

1-1-2017

# The Effect of Massage Therapy on Decision Making Skills in First Responders

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This research is a product of the Doctor of Psychology (PsyD) program at George Fox University. [Find out more](#) about the program.

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## Recommended Citation

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The Effect of Massage Therapy on Decision Making Skills in First Responders

by

Lyanna A. Díaz

Presented to the Faculty of the  
Graduate Department of Clinical Psychology

George Fox University

in partial fulfillment of  
the requirements for the degree of

Doctor of Psychology

in Clinical Psychology

Newberg, Oregon

June 13, 2017

# MASSAGE THERAPY & DECISION MAKING

The Effect of Massage Therapy on Decision Making Skills in First Responders

by Lyanna Andréa Díaz


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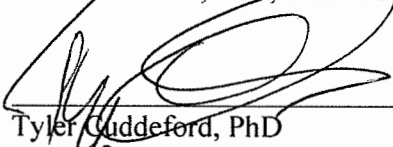
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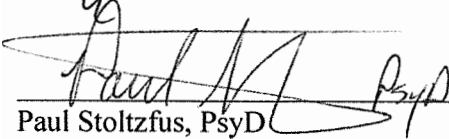
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**Abstract**

Firefighters experience everyday trauma, (critical incidents), as part of their job responsibilities. Critical incident exposure, number of years firefighting, burnout, and disengagement coping were positively associated with posttraumatic stress symptoms (Sattler, Boyd, & Kirsch, 2014). Ideally, firefighters would participate in positive coping strategies like trauma-related psychotherapy, massage therapy, and engaging with healthy social supports (Yuan et al., 2010); however, this does not routinely happen and posttraumatic stress symptoms increase. Since trauma can affect the body, manipulating the skin and muscles helps to release tension (Huebscher, 1998). This study investigated the relationship between massage therapy and decision-making abilities of firefighters in the state of Oregon ( $n = 24$ ). They completed a demographic questionnaire, Trauma Symptom Checklist – 40 (TSC, Briere, n.d ), Iowa Gambling Task, (measuring risky decision making; IGT, Bechara, Damasio, Damasio, & Anderson, 1994), then were randomly assigned to one of three groups: chair massage, relaxing music, or control group. After 10 minutes of activity, they completed a second administration of

the IGT. There was a significant positive correlation between trauma scores and pre-intervention decision-making total scores, meaning the higher the level of trauma, the better their decision-making scores on the pre-intervention IGT. This suggests, increased trauma encourages an individual to become hypervigilant and perform better on the IGT. Participants' galvanic skin response (GSR) were measured pre-and post-intervention. Results revealed a 2-way interaction between IGT pre-and post-net totals and the intervention. Pre-intervention, those in the control group made better decisions based on the IGT. Participants in the massage and music interventions improved decision-making on the IGT while those who continued with work decreased. A significant 3-way interaction between pre-and post-net totals, the intervention group, and those who sustained a head injury showed that individuals in the massage group who had head injuries initially performed the worst on the IGT but had significantly higher net totals post-massage. GSR scores decreased between pre-and post-times indicating that all participant groups were less aroused during the second administration of the IGT. Further research should explore other first responders' reactions to massage intervention as well as how long positive effects of massage last.

*Keywords:* decision-making, first responders, massage therapy, Iowa Gambling Task, Galvanic Skin Response, posttraumatic stress disorder, critical incidents

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## **Chapter 1**

### **Introduction**

First responders and other emergency personnel are often responsible for the safety and lives of others. They are required to make quick judgments and do their job well in highly stressful situations due to the ever-changing environments in which they are involved. It is not surprising then that they have different personality characteristics than those who work in less stressful environments. Mitchell and Bray (1990) assembled a list of the general personality traits of emergency personnel. They found that most first responders and emergency relief workers are highly dedicated and have a strong need to be in control. They have high expectations of themselves and strive for perfection. They are also action oriented people who become bored easily and therefore have a strong desire for risk-taking and immediate gratification (Clair, 2006).

Decision making is a vital ability that impacts quality of life. The ability to effectively make decisions can be negatively affected by traumatic everyday stressors (Elbert et al. 2011). Research on decision-making strategies used specifically by first responders, show that many decisions requiring immediate action are made intuitively, using a “gut like” reaction process (Hintze, 2008, p. 14). Many first responders who make decisions under stressful, time-pressured situations rely on their past experiences, using previous knowledge to help them quickly solve current problems (Klein, 1998).

**Traumatic Stressors and Critical Incidents**

Elbert et al. (2011), found that participants who were repeatedly exposed to severe traumatic stressors, such as torture and other violence, had certain areas of the brain activated more than participants who did not report similar stressors. When exposed to arousing visual stimuli, the occipital-parietal regions of both groups were activated; however, individuals without stressors exhibited a longer lasting response in this brain area than traumatized individuals. For those experiencing trauma, their response would rapidly shift to a fronto-temporal and amygdala response (Elbert et al., 2011). This suggests that individuals who have experienced a high degree of trauma have strong and rapid activation in the fronto-temporal region of the brain, flooding that area with stimuli. The fronto-temporal region is involved in executive functioning (Elbert et al., 2011). Tasks of this nature include general decision-making abilities such as managing time and attention, planning, organizing, and integrating past experiences into present actions. Individuals, such as first responders, who have experienced increasing levels of trauma tend to not react emotionally to traumatic cues which impair the episodic memory processes and decision-making abilities (Elbert et al., 2011).

All first responders, such as firefighters, police officers, and other emergency relief workers, frequently experience everyday trauma, also known as critical incidents, as part of their responsibilities to save lives and property (Sattler, Boyd, & Kirsch, 2014). Critical incident exposure increases firefighters' risk of traumatic stress reactions such as posttraumatic stress symptoms. Studies have shown that number of years firefighting, burnout, occupations effort and disengagement coping were all positively associated with posttraumatic stress symptoms (Sattler et al., 2014).

Due to the nature of the firefighter culture, being forthright about traumatic situations and critical incidents a firefighter has faced is extremely difficult. The firefighter culture is masculine dominant, and many studies have shown a link between masculinity and behaviors such as refusing to ask for help or seek treatment for pain, denying the need for sleep, and engaging in risk-taking behaviors, such as smoking, drug use, excessive drinking, high-risk sexual activities, and dangerous sports (O'Neill & Rothbard, 2017).

### **Trauma and Posttraumatic Stress Disorder**

Posttraumatic stress disorder (PTSD) is an anxiety disorder that sometimes develops after exposure to a traumatic event in which severe physical harm or death occurred or was threatened (Rubin & Kuester, 2009). This disorder is most readily associated with war veterans; however, children and family members of veterans often become traumatized as well in a phenomenon called “intergenerational transmission of trauma” (Rubin & Kuester, 2009, p. 66). Yet millions of Americans who were never in war develop PTSD. Not only do major traumatic events cause lasting trauma, but any breach of boundaries that overwhelms the nervous system can create long-term negative effects (Marmar et al., 2006). The National Institute of Mental Health estimated that PTSD affects approximately 7.7 million Americans, or about 3.5% of the adult population in a given year (Rubin & Keuster, 2009). In police officers alone, about 7 – 19 % will develop PTSD. Many more police officers fail to meet the full criteria for PTSD, but nevertheless are experiencing debilitating symptoms (Marmar et al., 2006).

Trauma seems to exist on a continuum in which different people can experience the same event, yet depending on past experiences, personality traits, and timing, each person will have a different trauma severity outcome (Rubin & Kuester, 2009). This can be explained through the

polyvagal theory which describes the sympathetic and parasympathetic nervous systems. To begin, the sympathetic nervous system is responsible for processes that occur in times of danger, such as increasing our heart rate and raising blood pressure (Rubin & Kuester, 2009). Our parasympathetic nervous system, on the other hand, is responsible for processes which take place under conditions of safety and relaxation including slowing down heart rate and relaxing muscles. Porges (1995) first developed the idea of polyvagal theory and stated that any animal, especially a human, who is faced with a potential threat will first decide if social engagement (building a relationship) or social disengagement will solve the problem. In conditions of higher threat, the animal goes into a state of hyperarousal and will then respond with either fight or flight. If this option does not work, the animal will eventually freeze completely, thereby decreasing metabolic activity and ceasing to move. Usually once the threat has dissipated, the parasympathetic nervous system is activated; however, if this doesn't happen our bodies become fixated in a state of hyperarousal with the perception of ongoing danger. This is because our sympathetic nervous system is still running and our parasympathetic nervous system is unable to return our body to a state of relaxation. When this occurs, trauma can become lodged in the body which leads to more severe consequences, such as quick re-experiencing of traumatic events if any situations emulate the past trauma (Marmar et al., 2006; Rubin & Keuster, 2009).

When a firefighter is exposed to a critical incident, there are usually immediate reactions including loss of sleep, emotional distancing from friends and family, numbing of emotions, and hypervigilance (Chapin, Brannen, Singer, & Walker, 2009). Oftentimes these issues can resolve themselves with emotional support and conversation surrounding the trauma; however, when the

reaction is severe enough and is not dealt with, the accumulation of critical incidents can develop into posttraumatic stress disorder (Chapin et al., 2009; Marmar et al., 2006).

Individuals who experience PTSD or trauma related symptoms often attempt to find ways to cope. Maladaptive coping mechanisms include alcohol and drug abuse, rigid avoidance of anything which might remind them of past trauma, poor support structures, and negative work environment (Marmar et al., 2006). Positive coping mechanisms and protective factors, on the other hand, include trauma-related psychotherapy, massage therapy, and having healthy social supports (Yuan et al., 2010).

### **Massage Therapy**

Massage is a practice that has been mentioned in ancient Greek, Egyptian, Indian, and Chinese texts. Massage is the systematic and scientific manipulation of the soft tissues of the body (Huebscher, 1998) without causing movement of a joint (Lund, 2000). In the United States, massage therapy primarily started within hospital settings; however, in the 1950s when nurses began to have required licensing and there were stricter guidelines on who could and could not work in hospitals, the practice of massage therapy declined. Due to the holistic approach to health, massage has gained popularity again and is oftentimes combined with physical therapy and other treatments or used as a general relaxation technique (Huebscher, 1998). Massage therapy has many purposes and benefits including but not limited to promotion of relaxation, reduction of stress, stimulating circulation, and “producing therapeutic effects on the respiratory and nervous systems” (Huebscher, 1998, p. 198). Massage is effective in manipulating the skin and muscle thereby increasing the movement capabilities of the musculoskeletal system. The benefits include reduction in swelling and loosening and stretching tight tendons (Huebscher,

1998). Since trauma is lodged in the body for some people, massage therapy is an excellent way for individuals to initiate tension release through the manipulation and loosening of their muscles. Despite the fact that massage therapy has not yet been proven to effectively treat PTSD, research has shown that it reduces both the psychological and physical stress in those who have had traumatic experiences (Rubin & Keuster, 2009). In a study conducted on nursing staff, Bost and Wallis (2006) found that weekly 15-minute massages over a 5-week period were beneficial to the nurses and appeared to decrease their levels of anxiety and stress as measured by cortisol levels and self-reports.

Of the types of massages available, chair massages were invented in the 1980s as a way to make massage more socially acceptable to the general public (“What is chair massage?” 2015). With this type of massage, the individual sits in an ergonomically designed chair, fully clothed, with her or his head face forward, and arms, torso, and legs fully supported. Licensed practitioners use a combination of deep tissue and Swedish massage on muscle groups in the neck, back, arms, and hands for usually less amount of time than a regular full body massage. Oftentimes, chair massage is used in the corporate world for stress management (“What is chair massage?” 2015).

### **Decision-Making Abilities**

The somatic marker hypothesis suggests that emotions and cognitions are integrated in the orbital frontal cortex, particularly the ventromedial prefrontal cortex, and are necessary for decision-making, especially in the face of uncertainty (Dunn, Dalgleish, & Lawrence, 2006; Gansler, Jerram, Vannorsdall, & Schretlen 2011). When individuals make decisions, a crude signal (or somatic marker) emerges and indicates our emotional response to an event. These

somatic markers show the value of the event and also serve as a trigger to our working memory and attention if the event is deemed important. In situations of uncertainty, however, somatic markers help to minimize the problem to only an emotional or “gut-reaction”. Only events that are deemed extremely valuable are also processed cognitively (Dunn et al., 2006).

There are many executive functioning tests available. Measures such as the Balloon Analogue Risk Task (BART; Lejuez et al., 2002) and Columbia Card Task (CCT; Figner, Mackinlay, Wilkening & Weber, 2009) could be used for executive function measures; however, the CCT is relatively new and performance on tasks has not been compared to more established tasks. The BART measures risky decision-making but does not add other distractors and therefore cannot simulate real-life risky decision-making. Therefore, when deciding which executive function measure to use, the Iowa Gambling Task (IGT; Bechara, Damasio, Damasio, & Anderson, 1994) was determined to be the most effective for testing first responders as it is well established in the literature and adds distractors during testing to help simulate real-life risky decision-making. (Buelow & Blaine, 2015).

### **Iowa Gambling Task**

The IGT was first developed as a measure of risky decision making by simulating real-life decisions in uncertain situations (Bechara et al., 1994). Originally it was developed to test adults who have ventromedial prefrontal cortical damage but who otherwise showed no deficits in other neuropsychological executive functioning tasks (Bechara et al., 1994; Beitz, Davis, & Salthouse, 2014; Buelow & Suhr, 2013). Patients with ventromedial frontal lesions have difficulties making choices when presented with multiple options with an uncertain outcome. These patients have an impaired ability to learn from past behaviors and thus make the same



risky decisions that lead to the same negative consequences. Patients with ventromedial frontal lesions perform near-normally on most measures of executive functioning, including the Wisconsin Card Sorting Task (Grant & Berg, 1948) and the Tower of London (Anderson, Anderson, & Lajoie., 1996). However, these same patients would fail the Iowa Gambling Task. It was proposed that patients with lesions in the ventromedial frontal cortex had poor decision-making skills because of an inability to use *somatic markers*, which are described as emotion-based knowledge that is used to gauge the possible outcome of decisions.

Participants with other impairments, such as a dorsolateral prefrontal cortex lesion, also perform poorly on the IGT because lesions in this area, or problems in other parts of the brain, affect working memory and cognitive processes (Turnbull, Berry, & Bowman, 2003). It was assumed that participants with issues effecting working memory and other cognitive functions will perform poorly on this task. The IGT is very complex and throughout many studies, it appears that participants do not appear to be able to make deliberate decisions about risks and benefits (aka “cold decision making”; Buelow & Blaine, 2015). Using episodic memory to try and learn the patterns of the game is not entirely feasible because the IGT relies more on gut-instincts (or “hot” decision making) because it uses rewards and punishments (Turnbull et al., 2003; Buelow & Blaine, 2015). Previous research has shown that participants developed a ‘feeling’ about which of the four decks are good or bad which is likely derived from low-level emotional responses of previous choices., Participants started out by choosing ‘high-risk-high-gain’ decks but neurologically normal participants would quickly shift to other decks that accumulated smaller amounts of money over a longer period of time (Bowman & Turnbull, 2003). Modeling real-life decisions where we deal with uncertainty in the context of rewards and

punishments, the IGT allows individuals to weigh the short-term and long-term gains and losses based on which decks they choose based on their “gut instinct” (Brevers, Bechara, Cleeremans, & Noel, 2013).

### **Galvanic Skin Response**

Oftentimes while participants are administered the Iowa Gambling Task, their Galvanic Skin Response (GSR) was measured throughout the duration of the test. The GSR is used to measure activation after deck choices are made. Interestingly, patients with ventromedial frontal lesions show an increased activation in their GSR after making a bad choice from a bad deck, showing they experience the emotions of their negative consequences. However, they have no ability to develop or learn from their past mistakes and choices (Bowman & Turnbull, 2003). In normal participants, their GSR results showed that after a few trials they began to experience anticipatory skin conductance results when they thought about risky decisions and the participants began to prefer the good decks even without conscious awareness of their preference. Previous research has shown that individuals with PTSD have a larger eye blink, heart rate, and skin conductance response than compared to their counterparts who have not been diagnosed with PTSD (Marmar et al., 2006).

IGT performance has been shown to be lower in populations of individuals who have damage to the ventromedial prefrontal cortex or amygdala; those who abuse or are dependent on drugs; and those who have diagnoses of schizophrenia or attention-deficit/hyperactivity disorders (Gansler et al., 2011). Buelow and Shur (2013) measured personality characteristics and IGT performance, and found that individuals who express high levels of sensation seeking,

impulsivity, disinhibition, and high levels of drive were associated with a riskier performance on the IGT (Buelow & Suhr, 2013).

The current literature clearly points to the significant and additive disabling nature of trauma experiences on functioning, such as social impairment, both within and outside of a clinical population. However, no research has examined the specific nature of cognitive impairment within nonclinical populations, or used methods outside of self-report and interview. In response to this dearth of literature, this study seeks to answer if trauma affects decision making ability and if chair massage therapy can help alleviate the negative effects on decision making ability. Currently, there is no research using the Iowa Gambling Task to measure how first responders, who generally show risk-taking personality characteristics, or individuals with trauma will respond to the task. Also, there is very little research on massage therapy in general and virtually none on potential benefits of massage on first responders. If this study shows chair massage to be beneficial in increasing decision-making ability, there would be a benefit in implementing 10-minute chair massages into first responders' regular routine which would then decrease stigma and decrease the likelihood of developing PTSD and burnout in first responders.

Since there are over 1 million Americans who serve as career and volunteer firefighters (Haynes & Stein, 2016), it is deemed incredibly important to research opportunities which benefit them. This study will ask participants to complete the Iowa Gambling task and then participate in one of three experimental groups, with the hypotheses that: (a) participants in the chair massage group will show decreased levels of GSR and increased performance on the IGT as compared to the calming music and control group, and (b) individuals who experienced

greater amounts of trauma will demonstrate a decreased performance on the IGT than participants who did not.

## Chapter 2

### Methods

#### Participants

The sample for this study was recruited from two fire departments and consisted of 24 adults. Participants were randomly divided into three groups, massage, music, and controls. The age of participants ranged from 18 to 50 years ( $M = 34.5$ ,  $SD = 9.13$ ). Age was non-normally distributed, with skewness of 0.001 ( $SE = .47$ ) and kurtosis of -1.07 ( $SE = .92$ ). The number of months on the job ranged from 1 to 277 months ( $M = 81.5$ ,  $SD = 82.7$ ). Time on the job was non-normally distributed, with skewness of 1.06 ( $SE = .47$ ) and kurtosis of .24 ( $SE = .92$ ). Demographics showed eight participants reported sustaining a head injury while 15 did not sustain a head injury either on or off the job. One participant did not report an answer. Table 1 summarizes the demographic data for the three groups.

Table 1

#### *Demographic Data Summarized by Group*

Group	Age			Time in Job		Gender		Head Injury	
	<i>n</i>	Mean	<i>SD</i>	Mean	<i>SD</i>	M	F	Yes	No
Massage	8	31	9	91	112	8	0	2	5*
Music	8	38	9	92	47	7	1	4	4
Controls	8	35	10	61	84	8	0	2	6

*Note.* Time in job reported in months. M = Male. F = Female. \* One individual chose not to report.

Table 2 summarizes the head injury data by group looking at loss of consciousness, if they were hospitalized after the head injury, and if they regularly engage in activities to relax.

Table 2

*Head Injury Data Summarized by Group*

Group	<i>n</i>	Head Injury		Lost Consciousness		Hospitalized		Activities to Relax**	
		Yes	No	Yes	No	Yes	No	Yes	No
Massage	8	2	5*	2	6	1	7	5	3
Music	8	4	4	1	7	0	8	5	3
Controls	8	2	6	1	7	0	8	5	3

*Note.* \* One individual chose not to report. \*\* Question asked if participants do any activities to relax

The principle investigator (PI) conducted the informed consent and demographic gathering procedure with participants. Additionally, the PI always administered the Iowa Gambling Task, set up, and gathered the data for the Galvanic Skin Response machine.

Approval for this study was obtained from the Institutional Review Board (IRB) of George Fox University.

## Materials

**Informed Consent.** Participants in each group received an informed consent. Participants were informed that they may be assigned to a chair massage group and if they were uncomfortable with touch they could request to be in another group or withdraw from the study at any time. (See Appendix A for a copy of the Informed Consent).

**Demographic Questionnaire.** Each participant was asked to complete a questionnaire that provided demographic information relevant to this study. Additionally, the questionnaire screened for head injuries and the nature of the head injury. (See Appendix B for a copy of the questionnaire).

**Trauma Symptom Checklist (TSC-40; Briere, n.d.).** Participants in each group were asked to complete a check-list that assessed symptomatology in adults concerning childhood or adult traumatic experiences. It measures aspects of posttraumatic stress and other symptom clusters often found in traumatized individuals. Studies using the TSC-40 indicate that it is a relatively reliable measure and has predictive validity with reference to a variety of traumatic experiences (Briere, n.d.). See Appendix C for checklist.

**Iowa Gambling Task (IGT).** The standard computerized version of the Iowa Gambling Task (Bechara et al., 1994) was given and participants were told to try and maximize their profit over the course of 100 selections from one of four decks of cards (A, B, C, and D). Each participant started with \$2,000 shown on the computer screen. Construct validity of the IGT is sound when considering lesioned populations or any other populations in which presumptive poor decision-making are concerned (Gansler et al., 2011). Generally speaking, decks A and B average a profit of \$100 per card selection while decks C and D average a profit of \$50 per card selection. Participants were also subject to losses depending on which decks they chose. Decks A and B showed a net loss of \$250 after 10 selections while decks C and D showed a net gain of \$250 over 10 selections. Therefore, decks A and B are termed “disadvantageous” while decks C and D are termed “advantageous” (Buelow & Suhr, 2013). Deck selections randomly result in

distractor feedback including, but not limited to, a smiley face with pleasant sounds for gains or a frowning face with unpleasant sounds for losses (Beitz et al., 2014).

**Galvanic Skin Response (GSR).** The GSR measures the momentary increase in electrical conduction of the skin associated with an increase in sweat gland activity. Dawson, Courtney, and Schell (2011), found that use of the GSR is an unobtrusive, easily recordable, measure that is related to decision-making. The GSR records information by placing electrodes on the palmar tips of the first and second fingers of the participants' hand. Through the electrodes, electrical conductance of the skin is measured with the idea being the more activity in the sweat glands, the faster electrical conductivity of the skin becomes. Electrodes were placed on the participants' non-dominant hand both times they were taking the IGT.

**Music Selection.** Music has been shown to positively affect stress, as well as emotional and cognitive processes (Thoma et al., 2013). Researchers showed that the sound of rippling water was more effective at relaxing participants than *Miserere*, a Latin choral song that is often thought to be neutral and a relaxing stimulus. Therefore, participants who were randomly assigned into this group listened to the sound of rippling water.

## **Procedure**

Testing was carried out in empty offices at both the participating fire stations in Oregon. Both departments have three shifts, each with its own team. Interested individuals signed up and received additional information on the study the day of testing.

The PI and another student, who is enrolled in doctoral training in clinical psychology, received two training sessions on the correct positioning of individuals and massage techniques from Dr. Tyler Cuddeford who currently serves as the director of the doctor of physical therapy



program at George Fox University and is a licensed physical therapist. Both the PI and the additional student gave chair massages during the study.

Participants were told to come into an unused office/ classroom, located in the building they work, to complete testing. Administrations were conducted during the firefighters' normal workday and therefore were sometimes interrupted by a call. One administration had to be discarded due to being interrupted by a call when the participant was taking the IGT.

The PI presented all participants with the informed consent and allowed time for the participant to read it (See Appendix A). At this time, the PI fielded any questions asked by the participant. During the informed consent process, participants were notified of the three experimental groups, the chance that they might receive a chair massage, and the opportunity to refuse a chair massage; however, none of the participants offered a chair massage opted out. Electrodes of the GSR were then attached and baseline data were collected as the participants filled out the demographic questionnaire and Trauma Symptom Check-list 40 (TS-40, Briere, n.d.; See Appendices B and C).

Following this process, the participants took the IGT (Bechara et al., 1994) completing all 100 trials while wearing the GSR. Afterwards, they were randomly assigned to a group; those who received a chair massage, listened to calming music or, went back to their normal work activities. Each group participated in their activity for 10 minutes. After the 10 minutes, each group completed the Iowa Gambling Task one last time, going through all 100 trials while wearing the GSR.

**Treatment Groups**

**Treatment group 1.** Chair Massage: Participants in the chair massage experimental group received a 10-minute chair massage from either the PI or another trained graduate student from George Fox University.

**Treatment group 2.** Relaxing Music: Participants in the relaxing music group listened to the sound of rippling water for 10 minutes. In a study by Thoma et al. (2013), they found the sound of rippling water was more effective than listening to relaxing music, such as *Misterere* by Allegri, as measured by cortisol levels.

**Treatment group 3.** Control: Participants in this group resumed normal work activities for 10 minutes before taking the IGT again.

The independent variable in this study was the three treatment groups. The dependent variables were the scores provided by the GSR and IGT. We anticipated the statistical analysis would include a 2 X 3 repeated measures MANOVA to evaluate the main effect between the treatment groups and dependent variables. A meeting to debrief the study will be scheduled with the department chief and any participants who are interested, to share the final results of the study.

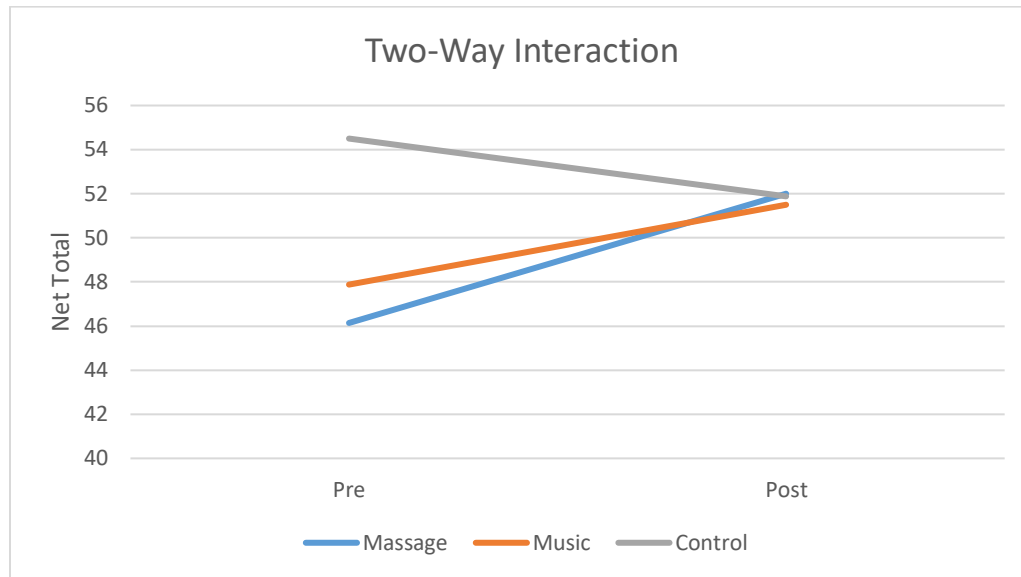
### Chapter 3

#### Results

In order to determine if a 10-minute chair massage improved decision-making skills, I conducted a 3 X 2 repeated measures ANOVA using the net “total” score from the Iowa Gambling Task. Analysis was done with each of the trial total scores on the IGT as well as an analysis done on the net total. There was not a difference between analyzing the five trials or the total so I decided to use the total score only.

There was no main effect for conditions (pre and post) on net totals from the IGT,  $F(1,17) = 1.738, p > .05$ . There was no main effect for the intervention (3 groups),  $F(2,17) = .314, p > .05$ . There is a 2 way interaction between pre-and post-net totals and the intervention group,  $F(2,68) = 3.57, p < .05, \eta_p^2 = .30$ .

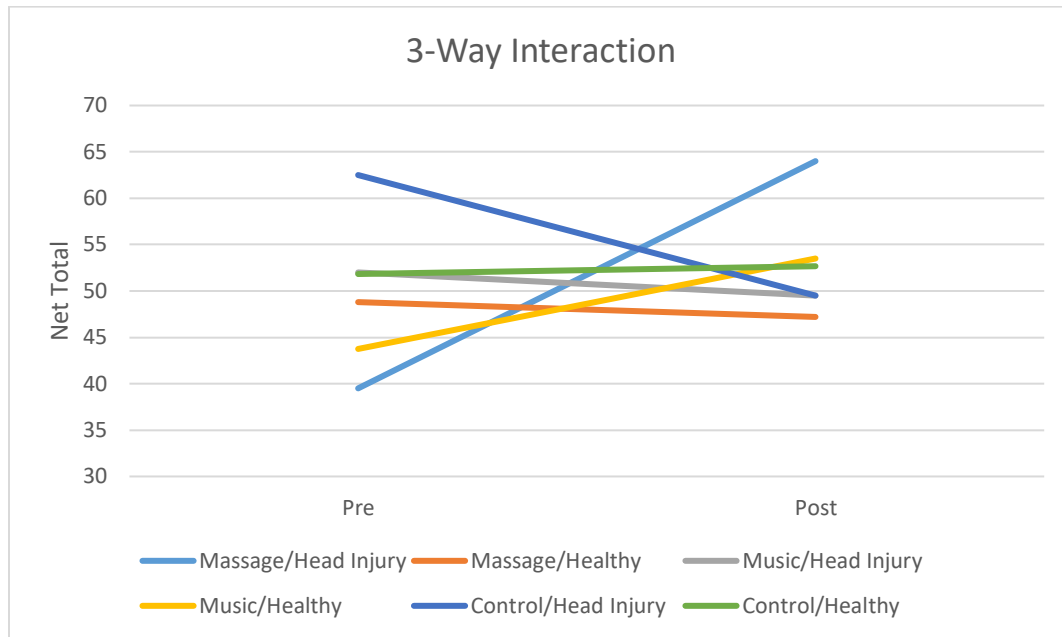
A post hoc one-way ANOVA was done for each of the net scores, pre and post, and there was no significant difference between the three groups, pre net,  $F(2,23) = 1.14, p > .05$  or post net,  $F(2,23) = .002, p > .05$ . A RMt-test was used to analyze the pre-post within group differences. There was no significant difference for massage ( $t(7) = .884, p > .05$ ), music ( $t(7) = 1.159, p > .05$ ), or control ( $t(7) = .671, p > .05$ ). See Figure 1 for means.



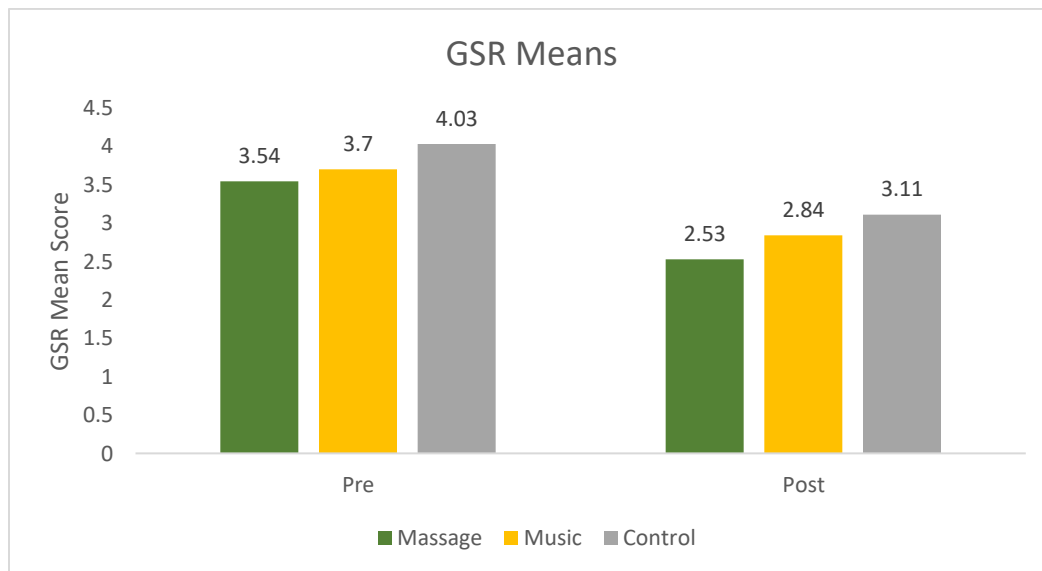
*Figure 1.* Two-Way Interaction. This chart shows the differences in net total scores pre-intervention and post-intervention.

There was a significant 3-way interaction between pre-and post-net totals, the intervention group, and those who have sustained a head injury,  $F(2,68) = 8.73, p < .002, \eta_p^2 = .51$ . Although it was not one of my original hypothesis, but a control question, it was discovered that over one-third (35%) of the participants acknowledged that they had head injuries. Therefore, I analyzed those with head injuries and those without head injuries as separate groups. See Figure 2.

Results showed that overall GSR scores decreased between pre and post times no matter which group the participant was in ( $RMt(23) = 4.836, p < .0001$ ; pre  $M = 3.756$ , post  $M = 2.83$ ) however, there were no significant differences within each group on mean GSR levels based on the intervention in which they participated,  $F(2,21) = .052, p > .05$ . Additionally, there were no significant differences in mean GSR levels between groups based on which intervention they participated in,  $F(2,21) = .164, p > .05$ . See Figure 3.



*Figure 2.* Three-Way Interaction. This chart shows changes in net total scores, pre-and post-intervention with participants who did and did not have head injuries.



*Figure 3.* GSR Means. GSR mean scores decreased across all groups, however, there was no significant differences of GSR scores within or between groups.

For the second hypothesis, in terms of level of trauma, my initial thought was that those who had higher levels of trauma would benefit from the massage, helping them with decision-making. In dividing the responses to the trauma checklist in thirds and using the top third and bottom third, the resulting means on the trauma checklist were almost identical ( $M = 13.83$  and  $13.33$ , respectively). A correlation was completed for the full group evaluating the relationship between level of trauma and decision making. There is a significant positive correlation between trauma scores and pre-intervention decision making total scores ( $r(n = 8) = .395, p < .05$ ). The relationship between trauma scores and decision-making scores only accounts for 16% of the variance. Using a one-way ANOVA, the level of trauma based on the trauma checklist score was evaluated between the groups. There is no significant difference in trauma scores between the three groups ( $F(2,19) = 1.176, p > .05$ ).

## **Chapter 4**

### **Discussion**

It was expected that participants in the chair massage group would show decreased levels of GSR (meaning their stress would decrease relative to the other groups) and increased performance on the IGT (meaning they would make better decisions during the IGT which would result in not losing as much money) as compared to the music and control group. This was partially true. GSR is a measure that is sensitive to any activation. Recordings were taken during the time the participant was completing the IGT. Average GSR scores did not significantly change from pre-intervention scores to post-intervention scores within each group; however, GSR scores did decrease from pre-and post-time measures no matter which group they participated in for the intervention. Additionally, average GSR scores were not significantly different between groups. It is expected that there would be some level of comfort with the apparatus during the second test session which can be seen with the lowered GSR for the entire sample. Most likely this is due to familiarity with the IGT and with the GSR equipment.

Making decisions quickly requires the proper functioning of the frontal lobe in order to organize and prioritize. It is also the frontal lobe that is needed in order to inhibit being distracted by environmental noise. It is this type of environment that I attempted to re-create with this study. In addition, daily stressors and the trauma faced while on the job as a first responder can affect the functioning of the frontal lobes. Any first responder will be effected by the responsibilities of the job as they respond to emergency situations in which there can be danger

to self and/or the responder is called to assist in difficult situations. I found (as shown in Figure 1), the control group initially had a higher net total score on the IGT compared to the massage or music group, before completing their intervention (going back to work). Thus prior to the intervention, those who were randomly assigned to the control group were making better decisions using the IGT as a measure. There are many reasons for this difference at the onset including individual difference of the participants and the activities of the firehouse at the time of testing. The interesting piece of this interaction is that post-intervention decision-making scores for the massage and music group increased while the control group's decision-making scores decreased. If the intervention made no change in decision-making, then we would expect those in the control group to maintain their higher scores on the IGT. Regardless of where the participants started on the initial IGT, those in the intervention groups that had a calming effect improved in their decision-making on the IGT while those who continued with work decreased their decision-making scores. It might be postulated that those in the massage and music interventions were able to clear their minds, manage their breathing, and decrease their arousal within the 10 minutes in order to improve their performance on the busy, distracting tasks while those who continue with work as usual returned to post-testing with cluttered thinking and thus performed worse. It is important to note that all three groups had scores at the average level, meaning after their intervention they were making quick decisions at an average level, despite distracting noises and visual aids.

Although, initially head injuries were used in the demographic questionnaire as a control question, over one-third of the participants acknowledged that they had sustained head injuries either on or off the job. Therefore, I decided to analyze these data as well (Figure 2). I found that



individuals in the massage group who had head injuries performed the worst on the IGT before they had the massage. However, the same individuals had significantly higher net totals, post massage. They made significantly better decisions after the massage than before the massage. Individuals who were in the massage group and did not have head injuries made about the same level of decisions post-massage as they did pre-massage. It seems that those who have had head injuries benefit from a 10-minute chair massage, increasing their ability to make better choices and to inhibit the noise of their environment. Individuals with head injuries who listened to music did not seem to benefit and therefore did not make better choices. Individuals who did not have head injuries and were in the music group made better decisions the second time they took the IGT. Thus, it seems that even the calming music detracts from the person's ability to down-regulate when there is a head injury. Lastly, individuals who reported head injuries and were part of the control group (who went back to work), did much worse making decisions on the IGT the second time, while those without a head injury who were in the control group made about the same level of good/ bad decisions the second time they took the IGT. Therefore, if a first-responder has sustained a mild head injury, it is beneficial for this person to have some type of de-stressor during the workday in order to improve the ability to inhibit distractors and make appropriate quick decisions, and it appears from this research that the massage is the best method of de-stressing for this subgroup.

In exploring the second hypothesis, I discovered that the range of scores on the trauma checklist was very limited. This is likely due to the firefighter culture mentioned previously, which is masculine dominant and has shown a link to behaviors such as refusing to ask for help or seeking treatment for pain and denying the need for sleep (O'Neill & Rothbard, 2017). The

significant positive correlation between trauma scores and pre-intervention decision making initially suggests that the higher the level of trauma that participants endorsed, the better their decision-making scores on the pre-intervention IGT. It might be hypothesized that having more trauma would encourage an individual to become more hypervigilant and thus perform better on a task like the IGT which uses distractor feedback. Even though the correlation between trauma scores and decision-making scores is significant, it only accounts for 16% of the variance. Therefore, 84% of the variance is something else that is unaccounted for and unknown at this time.

### **Limitations**

The sample of participants in this study presents some limitation to external validity. While statistical significance was found with this sample, the size is relatively small. Barriers to a larger sample size include limited volunteer sign-up, time restrictions, and inescapable fire emergencies where all participants needed to leave for an unknown amount of time.

Another limitation to this study involves not being able to use true randomization of participants into groups. Since I did not know how many participants I would be able to secure, I began using randomized block design after one group had five participants, to ensure that the groups would have equal number of participants.

A further limitation was the limited range of the trauma checklist. Given that some of these firefighters had worked on the job for multiple years and had obviously been in dangerous situations and witnessed horrible aftermath of accidents, it seems very unlikely that they have not experienced higher levels of trauma. It is possible that the trauma checklist was not refined enough for this particular population.

A further consideration is the intervention of 10 minutes. This was selected for many reasons including wanting some type of reasonable intervention that could be used at the firehouse (or other first responder location) within the worktime. It is possible that 10 minutes is not enough time to see positive effects for those who are not also managing the effects of a head injury.

### **Areas for Future Research**

With the findings of this study, future research should continue to investigate relationship of first responders with head injuries as well as investigate how long positive effects from the massage last. The ideal situation would be lasting effects on decision-making for the next emergency. Examining a more sensitive or culturally appropriate method for measuring levels of trauma would be beneficial since there was a large amount of variance between trauma checklist scores and decision-making scores that was unexplained. Additionally, future research should expand this study and explore the effects of massage therapy on decision-making skills in other first responders or Veterans.

### **Conclusion**

People who are first responders face danger and trauma on a daily basis. They are also required to make quick decisions in chaotic situations. Decision-making for anyone under duress tends to be impaired because of the reaction of the frontal and temporal lobes to activation. Being able to incorporate a low-cost, effective method for relieving stress at the workplace is desired. This research supports the idea of massage being beneficial but goes further in showing how it can positively affect decision-making skills. In particular, individuals who have had head injuries benefited the most from a 10-minute chair massage in improving decision-making skills.

Adding the option of receiving quick chair massages especially following an event would be a simple and inexpensive addition to an office so that personnel could destress and thus increase their ability to make appropriate decisions. Additionally, there is a great potential benefit of this study for other first responders, such as paramedics and police officers since they too, experience critical incidents in their line of work.

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## Appendix A

### Consent to Act as a Participant in a Research Study

**TITLE:** Decision Making Skills in First Responders

**INVESTIGATORS:** Lyanna Díaz, M.A.  
(541) 761-8295

**SUPERVISOR:** Dr. Glena Andrews, Ph.D  
Graduate Department of Clinical Psychology  
414 N Meridian St,  
Newberg, OR 97132  
(503) 554 - 2386

**DESCRIPTION:** Participants will be asked to fill out surveys and then they will complete an executive functioning task on a computer. Participants will then be randomly assigned to one of three experimental groups and will participate in the activity for 10 minutes. Upon completion of the experimental activity, participants will again complete the executive functioning task. The total amount of time should take no longer than 1.5 hours per participant.

**RISKS AND BENEFITS:** Participation in this study involves minimal risk. There could be risks of stress due to the recall of personal events and distractors/ noises during the executive functioning task. Participants benefit by gaining experience and familiarity with the process of conducting research in psychology.

**CONFIDENTIALITY:** I understand that any information about me obtained from this research, including answers to questionnaires and laboratory data will be kept strictly confidential. Information that will carry personal identifying information will be kept in locked files. It has been explained to me that my identity will not be revealed in any description or publication of this research. Therefore, I consent to such publication for scientific purposes.

**RIGHT TO REFUSE OR END PARTICIPATION:** I understand that I am free to refuse to participate in this study or to end my participation at any time and that my decision will not adversely affect my job at this facility or cause a loss of benefits to which I might be entitled.

**VOLUNTARY CONSENT:** I certify that I have read the preceding information or it has been read to me and that I understand its contents. Any questions I have pertaining to the research will be answered by Lyanna Díaz, M.A. Any questions or concerns I have regarding my rights as a research participant will be addressed by Glena Andrews, Ph.D (503) 554 - 2386, of the Graduate Department of Clinical Psychology. A copy of this consent form will be given to me. My signature below means that I have freely agreed to participate in this study.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Participant's signature

INVESTIGATOR'S CERTIFICATION: I certify that I have explained to the above individual the nature, potential benefits, and possible risks associated with participating in this research study, have answered any questions and have witnessed the above signature.

---

Date

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Investigator's signature

## Appendix B

Identifying number: \_\_\_\_\_

### Participant Demographics

Gender:      Male              Female              Transgender

Age: \_\_\_\_\_

Number of years and months in job: \_\_\_\_\_ Years \_\_\_\_\_ Months

Have you served in the military? (Circle one)              Yes              No

Have you ever sustained a head injury? (Circle one)              Yes              No

**If yes,**

Was this while on duty?              Yes              No

Did you lose consciousness?              Yes              No

Were you hospitalized?              Yes              No

Do you currently do any activity to relax?              Yes              No

### Appendix C

#### Trauma Symptom Checklist – 40

(Briere & Runtz, 1989)

*How often have you experienced each of the following in the last month? Please circle one number, 0-3.*

Symptom	Never ----- Often			
	0	1	2	3
1. Headaches				
2. Insomnia				
3. Weight loss (without dieting)				
4. Stomach problems				
5. Sexual problems				
6. Feeling isolated from others				
7. "Flashbacks" (sudden, vivid, distracting memories)				
8. Restless sleep				
9. Low sex drive				
10. Anxiety attacks				
11. Sexual overactivity				
12. Loneliness				
13. Nightmares				
14. "Spacing out" (going away in your mind)				
15. Sadness				
16. Dizziness				
17. Not feeling satisfied with your sex life				
18. Trouble controlling your temper				
19. Waking up early in the morning				
20. Uncontrollable crying				
21. Fear of men				
22. Not feeling rested in the morning				
23. Having sex that you didn't enjoy				
24. Trouble getting along with others				
25. Memory problems				
26. Desire to physically hurt yourself				
27. Fear of women				
28. Waking up in the middle of the night				
29. Bad thoughts or feelings during sex				
30. Passing out				
31. Feeling that things are "unreal"				
32. Unnecessary or over-frequent washing				
33. Feelings of inferiority				
34. Feeling tense all the time				
35. Being confused about your sexual feelings				
36. Desire to physically hurt others				
37. Feelings of guilt				
38. Feeling that you are not always in your body				
39. Having trouble breathing				
40. Sexual feelings when you shouldn't have them				

## Trauma Symptom Checklist – 40

(Briere & Runtz, 1989)

Subscale composition and scoring for the TSC-40: The score for each subscale is the sum of the relevant items.

Dissociation – 7, 14, 16, 25, 31, 38

Anxiety – 1, 4, 10, 16, 21, 27, 32, 34, 39

Depression – 2, 3, 9, 15, 19, 20, 26, 33, 37

SATI (Sexual Abuse Trauma Index) – 5, 7, 13, 21, 25, 29, 31

Sleep Disturbance – 2, 8, 13, 19, 22, 28

Sexual Problems – 5, 9, 11, 17, 23, 29, 35, 40

TSC Total Score: 1-40

**Important Note:** *This measure assesses trauma-related problems in several categories. According to John Briere, PhD "The TSC-40 is a research instrument only. Use of this scale is limited to professional researchers. It is not intended as, nor should it be used as, a self-test under any circumstances." For a more current version of the measure, which can be used for clinical purposes (and for which there is a fee), consider the Trauma Symptom Inventory – contact Psychological Assessment Resources at 800-331-8378. The TSC-40 is freely available to researchers. No additional permission is required for use or reproduction of this measure, although the following citation is needed: Briere, J.N. & Runtz, M.G. (1989). The Trauma Symptom Checklist (TSC-33): Early data on a new scale. *Journal of Interpersonal Violence*, 4, 151-163. For further information on the measure, go to [www.johnbriere.com](http://www.johnbriere.com).*

## Appendix D

### Curriculum Vitae

Lyanna A. Diaz

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lyannadiazpsyd@gmail.com

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#### EDUCATION

Doctor of Psychology, Clinical Psychology <i>Assessment Emphasis</i> George Fox University, <i>Newberg, OR</i> Graduate Department of Clinical Psychology: APA Accredited	<i>Expected April 2018</i>
Master of Arts, Clinical Psychology George Fox University, <i>Newberg, OR</i> Graduate Department of Clinical Psychology: APA Accredited	May 2015
Bachelor of Arts, Psychology <i>Neuroscience Emphasis</i> University of Puget Sound, <i>Tacoma, WA</i> Thesis: "Cultural Perceptions of Traumatic Brain Injury and Brain Related Rehabilitation within Minorities"	May 2013

#### SUPERVISED CLINICAL EXPERIENCE

VA Black Hills Health Care System (APA Accredited) – <i>Rapid City, SD</i> Title: Psychology Intern Rotations: Neuropsychological Assessment – 4 months major rotation; 4 months minor rotation/ 1-2 days per week. Refine knowledge/abilities required to complete diagnostic interview, test administration, scoring/ interpretation, report writing, and feedback to clients. Exposure to neurodiagnostic imaging files through chart review. Opportunities to complete transplant evaluations. Inpatient and outpatient evaluations. Posttraumatic Stress – 4 months. Diagnostic interviewing, assessments, and treatment planning for PTSD and MST. Individual (Cognitive Processing Therapy) and group. General Inpatient/Outpatient Mental Health – 4 months. Diagnostic interviewing, assessments, interventions for behavior management, assessment of suicidality and dangerousness, treatment planning, and discharge planning. Participation in team meetings for case discussion to address treatment progress and changes in treatment. Individual and group psychotherapy for improving function in everyday life.	July 2017 – Present
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Primary Care Pain Clinic – year long/ when possible. Opportunities to observe multidisciplinary pain evaluations with neurology, psychology, physical therapy, and pharmacy.

Training Director: Spencer Baum, PsyD

Rotation Supervisors: Shirley Herbel, PhD, Scott Krebs, PhD, Michael Huxford, PsyD, Adam Sumner, PhD, Hilary Kindsfater, PhD

Cedar Hills Hospital – *Portland, OR*

April 2016 – May 2017

Title: Mental Health Therapist

Description: Inpatient Mental Health – Freedom Care Unit

Population: Active duty military, veterans, and dependents. Common referrals included assessing suicidality, mental health diagnoses, and substance abuse treatment.

Duties: Ran groups including Chemical Dependency, Mood Group, and Pain Group. Assessed patient progress and discharge criteria in conjunction with on-site medical doctor and program supervisor. Collaborated with other psychologists, medical doctors, nurses, and staff to coordinate patient care.

Supervisors: Jory Smith, PsyD, Mario Bolivar Jr., LCSW, and Jobriath Morgan, MSW

Behavioral Health Clinic – *Newberg, OR*

Aug. 2015 – July 2016

Title: Assessment Coordinator

Description: Community Mental Health Clinic

Population: Lifespan, typically low SES. Presenting concerns included anxiety, depression, psychotic disorders, LD/ADHD, memory concerns, BPD, and Bipolar Disorder.

Duties: Conducted clinical interviews, administered assessment batteries, scored/interpreted, and wrote reports. Provided short-term individual therapy including referrals for court-mandated clients. Completed intakes with clients who were referred from a local hospital for suicidal ideation. Co-led group therapy sessions for Anger Management group. Managed clinic functions by calling clients, ordering protocols, managing the waitlist, and assisting other counselors in developing an assessment battery and writing reports.

Supervisors: Joel Gregor, PsyD and Robert Weniger, PsyD

Warner Pacific College – *Portland, OR*

Sept. 2014 – May 2015

Title: Career and Life Counseling Intern

Description: University Counseling Center

Population: Traditional and non-traditional university students with common concerns relating to anxiety, adjustment, depression, academic performance/ career decisions, and interpersonal difficulties.

Duties: Short-term individual and couples therapy for students of varying age, ethnicity, backgrounds, and spiritual affiliations. Participated in student outreach. Had opportunity to administer LD assessments and write associated report.

Supervisors: Denise Haugen Lopez, PsyD and Autumn Van Meter, M.A.

GFU Graduate Department of Clinical Psychology – *Newberg, OR*

Sept. 2013 – May 2014

Title: Pre-practicum Student Therapist

Description: Gained knowledge of clinical skills required for psychotherapy. Provided 10 therapy sessions per client as a part of Clinical Foundations course to two undergraduate student volunteers.

Population: Undergraduate students

Duties: Provided weekly individual therapy in a counseling setting utilizing a person-centered theoretical orientation and therapeutic techniques. Conducted intake interviews, developed treatment plans, wrote formal intake reports, completed progress notes, and completed termination summaries. Attended weekly group supervision with an advanced graduate student who was supervised by a licensed clinical psychologist. Reviewed videotaped sessions with student supervisor and during group supervision.

Supervisors: Carlos Taloyo, Ph.D. and Joel Simons, M.A.

### **MASTER'S LEVEL WORK EXPERIENCE**

Behavioral Health Consultation Team – *Newberg and McMinneville, OR* 2015 – 2016

Title: Behavioral Health Consultant

Description: On-call crisis risk assessment and consultation at two local area hospitals

Population: Lifespan. Common calls included assessing for harm to self or others, assessing for mania, and collaborating with other agencies for continuity of patient care.

Duties: Conducted suicide risk assessments and interviews for patients in the hospitals. Provided recommendations for hospitalization, respite care, or discharge. Completed safety plans with patients and families when possible. Navigated hospital systems to work with doctors and nurses on-call.

Supervisors: Mary Peterson, PhD, Joel Gregor, PsyD, and Bill Buhrow, PsyD

### **RESEARCH EXPERIENCE**

Doctoral Dissertation Research Sept. 2013 – May 2017

*George Fox University Graduate Department of Clinical Psychology*

Topic: The Effect of Massage Therapy on Decision Making Skills in First Responders

Proposal Defended: October 2015

Dissertation Defended: May 2017

Dissertation Chair: Glena Andrews, PhD

Research Vertical Team

Spring 2014 - 2017

*George Fox University Graduate Department of Clinical Psychology*

Description: Research team consisting of graduate students from each year of the program with various research interests and led by a faculty member. Worked on personal dissertation, assisted peers with various aspects of their dissertations, and worked with peers on supplemental research projects.

Faculty: Glena Andrews, PhD



Research Assistant

2012 – 2013

*University of Puget Sound – Tacoma, WA*

Learned to accurately apply EEG caps and electrodes. Gathered data using EEG and computer programs. Used scene-based object recognition and object recognition based on rotation stimuli.

Faculty: David Andreson, PhD

## POSTERS AND PUBLICATIONS

Díaz, L., Eisele, E., & Andrews, G. (August 2016). *The Influence of Conversation Skills for Children with Dysgenesis of the Corpus Callosum*. Poster presented to the Society of Clinical Neuropsychology (Division 40) at the annual meeting of the American Psychological Association, Denver, CO.

Eisele, E., Díaz, L., & Andrews, G. (August 2016). *Developmental Trajectory for Children with Dysgenesis of the Corpus Callosum: 4 Year Follow- Up*. Poster presented to the Society of Clinical Neuropsychology (Division 40) at the annual meeting of the American Psychological Association, Denver, CO.

## PROFESSIONAL PRESENTATIONS

“The Effect of Massage Therapy on Decision Making Skills in First Responders” Oct. 2017  
Presentation to VA Black Hills Fire Fighters and Police Officers – *Fort Meade, SD*  
Supervisors: Glena Andrews, PhD and Spencer Baum, PsyD

## ACADEMIC INVOLVEMENT AND LEADERSHIP

Neuropsychology Student Interest Group (SIG) Sept. 2016 – April 2017  
*George Fox University Graduate Department of Clinical Psychology*  
Co-president responsible for organizing events and guest speakers for our SIG. Past events include a certified licensed neuropsychologist sharing wisdom about the process and his job duties.

Fourth Year Oversight Sept. 2016 – April 2017  
*George Fox University Graduate Department of Clinical Psychology*  
Oversight of second-year student. Developed goals for student’s development for the practicum year. Assisted student in developing clinical/assessment skills. Assisted student with development of theoretical orientation. Provided both formative and summative feedback of student’s clinical and professional skills.  
Faculty: Kristie Knows His Gun, PsyD

Conducted interviews 2015 & 2016

*George Fox University Graduate Department of Clinical Psychology*  
Assisted with individual interviews for prospective graduate students. Collected data on interviewee performance and contributed to discussion with faculty members.

Diversity Committee Member 2015 – 2017  
*Oregon Psychological Association*

Work to organize panel discussions at APA conventions. Discuss and organize awards and upcoming events.

Student Council Member 2015 – 2017  
*National Latino Psychological Association*

Responsible for organizing events and webinars for the entire NLPA organization. Past events include an internship webinar with site directors as guest speakers.

Administration Committee and Training and Awareness Committee 2013 – 2017  
*Multicultural Committee at George Fox University*

Lead and facilitate events throughout the year emphasizing multicultural issues. Facilitate discussions surrounding current events and group process.

Liaison between Counseling Center, Student Retention Committee, and Financial Aid office  
 2015

*Warner Pacific College – Portland, OR*

Built professional relationships with other offices across campus to facilitate communication about students in need. Helped interns and students learn about requirements to maintain their scholarship status.

Peer Mentor June 2014 - 2015  
*George Fox University Graduate Department of Clinical Psychology*

Assisted incoming graduate student in transitioning into the program by providing personal/professional mentorship during their first year in the program.

## **PROFESSIONAL AFFILIATIONS**

American Board of Professional Psychology (ABPP) – Early Entry

American Psychological Association (APA)

Division 19: Military Psychology

Division 40: Society for Clinical Neuropsychology

Division 45: Society for the Psychological Study of Culture, Ethnicity and Race

American Psychological Association of Graduate Students (APAGS)

International Neuropsychological Society (INS)

National Academy of Neuropsychology (NAN)

National Latino Psychological Association (NLPA)

## **TEACHING EXPERIENCE**

Teaching Assistant for PSYD 527 & 528 Neuropsychological Assessment Sept. 2016 – April 2017

*George Fox University Graduate Department of Clinical Psychology*

Faculty: Glenna Andrews, PhD

Proctored/graded bio basis background exam. Oversaw test administration competencies with students. Graded scoring assignments and provided students with feedback. Created grading rubrics for test administration competency assignments. Demonstrated assessment administration during lab times. Watched and graded students live as they administered assessments.

Teaching Assistant for PSYD 524 Comprehensive Assessment Jan. 2017 – April 2017  
*George Fox University Graduate Department of Clinical Psychology*  
 Faculty: Marie-Christine Goodworth, PhD  
 Assisted students with developing test batteries for assessments. Graded and provided feedback on written reports. Assisted professor with administrative tasks.

Guest Lecturer for undergraduate Introduction to Psychology Oct. 2015  
*Warner Pacific College – Portland, OR*  
 Faculty: Denise Haugen, PsyD  
 Discussed brain behavior, basic neuroanatomy, and consciousness.

## PROFESSIONAL TRAINING AND WORKSHOPS

### Neuropsychological Assessment Trainings:

Neuropsychology: What Do We Know 15 Years After the Decade of the Brain?  
 Feb. 2016 Trevor Hall, PsyD and Darren Janzen, PsyD

Learning Disabilities: A Neuropsychological Perspective  
 Oct. 2014 Tabitha Becker, PsyD

Understanding and Treating Attention Deficit Hyperactivity Disorder  
 Oct. 2014 Erika Doty, PsyD

Neuropsychological Evaluation and Consultation: Clinical and Forensic Applications  
 Feb. 2014 Paul Kauffman, JD, PhD, ABPP

### Diversity Trainings:

Working with Multicultural Clients with Acute Mental Illness  
 March 2016 Sandra Jenkins, PhD

Spiritual Formation and Psychotherapy  
 March 2015 Barrett McRay, PhD

African American History, Culture, and Addictions, and Mental Health Treatment  
 Nov. 2013 Danette C. Haynes, LCSW and Marcus Sharpe, PsyD

Other Clinical Trainings:

PTSD Treatment and Conceptualization

Nov. 2017     *Scott Krebs, PhD*

History of Psychopharmacology

Oct. 2017     *K-Lynn Paul, MD*

Face Time in an Age of Technological Attachment

Nov. 2014     *Doreen Dogen-Magee, PsyD*

Evidenced Based Treatments for PTSD in Veteran Populations: Clinical and

March 2014     *Scott Krebs, PhD*

Integrative Perspectives

*David Beil-Adaskin, PsyD*

DSM V: Essential Changes in Form and Function

Jan. 2014     *Jeri Turgesen, PsyD and Mary Peterson, PhD, ABPP*

Primary Care Behavioral Health

Sept. 2013     *Brian E. Sandoval, PsyD and Juliette Cutts, PsyD*

**REFERENCES**

Available upon request.