

Trauma and the Emotional Stroop Task: Differences between Gender and Ethnicity

Monica Calderon

B.A., Department of Psychology, California State University Stanislaus, 1 University Circle, Turlock, CA 95382

Received 16 April 2019; accepted May 2019

Abstract

Individuals that have experienced a deeply distressing or disturbing event are considered to have faced trauma. Although previous studies have assessed trauma, relatively little is known about the cognitive processes that occur across ethnic variations. When assessing trauma, different genders are often exposed to different types of trauma, as well as differences in exposure to certain types of trauma. These variations are examined in the color-naming interference on an Emotional Stroop Task. This was measured to assess attentional bias on individuals who have faced a traumatic event. Fifty-four participants were recruited and used for analysis. Findings are discussed in the context of differences among gender, ethnicity, and trauma groups.

Keywords: trauma, Emotional Stroop Task, women

Introduction

The American Psychological Association (2018) defines trauma as a person's emotional response to an extremely negative event. More specifically, the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2013) has defined traumatic event as being exposed to death, threatened death, actual or threatened serious injury, or actual or threatened sexual violence. Examples of trauma include sexual abuse, physical abuse, exposure to warfare, disasters, serious accidents, and sudden deaths of loved ones. The Sidran Institute of Traumatic Stress Education and Advocacy (2019) reports that an estimated 70% of adults in the United States have experienced a traumatic event at least once in their lives.

Groups that have experienced a deeply distressing or disturbing experience such as war veterans (Ashley, Honzel, Larsen, Justus, & Swick, 2013) and those with childhood trauma (Wingenfeld et al., 2011) have been studied to better understand the underlying mechanisms that occur when these events occur. Despite the plethora of studies examining the links between trauma and the general population, few studies have examined the role that ethnicity may play. By taking a multi-ethnic approach, we can begin understand how experiences specific to members of different ethnic group that may be directly affected by that risk. Given that the minority trauma experience differs from the Caucasian trauma experience, various researchers have commented on the need for cross-cultural assessment of trauma (Williams & Mohammad, 2009). Some of these experiences include experiencing racism, micro-aggressions, and

perceived discrimination that may further enhance trauma symptoms (Coleman, 2016). Trauma reaction can be further emphasized in minority groups when factors such as racial discrimination and micro-aggressions are accounted for (Williams, Metzger, Leins, & DeLapp, 2018).

While trauma affects many individuals, certain groups are more susceptible to witness trauma. For example, lifetime prevalence of exposure to trauma varies by ethnic group: White/non-Hispanic (83.66%), African-Americans (76.37%), Asian/Hawaiian/Pacific Islanders (66.38%), and Hispanics (68.17%; Roberts, Gilman, Breslau, & Koenen, 2011). Whites were more likely than the other groups to have any trauma this includes, to learn of a trauma to someone close, and learn of an unexpected death (Roberts, Gilman, Breslau, & Koenen, 2011).

With these figures in mind, the risk developing PTSD was significantly higher for Blacks, statistically equivalent for Hispanics, and lower for Asians compared with Whites (Roberts, Gilman, Breslau, & Koenen, 2011). However, the risk of child maltreatment was higher for Blacks and Hispanics, specifically as children and witnessing domestic violence. Blacks had a higher risk of active combat, and Asians had a higher risk of having been a civilian in a war zone than Whites, (Roberts, Gilman, Breslau, & Koenen, 2011).

The difference in the exposure to different types of trauma may be due to factors such as minority status, which has been significantly associated with negative mental health outcomes, (Meyer & Cooper, 2003). Members of certain ethnic groups are also at a disadvantage when it comes accessing certain

resources (e.g., education, occupation) that have a direct impact on health. (Coleman, 2016).

While certain groups are more likely to come into contact with trauma, there are cultural factors that influence the post-trauma experience. Marshal, Schnell, and Miles (2009) found that in comparison to non-Hispanic Caucasians, Hispanics have reported higher levels of overall posttraumatic distress. When comparing a group of officers who experienced similar traumas, Hispanic officers were found to experience more severe PTSD symptoms, (Marshal, Schnell, & Miles, 2009). Factors that may contribute to these symptoms include a reaction to trauma such as depersonalization and derealization, post trauma coping (e.g., wishful thinking and self-blame coping), and post-trauma social context (e.g., receiving less social support; Pole, Best, Metzler, & Marmar, 2005).

Beyond ethnicity, there are also differences in the types of traumatic events that each gender is exposed to (Silove et al., 2017). Previous studies have found PTSD to be more prevalent in women than in men (Tolin & Foa, 2006). When assessing trauma, different genders are often exposed to different types of trauma, as well as differences in exposure to certain types of trauma. Men's traumatic experiences are often related to interpersonal assault and violence, exposure to war, and accidents (Silove et al., 2017). These gender differences were further analyzed when assessing trauma in veterans, results indicated that males obtained trauma by war exposure in comparison to women who reported physical and sexual victimization (Freedy et al., 2010).

Upon looking at the traumatic experiences that women face, it is often related to gender-based violence (e.g., rape, general assault, stalking, beaten up by spouse or partner) and network trauma (e.g., unexpected death of loved one, child with serious illness, traumatic event to loved one; (Silove et al., 2017). When assessing sexual abuse, an estimated 43.9% of women and 23.4% of men had experienced other forms of sexual violence that included forced penetration, sexual coercion, unwanted sexual contact, and noncontact unwanted sexual experience (Breiding, 2015). Along with those statistics, PTSD has been found to be more prevalent in women than men (Khoury, Tang, Bradley, Cubells, & Ressler, 2010).

It is noted that men have reported more traumatic events whereas women have noted a higher lifetime prevalence of PTSD (Silove et al., 2017).

One of the byproducts of exposure to trauma is the effect it has on cognitive processing. Attentional bias is one of these cognitive processes that is altered

in the short-term. There is already a general attentional bias towards threat that allows us to prioritize incoming threatening information (Notebaert, Crombez, Van Damme, Houwer, & Theeuwes, 2011), but trauma can enhance attentional bias. Previous studies have found signs of hyper-vigilance manifest as attentional bias toward threatening cues (Bar-Haim, Lamy, Pergamin, & Barkermans-Kranenberg, 2007) and greater interference of negative emotional stimuli on attention (Pineles, Shipherd, Welch, & Yovel, 2007). Attentional bias has been implicated in the possible cause and maintenance of prevalent mental disorders (Van Bockstaele et al., 2013).

Due to its ability to detect attentional bias to trauma related words, the Emotional Stroop Task has been suggested to be used as a pre- and post-task with intervention studies of PTSD patients (Ashley, Honzel, Larsen, Justus, & Swick 2013). The Emotional Stroop Task has been used on several types of trauma including war veterans. Veterans with PTSD were unequally slower in responding to combat-related words when compared to control groups (Ashley, Honzel, Larsen, Justus, and Swick 2013). For trauma- exposed individuals, those who experienced more severe abuse/trauma showed greater interference (Carpos & Blanchette 2014). By assessing the concept of greater interference, we can assess that trauma has had an effect of attention span of an individual. These slower reaction times provoke a cycle in which the person becomes hyper-vigilant to all stimuli related to the persons' worries, thus evoking an emotional response which creates an emotional disturbance for the individual, (Williams, Mathews, MacLeod, & Steinberg, 1996).

Previous studies have focused on individuals who have faced traumas using the Emotional Stroop Task and have completely disregarded the concept of ethnic variations. As we begin to shift toward assessing mental health through the psychological, biological, and sociological lens, we must begin to assess many of the standards that have been set in place. By incorporating ethnic variations, we can better understand the interactions among trauma and attentional bias in different groups.

Upon analyzing these different groups, we can begin to get a holistic view of the role that attentional bias may play in these disorders. The purpose of this study is to examine how attentional bias may vary in women who are minorities and have faced trauma using the Emotional Stroop Task. It is hypothesized that women who have faced trauma will have a longer reaction time and increased errors in trauma related words as compared to men who have faced trauma. It is also hypothesized that minorities

with trauma will have a longer reaction time to trauma related words as compared to Caucasian/Whites with trauma. Finally, it is hypothesized that individuals with trauma will have a longer reaction time and more errors than those without trauma.

Method

Participants

Participants included 54 (7 males and 46 females) with the following ethnic breakdown: 10 White, 33 Hispanic or Latino, 1 Native Hawaiian or Pacific Islander, and 9 other. Given the low sample of different ethnic groups, minority groups were categorized together while the Whites were categorized in a group of their own. Our sample consisted of 40 individuals who had experienced trauma in some way and 14 who did not. Those who had trauma were asked to state what type of trauma they had encountered. The average age of participants was 21.85 years ($SD=4.80$) Consent was obtained from each participant prior to beginning the questionnaire. Participants were recruited by flyers that were placed on CSU Stanislaus bulletin boards. This same flyer was posted on Facebook in trauma-related groups. Undergraduate and graduate students from CSU Stanislaus were recruited using the Psychology and Child Development department’s online subject pool, Sona. Participants signed up for a timeslot that was convenient for them. Flyers were also promoted via Facebook groups, and fliers placed on campus on the boards. Every individual who participated in the study was placed in a raffle to win a Kindle Fire.

Measures

The Emotional Stroop task (EST) is a modified version of the Stroop task. In the Stroop Task, subjects were presented with a list of words written in different colors and are asked to name the colors that words are printed as quickly as possible while ignoring the content of the word. For example, the word printed is yellow, but the inside of the word is red, participants are asked to name the word as quickly as possible while ignoring the content of the word.

While the task may seem similar, the Emotional Stroop task focuses on engaging an emotional response that interferes with the task demand of color naming rather than creating a cognitive conflict in the incongruent word presented. This is accomplished by including emotionally triggering words (e.g., death, cancer, war, etc.) in the list. Demonstrating that there is an attentional bias in coloring naming bias across various disorders is the most common use of the task (Williams & Mathews, 1996).

A modified version of the Life Event Checklist (LEC) for DSM-5 was used to determine if the individual has faced trauma. The list consists of a number of difficult or stressful things that may occur in the lives of others. For each category to the participants has the option to indicate whether the event happened to them, witnessed it, learned about it, part of their job, not sure, and doesn’t apply. Those who indicated that a traumatic event happened to them or witnessed it were placed in the trauma group.

The questionnaire was completed on Qualtrics. After completing the questionnaire, the participant was the redirected to the millisecond program where the Emotional Stroop Task was performed. Data on the Emotional Stroop Task was recorded on the millisecond website. Word stimuli was presented on a computer screen that was accessible to participant. The color identification response for each stimulus was detected by means of a keyboard. During the task, subjects were asked to press the key on which the color was represented by.

Procedure

Participants were asked to press the associated color key to identify the target word. A practice trial containing six words was administered to ensure that the participants understood the task. A fixation cross was present in the center of the screen (500ms) followed by a target stimulus. The task contained five different categories each containing 20 words: neutral (center, shapes), death (suicide, homicide), sexual abuse (consent, penetrate), physical abuse (slap, damage) and combat-related (warlord, gunman). The colors consisted of green, yellow, blue, and red. After the response was recorded the subject was told if their answer was correct or incorrect.

Results

An independent samples t-test was conducted to examine the differences between males and females using the scores of an Emotional Stroop Task reaction time for neutral, death, sexual abuse, physical assault, and combat categories. Results indicated a significant difference for physical trauma between males ($M = 1253.22, SD = 404.25$) and females ($M = 896.03, SD = 241.52$), $t(37) = 2.62, p = .01$. See Table 1 for other categories.

Table 1

Mean Scores of Gender Reaction Time in ms

Gender Group	Mean (SD)	RT	t-value	df	p-value
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Male	1097.25 (477.94)	Death	1.54	37	.13
Female	885.22 (232.96)				
Male	1014.20 (289.63)	Sex	1.08	37	.28
Female	886.95 (216.18)				
Male	1116.59 (567.95)	Combat	1.28	37	.21
Female	908.62 (273.48)				

An independent samples t-test was conducted to examine the differences between males and females using the scores of an Emotional Stroop Task percentage correct for neutral, death, sex, physical, and combat categories. Results indicated a significant difference for combat trauma between males ($M = 87.66$, $SD = 11.65$) and females ($M = 96.15$, $SD = 5.75$), $t(51) = 3.11$, $p = .03$. See Table 2 for other categories.

Table 2

Gender Group	Mean (SD)	RT	t-value	df	p-value
Male	92.86 (9.77)	Death	1.07	51	.28
Female	95.55 (5.54)				
Male	92.86 (7.81)	Sex	.90	51	.37
Female	95.16 (6.09)				
Male	94.80 (11.86)	Physical	.39	51	.70
Female	95.75 (4.63)				

Bias scores were calculated by subtracting the mean reaction time neutral word presentation from each of the means reaction to stimulus word conditions (death, combat, sexual abuse, and physical). A positive bias score indicated a slowed response latency to identify the color of the word when compared to the time take to identify the color of the word in the neutral condition (explaining why there are negative means). An independent samples t-test was conducted to examine the differences between males and females using the scores of an Emotional Stroop Task bias for death, sex, physical, and combat categories. An independent samples t-test was conducted to examine the differences between males and females using the scores of an Emotional Stroop Task bias reaction for death, sex,

physical, and combat categories. See table 3 for reaction time

Table 3

Gender Group	Mean (SD)	RT	t-value	df	p-value
Male	44.98 (189.38)	Death	.72	51	.47
Female	-15.92 (210.76)				
Male	-4.84 (80.77)	Sex	.03	51	.97
Female	-8.14 (275.57)				
Male	136.96 (175.59)	Physical	1.11	51	.26
Female	-9.37 (337.58)				
Male	39.76 (236.36)	Combat	-.17	51	.87
Female	53.03 (185.67)				

An independent samples t-test was conducted to examine the differences between Non-Hispanic Whites and Non-Whites for using an Emotional Stroop Task reaction time for neutral, death, sex, physical, and combat categories. Results indicated a significant difference for sexual abuse trauma between whites ($M = 1043.5833$, $SD = 232.92$) and minorities ($M = 865.15$, $SD = 207.08$), $t(38) = 2.21$, $p = .03$. See Table 4 for other categories.

Table 4

Ethnicity Group	Mean (SD)	RT	t-value	df	p-value
White	983.84 (254.66)	Death	.97	38	.34
Minorities	887.27 (265.48)				
White	1002.37 (239.21)	Physical	.86	38	.40
Minorities	913.18 (283.95)				
White	1031.08 (299.61)	Combat	1.10	38	.28
Minorities	903.78 (307.91)				

An independent samples t-test was conducted to examine the differences between Whites and minorities using an Emotional Stroop Task for the percent correct for neutral, death, sex, physical, and combat categories. Results indicated a significant difference for death related trauma between Whites ($M = 90.45$, $SD = 9.20$) and minorities ($M = 96.28$, $SD = 4.73$), $t(52) = 2.89$, $p = .01$. Results also indicated a difference for physical abuse trauma between Whites ($M = 91.82$, $SD = 9.77$) and minorities ($M = 95.59$, $SD = 4.29$), $t(52) = 2.42$, $p = .02$. See Table 5 for other categories.

Table 5

<i>Mean Scores of Ethnicity Percent Correct</i>					
Ethnicity Group	Mean (SD)	RT	t-value	df	p-value
White	95.00 (5.44)	Death	.03	52	.98
Minorities	94.94 (6.52)				
White	91.82 (11.89)	Combat	1.60	52	.11
Minorities	95.87 (5.61)				

Bias scores were calculated by subtracting the mean reaction time neutral word presentation from each of the means reaction to stimulus word conditions (death, combat, sexual abuse, and physical). A positive bias score indicated a slowed response latency to identify the color of the word when compared to the time take to identify the color of the word in the neutral condition (explaining why there are negative means). An independent samples t-test was conducted to examine the differences between Whites and minorities using an Emotional Stroop Task for the bias reaction for death, sex, physical, and combat categories. See Table 6 for bias scores.

Table 6

<i>Mean Scores of Ethnicity Bias Reactions</i>					
Ethnicity Group	Mean (SD)	RT	t-value	df	p-value
White	-26.90 (178.57)	Death	-.28	52	.78
Minorities	-6.23 (213.48)				
White	40.53 (102.73)	Sex	.65	52	.51

White	21.06 (349.25)	Combat	-.51	52	.61
Minorities	55.06 (137.11)				
	(200.41)				

An independent samples t-test was conducted to examine the differences between non-trauma groups and trauma using an Emotional Stroop Task for the reaction time for neutral, death, sex, physical, and combat categories. Results indicated there was no significant difference between trauma versus non-trauma groups in terms of reaction time. See Table 7 for reaction time.

Table 7

<i>Mean Scores of Trauma & Non-Trauma Groups Reaction Time in ms</i>					
Group	Mean (SD)	RT	t-value	df	p-value
Non-Trauma	1020.46 (461.45)	Death	1.11	52	.27
Trauma	909.00 (265.03)				
Non-Trauma	1040.53 (414.39)	Sex	1.54	52	.13
Trauma	905.30 (223.18)				
Non-Trauma	1016.41 (337.21)	Physical	.92	52	.36
Trauma	933.25 (274.19)				
Non-Trauma	1180.41 (852.25)	Combat	1.60	52	.12
Trauma	932.42 (306.99)				

An independent samples t-test was conducted to examine the differences between Non-Trauma and Trauma groups using an Emotional Stroop Task for the percent correct for neutral, death, sex, physical, and combat categories. Results indicated a significant difference for sexual assault related trauma between Non-Trauma ($M = 91.88$, $SD = 7.60$) and Trauma ($M = 96.02$, $SD = 5.46$), $t(52) = 2.20$, $p = .03$. See Table 8 for other categories.

Table 8

*Mean Scores of Trauma and Non-Trauma Groups
Percent Correct*

Ethnicity Group	Mean (SD)	RT	t-value	df	p-value
Minorities	-18.53 (278.41)				
White	-9.78 (157.20)	Physical	-.18	52	.86
Non-Trauma	95.78 (7.23)	Death	.40	52	.69
Trauma	95.00 (5.80)				
Non-Trauma	94.48 (8.95)	Physical	.90	52	.37
Trauma	96.14 (4.43)				
Non-Trauma	92.86 (10.04)	Combat	1.40	52	.18
Trauma	95.91 (5.90)				

Bias scores were calculated by subtracting the mean reaction time neutral word presentation from each of the means reaction to stimulus word conditions (death, combat, sexual abuse, and physical). A positive bias score indicated a slowed response latency to identify the color of the word when compared to the time take to identify the color of the word in the neutral condition (explaining why there are negative means). An independent samples t-test was conducted to examine the differences between Non-Trauma and Trauma groups using an Emotional Stroop Task for bias reactions in death, sex, physical, and combat categories. Results indicated a significant difference for death related trauma between Non-Trauma ($M = -105.26$, $SD = 282.49$) and Trauma ($M = 23.26$, $SD = 163.41$), $t(52) = -2.07$, $p = .04$. See Table 9 for other

categories. Table 9

*Mean Scores of Trauma & Non-Trauma Groups
Bias Reaction*

Group	Mean (SD)	RT	t-value	df	p-value
Non-Trauma	-85.19 (463.80)	Sex	-1.33	52	.19
Trauma	19.56 (118.34)				
Non-Trauma	-109.31 (547.09)	Physical	-1.60	52	.18
Trauma	47.51 (184.29)				
Non-Trauma	54.69 (238.31)	Combat	.13	52	.89
Trauma	46.69				

Discussion

The aim of this study was to investigate whether there were gender differences, trauma and non-trauma differences, and/or ethnic differences in the individuals performing the Emotional Stroop Task. This was done by measuring attention (reaction time) and percentage correct on an Emotional Stroop Task. Our results indicated that males reported a longer reaction time in comparison to females in terms of physical assault. These results are consistent with aforementioned research about gender differences in trauma exposure, i.e., males are often exposed to more non-sexual assault (Silove, 2017).

When comparing gender differences and percentage correct, there was a significant difference between males and females in terms of combat with words correct, with males did not getting as many correct as females. This may be due in part because males who are involved in war are found to report war-related trauma in comparison to women who are found to report sexual trauma or physical assault (Freedy et al., 2010).

When comparing reaction time, a significant difference was also found when comparing Non-Hispanic Whites and Minority groups who had trauma in the category of sexual abuse. Whites as a group had the tendency to get the words incorrect. This may be attributed to White women having more sexual assault as adults in comparison non-white participants, (Littleton, Grills-Taquechel, Buck, Rosman, & Dodd, 2013).

When comparing percentage correct, a significant difference was found between Whites and minorities in the category of death related trauma. Indicating that Whites did not get as many words correct as minorities. This concept is consistent with previous studies as Whites are more likely than other groups to experience or witness a death related trauma. As mentioned in Roberts, Gilman, Breslau, and Koenen (2011), this includes seeing someone killed, witnessing a dead body, and unexpected death.

When comparing percentage correct, a significant difference was found between physical abuse trauma between Whites and minorities. These results indicate that Whites obtained less words correct in comparison to minorities in this category. As mentioned in Roberts, Gilman, Breslau, and Koenen (2011), Whites had reported having more incidences of being attacked or beaten up.

Upon assessing percent correct between trauma and non-trauma groups, the non-trauma group reported a getting more words incorrect in the category of sexual assault. This was not expected as previous studies have indicated that trauma exposed individuals would have performed with more errors (Carpos & Blanchette 2014).

When comparing bias reaction time, there was a latency response indicating that the trauma group had a longer time responding to the category of death related trauma. This indicates that there was a greater interference in this category. By comparing bias scores, there was the ability to compare mean scores solely on emotional context. This latency may be attributed to a large portion of our sample size to have faced a life threatening illness or injury given that the effect of the Emotional Stroop Task is believed to show the behavioral response of failing to filter out experience-relevant emotional content, (Williams, Mathews, MacLeod, & Steinberg, 1996).

Limitations

While the results do show some evidence of group differences, there were some limitations to this study. There were originally 137 participants, but due a large portion not downloading the plug-in for the Emotional Stroop Task, the participant pool was reduced to 54. Concerning the results, unequal groups limited the statistical analyses that could be performed.

When analyzing cognition in future studies, it would be valuable to determine when the trauma may have taken place and how the individual feels about the trauma itself. Although individuals have their own timeline for healing, a potential time line can be investigated. The emotional state of the individual in terms of the trauma would be beneficial information also.

Future research can begin to assess resilience in spite of traumatic incidences. Despite culture, income, and socio-economic status, what are some essential characteristics that allow individuals to be resilience in spite of debilitating circumstances? Although we found some significant results for traumatic interference, there was also a trend for certain groups who had faced trauma to perform better on the Emotional Stroop Task. This information can be beneficial for those who have psychiatric illnesses, as we can further understand coping mechanisms as well as personal stories.

Other areas of cognition be further examined in respect to trauma is allowing individuals to express their trauma narratives and its relation to their emotional state. Trauma narratives can directly assess the behavioral responses of individuals by analyzing the content of their personal story as well access self- schemas and the individuals overall cognitive paradigm in relation to self.

Acknowledgements

I would like to thank the California State University, Stanislaus McNair Scholars Program, Honors Program and the SERCA Program for support throughout this research. Dr. Ellen Bell and

Dr. Jamila Newton each provided critical insights and guidance at various stages of the study. I would like to send a special thanks to Dr. Grace Paradis. Without her mentorship and inspiration, this research would not have been possible.

References

- American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.). Arlington, VA: American Psychiatric Publishing.
- Ashley, Victoria, Honzel, Nikki, Larsen, Jary, Justus, Timothy, & Swick, Diane. (2013). Attentional bias for trauma-related words: Exaggerated emotional Stroop effect in Afghanistan and Iraq war veterans with PTSD. *BMC Psychiatry*, 13(1), Article 86.
- Bar-Haim, Y., Lamy, D., Pergamin, L., Bakermans-Kranenburg, M., Van IJzendoorn, M., & Cooper, Harris. (2007). Threat-Related Attentional Bias in Anxious and Nonanxious Individuals: A Meta-Analytic Study. *Psychological Bulletin*, 133(1), 1-24.
- Breiding, M. (2015). Prevalence and Characteristics of Sexual Violence, Stalking, and Intimate Partner Violence Victimization-National Intimate Partner and Sexual Violence Survey, United States, 2011. *American Journal of Public Health*, 105(4), E11-E12.
- Caparos, S., & Blanchette, I. (2014). Emotional Stroop interference in trauma-exposed individuals: A contrast between two accounts. *Consciousness and Cognition: An International Journal*, 28104-112. doi:10.1016/j.concog.2014.06.009.
- Coleman, J. A. (2016). Racial differences in posttraumatic stress disorder in military personnel: intergenerational transmission of trauma as a theoretical lens. *Journal of Aggression, Maltreatment & Trauma*, 25(6), 561-579. doi:10.1080/10926771.2016.1157842
- Freedy, J., Magruder, K., Mainous, A., Frueh, B., Geesey, M., & Carnemolla, M. (2010). Gender differences in traumatic event exposure and mental health among veteran primary care patients. *Military Medicine*, 175(10), 750-8.
- Khoury, L., Tang, Y., Bradley, B., Cubells, J., & Ressler, K. (2010). Substance use, childhood traumatic experience, and posttraumatic stress disorder in an urban civilian population. *Depression And Anxiety*, 27(12), 1077-1086.
- Littleton, H. L., Grills-Tauechel, A. E., Buck, K. S., Rosman, L., & Dodd, J. C. (2013). Health Risk Behavior and Sexual Assault Among Ethnically Diverse Women. *Psychology of Women Quarterly*, 37(1), 7-21. <https://doi.org/10.1177/0361684312451842>
- Marshall, G. N., Schell, T. L., & Miles, J. N. V. (2009). Ethnic differences in posttraumatic distress: Hispanics' symptoms differ in kind and degree. *Journal of Consulting and Clinical Psychology*, 77(6), 1169-1178. doi: 10.1037/a0017721
- Meyer, I., & Cooper, Harris. (2003). Prejudice, Social Stress, and Mental Health in Lesbian, Gay, and Bisexual Populations: Conceptual Issues and Research Evidence. *Psychological Bulletin*, 129(5), 674-697.
- Notebaert, L., Crombez, G., Van Damme, S., De Houwer, J., & Theeuwes, J. (2011). Signals of threat do not capture, but prioritize, attention: A conditioning approach. *Emotion*, 11, 81- 89. <http://dx.doi.org/10.1037/a0021286>

- Pineles SL, Shipherd JC, Welch LP, Yovel I. The role of attentional biases in PTSD: Is it interference or facilitation? *Behaviour Research and Therapy*. 2007;45:1903–1913. doi:10.1016/j.brat.2006.08.021.
- Pole, N., Best, S. R., Metzler, T., & Marmar, C. R. (2005). Why are Hispanics at greater risk for PTSD? *Cultural Diversity and Ethnic Minority Psychology*, 11(2), 144–161. doi:http://dx.doi.org/10.1037/1099-9809.11.2.144
- Post-traumatic stress disorder fact sheet. (2019). Retrieved from <https://www.sidran.org/resources/for-survivors-and-loved-ones/post-traumatic-stress-disorder-fact-sheet/>
- Roberts, A. L., Gilman, S. E., Breslau, J., Breslau, N., & Koenen, K. C. (2011). Race/ethnic differences in exposure to traumatic events, development of post-traumatic stress disorder, and treatment-seeking for post-traumatic stress disorder in the United States. *Psychological Medicine*, 41(1), 71–83.
- Silove D., Baker J.R., Mohsin M., Teesson M., Creamer M., O'Donnell M., Forbes, D., Carragher, N., Slade, T., Mills, K., Bryant, R., McFarlane, A., Steel, Z., Felmingham, K., & Rees, S. (2017) The contribution of gender-based violence and network trauma to gender differences in Post-Traumatic Stress Disorder. *PLoS ONE*, 12(2): e0171879. doi:10.1371/journal.pone.0171879
- Tolin, David F., & Foa, Edna B. (2006). Sex Differences in Trauma and Posttraumatic Stress Disorder: A Quantitative Review of 25 Years of Research. *Psychological Bulletin*, 132(6), 959992.
- Van Bockstaele, B., Verschuere, B., Tibboel, H., De Houwer, J., Crombez, G., & Koster E, W., (2014). A review of current evidence for the causal impact of attentional bias on fear and anxiety. *Psychological Bulletin*, 140 (3), 682-721.
- Williams, J., Mathews, A., MacLeod, C., & Steinberg, Robert J. (1996). The Emotional Stroop Task and Psychopathology. *Psychological Bulletin*, 120(1), 3-24.
- Williams, M., Metzger, I., Leins, C., DeLapp, C., & Zimmerman, Jeff. (2018). Assessing Racial Trauma Within a DSM–5 Framework: The UConn Racial/Ethnic Stress & Trauma Survey. *Practice Innovations*, 3(4), 242-260.
- Williams, D., & Mohammed, R. (2009). Discrimination and racial disparities in health: Evidence and needed research. *Journal of Behavioral Medicine*, 32(1), 20-47.
- Wingenfeld, Riedesel, Petrovic, Philippsen, Meyer, Rose, Grabe, Barnow, Löwe, Spitzer. (2011). Impact of childhood trauma, alexithymia, dissociation, and emotion suppression on emotional Stroop task. *Journal of Psychosomatic Research*, 70(1), 53-58.

