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Melissa D. Dalton
*University of Kentucky*, melissa.dalton10@gmail.com

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Melissa D. Dalton, Student

Dr. Trent S. Parker, Major Professor

Dr. Jason Hans, Director of Graduate Studies

# EFFECTS OF SELF-DIRECTED PHYSIOLOGICAL MONITORING ON THERAPISTS ANXIETY

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THESIS

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A thesis submitted in partial fulfillment of the
requirements for the degree of Master of Science in the
College of Agriculture
at the University of Kentucky

By

Melissa D. Dalton

Lexington, Kentucky

Director: Trent S. Parker, Professor of Family Sciences

Lexington, Kentucky

2012

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ABSTRACT OF THESIS

EFFECTS OF SELF-DIRECTD PHYSILOGICAL MONITORING ON THERAPISTS ANXIETY

This mixed-method study investigated the effects of self-directed physiological monitoring on therapists anxiety. Ten therapists participated in a10-week physiological monitoring training sessions while monitoring respiratory sinus arrhythmia (RSA) and heart rate variability (HRV). The participants completed the state-trait anxiety inventory questionnaire after having a first, sixth, or tenth therapy session with a client. This was designed to monitor their state anxiety while working with clients. A series of paired sampled *t*-tests was conducted to assess changes in HRV, RSA, trait anxiety, and state anxiety. One significant result was found: the RSA of the therapist increased significantly. Correlations existed between the HRV of the therapist increasing and the trait anxiety of the therapist decreasing through RSA training sessions although they were not significant at the .05 level.

KEYWORDS: Anxiety, Physiological monitoring sessions, Respiratory sinus arrhythmia, Therapist, Therapy sessions

Melissa Dalton

April 23, 2012

EFFECTS OF SELF-DIRECTD PHYSILOGICAL MONITORING ON THERAPISTS ANXIETY

By

Melissa Diane Dalton

Trent S. Parker

Director of Thesis

Jason Hans

Director of Graduate Studies

April 23, 2012

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# Chapter 1

## Introduction

Anxiety can be described as any large variety of affective, motor, or psychological responses to something we perceive as dangerous (Kaplan & Sadock, 1981). More specifically, it can be just a sense of discomfort that we worry about such as an undefined threat (Taylor & Arnow, 1988). Discomforts can come in many forms, especially physical or psychological. A person can perceive danger in bodily injury, damage to their self-esteem, or even harming their personal welfare. Furthermore, different professions, particularly the mental health field, are more susceptible to anxiety than others (Kleespies et. al, 2011).

Therapists can be susceptible to anxiety due to many demands that they face. Therapists have a responsibility to their clients to help them overcome their life stressors all while maintaining a personal life of their own with family and friends. These conflicts can create anxiety, and even cause depression, for therapists due to everyday personal life and difficult work stressors (Kleespies et. al, 2011). These challenges can vary from managing the care of other persons, paperwork demands, high caseloads, and also the possibility of owning their own practice (Nocross, 2000; Sherman & Thelen, 1998). The anxiety therapists face can bleed over into their personal lives. As a result, counselors are at a higher risk of committing suicide than other professions (Kleespies et. al). To help individuals find ways to reduce anxiety we first need to understand the physiology of how anxiety affects the body.

The body is comprised of the autonomic and the somatic nervous systems. The one that is the most relevant to the current study is the autonomic nervous system,

because it controls the flight vs. fight responses that react when we feel anxiety. The autonomic nervous system, in a broad context, controls the activity of involuntary muscles such as smooth muscles, glands, and heart muscle cells (Brodal, 1992). The autonomic nervous system is further divided into two systems: the parasympathetic and the sympathetic nervous system. The sympathetic system deals mainly with organizing the body's resources when emergencies arise inside of the environment. In contrast, the parasympathetic system is in charge of maintaining the daily functions of the body and producing homeostasis (Brodal, 1992). When a person experiences anxiety, these two systems react to the unexpected change. When the change is experienced the body is trying to decide whether to engage fight or flight responses or to return the body to homeostasis. Some changes that can occur are an increase in blood pressure, heart rate, and blood follow to the heart, brain, and muscles (Stein, 2001).

Currently, research is underway to examine ways in which the fight or flight responses in the human body can be reduced to manage anxiety. For example, respiratory sinus arrhythmia (RSA) is one area that has demonstrated positive results. RSA helps to increase heart rate variability (HRV). HRV is simply the beat-to-beat change in one's heart rate (Henriques, 2011). HRV can be achieved in various forms to help decrease anxiety. One area of growing research is investigating the monitoring of breathing and heart rate for a period of time, while trying to achieve coherence between the two. Although more literature is emerging on this topic, there are still some gaps that need to be addressed.

One gap in the literature is evaluating therapists' perceptions of their anxiety in their life and how this is affecting therapy sessions. One such way to help therapists

become aware of the responses is have them monitor their physiological movements in their breathing and heart rate. Research is needed to observe if there is a positive correlation between therapists' anxiety and their subsequent treatment outcomes with clients. The current study will contribute to the existing literature concerning therapists' anxiety and how this can impact sessions as viewed by the therapist.

# Chapter 2

Relevant Literature

## Importance of Studying Therapist Anxiety

The relationship between therapists and clients is a major part of therapy. The working alliance between therapists and clients is crucial in promoting change in the clients (Gellhaus Thomas, Werner-Wilson, & Murphy, 2005). A good therapeutic relationship can be defined as having three components: (1) an availability and openness to all aspects of the clients experience; (2) openness to one's own experience in being with the client; and (3) the capacity to respond to the client from this experience (Geller & Greenberg, 2002). Therapists need to be aware in sessions and not be bothered by their own physiological reactions to stimulus and be able to manage their reactions.

Therapists need the ability to be aware of the client in the present moment and be able to respond appropriately to the client in ways that are consonant with the person they are seeing. Therapists' attention can increase through their listening and attunement skills (Geller, Greenberg, & Watson, 2010). Qualities of therapists that enhance the therapeutic alliance are empathy, support, exploration, activity, confident collaboration, appreciation, trust, warmth, competence, respect, attentive, and engaged listening to clients without imposing any judgment (Tannen & Daniels, 2010). In addition to the above mentioned, there is literature that finds good sessions are based on the clients' feeling that the therapist is warm, involved, and empathetic towards them (Horvath & Greenberg, 1989). Through these skills the client will be able to feel safe with opening up and working with the therapist to have a positive therapy session (Horvath, 1994).

Feelings of anxiety can negate this as the autonomic nervous system is reacting

in that moment and the therapist is more concentrated on himself or herself rather than the client. When a therapist is distracted in sessions they are not able to fully help the client to the greatest potential and can hinder the therapeutic alliance they have developed. The therapist learning to control their anxiety and appear to be more relaxed in sessions can potentially better therapy sessions.

For example, Williams, Judge, Hill, & Hoffman (1997) examined doctoral students enrolled in a counseling psychology program to examine how personal reactions, anxiety, counseling self-efficacy, and their therapeutic skills affect therapists' ability in sessions. The participants in the study reported feelings of comfort, being empathic, and caring but also reported feelings of anxiety, discomfort, and distractions at other times during sessions. The participants reported the most negative feelings in session around silences, termination, and cultural differences and how they felt about their own therapy skills. These negative feelings that therapists face may possibly get in the way of effective therapy, as noted earlier that the effective therapeutic alliance is associated with positive treatment outcomes.

Melton, Nofzinger, Wynne, & Susman (2005) examined college graduates going through a trainee program in a counseling field. The study focused on understanding the role of affect in therapy sessions. The study concluded that trainees in counseling programs should expect to have emotional reactions in therapy sessions. When a client evidences strong affect the counselor could react. As a result of a client's affect, counselors might change the topic, distance themselves, or even experience an increase in anxiety; and this appeared to actually be a result of the counselor's own reaction from the client. The study also found that sometimes students feel that anxiety

can impede therapy performance. Beginning therapists should expect to encounter challenges in therapy sessions and may need help reducing anxiety that could negatively influence performance.

**Autonomic Nervous System**

The autonomic nervous system (ANS) is comprised of two systems: the parasympathetic and the sympathetic nervous systems. Together these systems send messages to blood vessels, the heart and chest organs, the abdomen, and the pelvis through nerves in the brain. These messages are mainly reflex impulses through the autonomic nerves that then produce the appropriate response of these organs to help regulate the experiences that trigger the ANS. The two systems work separately but come together to help the body function and maintain homeostasis. When a stressor, such as a feeling of anxiety, is presented, both systems serve a purpose and react to changes in the other system. The sympathetic system controls the fight vs. flight response, increases heart rate, and affects various organs. As the responses happen, the parasympathetic system reacts and relaxes the body to decrease the heart rate when the body perceives the threat less dangerous.

The parasympathetic neurons are located in the brain stem and in the spinal segments. The parasympathetic ganglia are located closer to the organs and are longer compared to the sympathetic ganglia. The fibers that come from the parasympathetic system span only to the main organs (Brodal, 1992). The sympathetic system neurons lie just in the spinal segments while the ganglia are located near the central nervous system. The fibers release norepinephrine, which travels to the body wall and the extremities such as the skin, muscles, and joints. These differences between the two systems extend to

more than just the locations and are examined in more detail to help understand the functions of each.

When a stimulus such as feelings, noise, light, drugs, or chemicals comes in contact with the body and is more than the body's threshold, the sympathetic system is the first to react by releasing adrenaline. Adrenaline in the body causes the heart to beat faster and stronger; increases blood supply to muscles, tension, breathing rate, and sweating; raises blood pressure and blood sugar; speeds up mental activity; and dilates pupils. When these reactions occur, non-emergency functions are not permitted and the flight vs fight response overrides parasympathetic functions for the time being.

After the sympathetic system has been activated, the parasympathetic system returns the body to homeostasis. The parasympathetic system increases relaxation in muscles, slows heart rate, and lowers blood pressure. Dilated pupils and rapid breathing return to a normal state and digestive muscles resume operation. Much like a checks and balance system, the sympathetic and parasympathetic systems work symbiotically.

When individuals become aware of their bodies' reactions to a stimulus, they can increase the parasympathetic system state in an effort to decrease the reactions of the sympathetic system. Triggering the relaxation state faster allows individuals to concentrate on their environment and not only the stimulus to which they are reacting. By practicing relaxation techniques, individuals can increase awareness of their environment, which allows them to improve conversation skills and cognitive functions with clients (Geller, Greenberg, & Watson, 2010).

**Respiratory Sinus Arrhythmia**

One area that has looked to promote relaxation and decrease anxiety specifically

to biofeedback is respiratory sinus arrhythmia (Sherlin, Gevirtz, Wyckoff, & Muench, 2009). Respiratory sinus arrhythmia (RSA) is "a natural fluctuation of the heart rate in real time and is highly influenced by respiration and limbic activity" (Sherlin et al., 2009, p. 235). Vaschillo, Vaschillo, & Lehrer (2004) were among the first to research RSA and they describe the process to produce an effective RSA treatment session. At the beginning of RSA treatment, individuals are instructed to follow a computer generated wave that instructs them when to inhale and exhale. Individuals see their own breathing wave on the screen and try to replicate the computer-generated wave. They are able to adjust the computer wave accordingly to help them inhale and exhale in such a way that does not cause any discomfort and is the most natural to them. A best-fit computer generated wave for individuals is called the resonance frequency. When individuals find their resonance frequency, they then breathe in a perfect phase relationship that consists of watching a wave and inhaling until their heart rate peaks and then exhaling as the heart rate drops. Individuals repeat this process while trying to gain the greatest coherence between breathing and their heart rate.

Sessions of RSA generally last between ten to fifteen minutes and can take place once a week or everyday. Allowing RSA sessions to be flexible is viable for individuals that have a busier schedule. Finding a routine that works best for them can achieve the greatest results. Cutshall et al. (2011) found positive correlations at reducing anxiety when their participants used devices four times a week for four weeks. Positive results were linked to consistent routines. RSA is a convenient option for relaxation and to decrease anxiety using portable RSA biofeedback devices.

In a study conducted by Sherlin, Gevirtz, Wyckoff, & Muench (2009),

participants used a portable RSA device to examine if their state anxiety and heart rate (HR) decreased. The participants were in either a control group or experimental group and all participants reported moderate to severe stress levels in their life. The experimental group used the neXus-10 physiological monitoring system. To increase their stress, at the start of the session and the end, the Stroop test was completed. The Stroop test shows words in various colors and participants are asked to say out loud the name of the color in which the word is displayed and not the actual word. This process repeats for two minutes and the speed of the words displayed on the screen increases and decreases sporadically. Researchers use the Stroop test to increase stress in individuals to monitor their physiological responses. The control group in the study, unlike the experimental group, used the StresEraser, but they did not know how to manipulate the wave on the screen and did not have an already defined resonance frequency. The STAI-S (State Trait Anxiety Inventory- State Form; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) measured the perceived stress and anxiety. The results indicated that RSA biofeedback was effective at reducing state anxiety and HR and found the participants reported feeling calm compared to the participants that were in the control group. The study was limited because they only looked at one RSA session for the helpfulness of the devices; however, researchers still recorded positive results in reduction of a person's stress level during the Stroop test.

Other authors have found similar results using biofeedback devices (Henriques, Keffer, Abrahamson, & Horst, 2011) while working with college students. The authors noticed an increase in anxiety among college students and wanted to find interventions that would help decrease the anxiety but be lower in cost than medication or

therapy. After promising results in a pilot study an additional study was replicated to see if similar results were achieved (reference). The second study offered a delayed treatment design to examine the effectiveness of computer-based biofeedback programs. In both of the studies individuals participated in biofeedback programs for 20 minutes a week for four weeks. Different scales were used to measure anxiety, such as the STA-I and MASQ (Mood and Anxiety Symptom Questionnaire; Watson and Clark 1991). For each of the trials the individuals participated in, similar levels of anxiety were reduced. The study showed that computer-based biofeedback programs are an easy, cheap, and effective way to reduce anxiety but there were some limitations. The studies only lasted for four weeks and it might be hard to conclude this was a long enough intervention. Individuals that lead a more stressful college experience, such as being in a clinical graduate program, could potentially need a longer intervention to show similar results as they lead a more stressful college experience.

Reiner (2008) used the StressEraser with participants going to therapy for anxiety related disorders. A pilot study took place at a treatment facility that practiced cognitive behavioral therapy and integrated a biofeedback device into their interventions to reduce the anxiety. This device has a clip that goes on your index finger to measure your pulse and comes with a portable screen with a wave to prompt when to inhale and exhale. The treatment period lasted for 3 weeks. The therapist discussed the importance of the parasympathetic and sympathetic system, and of deep breathing relaxation. All participants found their resonance frequency at the start of the intervention. The participants were instructed to work with the biofeedback device for 20 minutes every day. The STA-I was used to measure the anxiety in the participants. The results were

consistent with previous research and stated that stress and anxiety levels were reduced and increased relaxation and feelings of serenity were seen at the end of the study. Participants also stated that this process was helpful to increase relaxation than other traditional relaxation therapies they had tried. These participants were already having anxiety related problems in their everyday life and this could be seen as a reason that they were able to find such promising results. The results might have been different if they were looking at people without anxiety related disorders to better their reliability of the study.

Biofeedback devices that are used to increase relaxation that are similar to RSA are HRV biofeedback devices. These HRV devices are similar but are used to increase HRV instead of looking at RSA. Both HRV and RSA are viable parts of biofeedback that give participants the options of seeing their results instantly.

Climov (2008) used an intervention on graduate students for 10 sessions to help the students overcome stress and anxiety using a heart rate variability (HRV) biofeedback unit. Students were given access to a HRV biofeedback unit and were asked to focus using relaxation techniques to reach physiological coherence for at least ten sessions of HRV training. Climov (2008) found that students who used the HRV biofeedback devices significantly reduced stress and were satisfied with this type of stress management technique. Students reported additional awareness of moments of clarity and the progress made towards relaxation. Participants appreciated the ability to assess their progress towards relaxation visually through heart rate variability graphs and scores (Climov, 2008). Having the ability to see their HRV on a screen in front of them gives participants immediate feedback, helped them learn to control their breathing, and

produce greater coherence.

**Hypotheses**

Based on the literature reviewed having therapists participate in RSA sessions to increase HRV and decrease anxiety would be beneficial. The purpose of this study is to evaluate therapists through RSA training sessions, it is hypothesized that: (a) the HRV of the therapist will increase as anxiety is decreased through RSA training sessions, (b) the RSA of the therapist will increase as anxiety decreases through RSA training sessions, (c) the trait anxiety of the therapist will decrease through the progress of physiological monitoring sessions, (d) the state anxiety for the therapist will decrease across all therapy sessions.

# Chapter 3

Methodology

## Participants

### *Sample*

The sample for this study was drawn from the University of Kentucky (UK) Family Center. The UK Family Center is an on-campus clinic that provides mental health services to couples, families, and individuals from the greater Lexington area. The UK Family Center has intern therapists that are pursuing a Master's degree in Marriage and Family Therapy. Licensed marriage and family therapists supervise students at the UK Family Center from the department of Family Sciences. The UK Family Center is a training facility in which severe mental health issues are screened out and referred elsewhere in the community. The sample included 8 female and 2 male therapists who were in their first through third year of seeing clients. The therapists ranged in age from 23-26 ($M=23.4$, $SD=1.35$) and all were Caucasian.

### *Participant Selection*

The therapists were contacted by the researcher through their practicum class and also by an email. Once they agreed to participate they notified the researchers by email or phone call. The participants were asked to meet with the researcher when a time was convenient for them. Before the procedure took place the participants were asked to read the informed consent and agree to take part in the study. After providing consent the participants asked to fill out the self-report questionnaires that included the demographic form (Appendix A), the Strait Trait Anxiety Form (Appendix B) and the Freiburg Mindfulness Inventory (see Appendix C).

## Measures

### *Self-Report Measures*

The self-report measures were used to assess the therapists' psychological functioning and session evaluations. The therapists completed a demographic assessment. The demographic assessment as asked for the following information: gender, age, ethnicity, religion, and preferred theoretical perspective of working with clients . The therapist provided the number of therapy session they were on with their current client and rated the degree of difficulty of each case being used on a Likert scale of one (*not difficult)* to seven (*extremely difficult*).

For the research purpose of the current study, the self-report measures assessed the therapists' anxiety prior to sessions. These self-report measures include a revised version from Kvaal, Laake, & Engedal (2001) of the State-Trait Anxiety Inventory (STAI) to form a scale measuring state anxiety.

### *The State-Trait Anxiety Inventory (STAI)*.

The STAI is a 20-item scale that participants answer on a Likert scale with responses ranging from one (not at all) to four (very much). The STAI questions are broken into two types: anxiety present and anxiety absent. Examples of questions from anxiety present are: "I feel upset, I am jittery, I am worried." Examples of questions from anxiety absent are "I feel at ease, I feel content, I feel pleasant." Rule & Traver (1983) conducted a study on 29 male undergraduate students before and after a stressful social analogue situation. Results indicated the STAI generated reliable scores similarly as Spielberger found in his studies. Rule and Traver (1983) found the test-rest correlations for about two-week period were .40 for state and .86 for trait. These were

similar to Spielberger, Gorsuch & Lushene (1970) that found for a 20-day period of .54 for state and .86 for trait. Subscales of STAI have been developed to show depression and anxiety. The subscale of STAI that looks at anxiety is called STAI-A. Bieling, Anthony, & Swinson (1998) conducted a study comparing STAI to other depression and anxiety scales. One correlation that was found was STAI-A (STAI anxiety) was most highly correlated with measures of anxiety. STAI-D (STAI depression) and STAI-A were both highly correlated with STAI-T (STAI trait) and highly correlated with one another. The STAI-A was significantly correlated with the Beck Anxiety Inventory.

*Physiological Measurement.*

For the study, a neXus-10 unit was used. The unit contains a finger sensor to measure heart rate variability, a breathing sensor to measure breath, and galvanic skin response sensors, that were used during the 15-minute biofeedback session of the therapists. The neXus-10 unit also measures respiration that focuses on the breath of the therapist. Biotrace+ software was used to measure the HRV, RSA, and GSR of the therapists during the 15-minute biofeedback sessions. The Galvanic skin response sensors were used to measure a person's stress level. To increase and measure stress levels the researcher asked the participants to count backwards by 9's or 7's starting at 1,000.

HRV for the current study was measured by the standard deviation of normal-to-normal (SDNN). The SDNN interval is the square root of variance, which is "calculated for short periods, usually five minutes, which is an estimate of the changes in heart rate due to the cycles longer than five minutes" (Mahk, 1996, p. 335).

## Procedures

*Informed Consent*

Upon meeting with the researcher, participants were informed of the procedure, risk and benefits, and that it was a voluntary study. It was stated that the participants had the right to withdrawal at any time without penalty. The informed consent used can be found on the UK's research website http://www.research.uky.edu/ori/

*Research Procedures*

Following the informed consent, the participants completed the self-report assessments. After the assessments were complete, the researcher conducted a qualitative structured interview (see Appendix D) with the participant to gain a better understanding of his or her anxiety. The questions included how long they have been seeing clients for and how they would rate their anxiety over all. Following this, the researcher then attached the heart rate sensor to the index finger of the participant. This sensor clip was unobtrusive. The breathing sensor was an elastic strap that was attached above the belly button around his or her stomach and fitted to his or her comfort level. Two sensors were placed on the participants' palm of the less dominate hand to measure galvanic skin response.

During this first session, the researcher asked the participants to breathe normal at his or her comfort level for two minutes. Next, a Serial 7 or 9 test (participants counted backwards by seven or nine out loud staring at 1,000) was conducted for two minutes. After the test, the researcher found the participant's resonant breathing frequency by having them try various different breathing exercises until they found the one that fit the participant. Each exercise will have the participant breathing at either 10

or 12 breaths per minute. This rate is associated with a state of relaxation. Although not expected if any participant begun to feel lightheaded, the exercise stopped and the participant was encouraged to breathe at a comfortable frequency (this only happened during the first two sessions with two participants). The resonant frequency was found by determining which rate produces the best (or highest) heart rate variability.

The regular physiology monitoring sessions proceeded one week after the initial meeting. When the participant was seeing a client at the first, sixth, or tenth therapy session during the study, the participant filled out the STA-I (see Appendix C). During the following weeks the participants completed 15 minutes of self-directed RSA training sessions every week. The researcher connected the heart rate, and breathing sensor during the training sessions. The participant was asked to breathe at his or her resonant frequency, which was found in the first RSA training session, while trying to gain a greater coherence between the heart rate and breathing. The participants were asked to breathe for 15 minutes in each of the following sessions for nine continuous weeks. There were weeks that were not continuous due to academic holidays and other various situations.

During the tenth session the participants had another structured interview with the researcher to ask questions about the process and their anxiety. During this session the participants again was connected to the GSR sensor, the breathing sensor, and heart rate sensor and was asked to do the Serial 9's for two minutes.

# Chapter 4

Results

## Analysis Strategy

A series of paired sampled *t*-tests was conducted for changes in HRV, RSA, trait anxiety, and state anxiety. It was originally thought that measurements from RSA training session one and RSA training session nine would be repeated measures. Due to the small sample size and attrition in the sample, two sets of analyses were used. For the first analysis, HRV measurements from RSA sessions one and five made up the repeated measures. For the second analysis, HRV measurements from RSA training sessions one and nine were used. To analyze changes in trait anxiety, GSR measurements from RSA training sessions one and the last session were used as the repeated measure. For state anxiety, because of sample attrition, two sets of analyses were used. For the first analysis, STAI scores from therapy sessions one, six, and ten were averaged between RSA training sessions one and three. The STAI for therapy sessions one, six, and ten were averaged between RSA training sessions four and six. These averaged scores became the repeated measures for the first analysis. For the second analysis, a similar strategy was used, except the STAI was averaged between RSA training sessions one and five and then again between RSA sessions six and ten.

## H1. The HRV of the therapist will increase as anxiety is decreased through sessions

A paired *t*-test was conducted to test for an increase in HRV. To determine the participants' HRV the standard deviation for normal-to-normal (SDNN) interval was used. The current study used two different *t*-tests to test for an overall increase in HRV. The first set of HRV measurements were conducted at the first RSA session (time one)

and the fifth RSA session (time two).

The first analysis involving RSA training session one and five was expected to see an increase in HRV at time two. There was no statistically significant difference, as measured by the HRV (see Table 1), $t$ (6) = -.371, $p < .73$. Thus the second part of the hypothesis that the HRV would be significantly reduced was not supported. The average levels of HRV between time one did increase.

The second analysis involving training session one of RSA (time one) and ninth RSA session (time two) was expected to see an increase in HRV at time two. There was no statistically significant difference, as measured by the HRV (see Table 1), $t$ (2)= -2.04, $p < .18$. Thus the first part of hypothesis one was not supported.

Table 4.1

Descriptive statistics for HRV at time one and time two

| | Time 1 | | Time 2 | |
|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* |
| HRV Session 1 & 5 (*n=7)* | 85.82 | 34.89 | 91.95 | 28.58 |
| HRV Session 1 & 9 *(n=3)* | 65.09 | 25.05 | 99.79 | 35.44 |

**H2. The RSA of the therapist will increase as anxiety decreases through sessions**

A paired *t*-test was conducted to determine if there was any increase in RSA. For the purpose of the current study two different *t*-tests were used to determine the overall change in RSA. The first set of RSA measurements had two repeated variables, one at the first session during the baseline of RSA session (time one) and the second at the fifth

RSA session (time two).

The first analysis involving RSA training session one and five was expected to demonstrate an increase at time two's levels of RSA conducted at the first RSA training session during a baseline (time one) and the fifth RSA training session (time two). There was a statistically significant result as measured by the RSA (see Table 2), $t$ (6) = -3.11, $p < .02$. Thus the hypothesis was supported when looking at time one and five of the participants' RSA.

The second analysis of RSA measurements had two repeated variables as well, one at the first RSA training session (time one) and at ninth RSA training session (time two). The second analysis involving RSA training session one and nine was expected to increase from time one to time two's levels of RSA. There was no statistically significant results, as measured by the RSA (see Table 2), $t$ (2) = -1.01, $p < .42$. Thus the hypothesis was not supported when looking at time one and two.

Table 4.2

Descriptive statistics for RSA at time one and time two

| | Time 1 | | Time 2 | |
|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* |
| RSA session 1 & 5 (*n*=7) | .07 | .21 | .54 | .23 |
| RSA Session 1 & 9 (*n*=3) | .163 | .30 | .44 | .17 |

**H3. The trait anxiety of the therapist will decrease through the progress of physiological monitoring sessions**

A paired *t*-test was conducted to determine a decrease in trait anxiety during a stress situation in RSA training session one and during the last training session. The trait anxiety was measured by galvanic skin response (GSR). Therefore measurements of the GSR at the first RSA training session (time one) and the last RSA training session (time two) comprised the repeated variable. The intervention was expected to decrease time two's levels of GSR. There was no statistically significant difference, as measured by the GSR (see Table 3), $t$ (3) = .54, $p < .63$. Thus, hypothesis three was not supported.

Table 4.3

Descriptive statistics for the GSR at time one and time two

| | Time 1 | | Time 2 | |
|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* |
| GSR (*n*=4) | 12.83 | 11.02 | 10.11 | 8.65 |

**H4. The state anxiety for the therapist will decrease across all sessions.**

A paired *t*-test was conducted to determine if there was a decrease in state anxiety across RSA sessions one and ten. State anxiety was measured by the STAI. The STAI has two sub-scales in the questionnaire that were used for the current study: anxiety present (AP) and anxiety absent (AA). Because of sample attrition, the data was analyzed from two perspectives. In the first analysis the two repeated variables were created by averaging the STAI subscales between RSA sessions one through three (which comprised time one) and RSA training session four through six (which comprised time

two). The second set of analyses was created in the same form but using time one as RSA training sessions one through five and time two as RSA training sessions six through ten (see Figure 1).

The first analysis involving time one and two was expected to evidence a decrease in the anxiety present STAI scores and an increase in anxiety absent STAI scores. There were no statistically significant results as measured by the STAI (see Tables 4 & 5), (AP) $t$ (7) = -.24, $p$ < .82; (AA) $t$ (7) = -1.14, $p$ <. 29.

The repeated measures for the second analysis had two repeated variables as well, at RSA training session one through three when a participant had a sixth therapy session with a client (time one) and RSA training session four through six when they had a sixth therapy session with a client (time two). The analysis was expected to see a decrease in the anxiety present STAI scores and an increase in anxiety absent STAI scores. There were no significant results as measured by the STAI (see Tables 4 & 5), (AP) $t$ (1)= -1.55, $p$ < .37; (AA) $t$ (1) = -1.18, $p$ < .45.

Due to low sample, there was a lack of therapists having a tenth therapy session with clients. Because of this, the third analysis could not be performed. The repeated measures for the fourth analysis had two repeated variables as well, at RSA training session one through five when a participant had a first therapy session with a client (time one) and RSA training session six through ten when they had a first therapy session with a client (time two). It was hypothesized that there would be a decrease in the anxiety present STAI scores and an increase in anxiety absent STAI scores. There were no statistically significant results as measured by the STAI (see Tables 4 & 5), (AP) $t$ (6) = 1.05, $p$ < .18; (AA) $t$ (6)= -.31, $p$ < .77.

The repeated measures for the fifth analysis had two repeated variables, at RSA training session one through five when a participant had a sixth therapy session with a client (time one) and session six through ten when they had a sixth therapy session with a client (time two). The analysis was expected to see a decrease in the anxiety present STAI scores and an increase in anxiety absent STAI scores. There were no statistically significant results as measured by the STAI (see Tables 4 & 5), (AP) $t$ (1) = -2.9, $p < .82$; (AA) $t$ (1) = 1.55, $p < .37$.

Table 4.4

Descriptive statistics for STAI at time one and time two for anxiety present

| | Time 1 | | Time 2 | |
|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* |
| STAI session 1-6 First session w. clients (*n*=8) | 17.83 | 4.47 | 18.72 | 7.26 |
| STAI session 1-6 Sixth session w. clients (*n*=2) | 14.5 | 3.54 | 23.00 | 4.24 |
| STAI session 1-10 First session w. clients (*n*=7) | 18.48 | 4.1 | 16.13 | 1.44 |
| STAI session 1-10 Sixth session w. clients (*n*=2) | 15.75 | 3.89 | 18.00 | 7.07 |

Table 4.5

Descriptive statistics for STAI at time one and time two for anxiety absent

| | Time 1 | | Time 2 | |
|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* |
| STAI session 1-6 First session w. clients (*n*=8) | 25.4 | 5.9 | 28.66 | 6.71 |
| STAI session 1-6 Sixth session w. clients (*n*=2) | 23 | 4.24 | 36 | 11.31 |
| STAI session 1-10 First session w. clients (*n*=7) | 28.17 | 3.63 | 28.76 | 4.33 |
| STAI session 1-10 Sixth session w. clients (*n*=2) | 31 | 5.66 | 22.5 | 2.12 |

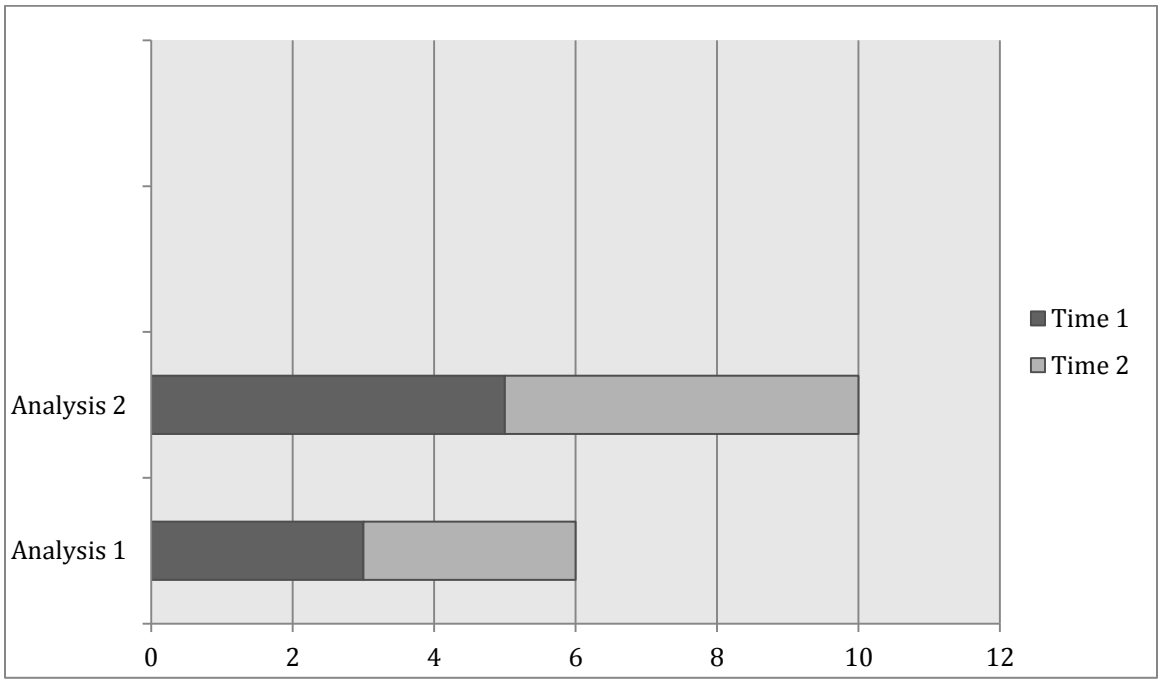


*Figure 4.1. State anxiety dependent variables*

**Qualitative Interview Results**

**Pretest interviews.** The results of the qualitative interviews suggested that the therapists perceived themselves as not generally experiencing high amounts of anxiety in their lives outside of therapy. When the therapists met with clients for their very first session as a therapist, all therapists stated their anxiety was high. For example, one therapist rated her anxiety a twenty on a scale of one to ten. The therapists rated their anxiety much lower now meeting with clients, than their first session as a therapist. Therapists described when they noticed their anxiety increasing in sessions. Descriptions centered on when they were about to self-disclose, confronting a client, or talking about a loss.

**Post Interviews.** The results of the qualitative interview after the last RSA session, suggested that the RSA sessions helped the therapists notice their breathing but overall they felt it did not affect their therapy sessions. The benefits the therapists felt they gained from the RSA sessions centered on having to sit and relax for fifteen minutes a week and learning how to breathe. The therapists felt that becoming more comfortable with clients was related more to gaining more experience than the RSA sessions.

# Chapter 5

Discussion

## Interpretations

Specifically exploring the effects of respiratory sinus arrhythmia, the purpose of the current study was to examine the effects of monitoring physiological measurements on therapists' anxiety. Given the small sample size, only one significant result was found. Results did uncover a number of small differences that can support the idea that RSA is a viable resource to help therapists in reducing anxiety.

Although few statistically significant differences were found, one was found between the baseline RSA and session five. During sessions one through five, there was the greatest number of participants, which might have contributed to the likelihood of having enough power to find significance differences. Previous literature found that consistent routines were shown to be effective when improving RSA (Cuteshell et. al, 2011), and the current study upheld those findings. The current study held RSA over a period of ten sessions. Academic holidays and other obligations prevented a consistent routine, but significant results were still found for the first five sessions, showing that routines seem to be a key factor in achieving an increase in RSA between an initial session and the last. An increase in RSA was achieved between the first and ninth session, but did not yield significant results. Even though there was a small increase, the results show that monitoring one's physiological measurements can be helpful for participants to engage in deep breathing by trying to replicate waves on a screen.

Similar findings for sessions one through nine were achieved for HRV. The HRV of the current study was not shown increase significantly. However, HRV was

shown to improve between the first and the last session, although not significantly. Similar to Climov (2008), who held ten sessions with graduate students using a HRV biofeedback device to increase HRV and decrease stress, the current study involved graduate students participating in a clinical program to try and achieve similar results. The current study does not support the results that Climov (2008) achieved, but a small sample size could have contributed to the lack of significance. If future studies looked at larger samples, then a significant increase in HRV might be achieved.

When examining the trait anxiety (GSR), decreases in GSR were found when looking at pre and post tests using the serial 7's and 9's, although the differences were not large enough to conclude that therapists' reactions to stress were decreased because of RSA treatment. Sherlin, Gevirtz, Wyckoff, & Muench (2009) found their results to be significant at pre and post interventions using a similar stress test, and are consistent with the trend found with the current findings. Similar to the lack of findings for HRV, if the sample size of the current study had been larger, then the GSR results might have been significant.

Not all components of anxiety of the therapist were decreased through sessions of RSA. The state anxiety of the therapist was shown to trend upward after sessions of RSA training. This inconsistent with previous research;Henriques, Keffer, Abrahamson, & Horst (2011), & Reiner (2008) reported a decrease in anxiety among college students. The peculiarity of the current findings could be due to the low sample size..

Williams, Judge, Hill, & Hoffman (1997) reported certain topics that showed increased anxiety in therapists' sessions with clients. Reasons why therapists feel anxiety is due to their abilities, personal reactions, and anxiety related to how they are feeling

toward session outcomes. Despite the lack of statistically significant findings, the current study supported this notion through qualitative interviews, which demonstrated that beginning therapists do feel anxiety in initial sessions. The ratings that were found on a scale from one to ten about how anxious the therapists were seeing their first clients, the therapist rated their first session high in anxiety. These findings show that therapists' perception of their abilities influences their anxiety in sessions.

**Implications**

Given that little research has looked at anxiety of training therapists, the current study investigated how therapists feel that anxiety influences sessions. Results from the current study can have future implications for researchers and clinicians.

While only one significant result was found for the current study, interesting trends were found to exist between the following results: increases in HRV after sessions of RSA, increases in RSA across sessions, and decreases in GSR between pre and post sessions. By using a larger sample size, future research may yield significant results after RSA sessions. As an intervention to help reduce anxiety for beginning and experienced therapists, RSA has potential to give insight for therapists to better the clients by helping therapists engage in therapy sessions. Therapists are a vital part in the therapy process as the therapeutic alliance is a major component, and having therapists be mentally present in sessions will likely give clients a better experience.

Finding of the current study also have implications for supervisors of therapists. Knowing that beginning therapists face anxiety centered on their ability, it is especially important for supervisors of trainees to help them decrease their anxiety. The implications for therapy sessions and the therapeutic alliance are vital for change. Taking

into account how anxiety triggers therapists' fight vs. flight responses, supervisors can work with the therapists to help them recognize these reactions and to increase the response time to return to homeostasis. Knowing therapists rate anxiety higher for meeting their first client, supervisors could use RSA before the initial first session to help therapists feel less anxious and more confident in their abilities.

**Limitations**

Some limitations exist in the current study. Due to the limited sample size of the current study, it can not be implied that the findings would be generalizable to the larger population. The current study had attrition in the sample as one participant dropped out after session eight. The sample of therapists in training varied from the time they had been seeing clients; because of this variation, the researcher had to start participants' RSA sessions at different times.

Further research should use a larger sample size and examine the differences between various types of therapists to see if similar results are found, due to the current study solely relying on marriage and family therapists. The current study lacked a control group to evaluate if the experimental group's results were found due to the intervention or simply gaining more experience with clients in general.

**Conclusion**

Therapists can be at a higher risk to experience anxiety, which could hinder the therapeutic alliance in therapy sessions. The current study looked at physiological monitoring as a way to help reduce anxiety for marriage and family therapists in training. Although many results from the current study were not statistically significant, the data trended in a direction that is consistent with past researchers' findings. Even

though there was a small sample size, RSA may be a tool for future supervisors and clinicians to consider for helping reduce anxiety in therapists.

APPENDIX A

DEMOGRAPHIC QUESTIONNIARE
THERAPIST

Age: _____

Gender: ☐ Male ☐ Female

What is your religious affiliation? (Circle number)

1. Protestant (e.g., Baptist, Lutheran, etc.) Please specify:_____
2. Catholic
3. Jewish
4. None
5. Non-denominational
6. Other (Please specify) _____

How do you define your ethnicity? (Circle all that apply)

1. White (Caucasian)
2. African-American
3. Hispanic
4. Native American
5. Asian
6. Pacific Islander
7. Other (Please specify) _____

Preferred theoretical perspective of working with this client:

1. Individual model (e.g., cognitive-behavioral, reality therapy)
2. Structural
3. Bowen
4. Experiential
5. Strategic/MRI
6. Solution Focused
7. Emotionally Focused Therapy
8. Narrative
9. Psychoeducation
10. Milan
11. Other: _____

APPENDIX B

STATE-TRAIT ANXIETY

Degree of difficult of the client: 1 2 3 4 5 6 7

Session number: _____

Please circle one where 1=not at all and 4=very much

| | | | | |
|---|---|---|---|---|
| 1. I feel calm | 1 | 2 | 3 | 4 |
| 2. I feel secure | 1 | 2 | 3 | 4 |
| 3. I am tense | 1 | 2 | 3 | 4 |
| 4. I feel strained | 1 | 2 | 3 | 4 |
| 5. I feel at ease | 1 | 2 | 3 | 4 |
| 6. I feel upset | 1 | 2 | 3 | 4 |
| 7. I am presently worrying over possible misfortunes | 1 | 2 | 3 | 4 |
| 8. I feel satisfied | 1 | 2 | 3 | 4 |
| 9. I feel frightened | 1 | 2 | 3 | 4 |
| 10. I feel comfortable | 1 | 2 | 3 | 4 |
| 11. I feel self-confident | 1 | 2 | 3 | 4 |
| 12. I feel nervous | 1 | 2 | 3 | 4 |
| 13. I am jittery | 1 | 2 | 3 | 4 |
| 14. I feel indecisive | 1 | 2 | 3 | 4 |
| 15. I am relaxed | 1 | 2 | 3 | 4 |
| 16. I feel content | 1 | 2 | 3 | 4 |
| 17. I am worried | 1 | 2 | 3 | 4 |
| 18. I feel confused | 1 | 2 | 3 | 4 |
| 19. I feel steady | 1 | 2 | 3 | 4 |
| 20. I feel pleasant | 1 | 2 | 3 | 4 |

APPENDIX C

*Freiburg Mindfulness Inventory*

The purpose of this inventory is to characterize your experience of mindfulness. Please use the last ___ days as the time-frame to consider each item. Provide an answer for every statement as best as you can. Please answer as honestly and spontaneously as possible. There are neither 'right' nor 'wrong' answers, nor 'good' or 'bad' responses. What is important to us is your own personal experience.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Rarely | Occasionally | Fairly Often | Almost always |

| | |
|---|---|
| 1. I am open to the experience of the present moment. | 1 2 3 4 |
| 2. I sense my body, whether eating, cooking, cleaning, or talking. | 1 2 3 4 |
| 3. When I notice an absence of mind, I gently return to the experience of the here and now. | 1 2 3 4 |
| 4. I am able to appreciate myself. | 1 2 3 4 |
| 5. I pay attention to what's behind my actions. | 1 2 3 4 |
| 6. I see my mistakes and difficulties without judging them. | 1 2 3 4 |
| 7. I feel connected to my experience in the here-and-now. | 1 2 3 4 |
| 8. I accept unpleasant experiences. | 1 2 3 4 |
| 9. I am friendly to myself when things go wrong. | 1 2 3 4 |
| 10. I watch my feelings without getting lost in them. | 1 2 3 4 |
| 11. In difficult situations, I can pause without immediately reacting | 1 2 3 4 |
| 12. I experience moments of inner peace and ease, even when things get hectic and stressful. | 1 2 3 4 |
| 13. I am impatient with myself and with others. | 1 2 3 4 |
| 14. I am able to smile when I notice how I sometimes make life difficult. | 1 2 3 4 |

## APPENDIX D

PRE INTERVIEW QUESTIONS:

1. How long have you been seeing clients for?
2. How anxious of a person do you think you are?
3. How did your anxiety rate on a scale from 1-10 when you had your first client?
4. How does your anxiety rate on a scale from 1-10 now meeting with clients?
5. Do you have anxiety when meeting a client for the first time?
6. Do you notice yourself getting anxious in sessions?

POST INTERVIEW QUESTIONS:

1. How do you feel the RSA training has affected your therapy sessions?
2. Do you feel that becoming comfortable with the clients is a result from more experience or from the RSA training?
3. What was the most difficult part of the RSA training?
4. What was the most beneficial part of the RSA training?
5. Do you find yourself becoming more aware of your anxiety during sessions after the RSA training?
6. How anxious of a person do you feel you are now compared to before the RSA training?
7. Do you feel the RSA training was helpful to reduce your anxiety?

APPENDIX E

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Office of Research Integrity
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315 Kinkead Hall
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859 257-9428
fax 859 257-8995
www.research.uky.edu/ori/

Initial Review

Approval Ends
October 10, 2012

IRB Number
11-0692-P4S

TO: Mellissa Dalton,
Family Studies
315 Funkhouser
0054
PI phone #: (918) 231-8384

FROM: Chairperson/Vice Chairperson
Non-medical Institutional Review Board (IRB)

SUBJECT: Approval of Protocol Number 11-0692-P4S

DATE: October 13, 2011

On October 12, 2011, the Non-medical Institutional Review Board approved your protocol entitled:

*Looking at Therapists' Session Anxiety*

Approval is effective from October 12, 2011 until October 10, 2012 and extends to any consent/assent form, cover letter, and/or phone script. If applicable, attached is the IRB approved consent/assent document(s) to be used when enrolling subjects. **[Note, subjects can only be enrolled using consent/assent forms which have a valid "IRB Approval" stamp unless special waiver has been obtained from the IRB.]** Prior to the end of this period, you will be sent a Continuation Review Report Form which must be completed and returned to the Office of Research Integrity so that the protocol can be reviewed and approved for the next period.

In implementing the research activities, you are responsible for complying with IRB decisions, conditions and requirements. The research procedures should be implemented as approved in the IRB protocol. It is the principal investigator's responsibility to ensure any changes planned for the research are submitted for review and approval by the IRB prior to implementation. Protocol changes made without prior IRB approval to eliminate apparent hazards to the subject(s) should be reported in writing immediately to the IRB. Furthermore, discontinuing a study or completion of a study is considered a change in the protocol's status and therefore the IRB should be promptly notified in writing.

For information describing investigator responsibilities after obtaining IRB approval, download and read the document "PI Guidance to Responsibilities, Qualifications, Records and Documentation of Human Subjects Research" from the Office of Research Integrity's Guidance and Policy Documents web page [http://www.research.uky.edu/ori/human/guidance.htm#PIresp]. Additional information regarding IRB review, federal regulations, and institutional policies may be found through ORI's web site [http:/ www.research.uky.edu/ori]. If you have questions, need additional information, or would like a paper copy of the above mentioned document, contact the Office of Research Integrity at (859) 257-9428.

N. Van Tuberggen Ph.D./ah
Chairperson/Vice Chairperson

An Equal Opportunity University

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# VITA

Melissa Dalton was born on April 5, 1988 in Tulsa, OK.

## EDUCATION

Oklahoma State University, Stillwater, OK
B.S. in Human Development and Family Sciences, 2010
Minors in Spanish

## PROFESSIONAL EXPERIENCE

Department of Family Sciences, University of Kentucky
Research assistant, 2010-2012

University of Kentucky Family Center
Marriage and Family Therapist Intern, 2010-2012

## PROFESSIONAL CONFERENCES AND WORKSHOPS

National Council of Family Relations (NCFR) Conference
Minneapolis, MN, 2010

America Association for Marriage and Family Therapy (AAMFT) National Conference
Fort Worth, TX, 2011

Family Psychological Services, Reaching Children Through Play Therapy Workshop
Lexington, KY, 2011

Kentucky Association for Marriage and Family Therapy (KAMFT) Conference
Louisville, KY, 2011

## PROFESSIONAL AFFILIATIONS

American Association of Marriage and Family Therapy (AAMFT)
Kentucky Association of Marriage and Family Therapy (KAMFT)
University of Kentucky Student Association for Marriage and Family Therapy (SAMFT)