
Systolic Blood Pressure	122.86 (12.33)	121.82 (11.27)	0.71	0.48
Diastolic Blood Pressure	76.07 (9.46)	75.70 (8.00)	0.33	0.74
Heart Rate	75.42 (13.62)	76.68 (14.42)	0.69	0.49

**MEAN VALUES OF PHYSIOLOGICAL MEASURES  
ASSOCIATED WITH MEDIA EXPOSURE**

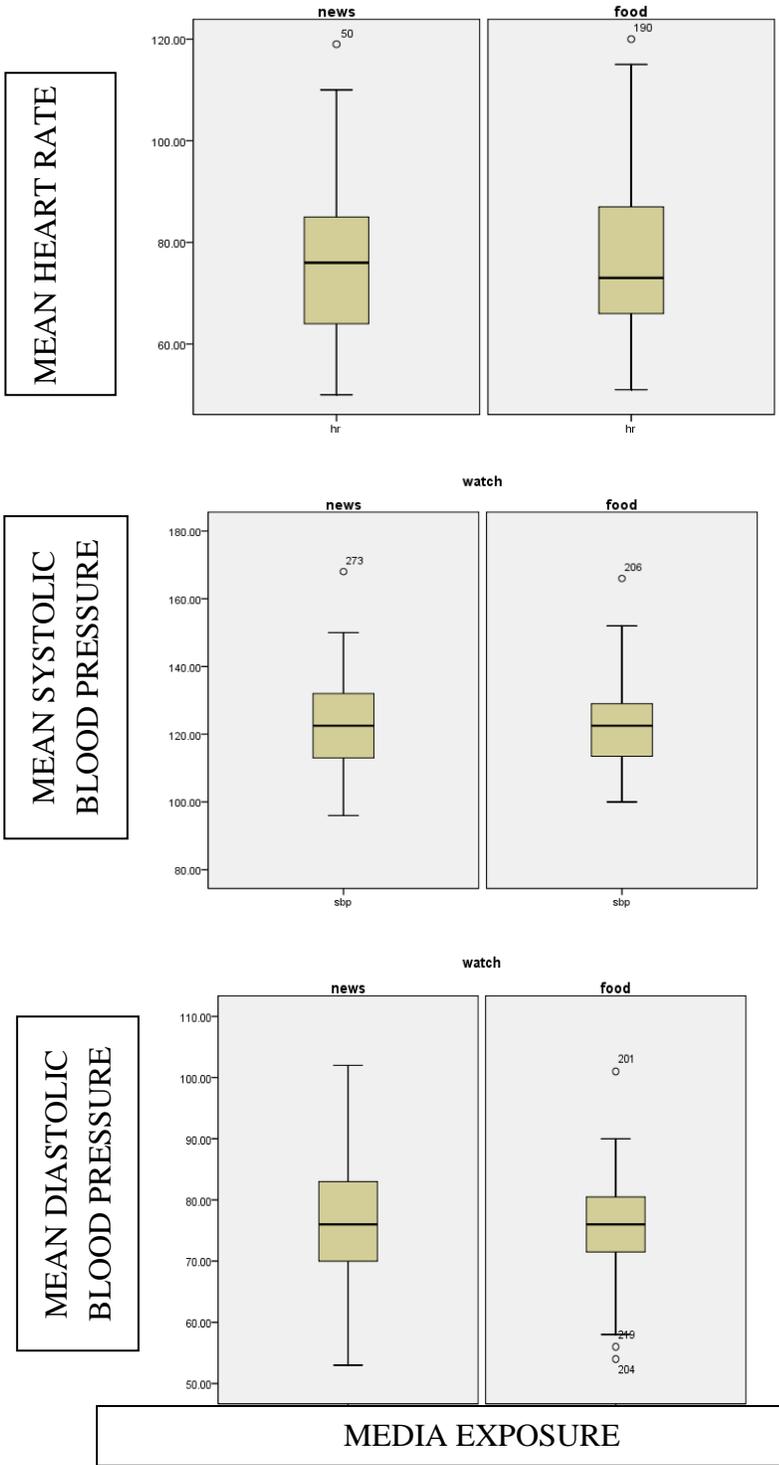


Figure 4: Mean Physiological Measures Associated with Media Exposures

## CHAPTER 4: DISCUSSION

### A. CNN NEWS VS. THE FOOD CHANNEL PHYSIOLOGY

In this study of media effects on the psychological and physiological responses in the active duty soldier, we found that current medical clinic media selection did not affect the physiological measures of the exposed subjects. This finding did not support the hypothesis that CNN news media exposure would stimulate a larger effect on the physiological response in active duty soldiers. These results fail to reproduce the same physiological effects seen in previous studies on media induced stressors in patients diagnosed with an anxiety disorder (McFall et al., 1990; Orr et al., 1995). The lack of findings suggests that although certain audio and visual stimuli have been shown to cause autonomic responses in humans with diagnosed anxiety disorder like PTSD, current news media displayed in the medical clinic setting do not appear to affect the physiologic response in subjects not diagnosed with an anxiety disorder (see figure 4). These results are also supported by Ragonesi et al. who found that after news exposure, saliva cortisol levels did not increase even though there was a significant decrease in joy and an increase in restlessness among subjects not diagnosed with an anxiety disorder (Ragonesi et al., 2008).

The statistical difference seen between subjects' measured heart rate and history of being deployed or non-deployed oddly was largely driven by the heart rate going up in the non-deployed group when The Food Channel network was the media exposure

suggesting an interaction between deployment and media. This finding appeared to be support a combat resilience hypothesis that was observed in a previous study conducted by Goldfinger et al. (1998). They discovered that non-combat control groups had a greater heart rate physiologic change compared to the combat group. Through their research, they speculated that combat control groups may have an underlying resiliency to media unless they are trauma-related (Goldfinger et al., 1998). The data from our examination seems to support Goldfinger's conclusions to combat related resiliency to certain stimuli. Another explanation to the lower heart rate phenomena could be that deployed subjects are in better aerobic condition compared to non-deployed subjects resulting in a slower measured heart rate.

## B. CNN NEWS VS. THE FOOD CHANNEL PSYCHOLOGY

Although there were no observed physiological differences between media exposure groups during the course of the experiment, there was a statistically significant result with subjects' perceived stress depending on the type of media exposure. It was found that CNN news media elicited a greater number of subjective stress responses among active duty soldiers. This finding supports the idea that subjective stressors are more prevalent among news channels like CNN then compared to The Food Channel Network. These results are consistent with prior research which showed that news broadcasts trigger increased negative emotions and decreased positive affect (Szabo et al., 2007; Ragonesi et al., 2008).

### C. LIMITATIONS OF STUDY

The use of news media, like random unedited CNN broadcasts, is highly variable in what they show. Because of this fact, it was difficult to control for equal exposure of the independent variable. Whereas some footage on CNN (war/violence) may cause a stress response in this particular population, other footage exposure (politics) may have little psychophysiological effect on the active duty soldier. These unedited broadcasts of politics, violence, war, and economics could have limited the physiologic and psychological response experienced by the active duty soldier and the type of media they perceive as stressful.

Although statistical significance was found in the objective stress response data, another limitation of this study was the number of recruited subjects. Through evaluation of previous studies, a sample size projection of 500 subjects with 250 individuals in each exposure group was necessary to achieve a power of 0.80 (Bernstein et al., 2007; Krakoff et al., 1988; Shimada et al., 1990). Obtaining only 274 subjects for evaluation, our results are limited by the 0.18 power of the study which was far short of the intended power of 0.80.

Two other limitations present in the current study include both the duration of media exposure and the attention subjects paid to the media during their clinic visits. Although procedures of the military medical clinic were followed for all patients, to minimize impact on the medical clinic no set time period was established for media exposure. This minimized the amount of media exposure to individuals who were seen in the clinic

earlier in the day and extended periods of exposure as the clinic bogged down later in the day. The duration of exposure was taken into consideration via the questionnaire and no significant difference was noted between the two media variables. Attention paid to media broadcasts was also a limitation that was present in the current study design. Although individuals were placed in the waiting room where exposure to media occurred, subjects were not monitored or encouraged to only observe the media. Many subjects noted on their questionnaire they were working on other things during the media exposure. Anticipating these three limitations, questions were included to minimize their effects and allow for improved statistical analysis.

#### D. SUMMARY

Previous mental health research has looked at a wide range of effect possibilities associated with media exposures among certain subpopulation. Over the past 30 years researchers have focused the majority of their efforts evaluating the effects of audio and visual stimuli on subpopulations like combat veterans with and without the diagnosis of anxiety disorders from nearly every major war or conflict. Through their investigations, they have consistently shown that subjects with a diagnosed anxiety disorder, like PTSD, display a hyperactive autonomic response when compared to non-combat veteran control groups. And while research has focused on PTSD in veterans, the most frequent mental health issues facing soldiers include: alcohol problems, depression, and acute stress disorder (Murphy et al., 2008). With this study we wanted to evaluate the effect that

current news media, which has shown to be subjectively disturbing to many subpopulations, has on current active duty soldiers who have not been diagnosed with an anxiety disorder. Unlike veterans of past wars, who have been evaluated years after their exposure to war and violence, many active duty soldiers have been exposed to recent traumatic experiences and have a high probability of returning to war. The fear is that the military medical clinic is exposing the active duty soldier to undo stress and worsening any mental health issues. The results reported in this paper show that active duty soldiers find current news media like CNN to possess more subjective stressors compared to The Food Channel Network. These results lead us into aim 2 of this paper: establish recommendations for the types of media that should be restricted in the military medical clinic setting. By demonstrating that CNN news is a statistically significant subjective stressor to the active duty soldier, this paper would recommend that all news media channels that project similar coverage be prohibited from military clinic settings. Through restricting the subjective stressors, like news media in military clinics, the Medical Corp can minimize potentially adverse effects on a soldier's mental health.

In addition, since the start of Operation Iraqi Freedom and Operation Enduring Freedom, there has been an increase in the awareness of the mental health of active duty soldiers both after returning home from war and upon redeployment. The United States Army has developed a comprehensive screening tool that identifies soldiers who may have mental health issues and directs them to the appropriate medical assistance. Not only are soldiers screened physically, but a mental health risk assessment and

reassessment are done during and post deployment to a combat theater. And with development of effective evidence-based treatments and guidelines like cognitive-behavioral therapy and selective serotonin-reuptake inhibitors (Friedman, 2004), the Armed Services will not only be prepared to protect the country it serves but also be able to protect those that serve.

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## **Vita**

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