THE RELATIONSHIPS AMONG MASTER'S LEVEL COUNSELING TRAINEES' TRAINING LEVEL, EMOTIONAL INTELLIGENCE, AND PSYCHOPHYSIOLOGICAL CORRELATES OF EMOTION REGULATION DURING A SIMULATED COUNSELING INTERACTION

by

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ABSTRACT

THOMAS KEITH HILL. The relationships among counseling trainees' level of training, emotional intelligence, and psychophysiological correlates of emotion regulation during a simulated counseling interaction. (Under the direction of DR. KOK-MUN NG)

This study explored the relationships among master's level counseling trainees' level of training, ability emotional intelligence (EI), and psychophysiological correlates of emotion regulation recorded during a video-simulated client interaction. Agreement exists among counselor educators, researchers, and theorists that counselors' emotion regulation is foundational to the competent delivery of counseling treatment. The literature further suggests that counselors and trainees experience frequent emotional challenges that overwhelm emotion regulation skills, interfere with competent delivery of service, and affect client outcomes. However, little research in counseling training and supervision has investigated trainees' emotion regulation or factors that support adaptive emotion regulation while trainees interact with clients who are experiencing emotional distress.

Participants were 66 master's level counseling trainees from counseling programs accredited by the Counsel for Accreditation of Counseling and Related Educational Programs. Participants' EI was operationalized as scores on the Mayer, Salovey, and Caruso Emotional Intelligence Test (Mayer, Salovey, Caruso, & Sitarenios, 2003). Emotion regulation was operationalized as electrodermal activity (EDA), high-frequency heart rate variability, and the standard deviation of normal heartbeat intervals (HRV-

SDNN). Correlation and regression analyses indicated that psychophysiological correlates of trainees' emotion regulation were not significantly correlated with training. However, HRV-SDNN significantly correlated with total EI, and the EI subscale Perceiving Emotions, while EDA significantly correlated with the Managing Emotions subscale.

DEDICATION

This dissertation is dedicated to my son. You not only understood the project from the start but contributed to its success. It was you who convinced me it was actually a good idea to put electrodes on people. I have been a better person thanks to you.

I would also like to express gratitude to my mom, my sister Jan, and my brother Norm. You never let me down.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

Counselors' ability to manage their emotions is crucial to delivering competent and effective counseling treatment (Batten & Santanello, 2009; Cooper & Ng, 2009; Rønnestad & Skovholt, 2003). Consequently, counselor education requires students to develop the ability to manage their emotions. Of particular importance is the ability to manage negative emotions such as anxiety, anger, frustration, and disappointment occurring in counseling sessions, where inappropriate management of such emotions can affect the delivery of competent treatment and interfere with client change (Binder & Strupp, 1997; Melton, Nofzinger-Collins, Wynne, & Susman, 2005; Williams, Judge, Hill, & Hoffman, 1997). Counseling supervision theories further posit the importance of assisting counselor trainees in gaining facility with emotions, both theirs and clients' (Batten & Santanello, 2009; Brack, Brack, & McCarthy, 1997; Rønnestad & Skovholt, 2003; Wetchler, 1999)

Research findings support the relationship between counselors' emotion management skills and treatment outcomes (e.g., Binder & Strupp, 1997), and developmental models of counselor preparation advance the hypothesis that counselor emotion regulation improves as a function of level of training (e.g., Rønnestad & Skovholt, 2003; Stoltenberg, McNeill, & Delworth, 1998). Some researchers suggest that emotional intelligence (EI) may be a defining characteristic of professional counselors that is correlated with level of training (Easton, Martin, & Wilson, 2008; Martin, Easton,

Wilson, Takemoto, & Sullivan, 2004). However, research has yet to examine the relationships among EI, level of training, and emotion regulation skills among counselor trainees.

Understanding factors that support successful emotion regulation is important because of the relationship between emotion regulation and well-being and individual functioning (e.g., McCraty, Atkinson, Tomasino, Goelitz, & Mayrovitz, 1999; Twenge & Baumeister, 2002). However, it has particular significance in counselors because they must interact with clients regarding emotionally charged issues such as crisis and trauma, sexual abuse, chronic and acute mental and medical illness, and suicidal or homicidal threats. In the midst of these circumstances, counselors must manage and respond to the emotions of clients while managing their own emotional responses in order to execute defining professional responsibilities such as client safety, effective therapeutic relationship, ethical decision-making, and cultural competence. Research has indeed indicated that during counseling sessions, counselor trainees are on emotional roller-coasters (Melton et al., 2005); and even experienced therapists struggle to manage negative in-session emotional reactions (Binder & Strupp, 1997).

The counseling literature contains multiple calls for additional attention to counseling trainees' internal processes that support emotion regulation and the delivery of emotion-related skills such as empathy. For example, Binder et al. (1993) called for greater attention to training in the management of negative reactions to clients. Melton et al. (2005) called for increased study on how students could acquire tools to handle their in-session emotional experiences. Greason and Cashwell (2009) further contended that the research and training focus on external, observable skills, rather than internal

processes, leaves a gap in counselor education that may have profound negative consequences. Recently, Cook (2010) suggested that prospective counseling trainees could be screened for their suitability for the profession on the basis of their facility with emotional self-regulation. In spite of this, little research has investigated emotion regulation in counseling trainees, its role in counseling training, or the factors that contribute to improved emotion regulation in counseling trainees.

An increasing research interest in emotion regulation in the general population has paralleled the increased use of psychophysiological measures to operationalize emotional activity (Sequeira, Hot, Silvert, & Delplanque, 2009; Werner & Gross, 2010). The activation of emotion involves measurable changes in physiological systems under the influence of the autonomic nervous system (ANS; Sequeira et al., 2009). One such change is activation of eccrine sweat glands on the palm surfaces of the hands and fingers. Measurement of this change, referred to as electrodermal activity (EDA), has a long history in the study of emotions (Boucsein, 1992). Variation in the intervals between heartbeats is another physiological change predictably associated with emotional activity (Appelhans & Luecken, 2006). Heart rate variability (HRV) has increasingly been used in research as an indicator of proficiency in emotion regulation (Thayer & Lane, 2000). However, research has yet to employ these variables in the exploration of the emotion regulation skills of counseling trainees.

This study sought to address gaps in the literature by exploring the relationships among counseling trainees' training level, ability EI, and in-session emotion regulation. The study focused on two variables important to counselor preparation and their effects on two psychophysiological correlates of emotion regulation. These two independent

variables were level of training and ability EI. The dependent variables were two well-researched psychophysiological correlates of emotion regulation: EDA and HRV. These variables operationalized emotion regulation (Appelhans & Luecken, 2006; Boucsein, 1992).

Background

Counselor Level of Training

Developmental models of counselor education and supervision state that counselor development includes improving the ability to manage emotional reactions to training demands and client interactions (Rønnestad & Skovholt, 2003; Stoltenberg et al., 1998). These models state that counselor emotion regulation improves as an outcome of training and experience, and this improvement is of particular importance to early phases of counselor development (Rønnestadt & Skovholt, 2003). This suggests that counselor training is expected to affect counselors' ability to manage emotions that occur during counseling sessions.

Counselor training has been defined narrowly as the acquisition of observable helping skills (Hill & Lent, 2006), and more broadly as the development of clinical competence (Buser, 2008). Research on the effects of training on skill development has yielded cautiously optimistic results, while pointing out the need for further study (Buser, 2008). The Council for Accreditation of Counseling and Related Educational Programs (CACREP; 2009) requires a training sequence of basic skills course work, followed by field experience sequentially in the form of practicum and internships. This study operationalized level of training dichotomously according to trainees' degree of completion of this sequence. Beginning level training was limited to enrollment in or

completion of a basic skills course with no further field experience. Advanced training was defined as placement in, or completion of, a first or second clinical internship.

Emotional Intelligence

EI has gained attention in the literature across disciplines since Salovey and Mayer first proposed a research-based theory of EI in 1990 (Salovey & Mayer, 1990). For example, EI has been found to positively correlate with leadership skills (Cote, Lopes, Salovey, & Miners, 2010), social competence (Yip & Martin, 2005), and enhanced performance under stress (Lyons & Schneider, 2005). EI has also been found to correlate negatively with the secretion of stress-related free cortisol in the brain (Mikolajczak , Roy, Luminet, Fillee, & Timary, 2007).

Ability EI is a construct which describes how an overall capacity for adaptive emotional responding is supported by the ability to integrate emotional information into cognition. The Mayer and Salovey (1997) model of ability EI represents this view, defining EI as:

> The ability to perceive accurately, appraise, and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotions and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth. (p. 10)

Mayer , Salovey, and Caruso (2004) describe emotion management as a skill set that culminates from skills at perceiving, utilizing, and understanding emotions, indicating that greater overall EI is expected to result in greater facility with emotion management.

A feature of ability EI is that it is expected to improve as an outcome of didactic and experiential learning about emotions. For example, a control group study by Nelis,

Quoidbach, Mikolojczak, and Hansenne (2009) found improvement in two branches of EI, emotion management and emotion identification, as a result of group training in EI. Viewing emotion management as a component of EI has direct relevance to the goals of counselor education (Cooper & Ng, 2009). Counseling students are expected to learn emotional skills related to identifying and reflecting emotions, understanding the effects of emotions, and influencing emotions in others. In addition, there is an understanding that emotional self-awareness is a pre-requisite to these skills (Holloway, 1997). In other words, counseling students learn to apply these skills to both client and self. Thus, ability EI could be expected to improve as a result of counselor training.

A few researchers have recently examined the relationship between EI and counselor training variables. Martin et al. (2004) studied the trait EI of a sample (n = 140) of counseling students and practicing counselors. They found that higher trait EI distinguished the study sample from non-counselors. They further found that three trait EI subscales (i.e., Identifying Own Emotions, Expressing Emotions Adaptively, and Using Emotions in Problem Solving) significantly predicted counseling self-efficacy (Martin et al., 2004). In a study of school counselors' self-perceived ability to work with culturally diverse clients, Constantine and Gainor (2001) found that trait EI significantly accounted ($p < .01$) for the variance in perceptions of multicultural knowledge. Miville, Carlozzi, Gushue, Schara, and Ueda (2006) studied the relationships between EI, universal-diverse orientation, and empathy in counseling students (n = 211). They found that, after controlling for gender, differences in EI accounted for significant variance in the empathy subscales of Perspective-Taking (R^2 = .187), Empathetic Concern (R^2 = .171), and Personal Distress (R^2 = .129).

Counselor education literature provides some guidelines for the practical application of EI principles to counselor education. Pellitteri, Stern, Shelton, and Muller-Ackerman (2006) edited the handbook *Emotionally Intelligent School Counseling* in order to provide guidelines for systematically integrating theory and research on EI into school counseling. Cooper and Ng (2009) presented an integrated review of literature on emotions, EI, and supervision, and described a model for integrating EI into the supervision process. They delineated practical guidelines for how supervisors could utilize their own EI to enhance the EI of supervisees; bringing about benefits in emotional identification, emotional problem-solving, and emotion regulation. They suggest that the model of ability EI described by Mayer and Salovey (1997) provides a needed conceptual framework for supporting the work of counselor educators in enhancing emotion-related skills of trainees (Cooper & Ng, 2009). Despite the recent attention in the literature on EI in counseling literature, no study has examined the effects of ability EI on psychophysiological correlates of emotion regulation in counselors.

Psychophysiological Correlates of Emotion Regulation

Emotion regulation occurs in response to, or anticipation of, emotional arousal (Gross, 2002). Research indicates that it is not uncommon for students to experience problematic levels of emotional arousal in sessions with clients (Melton et al., 2005; Williams et al., 1997), and emotional arousal has well-known psychophysiological correlates (Boucsein, 1992; Sequeira et al., 2009). Commonly studied psychophysiological correlates of emotional arousal include EDA, heart rate, muscle tension, and pupil dilation (Sequeira et al., 2009).

Employing psychophysiological measures as a means of assessing facility with emotion regulation has advantages over other means. For example, self-report measures introduce variables such as social desirability, response style, and personality that cloud the ability to account for all sources of variance (Kluemper, 2008). Furthermore, survey assessments of emotion regulation are composed of items that reference one or more theoretical views of emotion regulation (Gratz & Roemer, 2004). However, strategies for emotion regulation are potentially limitless, as they are dependent on factors such as personal experience, differences in emotional reactivity, perceptions of self-efficacy, and the demands of the situation (Gross, 2002). Therefore, it may be more advantageous to measure emotion regulation transtheoretically, in terms of known psychophysiological correlates, rather than through survey instruments whose items correlate to limited emotion regulation strategies.

This study utilized two psychophysiological correlates of emotion regulation, namely, EDA and HRV. EDA has been used extensively in research on emotional arousal and emotion regulation (Boucsein, 1992; Driscoll, Tranel, & Anderson, 2009; Pennebaker & Chew, 1985; Sequeira et al., 2009). Greater facility with emotion regulation results in lower levels of emotional arousal, less effort required at managing emotions, and smaller EDA responses (Boucsein, 1992).

HRV has emerged as an important index of the ability to regulate emotions and as an indicator of individual differences in emotion regulation (Appelhans & Luecken, 2006). For example, associations between HRV and emotion regulation have been found in studies on coping strategies among college students (Fabes & Eisenberg, 1997), induced distress in grade school children (Fabes, Eisenberg, & Eisenbud, 1993), coping

with bereavement (O'Connor, Allen, & Kaszniak, 2002), and attention allocation (Johnsen et al., 2003). Results of research generally support the association between higher HRV and greater capacity in emotion regulation (Appelhans & Luecken, 2006).

In research on emotion regulation, EDA and HRV are frequently measured in response to video stimuli (e.g., Kreibig, Wilhelm, Roth, & Gross, 2007; Sheppes, Catran, & Meiran, 2009). Rottenberg, Ray, and Gross (2007) state that research supports the capacity of videos to elicit activation across multiple generative systems of emotion, including the ANS. In addition, they describe characteristics of emotion-inducing videos that support the use of video stimulus in research, including: (a) video has high capacity to capture participants' attention, (b) video allows high standardization of the stimulus across participants, (c) video can be adapted to enhance target area generalizability, and (d) a naturalistic video activates multiple cues for emotion generation.

The above suggests that video may be utilized to simulate the stimulus of in-session client interaction while maintaining standardization across research participants. In this study, participants were asked to take the role of counselor and vocalize a counseling response as they viewed a video-recorded client disclosure. The recording was provided by permission from the video diary of a woman disclosing her recent diagnosis of ovarian cancer during her 14th week of pregnancy. The client narrative was presented in two segments of approximately two minutes each. After each segment, the video paused for 30 seconds during which participants were prompted to provide an appropriate counseling response.

Statement of the Problem

Counselor educators recognize that trainees face increased challenges in managing personal emotions in the face of the emotional presentations of clients (Melton et al., 2005). Counseling students are expected to integrate new challenges into existing emotion regulation strategies and learn new strategies for emotion regulation. Counselor developmental models state that counselor education and training facilitate this process (Ronnestad & Skovholt, 2003). However, research suggests that both counseling trainees and experienced counselors struggle with in-session emotion regulation (Binder & Strupp, 1997; Melton et al., 2005; Williams et al., 1997); and few studies have directly investigated master's level trainees' emotion regulation in the context of client interactions.

Theory and research suggest links between emotion regulation and empathy, ability to form and repair the therapeutic alliance, and client outcomes (Binder & Strupp, 1997; Ciarrochi, Chan, & Caputi, 2000; Mayer & Salovey, 1997; Ronnestadt & Skovholt, 2003). However, researchers have suggested that counselor training pays inadequate attention to how trainees develop emotional self-regulation (Melton et al., 2005). On the other hand, much attention is paid to development of student cognitive skills, especially in the area of critical thinking (Deal, 2003; Lovell, 1999). Research and theory have sought to link emotion related skills such as empathy with the development of cognitive skills such as critical thinking (Deal, 2003). However, research in this area has had mixed results, suggesting that critical thinking alone does not account for all of the variance in students' skills with empathy (Lyons & Hazler, 2002). Further research is

needed to investigate additional factors that promote counseling trainees' facility with emotion-related skills.

As discussed earlier, there is an evident overlap between the components of ability EI and the goals of counselor education. This overlap has been researched using trait (self-report) measures of EI (e.g., Martin et al., 2004). However, Kluemper (2008) points out that trait EI has demonstrated low divergent validity related to measures of personality. Viewed as an aspect of personality, trait EI may be stable over time and resistant to change (Kluemper, 2008). In contrast, ability EI is characterized as a cognitive intelligence and is assessed by maximal performance according to pre-determined criteria. Research using objective measures is needed to investigate theoretical correlations between ability EI and the goals and processes of counselor education.

While counselor educators recognize the importance of gaining skill at managing personal emotional arousal, they may lack a coherent model of emotional information processing that identifies factors supporting skills such as emotion regulation, empathy, and relationship building (Cooper & Ng, 2009). This may help explain the contention of some researchers that counselor training pays insufficient attention to improving trainees' emotional information processing (Greason & Cashwell, 2009; Melton et al., 2005). In response to the above-stated needs, this study investigated the effect of training and ability EI on psychophysiological correlates of counseling trainees' emotion regulation as they interacted with clients. Client interaction was simulated by asking participants to view and respond to a videoed woman delivering an emotionally charged narrative.

Significance of the Study

It is important that counselor educators have empirical means to verify that training has a desired effect, yet research into the outcomes of counselor training is challenging and often inconclusive (Buser, 2008). While emotional self-regulation is a foundational counselor skill (Cook, 2009), scant research provides indications of whether counselor training improves this skill or what factors promote its improvement. Greater understanding of trainees' in-session emotion regulation assists counselor educators and supervisors in designing effective training programs and assessing their outcomes. This study provides groundwork for improved counselor training by investigating the relationship between training and emotion regulation.

Research on the relationship between ability EI and trainees' emotion regulation may help illuminate underlying factors at work in counselor training that have thus far remained opaque. Ability EI provides a coherent model of emotional information processing through which counselor educators can conceptualize, model, and assess emotional skill development (Cooper & Ng, 2009). This could assist counselor educators in optimizing opportunities for training in emotion-related skills. This study assists in establishing a basis for utilizing ability EI in counselor training.

Ability EI models the integration of emotional information into cognitive functioning (Mayor & Salovey, 1997). Exploring the relationship between trainees' ability EI and emotion regulation may assist in understanding aspects of trainees' emotion regulation not fully explained by measuring cognitive skills or critical thinking (Lyons & Hazler, 2002).

Some theorists have suggested that emotional skills belong in the category of personality traits, and question how much effect training can have (Binder et al., 1993). In contrast, ability EI assesses the degree to which emotional information is integrated into cognitive functioning and posits that emotion-related skills such as empathy, relationship building, and emotion regulation may be improved through deliberate efforts to train and enhance ability EI. However, research on efforts to improve ability EI is still in its infancy. This study of the relationships among counselor training, ability EI, and emotion regulation may further assist in understanding the conditions under which emotion related skills may be improved.

This study utilized objective, criterion-based measures to assess EI and emotion regulation. These measures add a needed dimension to research areas in counselor education which have previously relied on participant self-assessment of these variables. This could further expand the research basis for greater utilization of such measures in counselor education research.

In summary this study assisted in filling existing gaps in the literature regarding trainees' in-session emotional arousal, the effects of counselor training on trainees' emotional arousal, and the effects of emotional intelligence on trainees' emotion regulation. The study may further promote quasi-experimental and experimental research designs in studying counselor emotion regulation and counselor training in emotion-related skills.

Research Questions

This study addressed the following questions:

1. What is the relationship between level of training and emotional regulation among counseling trainees when viewing and responding to an emotionally distressed client presented on video?
2. What is the relationship between ability EI and emotional regulation among counseling trainees when viewing and responding to an emotionally distressed client presented on video?
3. To what extent does ability EI contribute to predicting EDA in counseling trainees, after controlling for the effects of training level, when viewing and responding to an emotionally distressed client presented on video?
4. To what extent does ability EI contribute to predicting HRV in counseling trainees, after controlling for the effects of training level, when viewing and responding to an emotionally distressed client presented on video?

Statement of Hypotheses

For the purposes of this study, level of training was operationalized dichotomously as beginning level (i.e., those who were enrolled in or had completed a basic counseling techniques course but had no further clinical field experience) and advanced level (i.e., those who had completed their practicum experience and were enrolled in, or had completed, an internship field experience). Ability EI was assessed by the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT; Mayer, Salovey, Caruso, & Sitarenios, 2003). Emotional regulation was assessed by psychophysiological correlates: EDA and HRV. Figure 1 shows a diagram of the conceptual framework based on findings in the literature (e.g., Fabes & Eisenberg, 1997; Nelis et al., 2009; Williams et al., 1997).

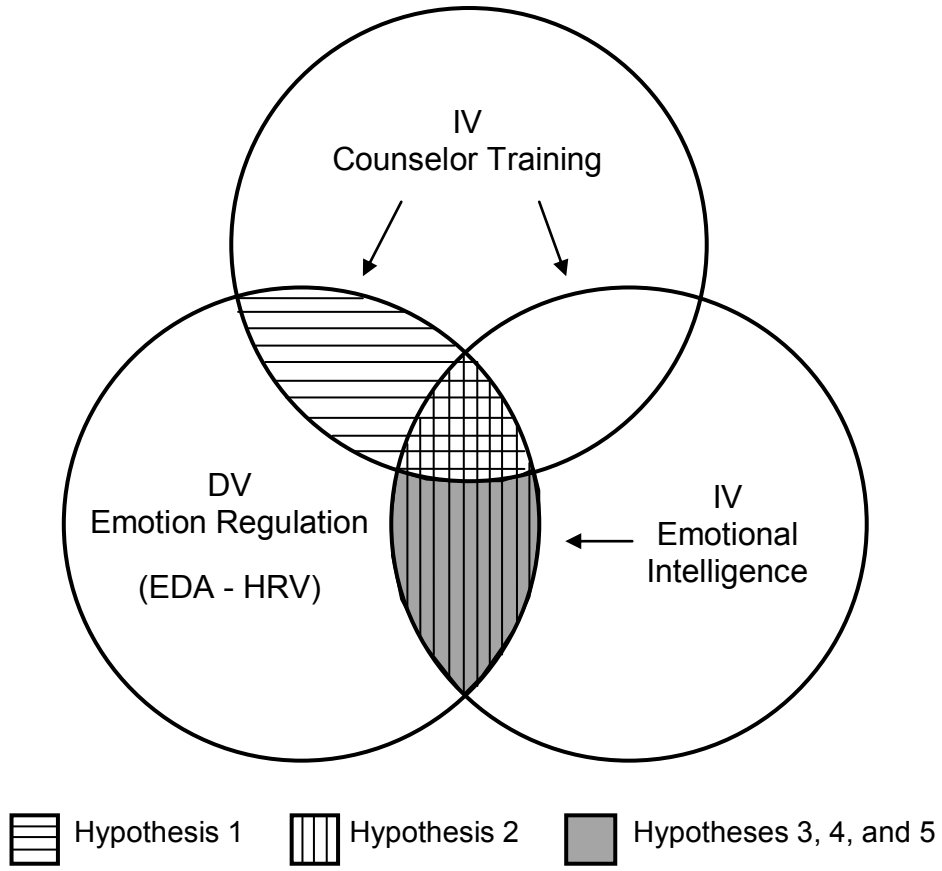

Figure 1. Diagram of the conceptual framework showing hypothesized relationships between variables.

Due to the ability of HRV to express multiple ANS influences, two common measures of HRV were calculated: high frequency HRV (HRV-HF) and the standard deviation of total HRV (HRV-SDNN). These are discussed in more detail in Chapter 3. This study proposed the following hypotheses:

1. Counseling trainees' level of training is positively associated with capacity for regulating emotion as indicated by (a) negative correlation with stimulus-evoked

EDA, (b) positive correlation with stimulus-evoked HRV-HF, and (c) positive association with stimulus evoked HRV-SDNN.

2. Counseling trainees' ability EI as indicated by total and scale MSCEIT scores, is positively associated with capacity for regulating emotion as indicated by (a) negative correlation with stimulus-evoked EDA, (b) positive correlation with stimulus-evoked HRV-HF, and (c) positive association with stimulus evoked HRV-SDNN.
3. After controlling for level of training, the variance in stimulus-evoked EDA is significantly explained by:
    a) Trainees' total ability EI.
    b) Trainees' abilities in perceiving emotions, using emotions, understanding emotions, and managing emotions.
4. After controlling for level of training, the variance in stimulus-evoked HRV-HF is significantly explained by:
    a) Trainees' total ability EI.
    b) Trainees' abilities in perceiving emotions, using emotions, understanding emotions, and managing emotions.
5. After controlling for level of training, the variance in stimulus-evoked HRV-SDNN is significantly explained by:
    a) Trainees' total ability EI.
    b) Trainees' abilities in perceiving emotions, using emotions, understanding emotions, and managing emotions.

Assumptions

This study made the following assumptions:

1. Participants would respond honestly to the EI assessment items.
2. Participants' interaction with a video of an emotionally distressed client made a demand on trainees' emotion regulation skills.
3. Distinct training levels were adequately operationalized by defining beginning training as limited to training received in basic skills class and advanced training as including current or past placement in a clinical internship.

Delimitations

1. Participants were limited to students enrolled in CACREP-accredited master's degree counselor education programs.
2. Participants were limited to students currently or previously enrolled in basic counseling skills training without further field experience or students currently or previously enrolled in internship.

Limitations

The following factors beyond the control of the researcher may limit generalizability of the findings of this study:

1. A self-selected, convenience sample may have resulted in a sample that is not representative of the population of counseling students in CACREP-accredited programs.
2. The sample of trainees from CACREP-accredited programs may limit generalizability to trainees in non-CACERP-accredited counseling training programs and other helping professions (i.e., psychologists, rehabilitation specialists, social workers, etc.).

3. A video-simulated client interaction may not adequately represent the demands of managing in-session emotional arousal in real counseling contexts.
4. The emotion regulation skills of specific trainees in the beginning level condition may be non-representative of beginning level trainees due to training or life experience obtained outside of the counselor training setting.
5. Cultural differences among participants and between participants and the videoed client may present unaccounted for sources of variance.

Operational Definitions

Level of Training

Counselor training refers to the acquisition of observable helping skills and the development of clinical competence by means of counseling trainees' course work, course supervision, and supervised field experience. Level of training refers to trainees' degree of completion of the sequence of skills training, first internship, and second internship. For the purposes of this study, level of training was dichotomized to two levels: beginning and advanced. Beginning level was defined as limited to basic skills training with no further field experience. Advanced level was defined as including enrollment in or completion of first or second internship.

Ability Emotional Intelligence

Ability emotional intelligence is defined according to Mayer and Salovey (1997) as:

> The ability to perceive accurately, appraise, and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to

> understand emotions and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth. (p. 10)

Trait EI is conceived as a construct of emotion-related dispositions and self-perceptions which is assessed by self-report (Kluemper, 2008). Ability EI was used in this study. Ability EI was operationalized by trainees' scores on the MSCEIT (Mayer et al., 2003).

Emotion Regulation

Emotion regulation refers to the operation of intentional or automatic behaviors and physiological responses that efficiently result in the achievement, alteration, and maintenance of emotion states optimally in accord with an individual's goals. For the purposes of this study, emotion regulation was defined as the ability to flexibly modulate evoked physiological arousal in order to make behavioral responses that are optimally in accord with adaptive goals (Thayer & Lane, 2000). Emotion regulation was operationalized as measures of EDA and HRV. These measures were acquired by means of a J & J Engineering I-330-C2 data acquisition monitor, which has been used in previous studies utilizing psychophysiological measurement (e.g., Vujanovic et al., 2006).

Electrodermal Activity

EDA refers to changes in skin resistance and conductance resulting from emotional activation of eccrine sweat glands in the palmar surfaces of the hands (Boucsein, 1992). For the purposes of this study, EDA was operationalized as the mean skin conductance level occurring over a discrete measurement period. The final score for EDA was the difference in EDA between the baseline and simulation periods.

Heart Rate Variability

HRV refers to the ability of the ANS to flexibly modulate the intervals between heartbeats in response to environmental demands (Appelhans & Luecken, 2006). The parasympathetic branch of the ANS reacts rapidly to slow the heart and the sympathetic branch reacts more slowly to increase heart rate. Thus, parasympathetic modulation can be detected as high frequency changes, sympathetic modulation is detected as low frequency changes, and the standard deviation of variability is equal to total frequency power (Berntson et al., 1996). For the purposes of this study, HRV was operationalized by two means: high frequency variation in the intervals between heartbeats and the standard deviation of intervals. Research has positively associated these measures with skill at emotion regulation (Thayer & Lane, 2000).

Organization of the Study

Chapter 1 described the problem needing research, provided background, and stated the significance of the study. It introduced research questions and hypotheses, limitations and delimitations, and operational terms. Chapter 2 provides a review of associated research and relevant theoretical models. It addresses research on emotion regulation and its psychophysiological correlates, counselor training level, and ability EI. Chapter 3 addresses the methodology for the study. It describes the research design, participants, procedures, instruments, data acquisition and analysis, and a detailed quasi-experimental protocol. Chapter 4 details the results of statistical analyses including how data was prepared and screened. Chapter 5 discusses implications of the results for counselor training and makes recommendations for future research.

CHAPTER 2: REVIEW OF THE RELATED LITERATURE

This study explored the relationships among counselor trainees' level of training, ability emotional intelligence (EI), and in-session emotion regulation. Of particular interest were the effects of training and ability EI on psychophysiological correlates of emotion regulation of counselor trainees. The following review of the literature is divided into four sections focusing on characteristics of the variables under study and how they are interrelated. The first section addresses emotion regulation, including an overview of emotions and how emotion regulation is defined and conceptualized. The second section discusses ability EI including construct characteristics of ability EI and the relationships between emotion regulation and EI skills. This section will summarize the research on ability EI and counselor education. Section three will address the relevance of emotion regulation to counselor education and discuss what counselor development and supervisory models say about emotion regulation. This section will review research relating emotion regulation to counseling and counselor education. The final section addresses psychophysiological correlates of emotion regulation, presenting a conceptual overview of the role of the autonomic nervous system (ANS) in the regulation of emotions. This section summarizes research on electrodermal activity (EDA) and heart rate variability (HRV) as correlates of emotion regulation.

Emotion Regulation

Gross (2002) states that it is one of life's great challenges to successfully manage

emotions because emotions are inextricably involved in our well-being. Because emotions signal that something important is at stake, emotion regulation, by definition, plays a crucial role in determining our response to important events. Twenge and Baumeister (2002) state that the ability to self-regulate natural responses to emotions is a powerful adaptive capacity that helps explain the diversity and flexibility of human behavior. However, counselor educators seeking to assess, support, or improve the emotion regulation skills of trainees may have questions regarding what constitutes adaptive emotion regulation, what stresses or challenges may occur in emotion regulation, and what characteristics support adaptive emotion regulation. To better understand these questions, the following section will review the nature of emotions, examine the definitions of emotion regulation, and look at how emotion regulation has been measured. Finally, a review of emotion regulation models will seek to determine the processes and characteristics of adaptive emotion regulation.

Emotions

Emotions defy easy categorization. They regulate multiple aspects of perception, cognitive functioning, physiology, and behavior (Lazarus, 2006; Mennin & Farach, 2007; Werner & Gross, 2010), and researchers constantly grapple with their familiar yet elusive nature (Burum & Goldfried, 2007; Solomon, 2002). As one response to this challenge, Gross (2008) posits a tri-modal model of emotions, which incorporates three points of consensus among researchers and theorists. The first point contends that emotions occur in response to events that have importance to a person's goals. The second point contends that emotions are multi-faceted responses that involve changes in subjective experience, behavior, and physiology. The third point acknowledges that emotions are

malleable and fluid.

Levenson (1999) describes intrapersonal functions of emotions that reflect the multi-modal approach. He states: (a) emotions are efficient physiological adaptations to salient environmental demands; (b) emotions focus attention, readying behavioral responses and activating associated memories; (c) emotions generate a physiological state of readiness for response that integrates disparate physiological systems including muscle groups, endocrine systems, and ANS responses; and (d) emotions are comprised of both innate and learned responses, possessing certain features that are invariant and others that vary widely according to development and culture.

Van Kleef (2010) suggests a model of emotions that emphasizes their interpersonal function. He notes that facial muscles which produce expressions have no other purpose than to convey one person's emotional experience to another. His model of emotions as social information contends that emotions disambiguate social interactions by providing information about reactions, desires, motives, and intentions. He notes that emotions influence interpersonal behavior through affective reactions and inferential processes. Affective reactions refer to how one person's emotions influence another's through emotional contagion processes enabled by mirror neurons, mimicry, and affective feedback. Through these processes, positive emotions typically evoke positive emotions in others, and negative emotions evoke reciprocal negative responses. Inferential processes refer to changes in behavior stemming from information inferred by observers on the basis of emotional expression (Van Kleef, 2010).

The above descriptions suggest four characteristics of emotions that give emotion regulation particular relevance for counselors: social cues for emotions, generative

pathways of emotions, physiological readiness for action, and resultant changes in behavior. The significance of these characteristics is explained below.

Social Cues for Emotions

Emotions provide social communication and occur in response to social communication, including communication of the emotions of others. Solomon (2002) notes that an aspect of every emotion is the social context, including immediate interpersonal reactions and pervasive cultural assumptions. Van Kleef (2010) extends this observation by noting that a function of emotions is social communication. Van Kleef reviews research indicating that (a) the communication of emotion takes place along a continuum of cognitive awareness, (b) emotional communication serves to elicit emotional and behavioral responses in others, and (c) the elicited response may in turn take place along a continuum of awareness. Thus, social interactions present a co-occurring need for, and challenge to, emotion regulation skills.

Pathways of Emotion Generation

LeDoux (1995) presented research indicating that emotions may be generated along neural pathways that vary in their degree of cognitive mediation. Levenson (1999) describes this in terms of two inter-related systems. One system automatically produces primary emotional responses to salient environmental cues in a predictable, consistent manner. The second system is comprised of multiple control and influence mechanisms that may alter or fine-tune emotional responses. Menin and Farach (2007) characterize these systems as a low road and a high road of emotion generation. Lower order systems tied closely to limbic brain regions respond rapidly but with little cognitive elaboration of cues. Higher order systems involve greater degrees of cognitive appraisal and

elaboration of stimuli, but are slower. Multiple avenues of feedback between the two systems balance competing needs: (a) the need for rapid response to environmental cues in order to maximize chances of survival, and (b) the need for subsequent reappraisal and modulation of responses in order to maximize adaptive functioning (Menin & Farach, 2007). This system presents a challenge to emotion regulation due to the frequent need for individuals to play catch-up with emotions that have occurred prior to any chance at cognitive mediation.

Physiological Arousal

A central function of emotions is to bring about physiological readiness for emotional goal-oriented behavior. This state of readiness occurs as varying configurations of physiological arousal (Apelhans & Luecken, 2000). Physiological arousal can support readiness for behavior as widely divergent as laughing, attacking, fleeing, freezing, or ruminating. Depending on the emotion, the experience of physiological arousal can be pleasant, informative, distracting, unpleasant, or overwhelming.

Emotion-Motivated Changes in Behavior

Emotions increase the likelihood that individuals will engage in behavior that advances emotionally identified goals (Menin & Farach, 2007). Levenson (1999) states that they accomplish this by reordering behavioral response hierarchies: making certain responses more or less likely. Instrumental in this process is the tendency of emotions to focus our attention on emotionally relevant information (Thayer & Lane, 2000). This has two important implications. The first is that emotional dysregulation often corresponds with behavioral dysregulation (Werner & Gross, 2010). The second implication is that

emotions may act as blinders: bringing selected information to the forefront while screening out information that has fallen in priority due to the emotional response (Thayer & Lane, 2000).

In summary, emotions are rapid responses to intra- and inter-personal events that focus attention on emotionally salient information and generate multi-level physiological readiness to engage in behaviors that support emotionally determined goals. The ability to regulate emotions may be constantly challenged by social interactions, the rapidity of emotional responses, the possibility of emotions occurring independently of cognitive mediation, the subjective urgency of physiological arousal, and the narrowing of attention on emotionally determined behavioral choices. Counselors are not immune to these challenges. Counseling involves social interaction in which the awareness, motivation, and behavior of the counselor are crucial, making emotion regulation a skill of paramount importance to counselors.

Defining Emotion Regulation

Emotion regulation is liable to be defined and conceptualized with differing emphases depending on the approach taken. Gross (2002) defines emotion regulation as the intentional or automatic efforts made to influence which emotions are experienced, when they are experienced, and how they are experienced. Twenge and Baumeister (2002) place emotion regulation in the context of overall self-regulatory, or self-control, processes. They characterize self-regulation as the ability to override, alter, or influence natural responses to emotions. From the self-control perspective, emotion regulation is involved whenever we attempt to alter how we might otherwise think, feel, or behave (Muraven & Baumeister, 2000). Another view of emotion regulation derives from the

study of emotion management in the context of employment (Hochschild, 1983). In this view, emotion regulation often equates to emotional labor, which refers to efforts to produce emotions that are suitable to employment situations in accord with social display rules (Bolton & Boyd, 2003).

Ability EI provides another view of emotion regulation that has particular relevance to the current study. Mayer and Salovey (1997) place emotion regulation in the domain of the EI skill of emotion management. They define emotion management as the ability to remain aware and open to emotional experience while efficiently guiding and influencing the experience of emotion in self and others in order to bring about the optimal conditions for achieving goals and enhancing well-being (Mayer & Salovey, 1997). This view of emotion regulation has the advantage of accounting for the cognitive integration of emotional information, emotional self-awareness and acceptance, both automatic and controlled responses, and the individual's personal goals and social awareness (Mayer, Salovey, & Carusso, 2004).

Another definition of emotion regulation focuses on the role of the central autonomic network (CAN) in generating and regulating emotions. The CAN includes prefrontal brain regions, serving executive and attentional functions, and limbic systems, responsible for lower order emotion generation and physiological arousal. Thayer and Lane (2000) propose a view of emotion regulation in which components of the CAN comprise a dynamic feedback system. This system responds rapidly to interrupt and inhibit physio-emotional arousal so that behavioral options may be reconsidered and optimal responses supported. From this view, emotion regulation relies on the ability of the ANS to rapidly inhibit and disinhibit physiological arousal in response to feedback

from executive brain regions. This view provides the definition of emotion regulation adopted for this study: the ability to flexibly modulate evoked physiological arousal in order to make behavioral responses that are optimally in accord with adaptive goals.

Measuring Emotion Regulation

It is useful for the purposes of this review to divide efforts at measuring emotion regulation into three categories: (a) self-report measures, (b) ability measures, and (c) psychophysiological measures. Self-report measures ask subjects to rate themselves on items indicative of skill at emotion regulation. An example of a recently developed self-report scale is the Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004). A sample item on this scale is "When I'm upset, it takes me a long time to feel better." Responses range from 1, *almost never*, to 5, *almost always.*

Advantages to self-report measures are the relative ease with which they are administered and scored. However, self-report measures may be more subject to common method variance, or variance attributed to the method of measurement rather than the variables of interest (Semmer, Grebner, & Alfering, 2004). Sources of common method variance in self-report can be response style, impression management, and social desirability (Kluemper, 2008).

Ability-based or maximum performance measures seek to reduce common method variance and improve objective stringency in the measurement of emotion regulation. The Managing Emotions scale of the Mayer, Salovey, and Carusso Emotional Intelligence Test (MSCEIT; Mayer, Salovey, Caruso, & Sitarenios, 2003) is an example of a criterion-based measure which assesses maximum performance as rated by experts. This measure asks subjects multiple choice questions designed to elicit the best response

for bringing about a specified emotional outcome. The answers can be rated according to expert consensus or according to a normative sample of the general population. A disadvantage of both self-report and ability-based measures lies in the variety of ways emotion regulation may be conceptualized by test developers. For example, the Generalized Expectancy for Negative Mood Regulation Scale (Catanzaro & Mearns, 1990) is a self-report measure that asks questions regarding specific emotion regulation strategies, particularly those associated with avoiding or down-regulating negative emotions. Gratz and Roemer (2004) point out that this approach may equate regulation with avoidance and overlook the importance of context in determining the value of an emotion regulation strategy.

It has become increasingly common to measure emotion regulation through well-known psychophysiological correlates of emotional arousal (Appelhans & Luecken, 2006; Sequeira, Hot, Silvert, & Delplanque, 2007). Because it references the observable outcomes of physiological processes, this approach may be considered transtheoretical. It avoids the pitfalls of self-report measures and does not favor one theoretical model of emotion regulation over another in its interpretation. This approach was taken in this study, and a more thorough review of psychophysiological correlates of emotion regulation is undertaken in a later section.

Models of Emotion Regulation

Much emphasis in the counseling literature is placed on assessing selected strategies of emotion regulation. However, counselor educators seeking a means of integrating emotion regulation skills into counselor training must look beyond emotion regulation strategies in order to identify underlying principles of emotion regulation.

This is because strategies of emotion regulation are potentially limitless, and specific strategies may be adaptive or maladaptive according to their context (Werner & Gross, 2010). A review of models of emotion regulation may help identify underlying characteristics and processes that support adaptive emotion regulation.

Gross (2008) proposes a model of emotion regulation in which regulation efforts can be categorized according to when they exert their influence in the unfolding emotional timeline. In this scheme, referred to as the process model of emotion regulation (Gross 2008; Werner & Gross, 2010), emotion regulation efforts may have an antecedent focus (taking place in anticipation of emotional arousal) or a response focus (taking place in response to emotional arousal). Gross proposes five categories of emotion regulation strategies that are distinct according to the type of strategy used and according to when strategies occur along the unfolding emotional timeline. The first category is *situation selection*, referring to choices made regarding if, how, or when to enter an emotion-eliciting situation. The second category is *situation modification*, referring to efforts to alter or adjust aspects of the situation. The third category is *attentional deployment*, which recognizes that choices can be made about which aspects of the situation are attended to. The fourth category is *cognitive change*, referring to choices made about how to construct the meaning of the situation. These four categories are conceptualized by Gross as antecedent focused, or utilized in anticipation of an emotionally arousing event. The fifth category, *response modulation* refers to efforts to alter or influence emotional responses that are already underway.

Werner and Gross (2010) point out that, although regulation may be more effective the earlier it occurs in the emotional timeline, the model itself does not suggest

that one category is more adaptive than another. In order for emotion regulation to be adaptive, Werner and Gross contend that it must be appropriate to the context, sensitive to how controllable a situation is, and supportive of long-term goals. In order to meet these criteria, Werner and Gross suggest that adaptive emotion regulation involves four steps: (a) *pausing* to allow unhindered recognition of a personal emotional occurrence, (b) *noticing* and being able to identify the emotional response, (c) *deciding* on the extent of agency the emotion or situation allows, and (c) *acting* in accordance with goals that have the highest long-term priority.

The process model has great utility in categorizing both functional and dysfunctional emotion regulation strategies, but may have limited application to counselor training. It focuses on intrapersonal functions of emotions: allowing for a social role, but not accounting for the complexity and power of interpersonal emotional processes. In addition, the model is arranged in reference to a discrete emotional event, which is a conceptually questionable occurrence. For example, the anticipation of an emotional event is an event itself, as is the use of any emotion regulation strategy. The linear clarity of Gross's (2008) model is overwhelmed when the complexity of the emotional state-space is considered. Finally, Gross (2008) acknowledges that the process model treats emotions as the objects of regulation, not as regulatory agents themselves. Thus, the model does little to describe how to take advantage of the regulatory characteristics of emotions (Menin & Farach, 2007). Nevertheless, the four-step process for regulating emotions suggests two important skills in support of adaptive emotion regulation: intrapsychic awareness of emotional occurrences and ability to identify emotions. In addition, the model implies two adaptive characteristics: openness to

emotional experience and ability to tolerate the resultant physiological arousal without finding it overwhelming.

Larsen (2000) describes a model of mood regulation that emphasizes effort to control the subjective experience of emotional valence. His model hinges on the idea of *discrepancy*: the comparison of a current affective state with a more desired state. He likens his model to a negative feedback system in which the experience of discrepancy activates cognitive and behavioral control processes that seek to return the individual to the more desired affective state. Larsen's model relies on the awareness of discrepancy so that regulation efforts are activated and at least some ability to identify the emotions involved, because effective control processes may be emotion-specific.

Larsen (2000) contends that this model has greatest utility in allowing identification of six areas in which individual differences may affect regulation processes and outcomes. The first is individual differences in sensitivity to affective cues in the environment. Second is choice and application of preferred regulation strategies. The third is differences in temperament or emotional reactivity. Fourth is affective self-awareness or attention to one's current state. Fifth is emotional discrimination or sensitivity to differences in affective states. Sixth is individual variability in desires, beliefs, and values regarding emotional states.

Larsen (2000) contributes to understanding processes and individual characteristics by re-emphasizing awareness of personal emotional occurrences and ability to identify emotions. In addition, Larsen points out the value of sensitivity to distinctions in emotional valence and arousal, and he states that adaptive regulation is supported by access to regulation strategies. This implies the ability to tolerate

physiological arousal so that adaptive strategies are not screened from awareness by the selective attention that accompanies such arousal. However, Larsen assumes that avoidance of unpleasant feelings is the primary motivator of emotion regulation efforts; thus running the risk of advocating emotional avoidance, suppression, or inhibition. His discussion does not take into account the adaptive function of emotions, including those considered negative.

Two models of emotion regulation take neurophysiology as a starting point and seek to integrate developing research on emotions with current knowledge of the ANS's role in generating emotions and regulating the resultant alterations in physiology. The models are Porges's (2011) polyvagal theory and the neurovisceral integration model of Thayer and Lane (2000). The models have two important commonalities. First, both contend that an individual's ability to regulate emotions and emotion-motivated behavior depends critically on the ability to flexibly adjust physiological arousal (Apelhans & Luecken, 2000). They maintain that the ANS plays a key role in regulating physiological arousal through the activities of the sympathetic nervous system (SNS) and parasympathetic nervous system (PNS). The SNS exerts an excitatory, disinhibiting influence over physiological response systems, while the PNS serves to inhibit response. The interaction of these two systems produces changes in physiological arousal and modulates the physiological readiness for emotion-specific action that is a hallmark of emotion. The ability of the ANS to rapidly and flexibly adjust physiological readiness for action is supportive of adaptive regulation of emotion. Slow or rigid ANS modulation results in less capacity to alter or adjust physiological and emotional responses (Apelhans & Luecken, 2000). A second common factor in the two models is that both emphasize

the ANS's modulation of physiological arousal by controlling variations in heart rate. They contend that the ANS's ability to flexibly vary heart rate enables an individual to shift adaptively between states of emotion-based physiological arousal. Thus, they maintain that measures of heart rate variability (HRV) are informative of individuals' facility with emotion regulation (Porges, 2011; Thayer & Lane, 2000).

Differences in the two models do exist. The polyvagal theory (Porges, 2011) notes that rapid HRV is supported by the fast-acting ventral vagal nerve complex. Porges (2011) points out that the ventral vagal complex shares neural connections with cranial nerves that control emotionally expressive behaviors such as facial expression, head orienting, vocalizing, and listening. Thus, a portion of the ANS that rapidly modulates heart rate also provides coordination between heart rate and emotional expression.

The neurovisceral integration model of Thayer and Lane (2000) draws attention to the integration of CAN components that generate emotions, selectively allocate attention, and rapidly modulate heart rate in support of engaging and disengaging physiological readiness for action. This model views emotion regulation, attention regulation, and physiological regulation as components of a dynamic feedback system. In this system, deficits in emotion regulation, such as those seen in mood and anxiety disorders, are viewed as positive feedback loops enabled by lack of flexible ANS modulation of physiological arousal. Adaptive emotion regulation is supported by flexible modulation of physiological arousal through, for one, variation in heart rate, which helps inhibit ongoing behavior and disrupt positive feedback loops (Thayer & Lane, 2000).

In summary, the above models point to key characteristics or skills that support adaptive emotion regulation. One characteristic is intrapsychic awareness or sensitivity

to the occurrence of personal emotions. A second characteristic is ability to identify emotions. A third characteristic is tolerance of emotional experience or the ability to acknowledge emotions without suppression or avoidance. A fourth characteristic is sensitivity to distinctions between emotions and between levels of valence and arousal. A fifth characteristic is ability to tolerate and adjust physiological arousal.

A model of emotion regulation not yet discussed is incorporated as one of the four branches of emotion related skills that comprise the construct of ability EI (Mayor & Salovey, 1997). Ability EI integrates many of the characteristics of adaptive emotion regulation already discussed. In addition, ability EI parallels important goals and processes of counselor training. The following sections will review the construct of ability EI beginning with how EI is conceptualized and defined. The EI concept of emotion regulation will be described, including how EI skills support adaptive emotion regulation. The section will conclude with a review of relevant research on EI including studies on EI in counseling and counselor education.

Emotional Intelligence

EI has been described as a core characteristic of counselors because it represents the domain of adaptive emotional information processing (Martin, Easton, Wilson, Takemoto, & Sullivan, 2004). EI also describes processes central to adaptive emotion regulation (Gohm, Corser, & Dalsky, 2005; Mayer et al., 2004). Counselor educators may see the potential utility of a construct which provides a means of conceptualizing, assessing, and enhancing the development of emotional information processing in counselor trainees, but the term *emotional intelligence* suffers from considerable variation in its use and conceptualization. The following sections present an overview of

EI and discuss how construct variations are characterized and measured. Models of EI will be compared and the construct characteristics of integrative ability EI will be explored in order to explicate its relevance to counselor training and this study. The section will conclude with a review of relevant research.

Conceptual Overview

The 1980s saw a surge in interest and research in the areas of emotions, cognitive-emotional integration, and the nature of intelligence (Mayer, Roberts, & Barsade, 2008). Gardner's (1983) book on the theory of multiple intelligences increased interest in this concept, and a 1990 article by Salovey and Mayer introduced their conceptualization of EI as a distinct form of intelligence. Mayer et al. (2004) contend that the following three criteria have been supported in research on EI and demonstrate that EI meets the requirements of a true intelligence. First, measurement of EI reflects mental ability rather than self-perception or self-reported behavioral tendencies. Second, it represents a set of moderately correlated tasks that function unitarily, and are distinct from other measures of intelligence or personality. Third, growth of EI in the individual follows a developmental course similar to conventional intelligence.

As first introduced, the concept of EI sought to describe how facility with emotion was integrated into cognitive functioning in a way that varied from person to person, that was distinct from both emotion and conventional intelligence, and that was measurable. This form of intelligence includes an ability to both perceive and reason about emotions in a sophisticated way and to utilize emotional information to guide thinking, behavior, and problem solving (Salovey & Mayer, 1990). Since then, theorists and researchers in EI have taken divergent paths, so that EI today may refer to multiple construct variations;

some of which differ enough to be considered distinct and separate constructs (Mayer, Salovey, & Carusso, 2008; Petrides & Furnham, 2001).

Measuring Emotional Intelligence

It is advisable to distinguish between definitions of EI in order to understand the EI construct utilized in this study. Approaches to EI fall into three categories: specific ability models, integrative ability models, and trait models. Differences in these approaches may be best understood in terms of how they are measured. Specific ability models measure one or more particular skills considered components of EI. An example is the Diagnostic Analysis of Nonverbal Accuracy Scales (DANVA; Nowicki & Duke, 1994). The DANVA asks participants to identify and rate the intensity of emotions represented in photographs of faces and postures and in vocal tone of auditory recordings. The test is scored according to accuracy of identification as determined by experts. This makes the DANVA a maximum performance or ability measure, because it measures skill rather than disposition or typical performance. Specific ability models and measures may have limited utility in understanding emotion regulation because adaptive emotion regulation requires the integration of multiple abilities (Werner & Gross, 2010). Likewise these models may have limited application to counselor education, where value is placed on flexibly integrating multiple skills in response to a variety of criteria, including theoretical orientation, culture, client goals, and client presentation.

Trait or mixed model approaches are so called because they include abilities that may be only tangentially related to emotional information processing, such as assertiveness or optimism, and because they are scored according to the self-judgment of the test taker (Mayer et al., 2008; O'Conner & Little, 2003). An example of a trait EI

measure is the Trait Emotional Intelligence Questionnaire (TEIQue; Petrides & Furnham, 2001). The TEIQue asks participants to rate themselves on a Likert-type scale from 1 to 7 on items such as "I usually find it difficult to regulate my emotions." Petrides and Furnham state that trait EI and ability EI are distinct constructs, and the distinction hinges critically on how they are measured, because a self-report measure assesses self-perceived dispositions and behavioral tendencies, while a maximum performance measure assesses actual ability. In addition, researchers have proposed that trait models of EI show considerable overlap with models of personality, such as the Big Five, and they question whether trait and mixed models can be adequately distinguished from personality factors (Petrides, Perez-Gonzalez, & Furnham, 2007).

Researchers have reported significant differences in trait EI between counselors and the general population, leading some to contend that counseling as a profession screens for competence at utilizing emotional information (Easton, Martin, & Williams, 2008). However, counselor educators may find that trait EI has limited utility for assisting trainees in gaining skill at emotional information processing, because trait EI refers to behavioral dispositions as revealed by self-perception rather than trainable skills (Mayer et al., 2008; Petrides & Furnham, 2001).

The third category of EI models, integrative ability EI, seeks to combine emotion-related abilities into an overall capacity for adaptive utilization of emotional information. This domain of ability represents the perception, analysis, utilization, and communication of emotional information (Mayer et al., 2004). From theory and research in emotional information processing, Mayer and Salovey (1997) distilled four component skill areas which comprise EI: (a) the ability to accurately perceive and identify emotions in self and

others, (b) the utilization of emotion information and emotion states to enhance cognition, (c) the ability to analyze and understand emotions, and (d) the ability to manage and influence emotions in self and others. A measure of integrative ability EI is the Mayer-Salovey-Carusso Emotional Intelligence Test (MSCEIT; Mayer, Salovey, Carusso, & Sitarenios, 2003). The MSCEIT is a maximum performance test which assesses ability in the above-mentioned areas of emotional information processing: accurately identifying emotions, using emotion to facilitate cognition, understanding emotion, and managing emotion. For example, emotional facilitation of cognition is assessed by asking participants to pair emotions with the kinds of thoughts and activities enhanced by that emotion (Mayer et al., 2008). The benefit of the integrative approach is that it seeks not only to measure participant ability in skill areas but proposes a structure wherein emotional skill areas develop, interact, and may be enhanced (Mayer et al., 2004). For this reason, integrative ability EI provides great potential utility in training counselors, and was the model adopted for this study. Hereafter, the use of the term EI in this study refers to integrative ability EI.

Emotional Intelligence and Emotion Regulation

Emotion regulation in the EI model belongs in the category of emotion management. Mayer et al. (2004) describe emotion management as the ability to remain open to emotional experience while guiding and influencing emotions in self and others in accordance with personal goals, self-knowledge, and social awareness. In order to identify skills and processes supportive of adaptive emotion regulation, it is necessary to understand the structure of the EI model. The four branches of EI are considered both integrated and hierarchical, somewhat like a pyramid, with emotional perception at the

bottom and emotion regulation at the top. Mayer and colleagues (2004) contend that skill at emotion management accrues from integration and development of skills in the previous three branches of EI. In each branch, there is a development of skills from basic to more complex, and skill development in one branch supports and enhances abilities in other branches. This means that each branch of EI facilitates and enables the branch above it. Emotion management is considered the culminating skill area. This view makes clear that effective emotion regulation derives from increasing skill in each other branch of EI (Mayer et al., 2004). This picture has important implications for counselor training, which are made clear when the four branches of EI are examined below.

The foundational branch is the ability to accurately perceive and identify emotions in self and others (Mayer et al., 2004). This includes the ability to recognize emotions from both verbal and non-verbal cues such as facial expression, posture, and gesture. It also includes ability to identify emotion from indirect communications that have emotion-related content. The second branch of EI, building on the first, is the ability to utilize emotion by assimilating the multiple dimensions of emotion into thinking (Mayer et al., 2004). This includes utilizing emotional information to prioritize thinking, guide problem-solving, facilitate judgment, and enhance motivation. The first two branches of EI support the abilities of the third: analyzing and understanding emotions. Skill in this area includes understanding emotional stimuli, interactions between emotions, consequences of emotions, and the ability to perceive subtle distinctions in emotional valence and arousal (Mayer et al., 2004). The culminating branch of EI is the ability to manage emotions in self and others. This means integrating skill from previous branches in order to remain aware and open to emotional experience

while efficiently guiding and influencing the experience of emotion in self and others in order to bring about the optimal conditions for achieving goals and enhancing well-being (Mayer et al., 2004).

Comparison to Models of Emotion Regulation

The skills described in the four-branch model of EI echo previously discussed components of adaptive emotion regulation. As with Gross (2008) and Larson (2000), EI confirms the importance of identifying emotions and being aware of emotional experience, tolerating emotions without suppression or avoidance, and ability to note subtle distinctions in emotional experience. However, EI places additional emphasis on the ability to integrate emotion-related information into cognitive functioning, decision-making, and problem-solving (Mayer et al., 2004). Mayer et al. state that anyone seeking to effectively manage emotion in self or other must be able to accurately perceive, discriminate and monitor feelings, believe they can utilize this information to affect emotions, carry out strategies that will influence emotions, and evaluate the effectiveness of these strategies. Missing from the Mayer and Salovey (1997) formulation of emotion management is direct consideration of the effects and management of physiological arousal. Tolerance and flexible adjustment of physiological arousal is an important emotion regulation ability (Thayer & Lane, 2000). While the multiple expressions of physiological arousal must be considered important emotional information, their utilization is only implied in the four-branch model of EI.

Emotional Intelligence and Counselor Education

The branches of ability EI coincide with important goals and processes of counselor education, particularly in application to counselors' in-session skills and

behavior. The first branch of EI, emotion identification, is applied whenever counselors attend to the many aspects of client presentation, along with their personal and professional reactions, in order to guide their use of appropriate counseling interventions (Cooper & Ng, 2009). Accuracy of emotional identification is considered essential to the demonstration of empathy (Machado, Beutler, & Green, 1999) and in potentiating psychological change (Burum, 2007). Research indicates that using emotions (emotional facilitation of thinking), the second branch of EI, is active in adaptively directing attention, shaping memory, enhancing motivation, and guiding decision-making (Damasio, 1994; Menin & Farach, 2007). This ability enhances counselors' skill at case conceptualization, advanced empathy, relationship building, and treatment planning (Cooper & Ng, 2009).

Analyzing and understanding emotions, the third branch of EI, is considered a foundational skill upon which empathy is based (Cooper & Ng, 2009; Mayer et al., 2004; Rogers, 1951). Counselor educators place a high premium on this skill. Yet, arguably there is little coherent training methodology for enhancing trainee's ability to analyze and understand emotions (Cooper & Ng, 2009; Melton, Nofzinger-Collin, Wynne, & Susman, 2005). A final notable point regarding the utility of EI in counselor training is that ability EI suggests a structure and process for planned improvement in each skill area, including emotion management. Theory and research suggest that targeted practice of EI skills can speed their improvement (Kornacki & Caruso, 2007; Nelis, Quoidbach, Mikolajczak, & Hansenne, 2009).

Empirical Research

It is beyond the scope of this study to comprehensively review EI research.

However, reviewing selected areas of research may illustrate its relevance to emotion regulation and this study, as well as its potential utility in counselor training. The following sections summarize research on EI as applied to social functioning, physiology and neuroscience, and counseling and counselor training.

Social Functioning

A number of studies find associations between EI and social functioning. For example, Lopes, Salovey, and Strauss (2003), studying EI in college students, found that participant's emotion management scores were significant in predicting positively perceived friendships as rated by participants and others. The predictions remained significant after controlling for social desirability and Big Five personality factors. Lopes, Salovey, Beers, and Cote (2005) used the emotion management scale of the MSCEIT to study the relationship between emotion management and peers' perceptions of positive versus negative personal qualities. Participants' scores in managing emotions were significantly correlated with high self-reports of interpersonal sensitivity, high peer reports of interpersonal sensitivity, high peer reports of reciprocal friendships, and the overall ratio between positive and negative perceptions by peers (Lopes et al., 2005).

Brackett, Rivers, Shiffman, Lerner, and Salovey (2006) studied how well MSCEIT scores predicted observable relationship-forming behaviors. College students were video-taped during "get to know you" interactions without knowledge that these behaviors comprised the data of the study. Relationship-forming behaviors were rated by trained observers and by participants' partners in the exercise. Men with higher EI were more likely to get high ratings for being socially engaged, socially competent, and interested in the partner. Correlations remained significant after controlling for Big Five

personality factors. This relationship was not significant for women, who scored higher in total EI.

As higher EI scores have been associated with adaptive social behavior, lower EI scores have been associated with maladaptive behavior. Teenagers with lower EI were rated significantly higher by others in aggression (Mayer, Perkins, Caruso, & Salovey, 2001). Lower EI scores have also been associated with higher levels of alcohol and drug abuse among males and with smoking in inner-city teens (Brackett, Mayer, & Warner, 2004; Trinidad & Johnson, 2002).

Physiology and Neuroscience

While models of emotion regulation suggest an important role for individuals' physiological awareness and flexibility, the research on EI in physiology and neuroscience is still in its infancy. Nevertheless, interesting areas of research have emerged. For example, Jaušovec, Jaušovec, and Gerlic (2001) studied differences in electro-encephalogram recordings between high EI participants and average EI participants as they completed adapted versions of the MSCEIT. Their findings paralleled similar research on general intelligence, in that high EI individuals showed less cortical activation in completing EI tasks than average EI participants. The authors interpreted this finding in accordance with neural efficiency theory on general intelligence suggesting that high EI individuals display greater cortical efficiency in emotional problem solving. In a follow-up study, Jaušovec and Jaušovec (2005) used participant scores on the MSCEIT and scores of general IQ to create groups distinguished by high versus average IQ and high versus average EI. Electroencephalogram data were recorded while participants solved tasks related to spatial versus emotional problem

solving. Findings suggested that high IQ and high EI individuals employed more efficient problem-solving strategies. Analysis also indicated that emotional problem solving activated neural processes that were distinct from those activated by spatial problem solving.

In a study on EI and physiology, the four scales of the MSCEIT were measured to explore the relationship between physiological self-awareness, in this case awareness of participants' own heartbeats, and EI (Schneider, Lyons, & Williams, 2005). Significant positive correlations were found between heartbeat awareness and two EI scales, namely, Using Emotions and Understanding Emotions. A negative correlation was found with scores on Emotion Management. Given the important role suggested for physiological responsiveness in emotion regulation (Thayer & Lane, 2000), more research is warranted on the relationship between EI and physiological responses.

Counseling

Measures of EI have been employed to explore the role of EI in counseling with mixed results. Interpretations of research may have been complicated by some researcher's tendency to inadequately distinguish between trait and ability EI in designing and executing studies (Mayer et al., 2008). Therefore, for purposes of clarity, the following review is limited to those studies using ability measures of EI.

Implications for the Therapeutic Alliance

A group of studies show relevance for counselors in building and maintaining the therapeutic alliance. Studies have been mentioned earlier indicating that EI positively correlates with others' perceptions of social competence and interpersonal sensitivity (e.g., Lopes et al., 2005). In addition to these findings, Brackett, Warner, and Bosco

(2005) found that if just one partner in a relationship had high EI this could significantly ameliorate perceptions of relationship quality despite the low EI of the other partner.

Binder and Strupp (1997) reviewed research indicating that counselors were vulnerable to reacting negatively to conflictual client presentations and that these reactions undermined the therapeutic relationship and client outcomes. Brackett et al. (2006) found that men, but not women, lower in EI evidenced greater use of negative or destructive interpersonal strategies in response to positive or negative relationship events. This included use of passive maladaptive strategies such as avoidance.

The importance of empathy in the therapeutic relationship has already been noted, as well as the theoretical links between empathy and EI. Ferguson and Austin (2010) explored the relationship between an ability measure of EI and participants' performance on theory of mind tasks. Theory of mind is conceptualized as the ability to infer others' mental states, such as beliefs, intentions, and emotions. It has theoretical links to empathy, and research supports its links to adaptive social functioning (Paal & Bereczkei, 2007). Ferguson and Austin found that the EI ability understanding emotions significantly predicted performance of social-cognitive theory of mind tasks. Ciarrochi, Chan, and Caputi (2000) found that scores on an ability measure of EI, based on the Mayer and Salovey (1997) model, positively correlated with a self-report measure of empathy.

Improving EI in Counselors and Others

Studies on improving EI through training are few and have returned mixed results. For example, Gibson's (2004) dissertation hypothesized that the EI of counseling graduate students would increase over the course of clinical practicum. Participants were

24 graduate counseling students. The MSCEIT was administered to participants during their first month of program enrollment and during the month following one year of enrollment. Data analysis found no significant difference in EI scores. It is difficult to draw conclusions from this study due to its small sample size and the researcher's assumption that first year counseling courses were a proxy for training in EI (Gibson, 2004). It is reasonable to argue that not enough is currently known about how EI develops to conclude that counseling first-year academic courses will bring about improvement for the population of students.

Conversely, Nelis et al. (2009) studied the effect of targeted EI training on 19 psychology students. Training was comprised of four 2-hour training sessions over a four week period, with journaling and practice exercises given as homework. Data was also collected from a control group of 18 students who did not take the training. Data was collected prior to training, at the end of session four, and six months following training. Effectiveness was assessed through ability-based scales measuring ability to regulate emotions of self and others, identify emotions, and understand emotions. Data analysis showed significant improvement in emotion identification and emotion regulation at the end of training and six months following. No significant difference occurred in understanding emotions, however.

Clarke (2010) used a pre- and post-test design to study the effects of a two-day training program designed to improve the EI abilities of project managers. Participants were given a measure of ability EI and a self-report scale of empathy one month prior to training, one month following training, and again six months following training. Due to attrition, 36 data sets were collected at all three data points, while 52 were collected for

the pre-test and the six month post-test. Data analysis found no significant differences one month following training, but significant improvement in understanding emotions was seen six months following training. No significant improvement was found in other areas of EI, and measures of empathy actually decreased. The delay in showing an improvement in EI skill may indicate that factors other than the immediate effects of training played a role in the improvement (Clarke, 2010).

The disparate findings of these studies illustrate that not enough is known about how EI develops and how its development may be enhanced and supported. In addition, not enough is known about how training in EI skills may parallel or diverge from training in other important counseling skills such as critical thinking. Clearly, more research is needed regarding the development and enhancement of EI and the effectiveness of EI training.

Summary

A body of research indicates a relationship between EI and facility with relationships and social functioning. However, more research is warranted regarding how EI relates to physiological responsiveness and the utilization of physiological information in emotion regulation. Furthermore, while many theorists and researchers have suggested a role for EI in counseling and counselor training, the research in this area is still in its infancy. Research on relationship functioning suggests a role for EI in the therapeutic alliance, but research on improving EI has yielded results that are mixed and difficult to interpret. Clearly, additional research is needed to explore how EI relates to counseling and how it can best be utilized in counselor training. Therefore, the following

section will take up counselor training and explore its effect on counseling skills and the development of emotion-related competence.

Counselor Training and Emotion Regulation

It is commonly assumed that training in helping skills is effective, and research lends qualified support to this view (Buser, 2008). Still open to question are how effective it is and what elements most influence its effectiveness (Hill & Lent, 2006). Some researchers contend that not enough attention is paid in training programs to the development of trainees' facility with internal processes related to emotional skills (Binder & Strupp, 1997; Greason & Cashwell, 2009; Melton et al., 2005). The following section will begin by summarizing the role of counselor training and research on its effectiveness. The focus will then turn to how counselor development models view the development of trainees' emotion regulation, and the need for attention to the emotion regulation skills of counselors will be discussed. The section will conclude with a review of relevant literature on the role of emotion regulation for counselors and in counselor training.

Counselor Training Level

Counselor training has been defined narrowly as acquisition of observable helping skills (Hill & Lent, 2006). Research on training in helping skills has historically focused on models originating from Carkhuff (1972) and Ivey (1971), as well as later models heavily influenced by these (Hill & Lent, 2006). A broader view of counselor training views it as the development of clinical competence. This view integrates helping skills into cognitive skills, critical thinking, and cognitive complexity (Buser, 2008; Little, Packman, Smaby, & Madux, 2005; Lyons & Hazler, 2002). The standards of the Council

for Accreditation of Counseling and Related Educational Programs (CACREP; 2009) call for enhancing clinical competence through professional practice (field experience) in the form of supervised practicum and internship experience. The professional practice sequence must be preceded by basic training in helping skills. This sequence typically requires four semesters to complete and thus may span roughly two years of graduate training and course work.

The counseling literature documents numerous and varied approaches to developing clinical competence. However, Lovell (1999) points out the common influence of stage theorists such as Perry (1968) and Kohlberg (1984). Stage theorists described progressive structural changes in cognition as a result of development, and notably linked cognitive development to increased empathy (Lovell, 1999). The influence of stage theorists is evident in current models of counselor development (Lovell, 1999), which propose that level of training corresponds to trainees' progress through stages of development. These are described in later sections.

Support has grown in the literature for the view that development of interpersonal helping skills hinges on growth in cognitive complexity: the ability to integrate multiple perspectives into understanding behavior (Brendel, Kolbert, & Foster, 2002; Fong, Borders, Ethington, & Pitts, 1997). Yet some contend that development of cognitive complexity is poorly understood, and that models of counselor training are more influenced by tradition than by understanding of how skill acquisition develops (Brendel et al., 2002; Fong et al., 1997).

Training in helping skills typically involves practice and integration of a hierarchy of increasingly complex interpersonal skills. Reviews of research generally support that

helping skills improve with training, while they lament conceptual and methodological problems in research that limit conclusions that can be drawn (Buser, 2008; Hill & Lent, 2006). Ronnestad and Skovholt (2003) argue that observable improvements in helping skills such as empathy hinge on improvements in trainees' emotion regulation. Yet few studies have addressed the development of trainees' emotion regulation, and the review of research in this chapter will reveal that those few offer little guidance.

Buser (2008) states that research on level of training and cognitive skill development has yielded cautiously optimistic results, while pointing out the need for further study. For example, Fong et al. (1997) studied the effects of training on counseling trainees' cognitive functioning and counseling performance. They defined four levels of training according to the training sequence required by CACREP; the start of the program (no training), completion of basic skills training, completion of practicum, and completion of second internship. Repeated measures analyses of variance indicated small but significant changes in cognitive skill development as a result of training. Counseling performance was measured at only two levels of training: no training and completion of skills training. Analysis by *t* tests indicated significant improvement as measured by observer-rated response modes (t (42) = 12.48, p = < .001). Brendel et al. (2002) studied the effect of training on counseling trainees' cognitive complexity. They defined three training levels; no training (prior to program entry), completion of one program year, and completion of two program years. They found a significant increase that occurred only following completion of trainees' professional field experience (i.e., internship).

Easton et al. (2008) studied the trait (self-reported) EI and counseling self-efficacy of counseling trainees in CACREP programs. They compared beginning counseling trainees (either no training or basic skills only) with trainees in practicum and internship. Results indicated that training resulted in significant increases in trainees' counseling self-efficacy.

Lyons and Hazler (2002) studied how training in CACREP programs affected cognitive development and empathy. They looked at two levels of training; students in the first week of their first year of counselor training and students in the first week of their second year. Results showed significant differences between training levels in affective/trait-based empathy that was not correlated with cognitive development. Likewise, they found significant differences in cognitive-based empathy that did not correlate with cognitive development. The authors concluded that skill with empathy increased as a result of training, but that cognitive development did not significantly account for the improvement in empathy.

For the purposes of this study, level of training was operationalized as *beginning* and *advanced*, in terms of participants' degree of completion of the CACREP sequence of skills training, practicum, and internship. Beginning level was limited to enrollment in, or completion of, basic skills training. Advanced level was limited to enrollment in, or completion of, a first or second internship.

The Importance of Emotion Regulation in Counselor Training

Werner and Gross (2010) estimated that over 75% of diagnostic categories in the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 2000) involve some problem of emotion and emotion regulation. With

increasing understanding of the role of emotions in the etiology of mental disorders (Werner & Gross, 2010) and in facilitating therapeutic change (Greenberg & Pascual-Leone, 2006; Mennin & Farach, 2007), the counseling literature calls for the counselor to integrate an ever-widening array of emotion-based interventions. For example, counselors must develop their ability to be aware of and identify emotions in self and others and assess the intensity of the emotion (Greenberg & Pascual-Leone, 2006; Kohlenberg, 2000; Rogers, 1951). They must be able to reflect on the meanings of emotions and be able to utilize emotional information to facilitate their own and client functioning (Mennin & Farach, 2007; Wetchler, 1999). They are encouraged to utilize their own emotional responses to client behavior to help clients gain insight and increase awareness of the effects of their behavior on others (Batten & Santanello, 2009). Moreover, counselors must be able to assist clients in regulating their emotions, including teaching and modeling emotion regulation, self-soothing, and distress tolerance (Beck, 1976; Linehan, 1993; Werner & Gross, 2010).

The discussion of emotions in the earlier part of the chapter revealed characteristics of emotions that cause them to have frequent and recurrent effects on counselors. Binder and Strupp's (1997) review of the literature indicates that counselors' emotional reactions to conflictual client presentations are a persistent occurrence that undermines the therapeutic alliance and client outcomes. According to Strupp (1980c):

> As therapists we have not adequately faced up to the negative reactions engendered in us by patients who bring to our offices the products of their unhappy life experiences…thus, major deterrents to the foundation of a good working alliance are not only the patient's characterological distortions and

> maladaptive defenses but – at least equally important – the therapist's personal reactions. Traditionally these reactions have been considered under the heading of countertransference. It is becoming increasingly clear, however, that this conception is too narrow. (p. 953)

Emerson and Markos (1996) state that counselors face unique stresses due to their interactions with the severe problems of clients yet may not be trained to manage this stress. Larson and Yao (2005) warn that clinical empathy presents the danger of burnout due to the emotional labor involved. Indeed, Kottler (1993) stated that burnout was the most common personal consequence of being a counselor. Cummins, Massey, and Jones (2007) go further, stating that the need for counselors to work with client trauma is an unavoidable reality that may result in counselors developing secondary traumatic stress, particularly when the emotion regulation skills of the counselor are compromised due to personal history or current stress.

Counselors' deficits in emotion regulation may not reach the level of clinical significance yet still have important negative consequences, because facility with a wide range of emotional responding is a professional imperative for counselors. Werner and Gross (2010) suggest deficit areas in emotion regulation, each of which has important implications for counselors. One deficit is when emotion regulation efforts are insufficient to achieve the desired level of emotional valence and arousal. Studies on the high levels of anxiety in trainees may be illustrative of this problem. Studies suggest that there is an optimal level of anxiety beyond which trainees' performance may suffer (Friedlander , Keller, Peca-Baker, & Olk, 1986), and that unmanaged anxiety interferes

with counseling effectiveness (Melton et al., 2005; Williams, Judge, Hill, & Hoffman, 1997).

A second deficit is when emotion regulation strategies meet short-term demands at the expense of higher priority goals. This problem may occur when counselors utilize strategies such as distancing from the client or avoidance of selected topics (Quintana & Holahan, 1992). Such strategies may assist the counselor in regulating personal emotions at the expense of the therapeutic alliance or client outcomes. A final deficit occurs when the required effort to regulate emotions monopolizes and depletes cognitive and regulatory resources, leaving insufficient resources for attending to long-term priorities. Research on self-regulatory resources suggests that depletion of resources due to effort at self-regulation results in subsequent impairment of regulatory abilities (Muraven & Baumeister, 2000).

Development of Counselors' Emotion Regulation

Models of counselor development treat emotion regulation as an important developing skill in counselors. Ronnestad and Skovholt (2003) state that counselors' emotion regulation is necessary to the professional concept of empathy. Their qualitative analysis of a longitudinal study of 100 counselors and trainees found that one characteristic distinguishing advanced students from beginning students was their degree of emotional comfort with the counseling process (Ronnestad & Skovholt, 1991). However, they found challenges to trainees' emotion regulation from multiple sources. They found that trainees experienced strong affective reactions to graduate training and typically experienced a degree of in-session anxiety that hampered the multi-level attending needed. They noted further that negative interactions with clients can challenge

even seasoned practitioners, but trainees are especially vulnerable. However, they found that one of the major themes of counselor development was the gradually improving ability to manage emotional reactions to clients.

The Integrated Developmental Model of supervision (IDM; Stoltenberg, McNeill, & Delworth, 1998) suggests that emotional components of self-awareness must be monitored in the counselor development process. The IDM tracks developments in, among other things, self-awareness over four levels of counselor development. The IDM contends that Level 1 (beginning) counselors are characterized by high self-focus and negative self-referential emotions such as anxiety, frustration, and hopelessness; reflecting multiple challenges to emotion regulation. Stoltenberg et al. (1998) state that this hampers the trainees' ability to process personal emotions, convey empathy, attend to the client, and process client information. The model contends that, through continued training and experience, trainees will be able to manage negative personal affect and shift focus to the client.

Models of counselor development suggest that the combination of training and experience yields changes over time in counselors' cognitive development as well as ability to manage personal emotions, leading to greater facility with emotion-related skills such as empathy and relationship building. Unfortunately, little commentary is offered on how such development comes about, or how it may be optimally supported, other than noting the key role played by supervisors (Ronnestad & Skovholt, 2003). While follow-up research has supported some features of the above development models (Bernard & Goodyear, 2008), researchers have offered little additional insight on how

emotion regulation improves in counselors. Clearly, this topic warrants additional research.

Development of Emotion Regulation through Supervision

Recognizing that emotion regulation directly affects trainees' facility with both cognitive and emotional content, supervision literature has given rise to a handful of models for understanding and integrating in-session emotion regulation. Brack, Brack, and McCarthy (1997) developed a model wherein supervisees could process appraisals of self and client in order to minimize the impact of supervisees' negative emotions. Their model focuses on maladaptive appraisals as a source of emotional dysregulation in trainees, and teaches how to use reappraisal adaptively as an emotion regulation strategy. Brack and colleagues state that this model has received some research support (e.g., McCarthy & Brack, 1992). However, the model attributes emotional events solely to the interactions of somewhat complex cognitive appraisals. It offers re-appraisals as the primary means of emotion regulation. More current models of emotional generation and regulation (e.g., Mayer et al., 2004; Thayer & Lane, 2000; Werner & Gross, 2010) suggest that a more comprehensive approach to understanding emotions would offer greater opportunities for adaptive emotion regulation.

Wetchler (1999) observed that counselors and clients can be caught in interactional patterns of emotional dysregulation perpetuated by counselor anger and frustration. He used Emotion Focused Therapy principles (Johnson & Greenberg, 1994) to develop a model wherein supervisees could explore their primary emotional reactions to clients in order to optimize attachment in the therapeutic relationship. This approach takes advantage of principles of emotion regulation suggested by current models (e.g.,

Mayer et. al., 2004; Werner & Gross 2010) in that it emphasizes self-awareness, acceptance, and the adaptive utilization of emotional information.

Recently, Batten and Santanello (2009) suggested a model for working with emotion in Functional Analytic Psychotherapy (Kohlenburg, 2000) wherein the counselor's emotional reactions to clients are believed to comprise important therapeutic content. Batten and Santonello emphasize emotional awareness and acceptance and offer stage-based practice for cognitive integration and utilization of emotion, making this model reminiscent of the integrated approach of ability EI. Cooper and Ng (2009) formulated a model of supervision based on the Mayer and Salovey (1997) model of ability EI. In this model, the supervisor's EI plays a key role in relationship building and interventions with the supervisee, as well as in enhancing the supervisee's EI. The above two models are notable for incorporating models of emotion generation and regulation that are comprehensive and flexible. However, these models have received little research attention to date. Studies are needed to explore their effectiveness and utility.

Research on Counselors' Emotion Regulation

A number of authors have called for greater attention in research and training on counselors' internal processes that support emotion management and the delivery of emotion-related skills such as empathy (Binder & Strupp, 1997; Greason & Cashwell, 2009; Melton et al., 2005). However, outside of supervision, little coherent strategy has been articulated to address the development of emotion regulation skills of counseling trainees (Melton et al., 2005) and support counselors' well-being (Roach & Young, 2007). A review of the literature using a wide variety of terms related to emotion regulation performed by the author of this study revealed that research directly addressing

emotion regulation in counselors or counseling students is rare.

Nevertheless, there are a number of studies that include topics with application to counseling trainees' emotion regulation. The following sections will review (a) studies that directly address counseling trainees' emotional arousal, (b) studies indicating how counselors' emotions can affect counseling goals and processes, and (c) studies on non-facilitative counseling behaviors that can be attributed to a challenge to the emotion regulation skills of the counselor or trainee.

Counselor Trainee Emotional Arousal

One of the few studies to directly address the relationship between training level and emotion regulation was Cook's (2009) dissertation. He utilized a self-report measure of emotion regulation developed by Gratz and Roemer (2004) to compare the emotion regulation skills of pre-practicum trainees with those of trainees in internship. Cook's findings indicated that pre-practicum trainees' self-judgments of emotion regulation did not differ significantly from those of trainees in internship. Cook concluded that greater attention was needed to examine the circumstances under which trainees' emotion regulation develops. Interpreting Cook's study is complicated by the effect of self-efficacy on self-reported variables (Kluemper, 2008). A study by Hill et al. (2008) indicated that trainees' self-efficacy varied according to the nature of the skills they were learning at the time they were assessed.

Melton et al. (2005) found that counseling students' in-session emotions were frequently intense and distracting. Their sample was 34 counseling trainees who recorded their inner experiences following a counseling session with a client volunteer. Melton et al. reported that students' emotions were evoked frequently and often intensely.

They characterized students' inner experience as an emotional rollercoaster. They reported that students frequently were confused and experiencing emotions they struggled to manage. They further noted that students' reactions were rarely conveyed deliberately to clients or evident to listeners.

Melton et al. (2005) noted frequent instances of trainees' withdrawal from engagement with the client or disaffiliative engagement due to trainees' emotional reactions. This took various forms, including self-focusing, allocating attention away from the client, avoiding topics, and focusing negative emotion on the client. Such contextually inappropriate regulation strategies meet Werner and Gross's (2010) criteria for maladaptive emotion regulation wherein such strategies meet the short-term goals of the trainees to manage powerful personal emotions but hamper longer-term goals for a constructive therapeutic alliance and effective treatment.

The study by Melton et al. (2005) supports predictions of counselor development models (e.g., Ronnestadt & Skovholt, 2003; Stoltenberg et al., 1998) in that trainees evidenced excessive self-focus and anxiety, resulting in deficits to empathy and therapeutic affiliation. Melton et al. concluded by noting that counselor educators should expect trainees to experience strong in-session emotions that strain existing emotion regulation skills. They recommended further research in counseling trainees' in-session emotions and called for greater attention to emotion regulation strategies in counselor education.

Williams et al. (1997) studied the in-session affective experiences of counselor trainees in an effort to better understand the range of those experiences, how trainees managed them, and changes taking place over the course of a semester of training. Data

was collected from seven doctoral level practicum students, their volunteer clients (*n* = *30*), and their peer supervisors. Six categories of counselor affective reactions emerged from analysis of the data, and were labeled (a) anxious-uncomfortable, (b) distracted-disengaged or self-focused, (c) empathic-caring, (d) comfortable-pleased, (e) frustrated-angry, and (f) inadequate-unsure of self. Williams et al. stated that distraction and disengagement due to personal feelings were typical experiences described by most participants. Analysis of supervisor data revealed a theme of difficulty managing personal emotions, with three categories: (a) displays of negative or incongruent behavior towards clients, (b) avoidance of emotion or emotional topics, and (c) over-focus or over-involvement. The authors concluded that negative affect occurring in-session, coupled with inadequate management strategies, resulted in instances of interference with effective counseling.

Williams et al.'s (1997) study illustrates how challenges to trainees' emotion regulation can result in non-facilitative regulation strategies. Williams et al. stated that trainees' strategies for managing personal emotions fell into three categories. The first of these was focus on the client. Williams et al. interpreted focus on the client as a facilitative emotion management strategy. However, a case could be made that ability to focus on the client is an important counselor skill that ought to be distinguished from focusing on the client as a means of managing counselor emotions. Trainees may over focus on the client as a means of avoiding personal emotions that are uncomfortable or confusing. This means of emotion regulation may result in over-involvement with the client, avoidance of trainees' emotions, or misattribution of counselor emotions to the client. Instances of all of these drawbacks were reported by Williams et al.

The remaining two emotion management categories reported by Williams et al. (1997) were utilizing self-awareness and suppression of personal affect. Research suggests that trainees' utilization of self-awareness may have adaptive outcomes, whereas emotional suppression may inhibit empathy, increase physiological arousal or block relevant therapeutic information (Follette & Batten, 2000; Werner & Gross, 2010).

Effects of Counselors' Emotions on Counseling Goals and Processes

Although this topic would seem to be an important and rewarding research area, a search of the literature reveals that the research is sparse and fragmented. This could be due to a historic lack of consistent theory, models, and terminology for describing and attributing emotional phenomena. Nevertheless, a few studies have important implications for the importance of counselors' emotion regulation.

A study by McClure and Hodge (1987) suggested that counseling trainees' strong emotional responses to clients distorted their perceptions of clients both positively and negatively. The authors studied countertransference in 12 neophyte counselors in a doctoral training program. Trainees' perceptions and attitudes regarding themselves and their clients were measured using a180-item analysis of temperament, which included indications of positive or negative emotions. Multiple regression analysis indicated that strong positive emotion towards clients resulted in trainees perceiving clients' personalities to be more like themselves than client-measurement indicated. Negative emotion had the counter effect, distorting trainees' perceptions of likenesses in a negative direction. No evidence of distorted perceptions of personality occurred in the absence of strong trainee emotional reactions (McClure & Hodge, 1987). This study's small sample size limits the generalizability of its findings. Nonetheless, the study suggests that

trainees' emotional reactions to clients can distort perceptions of the client, indicating the need for improved emotion regulation skills.

Heibert, Uhlemann, Marshall, and Lee (1998) compared the relationships between counseling trainees' self talk, state anxiety, and counseling skills. Ninety-five students in two counseling programs completed inventories measuring self-talk regarding in-session counseling skill and state anxiety at the beginning and end of a semester of training in counseling skills. Counseling skills were measured at the end of the semester by the course instructor's rating of a videoed counseling session. Data analyses found significant correlations among negative self-talk, state anxiety, and low ratings of counseling skill. The findings suggested that trainees were ineffective at facilitative regulation of anxiety related to in-session counseling, and non-facilitative regulation was associated with lower ratings of competence.

Additionally, Heibert et al. (1998) found that while decreased negative self-talk from beginning to end of the semester was associated with decreased state anxiety and better in-session performance, little change in self-talk or state anxiety occurred between the beginning and end of the semester. This suggests that training over the course of a single semester had little effect on trainees' ability to manage in-session anxiety. This study was limited by the use of self-report measures and by correlational analysis that does not attribute causation. In addition, it measured a single influencer of emotion regulation (i.e., self-talk) and a single emotional outcome (i.e., anxiety). However, the study suggests a relationship between non-facilitative in-session emotion regulation and low ratings of counselor performance. An interesting facet of this study was a significant main effect found between the two different counseling programs in measures of

students' negative self-talk and state anxiety, suggesting the possibility that differing instructional environments had differing effects on students' facilitative emotion regulation. This area would benefit from research on how adding an emotion regulation skills component to basic skills training might affect trainees' self-talk, state anxiety, and counseling performance.

Sharkin and Gelso, (1993) studied how counseling trainees' anger proneness and discomfort with anger would affect their anger towards and discomfort with a client who was angry with them. Thirty-eight graduate counseling trainees completed scales of trait anger and discomfort with anger before viewing one of two randomly assigned videoed segments of a female client expressing anger towards her counselor. Following exposure to the video, trainees completed state anger and anxiety scales. Analysis revealed significant correlations between the independent variables trait anger and discomfort with anger and the dependent variables anger and discomfort with the client. Regression analysis found that the combination of trait anger and discomfort with anger significantly predicted trainees' anger and discomfort towards the client (Sharking & Gelso, 1993).

The problems suggested by these studies may be reflective of counseling programs' focus on observable helping skills and cognitive development (Buser, 2008); a focus that de-emphasizes trainees' development in emotional information processing and personal emotion regulation. These studies also lend emphasis to observations that training in emotion regulation, and the non-observable factors that support it, is often left to chance (Greason & Cashwell, 2009; Melton et al., 2005).

Non-Facilitative Counseling Behaviors Linked to Emotion Regulation

Restricted emotionality refers to the socialized tendency of males to suppress or

avoid emotions. Research suggests that this emotion regulation style has a non-facilitative effect on male counselors and trainees. Wisch and Mahalik (1999) studied how restricted emotionality affected the perceptions of male therapists towards emotionally expressive gay men. Participants were 196 practicing male therapists who gave clinical and personal reactions to clinical vignettes of gay male clients. Results indicated that therapists with greater restricted emotionality reported less empathy towards the client, less comfort with the client, and a more distorted perception of the emotional expression of the client.

Wester, Vogel, and Archer (2004) studied male counseling trainees to investigate how the socialized tendency of males to suppress emotion would affect them in supervision. The authors compared the restricted emotionality of male counseling trainees with that of men sampled from the general population and practicing male counselors. They also measured the effect of restricted emotions on trainees' counseling self-efficacy. Data analysis indicated that trainees' with greater restricted emotion had more negative perceptions of their counseling self-efficacy. These studies suggest that a socialized emotion regulation style wherein emotion is suppressed or avoided may be non-facilitative of counselors' perceptions of themselves and their clients. Of additional relevance to the current study was the finding that the restricted affect of counseling trainees fell between the scores of men in the general population and practicing male counselors (Wester et al., 2004), suggesting that training and experience can result in more facilitative emotion regulation skills in male counselors.

Quintana and Holahan (1992) studied the termination behavior of counselors in good outcome versus poor outcome cases. A termination behavior checklist created by

the authors and a counseling outcome questionnaire was completed by 85 experienced counselors referencing a recent termination. Multiple analysis of variance comparing good outcome and poor outcome cases revealed significant differences in counselors' discussions at termination. In poor outcome cases, counselors reported fewer instances of reviewing the course of counseling, reviewing goal attainment, exploring what the client had liked or not liked, processing the clients emotional reactions to termination, and self-disclosure of counselors' reactions to termination. In discussing their findings, Quintana and Holahan make three observations. First, their findings suggest that counselors at termination avoid discussion of negative aspects of clients' experiences. Second, counselors in poor outcome cases may be avoiding discussion of topics because of the counselors' or clients' negative emotions. Third, counselors' avoidance behavior at termination is non-facilitative of important therapeutic processes. This study must be interpreted cautiously in terms of emotion regulation because no data was collected indicating counselors' or clients' emotional associations with issues of termination. However, counselors' avoidance behavior occurred in termination of cases which the counselors characterized as unsuccessful. Thus, it may be validly argued that counselors' non-facilitative avoidance was prompted by attempts to regulate negative emotions.

Gelso and Hayes (2001) make two relevant observations indicating that unmanaged countertransference can be viewed as an example of counselors' non-facilitative emotion regulation: (a) a commonality of all definitions of countertransference is an emotional reaction of counselor to client, and (b) unmanaged countertransference is acted out in the counseling session resulting in negative outcomes. Hayes and Gelso (1991) studied the relationship between counselors' state-trait anxiety

and countertransference behavior. Participants were 11 male and 24 female counseling trainees. Participants listened to two audio-taped clients and chose one of two interpretive responses at 10 predetermined intervals on the tape. Either response could be considered appropriate as judged by experts. However, one response indicated greater personal engagement with the client, while the other indicated withdrawal from the client. Data analysis found significant correlation between state-trait anxiety and withdrawal from the client in male trainees but not in female (Hayes & Gelso, 1991). Interpretation of this data should take into account that the taped clients were female, and the results may incorporate an artifact of gender interaction. Nevertheless, the study suggests withdrawal as a non-facilitative effort to regulate trainees' anxiety. The study further suggests the need to investigate gender effects on counselors' emotional responses to their clients.

Non-Facilitative Emotion Regulation in the Therapeutic Alliance

A wealth of information regarding counselors' non-facilitative emotion regulation can be found in research known collectively as the Vanderbilt studies (Strupp, 1993). Data in these studies were obtained by videotape of counseling dyads meeting for multiple sessions. Clients in these dyads were rated as having moderate to severe mental disorders. Transcripts of these dyads have been available for analysis and re-analysis of therapeutic outcomes, client/counselor interaction, and client and counselor individual characteristics (Binder & Strupp, 1997).

Using the Vanderbilt data, Strupp (1980a, 1980b, 1980c,) conducted case study analyses of experienced counselors to compare dyad interactions in good outcome and poor outcome conditions. One of his observations was the pervasiveness of what he

termed *negative complementarity*, meaning the tendency of the counselor to parallel the client's negative emotions (Binder & Strupp, 1997). A common example of negative complementarity occurred when antagonistic expressions from the client evoked parallel hostile responses from the therapist (Binder & Strupp, 1997). Binder and Strupp (1997) noted that negative emotional complementarity was an evoked interpersonal response rather than a deliberate counseling strategy. Thus, negative complementarity can be validly viewed as an outcome of non-facilitative emotion regulation strategies; strategies which did not meet the broader contextual goals of the counselors.

Henry, Schacht, and Strupp (1986) reanalyzed Strupp's (1980) case studies using the coding method of the Structural Analysis of Social Behavior. Reanalysis found the poor outcome cases were characterized by significantly more instances of client negative emotional expressions evoking negative emotional responses from the counselor. The authors replicated this study with a larger sample size of 14 dyads divided evenly into good and poor outcome conditions (Henry, Schacht, & Strupp, 1990). Analyses yielded significant correlations between counselor behavior that was antagonistic and client self-blaming behavior, and counselor antagonistic behavior and poor outcomes.

Tasca and McMullen (1992) analyzed the interactions in Vanderbilt dyads with the aim of discovering patterns that might be distinct in different stages of treatment. They found that poor outcome cases were characterized not just by more instances of negative complementarity, but by more frequent instances of clients initiating antagonistic exchanges, particularly in the early and late stages of treatment. The authors concluded by noting "…one must question the inability of therapists in this sample to deal with client hostility in a therapeutic manner" (Tasca & McMullin, 1992, p.521).

In a second phase of the Vanderbilt studies (Vanderbilt II; Binder & Strupp, 1997), experienced therapists were recorded in dyads with bona fide clients in an effort to assess the effects of a manualized training protocol. The training protocol sought to assist counselors in identifying and remediating maladaptive interpersonal patterns, particularly those occurring between counselor and client. The protocol stressed an explicit focus on identifying and responding to transference and countertransference issues (Vakoch & Strupp, 2000). The unexpected finding of one analysis of the transcripts was that counselors' instances of antagonistic responses to clients actually increased (Henry, Strupp, Butler, Schacht, & Binder, 1993). Vakoch and Strupp (2000) state that, while counselors increased their use of manual-based techniques for managing transference and countertransference, they did so in in-effective or inappropriate ways. For example, they stated that counselors were more likely to probe clients for transference feelings even in the absence of cues that would indicate such feelings. Moreover, counselors' greater activity in sessions appeared to result in more instances of counselors evidencing antagonism towards the client (Henry et al., 1993).

Najavits and Strupp (1994) analyzed the Vanderbilt II data, looking for common factors associated with therapist effectiveness. They found that effectiveness was associated with greater therapist ability to manage their evoked negative reactions to clients, but that the training model itself did not significantly influenced therapists' effectiveness. However, they found that more effective therapists rated themselves as more self-critical. The authors interpreted this as a greater tendency towards self-reflection and self-monitoring. As noted by Werner and Gross (2010) these are component skills of adaptive emotion regulation.

Vakoch and Strupp (2000) conclude that evoked emotional responses are difficult to manage, even with targeted training. However, given that countertransference involves counselors' unmanaged emotional responses to clients (Gelso & Hayes, 2001), it may be valid to argue that the training protocol did not offer sufficient training in skills for recognizing, identifying, and managing counselors' emotional responses to clients. The Vanderbilt II training protocol might have been hampered by lack of a coherent model for personal and interpersonal emotion regulation.

The Vanderbilt studies may have limited generalizability due to qualitative methodologies. In addition, Vanderbilt therapists utilized a time-limited psycho-dynamic therapy model, and therapist variables related to training and theoretical orientation may limit generalizability. Nevertheless, several indications emerge that are relevant to the current study. First, the findings suggest that clients' emotional expressions have a powerful capacity to evoke parallel reactions in counselors despite the counselors' best intentions and despite targeted training to manage countertransference. Thus, negative complementarity is not a coincidence, but results from counselors' ineffective emotion regulation skills in response to clients. Second, associations were repeatedly found between counselors' non-facilitative emotion regulation and poor client outcomes. Finally, the studies suggest that counselors' facilitative emotion regulation may be an important factor in ameliorating the poor prognoses of clients who present antagonistically.

In summarizing the findings of the Vanderbilt studies, Binder and Strupp (1997) concluded by recommending that counselor training include training in *reflection-in-action*: ability to reflect on processes as they occur and generate response strategies in the

midst of actions. This self-monitoring parallels skills described by Werner and Gross (2010) for supporting adaptive emotion regulation. However, Binder and Strupp added "unfortunately, there is no evidence in the psychotherapy training literature that we have effective methods for teaching this sort of self-monitoring and improvisation" (p. 135).

Conclusions

The preceding review of literature suggests that counselors' emotion regulation is an understudied issue, particularly in regard to how this skill is developed and supported. Furthermore, research into counselors' emotion regulation has been hampered by the situation described by Mennin and Farach (2007); that research into emotions is plagued by conflicting definitions, misunderstandings about the role of emotions, and lack of conceptual clarity. Differing theoretical orientations have resulted in numerous construct variants and inconsistent terminology for describing emotional phenomena. For example, *countertransference* and *negative complementarity* both refer to outcomes of the interpersonal function of emotions (Binder & Strupp, 1997), and *self-talk* may act as an emotion regulation strategy in some cases and a cue for emotional dysregulation in others (Nutt-Williams & Hill, 1996). Until relatively recently, the literature has lacked transtheoretical models of emotions that take into account their multiple dimensions of generation, function, and regulation (Mennin & Farach, 2007). These factors make interpretation of extant studies difficult. Counselor educators looking to research for guidelines on how to develop and support the adaptive emotion regulation of trainees would be hard pressed to find coherent results.

Nevertheless, indications can be drawn that have major implications for counselor training and for future research. First, counselors are regularly presented with challenges

to emotion regulation in the form of negative emotional arousal, the anticipation of negative emotional arousal, or the occurrence of levels of emotional arousal that overwhelm existing emotion regulation skills. Second, in these circumstances, counselors' emotion regulation strategies can be ineffective or non-facilitative of counseling goals. Third, research associates counselors' non-facilitative emotion regulation with a variety of negative outcomes. Fourth, the approach to emotion regulation in counselor training is inconsistent and often left to chance. Finally, the effect of training on counselors' emotion regulation is understudied.

This study may contribute to the counseling literature by providing information about the effect of training and trainees' emotion regulation. In addition, psychophysiological correlates of emotion provide a transtheoretical means of conceptualizing and measuring emotion regulation, with variables that have a history of consistent interpretation. Finally, exploring the link between counselor training, emotion regulation, and ability EI may offer counselor educators a coherent construct for understanding, assessing, and enhancing trainees' emotion regulation.

Electrodermal and Heart Rate Correlates of Emotion Regulation

The purpose of this study was to explore the relationships among counseling trainees' emotion regulation, emotional intelligence, and level of training. Trainees' emotion regulation was operationalized and measured using well-known and well-researched psychophysiological correlates: EDA and HRV. The following sections provide the rationale for the use of psychophysiological correlates in this study and discuss the history of EDA and HRV in the study of emotion regulation. Historical and current interpretations of EDA and HRV will be discussed along with examples of their

use in relevant research.

Historical Applications and Interpretation

The co-occurrence of emotion, palmar sweating, and change in heart rate has been noted throughout much of recorded history (Stern, Ray, & Quigley, 2001), and the past century has seen a rapid accumulation of data regarding that relationship. For example, Elliott, Bankart, and Light (1970) found that EDA, also referred to as skin conductance or galvanic skin response, increased along with increased effort to inhibit thoughts, but only in conditions where there was high incentive to inhibit thoughts. They also found that heart rate decreased under similar conditions. They found that a similar pattern of negative covariance between heart rate and EDA occurred in anticipation of electrical shock. Pennebaker and Chew (1985) found that EDA increased along with effort to inhibit behavior (refrain from revealing knowledge). Later, it was found that EDA increased when subjects avoided discussing personal or traumatic events, and when subjects attempted to suppress emotional thoughts (Pennebaker, Hughes, & O'Heeron, 1987; Wegner & Gold, 1995). Research data generally confirms that EDA increases linearly along with positive and negative emotional arousal (Sequeira, et al., 2009). This effect has been observed in response to emotional content in words (Manning & Melchiori, 1974), pictures (Winton, Putnam, & Krauss, 1984), and video (Hubert & de Jong-Meyer, 1991).

Utilization of heart rate as a variable in research on emotions has increasingly been replaced by HRV (changes in the interval between heart beats) due to research correlating diminished HRV with impaired ability to regulate emotions (Appelhans & Luecken, 2006). HRV can be calculated multiple ways that reflect differing influences

on variability and allow needed discrimination in research (Berntson et al., 1996). Therefore, research using HRV often employs multiple HRV calculations, and it has emerged as a useful indicator of regulated emotional responding in studies of mental health (Appelhans & Luecken, 2006).

Autonomic Model of Emotion Regulation

The link between EDA, HRV, and emotions lies in the role of the ANS in generating and regulating each. The ANS is a brain-body interface that serves the need for the organism to activate multi-level physiological resources in response to emotionally salient environmental events. One such resource is heart rate, and earlier sections of this proposal outlined the role of the ANS in regulating emotion-related HRV through the exciting and inhibiting activities of the SNS and PNS respectively. Changes in EDA are also mediated by the ANS, and occur due to SNS activation of eccrine sweat glands, most commonly measured on the palms of the hands (Sequeira et al., 2009). Activation of these glands occurs distinctly as a result of psychological, particularly emotional, activity and is often referred to as emotional sweating (Boucsein, 1992). Research has indicated that these glands are strongly influenced by central autonomic network components of emotion generation: the hypothalamus, amygdala, hippocampus, and cingulate gyrus (Sequeira et al., 2009). Commonly used methods of measuring EDA and HRV will be explained in greater detail in the methodology section.

Rationale for Using Psychophysiological Correlates

Self-report measures have frequently been used to operationalize emotion regulation; for example, assessing trait (self-reported) skill prior to an emotion regulation task or assessing state (recalled) emotion regulation following the task. However,

psychophysiological correlates of emotion regulation offer greater control over variability associated with social desirability, self-efficacy, or personality (Crider, 2008; Semmer et al., 2004). In addition, psychophysiological correlates are typically recorded during the course of a studied emotional event or regulation task. This presents the possibility of charting correlations with studied events and processes as they occur. Finally, psychophysiological correlates may validly be considered transtheoretical because they do not rely on any particular theoretical orientation or emotional model for their interpretation.

EDA and HRV have been increasingly used as variables in the study of emotion regulation. They have been used as stand-alone indicators or to provide an added dimension to self-report measures and ability measures (e.g., Dunn, Billotti, Murphy, & Dalgleish, 2009). They are also increasingly used in correlation with measures of central neurological activity such as positron emission topography and magnetic resonance imaging (Sequeira et al., 2009; Thayer & Brosschott, 2005). This study takes advantage of the history, immediacy, and objectivity of these variables in exploring the emotion regulation skills of counseling trainees.

Utilization of EDA in Emotion Regulation Research

EDA has a long history of use as an indicator of emotional arousal. For example, Hubert and de Jong-Meyer (1991) compared emotional responses to viewing an amusing film with responses to a suspenseful film. They found that the pleasant film induced lower EDA with little change in perceived physical sensations, while the suspense film resulted in higher EDA, greater irritability, and less physical relaxation. Lang, Greenwald, Bradley, and Hamm (1993) studied psychophysiological responses as

participants viewed pictures representing a wide range of emotional valence and arousal. They found that EDA went up along with participants' ratings of their emotional arousal when viewing a picture. One stage of the experiment allowed participants to decide how long to view each picture and recorded viewing time. EDA was found to covary positively with viewing time. The study also found that assessments of personality and social desirability found no significant covariance with EDA. More recently, a panel of 23 psychophysiological correlates, involving electrodermal, cardiovascular, and respiratory measures, was employed to test whether fear, sadness, and emotional neutrality could be accurately distinguished on the basis of physiological response patterns (Kreibig, Wilhelm, Roth, & Gross, 2007). Results of the study showed that EDA was the single most sensitive indicator of emotional arousal for both the fear and sadness conditions.

EDA is also used as an indicator of emotion regulation with low EDA response indicating more efficient or effective regulation. For example, Sheppes, Catran, and Meiran (2009) compared relative EDA activation resulting from distraction versus reappraisal when participants were instructed to use those strategies after an emotional response was under way. Participants were responding to sadness-inducing videos. Results showed greater EDA for the reappraisal than the distraction condition, indicating that reappraisal made a greater demand on regulatory resources. Gross and Levenson (1993) used disgust-inducing films to study how emotional suppression affected subjective emotional experience and physiology. Participants in the suppression condition showed higher physiological arousal indicated by higher EDA and eye-blink responses. An interesting finding was that heightened physiological arousal began to

emerge during the suppression instruction period, before the film was actually viewed, and continued during the post-film period. The finding that emotional suppression results in greater physiological arousal has been replicated in subsequent studies (e.g., Gross & Levenson, 1997).

In another study, participants viewed documentary videos of the aftermath of traffic accidents with instructions on using either a suppressive emotion regulation strategy or an acceptant one (Dunn, Billotti, Murphy, & Dalgleish, 2009). A control group was given no instructions regarding emotions. Results indicated that participants in the suppressive condition reported less fear, but had equivalent EDA response while viewing the videos. During the recovery period, immediately after viewing the video, the acceptant group showed lower EDA responses.

The above studies typify a category of research wherein participants are instructed to use a regulation strategy without regard for their familiarity, preference, or skill level regarding that strategy. Other studies involved different designs. For example, Driscoll, Tranel, and Anderson (2009) allowed participants to use their preferred means of raising or lowering emotional responses to affective images. Analysis of EDA in this study showed that both positive and negative images resulted in greater EDA response. However, participants instructed to lower emotions showed lower EDA response while those instructed to increase emotions showed greater EDA response. This result may shed light on the finding of Gross and Levenson (1993) wherein EDA response was heightened as participants listened to the researchers' instructions to use a specific emotion regulation strategy; suggesting the possibility that EDA responses may partially reflect participants' efforts to restrict themselves to unfamiliar strategies.

Utilization of HRV in Emotion Regulation Research

A number of studies have shown a correlation between lower HRV and compromised emotion regulation (for review see Thayer & Lane, 2000). For example, Dishman et al. (2000) found an association between lower HRV and higher self-ratings of anxiety and emotional stress. This association occurred independently of age, gender, and trait anxiety. It also was independent of cardiorespiratory fitness, blood pressure, respiration, and heart rate. Similar research has shown an association between lower HRV and anxiety disorders (Friedman & Thayer, 1998), bereavement (O'Conner, Allen, & Kaszniak, 2002), and depression (Thayer, Friedman, Borkovec, Johnson, & Molina, 2000).

As low HRV has emerged as an indicator of diminished emotional regulating, high HRV has been found to indicate greater facility at emotion regulation. Studies have associated high HRV with mindfulness (Rogers, 2009), adaptive deployment or inhibition of attention (Johnson et al., 2003), and ability to distinguish between, and modulate attention to, stimuli that is positive, neutral, or harmful (Ruiz-Padial, Sollers, Vila, & Thayer, 2003). In addition, one study found significant positive correlation between HRV and subjective ratings of well-being; and the association was mediated by the use of habitual emotion regulation skills (Geisler, Vennewald, Kubiak, & Weber, 2010).

While a relationship between lower HRV and deficits in emotion regulation has been established, research is emerging that associates improvements in emotion regulation with increases in HRV. For example, increased HRV has been reported along with improved symptom control following treatment for clinical anxiety disorders (Friedman, Thayer, & Borkovec, 1993) and depression (Balogh, Fitzpatrick, Hendricks,

& Paige, 1993). More recently, researchers instructed high-school students ($N = 980$) in a program of emotional self-regulation and conducted pre- and post-test measures of HRV, test anxiety, and self-reports of ability to manage positive and negative affect (Bradley et al., 2010). Results indicated overall increased HRV along with decreased test anxiety and decreased self-reported negative emotion. Notably, students with previous high test anxiety showed increases in high-frequency HRV (HRV-HF) and in the standard deviation of interbeat intervals (HRV-SDNN) even in the absence of the testing condition.

Summary

Consistent historical interpretations of EDA and HRV data provide a firm footing for their utilization in the study of emotion regulation. EDA remains a robust means of assessing emotional responses and has been used extensively to study emotion regulation. Consistent results indicate that EDA increases linearly with emotional arousal. Furthermore, research indicates that EDA differentiates between more or less efficient efforts at emotion regulation, with more efficient emotion regulation resulting in lower EDA and greater effort needed for emotion regulation associated with higher EDA. HRV has been used increasing as an indicator of adaptive emotional regulation. Greater HRV is associated with efficient use of cognitive resources in regulating emotional responses, and improvements in emotional regulating have been associated with increases in HRV.

Psychophysiological correlates of emotion regulation have been used greatly in the study of emotions and emotion regulation. However, their use in the study of emotional intelligence has only emerged very recently, and few studies exist which utilize psychophysiological correlates in research on counselor training. At the time of

this review, no research could be located which utilized psychophysiological correlates to study emotion regulation in the context of counselor training. The current study addresses this gap in the literature.

Psychophysiological correlates of emotion regulation provide a more precise focus on emotion regulation outcomes and on the efficient use of emotion regulation resources. They allow accurate correlation with emotion regulation process because they can be measured coincidentally with emotion regulation tasks. In addition, psychophysiological correlates avoid challenges to interpretation associated with self-report measures, such as self-efficacy, social desirability, and personality. The use of these variables in the proposed study would provide needed stringency in the measurement and interpretation of emotion-related variables and broaden the research basis for their increased use in counselor training research. For these reasons, EDA and HRV were the preferred means of operationalizing emotion regulation in this study.

Chapter Summary

This chapter provided a review of literature focusing on the variables of interest in the proposed study. The chapter discussed relevant literature on theory and research in emotion regulation, including the use of psychophysiological variables in emotion regulation research. The chapter reviewed theory and research on EI with emphasis on the relevance of ability EI to counselor training. The chapter also reviewed research on counselor training, with emphasis on challenges to counselors' and trainees' emotion regulation skills.

Challenges to counselors' emotion regulation are inescapable and consequential due to the nature of emotions. Emotions communicate important social information, yet

this communication can take place beneath the threshold of awareness (Van Kleef, 2010). Emotional responses are generated rapidly, often without cognitive mediation (LeDoux, 1995). Emotions are inextricably linked to physiological arousal, which can be uncomfortable and can reprioritize behavioral options (Thayer & Lane, 2000). Finally, emotions allocate attention to certain types of information while inhibiting attentional flexibility (Thayer & Brosschatt, 2005). These factors suggest the importance of understanding how counselor training can enhance counselors' adaptive emotion regulation.

EI incorporates skills and processes considered essential to adaptive emotion regulation and further includes integration of emotional information into cognitive skills (Mayer & Salovey, 1997). A maturing body of research supports the association between EI and adaptive social functioning, but research on improving EI has yielded results that are mixed and difficult to interpret. Researchers note parallels between EI and the goals and processes of counseling, and research on relationship functioning suggests a role for EI in the therapeutic alliance (Mayer et al., 2008). Nevertheless, ability EI has been seldom researched in counselor training, and existing studies indicate the need for additional information, as well as greater design stringency.

Counselors' emotion regulation is another understudied issue. Nevertheless, careful study of the literature suggests that counselors' emotion regulation skills are regularly overwhelmed (Melton et al., 2005), insufficient (Williams et al., 1997), contextually inappropriate (Binder & Strupp, 1997), or non-facilitative of counseling goals (Binder & Strupp, 1997). Despite these indications, examination of the literature indicates that research into counselors' emotion regulation has been rarely undertaken

and hampered by lack of a coherent theoretical referent. Findings in extant research are also difficult to make applicable due to inconsistency in design focus and measurement.

Psychophysiological correlates of emotion regulation, such as EDA and HRV, provide a precise focus on the efficient use of emotion regulation resources and avoid threats to validity associated with self-report measures (Kluemper, 2008). Psychophysiological correlates are frequently use in the study of emotions. However, the author was unable to locate studies using these measures to investigate counselors' emotion regulation.

In view of these considerations, the counselor training field is in need of emotion regulation research which (a) focuses on counselors' emotion regulation, (b) provides reference to a coherent theoretical construct, (c) clarifies the role of EI in counselor training, (d) examines the role of counselor training in the development of emotion regulation and EI, and (c) limits ambiguity in the measurement and interpretation of emotion regulation data. This study sought to address this need. The study examined the relationships among counseling trainees' level of training, their emotion regulation as measured by EDA, HRV-HF, and HRV-SDNN, and their ability EI as measured by total and subscale MSCEIT scores.

CHAPTER 3: METHODOLOGY

This study addressed the need highlighted in the counseling literature for further explication of factors that support and enhance the emotion regulation of counseling trainees (e.g., Binder & Strupp, 1992; Greason & Cashwell, 2008; Melton, Nofzinger-Collins, Wynne, & Susman, 2005). The study focused on how master's level counseling trainees' emotion regulation during a video-simulated client interaction was related to their training level and emotional intelligence (EI).

Research Questions

This studied addressed the following questions:

1. What is the relationship between level of training and emotional regulation among counseling trainees when viewing and responding to an emotionally distressed client presented on video?
2. What is the relationship between ability EI and emotional regulation among counseling trainees when viewing and responding to an emotionally distressed client presented on video?
3. To what extent does ability EI contribute to predicting electrodermal activity (EDA) in counseling trainees, after controlling for the effects of training level, when viewing and responding to an emotionally distressed client presented on video?
4. To what extent does ability EI contribute to predicting heart rate variability (HRV) in counseling trainees, after controlling for the effects of training level, when

viewing and responding to an emotionally distressed client presented on video?

Hypotheses

Level of training was operationalized dichotomously as beginning level (i.e., those who were enrolled in or had completed a basic counseling skills course but had not yet started their clinical field experience) and advanced level (i.e., those who were enrolled in, or had completed, their first or second internship field experience). Ability EI was assessed by the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT; Mayer, Salovey, Caruso, & Sitarenios, 2003). Emotion regulation was assessed by psychophysiological correlates: EDA, high frequency HRV (HRV-HF), and the standard deviation of normally occurring or *normal-to-normal* heartbeat intervals (HRV-SDNN).

Based on findings in the literature (e.g., Fabes & Eisenberg, 1997; Nelis, Quoidbach, Mikolojczak, & Hansenne, 2009; Williams, Judge, Hill, & Hoffman, 1997), the following hypotheses were proposed:

1. Counseling trainees' level of training is positively associated with capacity for regulating emotion as indicated by (a) negative correlation with stimulus-evoked EDA, (b) positive correlation with stimulus-evoked HRV-HF, and (c) positive association with stimulus evoked HRV-SDNN.
2. Counseling trainees' ability EI as indicated by total and scale MSCEIT scores, is positively associated with capacity for regulating emotion as indicated by (a) negative correlation with stimulus-evoked EDA, (b) positive correlation with stimulus-evoked HRV-HF, and (c) positive association with stimulus evoked HRV-SDNN.
3. After controlling for level of training, the variance in stimulus-evoked EDA is significantly explained by:

a) Trainees' total ability EI.

b) Trainees' abilities in perceiving emotions, using emotions, understanding emotions, and managing emotions.

4. After controlling for level of training, the variance in stimulus-evoked HRV-HF is significantly explained by:

    a) Trainees' total ability EI.

    b) Trainees' abilities in perceiving emotions, using emotions, understanding emotions, and managing emotions.

5. After controlling for level of training, the variance in stimulus-evoked HRV-SDNN is significantly explained by:

    a) Trainees' total ability EI.

    b) Trainees' abilities in perceiving emotions, using emotions, understanding emotions, and managing emotions.

Research Method

Research Design

This study used a quasi-experimental design. Dependent variables were participants' EDA, HRV-HF, and HRV-SDNN, and independent variables were participants' level of training, scores of ability EI, and scores of EI subscales. Hypotheses 1 and 2 were addressed by examining the zero-order correlations between variables. Hypotheses 3, 4, and 5 were addressed by two hierarchical multiple linear regressions (MLRs) for each psychophysiological DV: one with total EI and the second with EI subscales. Each pair of regressions entered training level, coded as a dummy variable, into the equation at step 1. At step 2, one regression entered total EI and the

second entered EI subscale scores. This determined the relative strengths of training level and total EI or EI subscales in predicting trainees' EDA, HRV-HF, and HRV-SDNN respectively.

The methodology detailed below was tested in a pilot study conducted with a sample of counseling doctoral students. The purpose of the pilot study was to make a trial run of the procedure, elicit participant feedback on improvements to the procedure, and verify that the proposed psychophysiological measurement methods returned viable data. Visual examination of raw data and line graphs of EDA and HRV data obtained during the pilot study confirmed detection of phasic EDA responses and accurate detection of normal-to-normal heartbeat intervals (discussed in greater detail below). Changes to the methodology made as a result of participant feedback will be indicated where relevant.

Participants

A convenience sample of graduate level trainees was recruited from two counselor education programs in Southern coastal states. Participants were 21 year of age or above. They were given $20.00 as incentive and recompense for their participation, and participation was anonymous and voluntary. In order to assist in standardizing trainee experience regarding level of training, programs were limited to those accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP; 2009). Participants met one of two criteria: (a) they were enrolled in, or had completed, basic skills training without any further field experience; or (b) they were enrolled in, or had completed, at least one internship field experience. All

participants in the beginning group had been enrolled in basic skills training for a minimum of six weeks.

Participants were recruited by the following steps:

1. Approval was obtained from the university's Institutional Review Board (IRB).
2. Program administrators of the participating programs were contacted to introduce the research project and gain access to students. The contact email is presented in Appendix A.
3. Participants were recruited through email sent by program administrators, and by classroom presentation. Recruitment language for email and presentations is presented in Appendix B. Brief classroom presentations were arranged through contact with individual instructors. Following presentations, interested students were sent the IRB approved recruitment handout and asked to reply if they wished to participate.
4. Responding students were scheduled for an appointment for gaining informed consent and collecting data. The IRB consent form is presented in Appendix C.

Materials

MSCEIT

The MSCEIT (Mayer et al., 2003) was accessed online by providing each participant with a login and a unique, confidential password determined by the researcher. The password also served as the participant's identifier. Use of the MSCEIT for research purposes required a data-sharing agreement with the instrument's publisher. A unique, confidential password and identifier served to distinguish participants' identification on score sheets while maintaining their confidentiality with the

instrument's publisher. Psychometric data and characteristics of the MSCEIT are detailed under instrumentation.

Baseline, Neutral, and Recovery Vignettes

Stimulus evoked scores of EDA are derived in relationship to baseline (resting) readings. As in previous studies using film in conjunction with psychophysiological recordings (e.g., Sheppes, Catran, & Meiran, 2009), baseline readings were recorded over a 3-minute period. The neutral vignette was a 2-minute video showing scenes from nature (Denali National Park in Alaska). This film segment was recommended by Rottenburg, Ray and Gross (2007) for providing a video stimulus which was neutral in emotional intensity while mildly pleasant in valence. The neutral video acted as a comparison to the simulation video to assess whether variability in psychophysiological measurements might be due to the process of video-watching, rather than video content. Thus the neutral video acted as a second baseline which included video-watching as a condition. Following the simulation video, a pastel shaded screen was shown for a 2-minute recovery period, and a recovery baseline was recorded during this time. The recovery screen displayed a message explaining that the participant should watch the screen while the recovery baseline was recorded.

Simulation Vignette

Selection of the simulation video followed a three-step process. The first step was a search of the literature for indications of how videos have been used in conjunction with psychophysiological measurement. Rottenburg et al., (2007) state that research supports the capacity of films to elicit activation across multiple generative systems of emotion, including the autonomic. In addition, they describe characteristics of emotion-

inducing videos that support their use in this study, including: (a) videos have high capacity to capture participants' attention, (b) the use of video allows high standardization of stimulus across participants, (c) naturalistic video supports generalizability, and (d) video content can be chosen for its authentic naturalism to a target population.

Proceeding from the indications of Rottenburg et al. (2007), step 2 involved searching video sources for a recording of a person disclosing self-determined autobiographical content under self-determined conditions, which would give the video high authenticity. The selected video was excerpted from a video diary posted on an online video repository (YouTube) intended for public viewing. The video posting included contact information, and the author's permission was obtained for its use (personal communication, July 17, 2011). The video was minimally edited for length and to divide it into two segments. In the first segment, the author describes the events leading up to her diagnosis with ovarian cancer and her doctor's recommendation that she terminate her pregnancy. In the second segment, she describes the decision to proceed with treatment without terminating pregnancy, and she expresses her fear for her unborn baby.

Step 3 required that the video be rated by a panel of five licensed practicing counselors using the rating form in Appendix D. The form contains three statements rated on a 5-point Likert scale ranging from *1- Strongly Disagree* to *5- Strongly Agree.* The statements were (a) "The video I viewed is representative of the type of issue I can expect to encounter as a counselor," (b) "The video I viewed is liable to evoke a moderate emotional response in a counselor," and (c) "The person in the video evoked an

empathetic response in me as a counselor." The statements received mean ratings, respectively, of 4.8, 4.2, and 4.6. These ratings indicated overall agreement that the video content presented a scenario which counselors may typically be expected to encounter, was likely to evoke moderate emotional reactions, and could evoke an empathetic response.

The video was presented in two segments in order to present participants with a manageable amount of information in each segment. Participants were instructed to take the role of counselor as they watched the video. After each segment, the video paused for 30 seconds during which participants were prompted on screen to vocalize a counseling response of their choice. Feedback from the pilot study resulted in re-editing of the video segment lengths so that pauses occurred at points more conducive to providing a response. This resulted in a total simulation recording period of 5 minutes and 29 seconds.

Presentation Software

Baseline screens, instruction screens, and video vignettes were composed on or embedded in presentation software. Timings and pauses were embedded in the presentation and synchronized with data acquisition software. Presentation software ran on a portable computer and was displayed on a flat-screen monitor.

Apparatus

Baseline and stimulus vignettes were presented on a 23-inch monitor placed one meter in front of the participant. A video camera recorded the participant. Raw EDA and HRV data was acquired with a J & J Engineering I-330-C2 data acquisition monitor. This monitor recorded psychophysiological data by means of electrode sensors placed on

participants' skin at specified locations. The sensors were Silverest brand single use electrodes manufactured by Vermed. Electrode sensors were made from silver-silver chloride and pre-treated with 10% chloride wet gel.

The data acquisition monitor was attached by USB cable to a laptop computer with a minimum 1.5 gigahertz processor and the equivalent of a minimum 128-megabyte video card. The monitor was controlled by USE3 Physiolab software which recorded and stored the sampled data. The data acquisition monitor was capable of sampling psychophysiological data at a rate of 2048 samples per second. Sampling apparatus met the standards recommended by Boucsein (1992) for acquisition of EDA data and the standards of the Task Force of The European Society of Cardiology and The North American Society of Pacing and Electrophysiology (Task Force, 1996) for the acquisition of HRV data. J & J Engineering I-330-C2 data acquisition monitors are manufactured under the regulations of the U. S. Food and Drug Administration (1997). They are powered by four AA alkaline batteries. A surge protection switch protects participants from possible static discharge of 15,000 volts minimum. Data monitoring during the pilot study indicated that the laptop computer should be located a minimum of 6-feet from electrode sensors in order to control background radiation picked up by sensors.

Instrumentation

Level of Training

Level of training was confirmed by participants filling out a short demographic questionnaire asking them to indicate their current state of enrollment regarding basic skills training, first internship, or second internship (Appendix E). This information was used to screen participants' eligibility. In order to accurately describe the sample,

participants were asked to provide their age, ethnicity, occupational background, approximate client contact hours, and any additional counseling or helping skills training they received outside their current program of enrollment.

Participant Emotion Self-Rating Form

Participants were asked to rate each video after viewing it and answers were documented on the participant emotion self-rating form (Appendix F). These questions were adapted from a questionnaire used by Rottenburg et al. (2007) to assess the emotion-inducing characteristics of videos. Participants rated their subjective emotional responses according to overall emotional intensity, intensity of negative emotional response, and intensity of positive emotional response. The participant self-ratings provided an additional check that participant emotional responses were due to the content of the simulation video rather than the condition of video-watching.

MSCEIT

The MSCEIT (Mayer et al., 2003) is a 141-item test divided into four content areas corresponding to the four-branch model of EI proposed by Mayer and Salovey (1997): (a) ability to perceive emotions, (b) ability to utilize emotion to facilitate cognition, (c) ability to understand emotions, and (b) ability to manage emotions. Each branch of EI is measured according to performance in two task areas per branch, resulting in a total of eight task areas. Perceiving emotions is measured through faces and pictures tasks, which ask participants to rate the degree to which emotions are present in faces, landscapes, and abstract designs. The cognitive facilitation branch is measured through sensation and facilitation tasks. Sensation tasks ask participants to induce emotions then match them to sensations, and facilitation tasks ask participants to assess what moods

best facilitate selected cognitive tasks. Understanding emotions is measured by means of blends and changes tasks. These ask respondents to judge which emotions combine to form other emotions and what emotion might result from the intensification of another. Managing emotions is measured through emotional management and relationship tasks. Management tasks present respondents with a scenario and ask how a desired emotional outcome may be brought about. Relationship tasks ask respondents how to bring about desired outcomes in the emotions of others (Mayer et al., 2003).

Each task area is comprised of individual items or item sets. Response formats are varied across each task in order to minimize error resulting from response style or measurement correlation (Mayer et al., 2003). The test may be scored by expert consensus or by comparison to a normative sample. For the purposes of this study, scoring by expert consensus was the preferred method.

Validity and Reliability

Brackett and Mayer (2003) provided support for the discriminant validity of the MSCIET, finding zero-order correlations of $r = .28$ and less between MSCEIT scores and those of the NEO-PI-R (Big Five personality factors; Costa & McCrae, 2011), with only Openness and Agreeableness showing significant correlations. Mayer et al. (2003) tested the MSCEIT's reliability and factor structure on a sample of 2112 culturally and nationally diverse adults. The mean age of the sample was 26.25 years ($SD = 10.51$). The sample reported diverse educational backgrounds, with 0.6% lacking high-school diplomas, 10.3% with high school diplomas only, 39.2% having some secondary education, 33.7% having completed college, and 16.1% with graduate level degrees. Mayer et al. reported that confirmatory factor analysis resulted in one factor (total EI) and

four factor (corresponding to the branches) models that were good fits to the data with normed fit indices that ranged from .98 to .99.

Questions have been raised about the factor structure of the MSCEIT and studies have suggested differing nested factor structures within the overall general model (Rossen, Kranzler, & Algina, 2008). For example, Palmer, Gignac, Manocha, and Stough (2005) suggested that analysis supported a general factor model with three nested factors. Rossen et al. (2008) replicated and extended these findings and again questioned the validity of the four-factor model. They found support for a general EI model with three nested factors labeled perceiving, understanding, and managing emotions.

Mayer et al. (2003) reported split-half reliability for the MSCEIT at $r(1985) = 0.91$ for expert scoring. Split-half reliability for the subscale scores ranged from $r(2004 - 2028) = .76$ to .91. Brackett and Mayer (2003) found test-retest reliability of $r = 0.86$ with $N = 60$.

Measuring EDA and HRV

Validity and reliability of EDA and HRV as measures of emotion regulation have been indicated by research showing consistent correlations between these measures and widely varying indicators of emotional arousal and regulation (Appelhans & Luecken, 2006; Sequeira, Hot, Silvert, & Delplanque, 2009). Reliability is supported by consistency in measurement method. In the measurement and interpretation of EDA, this study adopted commonly used standards recommended and described by Boucsein (1992). In the measurement of HRV, the study adopted the standards and recommendations of the Task Force (1996).

EDA samples were recorded at .1-second intervals over a range of 0.5 to 200

microsiemens; a siemens being the standard international unit of electrical conductance. In accordance with recommended procedures (Boucsein, 1992), EDA samples were acquired by means of electrode sensors placed on the palm surfaces of the middle sections of the second and third fingers of one hand. HRV was sampled by means of electrocardiogram (ECG) sensors in a Lead I placement: one sensor on each forearm plus a ground (Stern, Ray, & Quigley, 2001). Data was recorded with USE3 Physiolab software with a notch filter set at 60Hz to filter out electric line artifact signals.

Data reduction

Raw session data was recorded by USE3 Physiolabs software and stored in database and spreadsheet form. Recorded raw session data for EDA was in the form of skin conductance levels in microsiemens per second. Recorded raw session data for HRV was in the form of ECG readings. Software reduced sampling from the hardware derived 2048 samples per second to the recommended 1024 samples per second (Task Force, 1996).

Skin conductance response refers to the degree of change in skin conductance measured in microsiemens per second. Tonic resting skin conductance levels are stable and normally distributed between 1 and 30 microsiemens. Phasic levels are stimulus evoked and represent the impact of discrete emotionally significant stimuli. The recommended range for detecting phasic responses is .05 to 1 microsiemens above tonic levels (Boucsein, 1992).

Mean skin conductance level refers to the average of skin conductance readings over a specified period given in microsiemens per second. For the purposes of this study, participants' EDA scores were derived by subtracting the mean skin conductance level

established during baseline from mean level during the simulation. Period averages such as this have been used previously in research utilizing the combination of video stimulus and psychophysiological recording (e.g., Kriebig et al., 2007). Visual examination of EDA graphs of baseline readings revealed variability in baseline EDA that may have been due to individual differences in habituation to the testing environment. Therefore, EDA readings during the neutral video were preferred as the referential baseline for deriving EDA scores. This choice also had the advantage of including the condition of video-watching in both the baseline and simulation readings.

Raw heart rate data was derived from the measurement and recording of normally occurring interbeat intervals (IBIs) in milliseconds. The record of IBIs was entered into Kubios HRV analysis software (Niskanen, Tarvainen, Ranta-aho, & Karjalainen, 2004) which includes tools for correcting missing or abnormal beats. The study used two methods recommended by the Task Force (1996) for deriving HRV scores: a time domain method and a frequency domain method. The time domain method calculated the standard deviation of normal-to-normal IBIs (HRV-SDNN). This often-used measure recently appeared in studies of emotion regulation related to alcohol use (Vaschillo et al. 2008), psychosocial risk factors of depression (Horsten et al., 1999), and posttraumatic stress (Lee & Theus, 2012). The value of this method is that it represents all sources of cyclic variability in IBIs for the recording period (Task Force, 1996).

The frequency domain method analyzed the sequence of IBIs using a frequency detection algorithm called a fast Fourier transform (Task Force, 1996). Fast Fourier transform is a mathematical method for transforming a time sequence into a frequency. This technique separates the distribution of variance in interbeat intervals into those

changes occuring rapidly (high frequency HRV) and those occurring more slowly (low frequency HRV). High frequency HRV (HRV-HF) is generally considered representative of the activity of the parasympathetic nervous system and is associated with greater facility in emotion regulation (Appelhans & Luecken, 2006; Thayer & Lane, 2000). The combination of HRV-SDNN and HRV-HF measures were used in a study by Bradley et al. (2010) which found improvements in these measures in high school students following a program of training to reduce test anxiety.

This study reports HRV-HF scores in normalized units. Berntson et al. (1997) caution that total HRV frequency power includes components resulting from the gating of parasympathetic influence during respiration. Thus, respiritory differences in participants may be sources of variance that complicate interpretation of scores. They recommend normalizing frequency ranges of interest by removing very low frequency components. Normalized frequencies are calculated by Kubios software and represent the relative power of the high frequency variance in proportion to the total power. Normalized HRV-HF is derived by multiplying the high-frequence power by 100 then dividing it by the total power minus the very low frequency power (Berntson et al., 1997).

Procedure

Testing involved two stages of data collection. The first stage required participants to fillout the questionnaire for demographic and training level information and complete the MSCEIT online. Participants were set up in a counseling lab with a laptop computer and a unique confidential login to the online version of the MSCEIT. The researcher maintained a confidential record that matches participants MSCEIT login identifier with their study identifying number. Once participants completed the MSCEIT,

it was scored by the publisher, and a detailed data set for each participant was available in Excel format.

The second stage measured EDA and HRV while participants were engaged in a video-simulated client interaction. A detailed protocol of this procedure was adhered to and is provided in Appendix G. Participants were seated one meter from a monitor display. The researcher explained the process of attaching sensors and obtained permission to proceed. Each electrode site was prepared by cleaning with micro-abrasion gel and alcohol swabs. In accordance with recommendations (Boucsein, 1992), EDA electrodes were attached to the palmar surfaces of the middle sections of two fingers of one hand. HRV electrodes were attached using a Lead I placement: placing electrodes on the inner surface of each forearm above the wrist (Stern et al., 2001).

Data collection proceeded when sensor check screens showed that equipment was functioning properly and sensor readings were within required limits. Once data recording began, it proceeded uninterrupted until sensors were removed following the recovery baseline. Event markers were entered into the data by the acquisition software which demarkated each period of interest.

In accordance with recommendations in the literature (e.g., Dun, Bilotti, Murphy, & Dalgleish, 2009), participants were asked to watch the screen for three minutes while initial baseline EDA and HRV was recorded. Following initial baseline recording, instructions appeared on the display regarding the neutral video. Instructions stated that participants were about to watch a 2-minute neutral video and that they should inform the researcher when they were ready to proceed. EDA and HRV recording proceeded during the neutral video. At the end of the neutral video, the monitor displayed the three

questions on the participant emotion self-rating form and instructed participants to answer the questions aloud. Answers were documented on the rating form that noted the participants' confidential identifier.

Following participant self-rating of the neutral video, the researcher cued the instructions for the video-simulated client interaction. Feedback from the pilot study indicated the researcher should leave the lab during the simulation, and the on-screen instructions informed the participant of this. Participants were instructed to take the role of a counselor as they watch each video segment. They were informed that the video would pause at the end of each segment and that they would be prompted on screen to vocalize their choice of appropriate counseling response.

In order to protect participants from undue stress, the procedure incorporated methods common to previous research using video to evoke emotional responses (e.g., Dunn, Billotti, Murphy, & Dalgleish, 2009; Hughes, Uhlman, & Pennebaker, 1994; Schartau, Dalgleish, & Dunn, 2009). Instructions stated that participants could stop the video if needed using the monitor remote controller placed close to one hand. Participants were asked to read instructions carefully, ask any needed clarifying questions, and indicate when they were ready to begin. When participants indicated readiness, the researcher cued the simulation video. The cue to begin the simulation included a 10 second delay allowing the researcher time to leave the lab and close the door.

At the end of the simulation, on-screen instructions asked the participant to watch the screen for an additional 2 minutes while a recovery period baseline was recorded. Once data recording was completed, the researcher returned and recorded the

participant's answers to the emotion self-rating questions regarding the simulation video. Sensor cables were then disconnected and the disposable sensors peeled off and discarded. Feedback from participants in the pilot study confirmed that participants wanted follow-up information regarding the outcome for the videoed client. Therefore, participants were debriefed by informing them of the successful outcome of the video author's treatment and allowing them to express reactions to the video. This concluded their participation. Figure 2 shows a flowchart of the sequence of data collection.

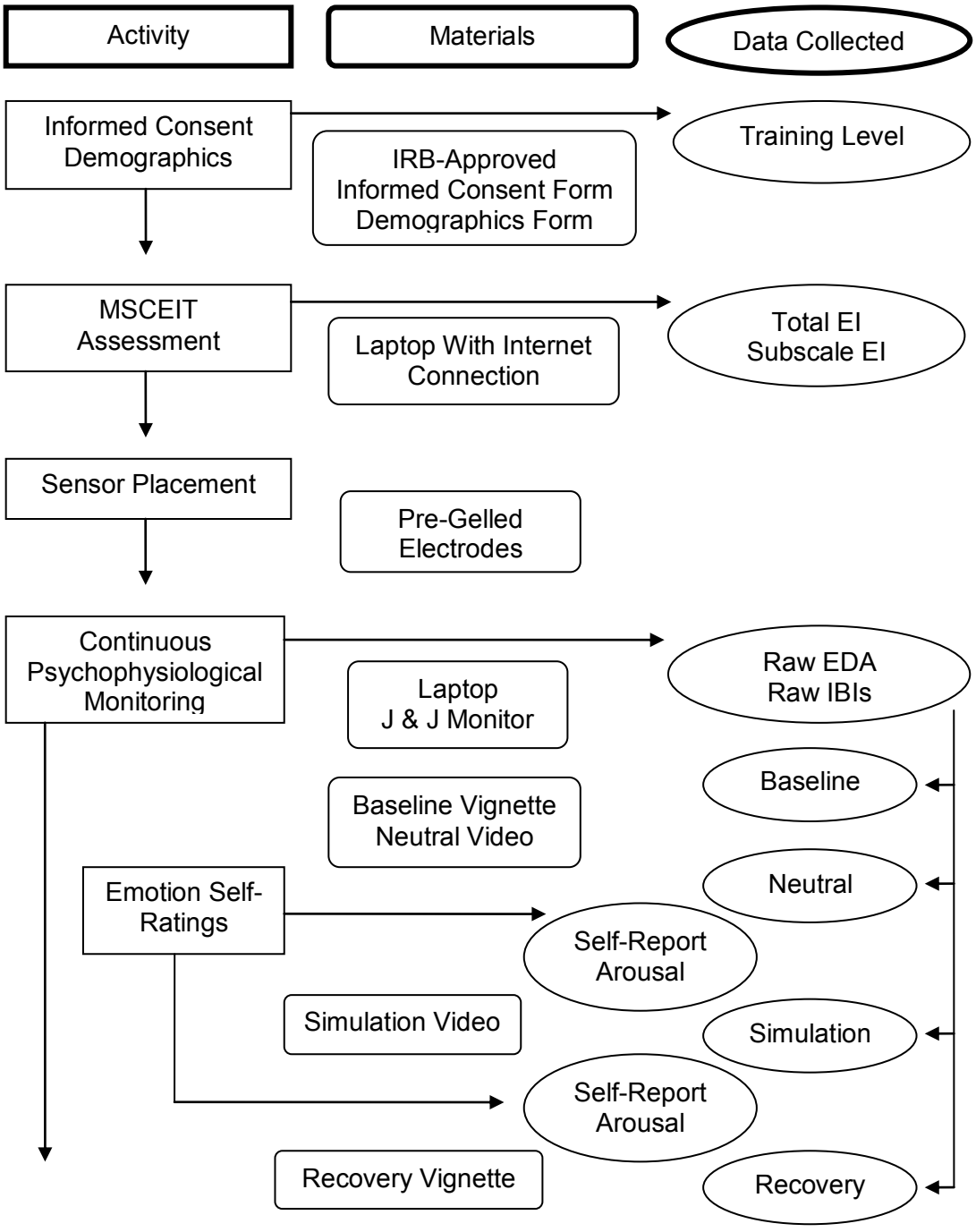

Figure 2. Data collection flowchart. Raw EDA is skin conductance microsiemens per second every .1 seconds. Raw IBIs are in milliseconds every .001 seconds.

Data Analysis

Data was screened and analyzed using the Statistical Package for Social Sciences (SPSS) software. Initial data screening for outliers, missing data, and the assumptions of regression analysis was performed to investigate suitability for analysis. In order for regression analysis to be robust, data is assumed to be normally distributed, linear in relationships among variables, and homoscedastic (equivalent in variance at all levels of dependent variable scores). In addition, analysis is weakened when variables are multicollinear, when there is an inadequate ratio of cases to IV's, and when there are extreme outliers among scores.

Data was screened for normal distribution and univariate outliers by visual examination of histograms, boxplots, and *z* scores. Skewness and kurtosis statistics were also generated in SPSS. Multivariate outliers were assessed by examining Mahalonobis distances generated by SPSS regression. Linearity and homoscedasticity was checked with scatterplots of variables and their residuals. Multicollinearity was checked by checking SPSS collinearity diagnostics against tolerance criteria for inclusion of variables.

Research Hypotheses 1 and 2 were addressed by examining the zero-order correlations between the study variables. Research Hypotheses 3, 4, and 5 were addressed by hierarchical multiple linear regression (MLR). The purpose of MLR is to assess the relationship between a dependent variable and multiple independent variables. Hierarchical MLR adds IVs to the regression equation in an order specified by the researcher, according to the theoretical bases of the study's hypotheses. The regression equation can then determine the relative contributions of each IV to variability of the DV.

Hierarchical MLR also assesses the unique contribution of IVs entered later in the equation above and beyond those entered previously. For each emotion regulation DV, level of training was entered into the regression equation first as a dichotomous variable representing beginning and advanced training levels. This step determined the contribution of training level to the variability of EDA and HRV. Step 2 entered EI scores into the equation in order to determine the unique contribution of EI above and beyond training level. For each DV, a second hierarchical MLR was then conducted with EI scale scores. EI scale scores were entered in step 2 in a block with forward selection. Forward selection instructs analysis software to enter only those variables that contribute significantly to the regression model, and in order of the greatest contribution (Tabachnik & Fiddell, 2008). This determined the unique contributions of any EI scale scores to explaining the variance in DVs.

Summary

This chapter covered the research method, starting with a statement of research questions and hypotheses. Selection of participants, materials and apparatus, instruments and derivation of scores, research design, and procedure were also described. The chapter concluded with an overview of how data was screened and analyzed. The following chapter will explain in more detail the data screening, results of screening, data analyses, and the results of analyses.

CHAPTER 4: RESULTS

The purpose of this study was to investigate how training and emotional intelligence (EI) affect master's level trainees' emotion regulation. The following sections will cover: (a) descriptive characteristics of the study sample, (b) data preparation and screening, (c) correlation statistics for the study variables, and (d) results of hierarchical multiple linear regression (MLR). The Statistical Package for Social Sciences (SPSS) was used to conduct all statistical screening and analyses. This study addressed the following questions:

1. What is the relationship between level of training and emotion regulation among counseling trainees when viewing and responding to an emotionally distressed client presented on video?
2. What is the relationship between ability EI and emotion regulation among counseling trainees when viewing and responding to an emotionally distressed client presented on video?
3. To what extent does ability EI contribute to predicting electrodermal activity (EDA) in counseling trainees, after controlling for the effects of training level, when viewing and responding to an emotionally distressed client presented on video?
4. To what extent does ability EI contribute to predicting heart rate variability (HRV) in counseling trainees, after controlling for the effects of training level, when viewing and responding to an emotionally distressed client presented on video?

Sample Descriptives

The study sample consisted of 66 master's level trainees from two programs accredited by the Counsel for the Accreditation of Counseling and Related Programs in two Southern coastal universities. There were 60 females and six males in the sample. Trainee age ranged from 22 to 52 years, with a mean age of 31 (SD = 7.9). Self-reported ethnic characteristics were 67.7% (n = 44) Caucasian, 28.8% (n = 19) African American, and roughly 4% other minorities (one Latino, one Asian, and one Multi-Racial). The sample was evenly divided in terms of training level, with 33 trainees at the beginning level (enrolled in or completed basic skills with no field experience) and 33 at the advanced level (enrolled in or completed a first or second internship). Clinical mental health track trainees comprised 64% of the sample (n = 42) and school track trainees comprised 36% (n = 24). Independent samples t tests were conducted with the sample sorted by concentration area to determine if clinical track counselors differed significantly from school track counselors on the study IVs: EDA, high frequency heart rate variability (HRV-HF), the standard deviation of normal-to-normal heartbeat intervals (HRV-SDNN), total EI, or any EI subscales. No significant differences were found at $p <$ .05. Table 1 presents the demographics of the study sample.

Table 1: Number and Frequency of Trainee Gender, Ethnicity, and Concentration Area

Variables	Category	*n*	%
Gender	Female	60	91%
	Male	6	9%
Ethnicity	Caucasian	44	67.7%
	African-American	19	28.8%
	Latino-American	1	1.5%
	Asian/Pacific Island	1	1.5%
	Bi/Multi -Racial	1	1.5%
Concentration	Clinical Mental Health	42	64%
	School Counseling	24	36%

Scale Reliabilities

As discussed in Chapter 3, the four scales of the MSCEIT are each comprised of two distinct types of task questions. Therefore, at the total and scale levels, split half reliability is the appropriate measure of internal consistency due to item heterogeneity (Mayer, Salovey, & Carusso, 2002). Mayer et al. (2002) reported split-half reliabilities in the standardization sample ranging from .91 to .62. Palmer, Gignac, Manocha, and Stough (2005) found coefficients ranging from .89 to .66 ($N = 450$). In this study, reliabilities for total EI and subscales were determined by calculating split half reliabilities with Spearman-Brown correction. The split-half coefficients for the sample in this study were (a) .83 for total EI, (b) .90 for Perceiving Emotions, (c) .50 for Using Emotions, (d) .65 for Understanding Emotions, and (e) .74 for Managing Emotions.

These reliabilities were slightly lower than those for the normative sample but comparable to studies with similar sample sizes (e.g. Lopes, Salovey, Côté, Beers, & Petty, 2004).

Data Preparation and Screening

This study looked at master's level counseling trainees' EDA, HRV-HF, and HRV-SDNN during a video-simulated counseling interaction and examined the relationships between these variables and their level of training and EI. Prior to analyses, data were screened in two stages. The first stage involved visual screening of data per participant prior to deriving EDA and HRV scores. Screening of raw EDA and HRV data followed procedures recommended in the literature (e.g., Berntson et al., 1997; Figner & Murphy, 2011; Hubert & de Jong-Meyer, 1990). Because EDA and HRV data recording was continuous throughout the quasi-experimental procedure, each participant generated large amounts of raw data. The first step in screening this data was isolating the periods of interest in each participant's data. Using event markers and timings embedded in the data stream, segments of EDA and HRV data were isolated which corresponded to the initial baseline condition, the neutral video condition, the simulation video condition, and the recovery condition.

The second step was visual examination of each data segment to assure that measurements were valid and usable. EDA readings were rendered as line graphs and each graph was checked to make sure it showed the distinct profiles of phasic EDA responses (phasic responses are changes in EDA corresponding to discrete emotional events). Figure 2 shows an example of a graph segment from one participant indicating phasic EDA responses.

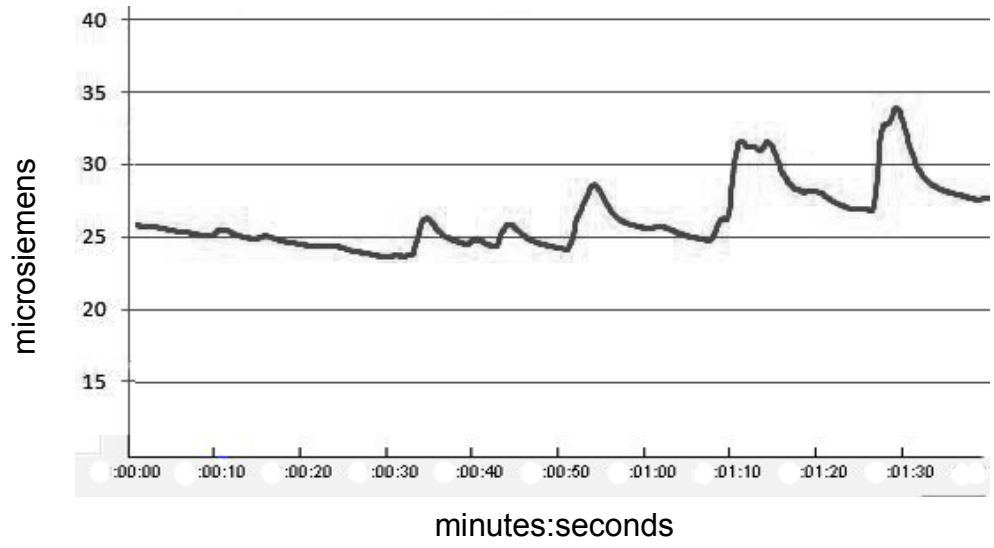

Figure 3. Line graph of EDA responses in microsiemens per second.

Visual screening of HRV data also required graphing. HRV analysis software generates line graphs of heartbeat intervals for each data set. The distinctive component of heart activity used to distinguish individual heartbeats is referred to as the R wave (Stern, Ray, & Quigley, 2001). HRV scores are accurately derived when monitoring equipment can detect the R wave and measure normally occurring (normal-to- normal) R wave intervals. Problems in distinguishing the R wav can occur from two sources. The first is electrical background radiation in the testing environment which is picked up by skin sensors. This problem was overcome by setting a software filter which removed the 60Hz radiation cycle emitted by electrical devices. A second problem occurs when characteristics of individual heartbeat components make it difficult for software to isolate the R wave (Stern et al., 2001). These cases were detected by visual inspection of graphs.

As a final step in visual screening, it is common for a sequence of heartbeats to

include non-normal artifacts due to skipped or irregular heartbeats, and these were removed before analyses (Berntson et al., 1997). In line graphs, non-normal intervals appear distinct from the normal sequence, and HRV analysis software includes tools for removing them. In the present study, nine participants' data did not show accurate detection of normal-to-normal intervals and these participants were omitted from HRV analyses. After visual screening of graphs, EDA and HRV scores were calculated according to the procedures in Chapter 3. Figure 3 shows a line graph of normal-to-normal intervals including detected non-normal artifacts to be removed.

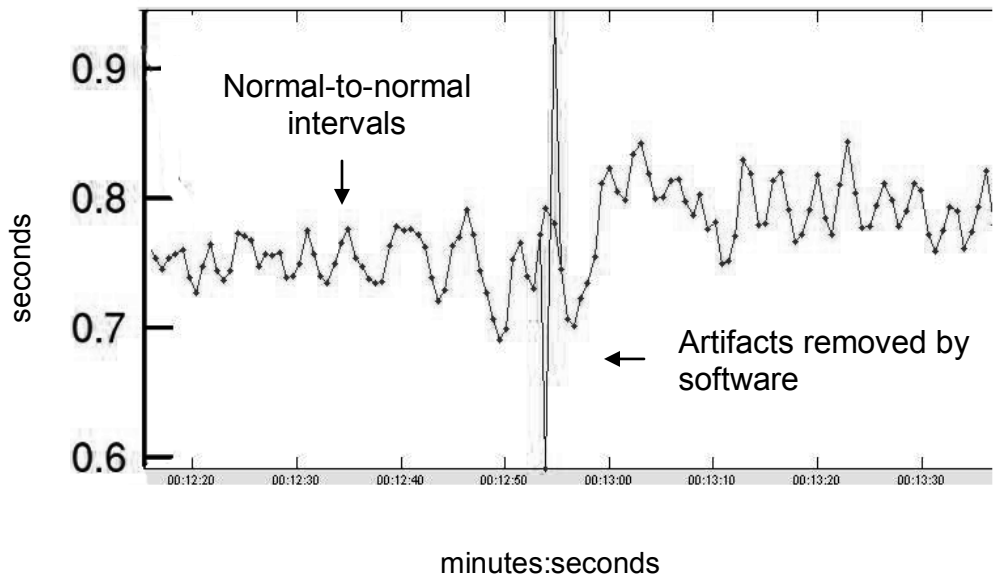

Figure 3. Line graph of normal-to-normal heartbeat intervals showing artifacts to be removed.

In the second stage of screening, scores of EDA, HRV-HF, HRV-SDNN, EI, and EI subscales were examined for normal distribution, univariate and multivariate outliers, linearity and multicollinearity, and equal variances. SPSS EXPLORE was used to

examine histograms and boxplots for each variable along with tests of significance of skewness and kurtosis. One univariate outlier was detected whose EDA score was over four standard deviations from the mean and disconnected from the rest of the distribution. After this score was removed, the distribution of EDA scores was moderately positively skewed. After a square-root transformation, distribution was improved, and skewness and kurtosis on this variable was within plus or minus one. The transformed EDA scores were used in all further screenings and analyses. Distribution of HRV-SDNN scores was mildly positively skewed. Square-root transformation resulted in improved distribution, and the transformed HRV-SDNN scores were used in all further analyses. Distribution of HRV-HF in normalized units ($HRV\text{-}HF_{n.u.}$) scores fell within acceptable limits (skewness and kurtosis within plus or minus one) with no univariate outliers.

Total EI score distribution was negatively skewed with skewness at -.972 and kurtosis at 1.515. One EI score was a univariate outlier in the total EI scores and two subscales: Perceiving Emotions and Understanding Emotions. After removal of this score, distributions of total EI and Understanding Emotions were improved, with skewness and kurtosis within plus or minus one. Scores on the EI subscale Perceiving Emotions were negatively skewed with one outlier and with skewness and kurtosis both greater than plus or minus one. Scores on the subscale Managing Emotions were negatively skewed and two scores were univariate outliers. After removal of these outliers, skewness and kurtosis on these scales were within acceptable limits.

To screen for linearity, multicollinearity, homoscedasticity, and multivariate outliers, a multiple regression was performed by entering all variables as IVs with participant number as a dummy DV, and examining saved Mahalonobis values. No

multivariate outliers were found. Multicollinearity statistics did not indicate any violation of this assumption. Scatterplots of standardized residuals against predicted DV values showed even dispersion of data points indicating that assumptions of linearity and homoscedasticity were not violated.

Ratio of Cases to Independent Variables

The determination of adequate sample size is generally reported to rely on several factors, one being whether the analysis is for explanatory purposes (testing the null hypothesis) or predictive purposes (Knofczynski & Mundfrom, 2008). When using MLR for predictive purposes, it is recommended that sample size be based on the predicted adjusted effect size (adjusted R^2; Kelley & Maxwell, 2003; Knofczynski & Mundfrom, 2008). An extensive search of the literature did not reveal any studies on which to base a prediction of effect size for the variables under study. Therefore, using MLR for predictive purposes in this study would be inadvisable.

Using MLR for explanatory purposes requires smaller sample sizes than for prediction (Tabachnik & Fidell, 2007). Rules of thumb for MLR with two IVs range from 30 (Stevens, 1999) to 66 (Tabachnik & Fidell, 2007). The final sample sizes for analysis were (a) 65 EDA scores, (b) 57 HRV-HF and HRV-SDNN scores, (c) 65 total EI scores, (d) 65 Perceiving Emotions scores, (e) 66 Using Emotions scores, (f) 65 Understanding Emotions scores, and (g) 64 Managing Emotions scores. Analyses were conducted with missing values excluded. This resulted in a lower boundary of $n = 55$ for some analyses. Table 2 presents the means and standard deviations of the study variables by sample and training level.

Table 2: Means and Standard Deviations of EDA, HRV, EI, and EI Subscales by sample and training level.

	Beginning			Advanced			Sample		
Measure	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
$EDA_{(sqrt)}$	32	2.49	.78	33	2.18	.87	65	2.34	.83
$HRV\text{-}HF_{n.u.}$	29	44.29	15.96	28	37.25	18.90	57	40.83	17.67
$HRV\text{-}SDNN_{(sqrt)}$	29	7.84	1.47	28	7.48	1.63	57	7.66	1.55
EI-Total	33	.57	.05	32	.56	.05	65	.56	.05
EI-PERC	32	.58	.11	32	.60	.12	64	.59	.11
EI-USE	33	.50	.05	33	.49	.05	66	.50	.05
EI-UND	33	.71	.07	32	.69	.09	65	.70	.08
EI-MAN	33	.49	.04	31	.48	.04	64	.48	.04

Note: n.u. = normalized units. EI-PERC = Perceiving Emotions; EI-USE = Using Emotions; EI-UND = Understanding Emotions; EI-MAN = Managing Emotions.

The scores in Table 2 are notable because beginning trainees as a group had higher mean scores in two of four EI scales, giving them a slightly higher mean EI score. However, independent sample *t* tests comparing the means between training levels on each of the study variables showed that the differences were not statistically significant at the .05 level (*p* values ranged from .135 to .849).

Video Validation

An important consideration was the extent to which EDA and HRV scores could be attributed to participants' emotional response to the simulation video, rather than to the condition of video-watching or the testing environment. Two steps were taken to address this question. In the first step, repeated measures *t* tests were conducted to

determine if there were significant differences in the mean EDA and HRV scores between the neutral video and the simulation video. Results indicated a significant increase in mean EDA from neutral (M = 14.58, SD = 23.11) to simulation (M = 21.86, SD = 38.62, $t(64) = -3.352$, $p = .001$), indicating a statistically significant increase in emotional arousal occurring from watching the simulation video. A statistically significant decrease occurred in HRV-$HF_{n.u}$ between the two video conditions ($M_{neutral}$ = 51.56, $SD_{neutral}$ = 21.66; $M_{simulation}$ = 41.20, $SD_{simulation}$ = 18.58, $t(64) = 4.382$, $p < .001$). Results also indicated a statistically significant decrease in HRV-SDNN between the two video conditions ($M_{neutral}$ = 51.56, $SD_{neutral}$ = 21.66; $M_{simulation}$ = 41.20, $SD_{simulation}$ = 18.58, $t(64) = 4.382$, $p < .001$).

A second step in confirming the effectiveness of the simulation video was to compare participants' emotion self-ratings of the two videos. Paired samples t tests were conducted with participants' ratings of overall intensity of emotional response and intensity of negative emotional response. Participants rated the simulation video significantly higher in overall emotional intensity ($M_{neutral}$ = 3.49, $SD_{neutral}$ = 1.54; $M_{simulation}$ = 6.28, $SD_{simulation}$ = 1.00, $t(65) = -13.20$, $p < .001$), and in intensity of negative emotion ($M_{neutral}$ = .78, $SD_{neutral}$ = 1.24; $M_{simulation}$ = 6.07, $SD_{simulation}$ = 1.19, $t(65) = -22.27$, $p < .001$). Findings suggest that the simulation video effectively evoked an emotional response greater in overall intensity and in intensity of negatively valenced emotion compared to the neutral video. These results support the assumption that the simulation video placed a demand on participants' emotion regulation.

Correlation Statistics

Pearson product moment correlations were calculated for each pairing of study variables. Training level was coded as -1 and 1, with the former representing beginning trainees and the later representing advanced level training. Point biserial correlation was used to measure relationships between this dichotomous variable and the remaining continuous variables. Cases with missing values were excluded. The correlation matrix is presented in Table 3. Table 3 shows significant correlations that might be expected among EI and EI subscale scores. Of interest to this study are significant correlations between (a) EDA and Managing Emotions, (b) HRV-SDNN and total EI, and (c) HRV-SDNN and Perceiving Emotions.

Table 3: Bivariate Correlations Between Study Variables

	Variables	1	2	3	4	5	6	7	8
1	$EDA_{(sqrt)}$	–							
2	$HRV\text{-}HF_{n.u.}$	.20 *n* = 57	–						
3	$HRV\text{-}SDNN_{(sqrt)}$	.16 *n* = 57	.30* *n* = 57	–					
4	TRAINING	-.19 *n* = 65	-.20 *n* = 57	-.12 *n* = 57	–				
5	EI-Total	-.08 *n* = 64	.06 *n* = 57	.30* *n* = 57	-.02 *n* = 65	–			
6	EI-PERC	-.01 *n* = 63	.14 *n* = 56	.31* *n* = 56	.08 *n* = 64	.79** *n* = 64	–		
7	EI-USE	-.03 *n* = 65	-.07 *n* = 57	.13 *n* = 57	-.06 *n* = 66	.70** *n* = 65	.50** *n* = 64	–	
8	EI-UND	.05 *n* = 64	-.03 *n* = 57	.22 *n* = 57	-.12 *n* = 65	.53** *n* = 65	.05 *n* = 64	.14 *n* = 65	–
9	EI-MAN	-.29* *n* = 63	.21 *n* = 55	.17 *n* = 55	-.07 *n* = 64	.34** *n* = 63	.04 *n* = 62	.12 *n* = 64	.12 *n* = 63

Note: n.u. = normal units. * = $p < .05$. ** = $p < .01$. EI-PERC = perceiving emotions; EI-USE = using emotions; EI-UND = understanding emotions; EI-MAN = managing emotions.

The first two research questions were addressed by examining the zero-order correlations between the study variables. The first research question addressed the relationship between level of training and emotion regulation among counseling trainees when viewing and responding to an emotionally distressed client presented on video. Table 3 shows that more training was negatively correlated with EDA as expected. However, the magnitude of the correlation was not statistically significant at $p < .05$ (r = -.19, n = 65, p = .135). Thus, the results do not support the expectation that EDA scores were statistically negatively correlated with training level. Measures of HRV were

expected to correlate positively with training level. However, HRV-$HF_{n.u}$ was mildly negatively correlated with more training (r = -.20, n = 57, p = .134), as was HRV-SDNN (r = -.12, n = 57, p = .386). Thus, for the three measures of emotion regulation, none significantly correlated with training level at the .05 level.

The second research question addressed the relationship between ability EI and emotional regulation among counseling trainees when viewing and responding to an emotionally distressed client presented on video. EDA was expected to correlate negatively with total EI, but the correlation was not significant at the .05 level (r = -.08, n = 64, p = .558). Likewise, the expected correlations did not occur at the .05 level between EDA and Perceiving Emotions (r = -.01, n = 63, p = .963), Using Emotions (r = -.03, n = 65, p = .816), or Understanding Emotions (r = .05, n = 64, p = .726). A significant negative correlation, however, occurred between EDA and Managing Emotions at $p < .05$ (r = -.29, n = 63, p = .02). Thus, among EI and subscale scores, only Managing Emotions correlated significantly with EDA at the .05 level as expected.

HRV scores were expected to correlate positively with EI and subscale scores. However, Table 3 shows that HRV-$HF_{n.u}$ correlations were not significant at the .05 level. Significant correlations with HRV-SDNN occurred for total EI (r = .30, n = 57, p = .023), and Perceiving Emotions (r = .31, n = 56, p = .02), but not for other EI subscale scores. Thus, for HRV-derived scores on emotion regulation, only HRV-SDNN showed expected correlations at the .05 level.

Hierarchical Regression Analyses

Research Questions 3, 4, and 5 addressed the contribution of ability EI and EI subscales to explaining variance in trainees' emotion regulation scores after controlling

for level of training. Although training level did not significantly correlate with other dependent or outcome variables, training level was included for the regression analyses due to its theoretical centrality to the study topic. Question 3 explored the contribution of EI to EDA after controlling for level of training. This question was addressed by hierarchical MLR. Step 1 entered EDA as the dependent variable and training level as the criterion variable. At the end of step 2, training level explained 3.4% of the variance in EDA, which was not statistically different from zero at $p < .05$ ($R^2 = .034$, $R^2_{adj} = .018$, $F(1,62) = 2.164$, $p = .146$). Step 2 entered EI total scores. At the end of step 2, the two variables combined to explain 4% of the variance ($R^2 = .04$, $R^2_{adj} = .008$, $F(2,61) = 1.268$, $p = .289$). The change in variance explained in step 2 was not statistically significant from zero at $p < .05$ ($\Delta R^2 = .006$, $\Delta F(1,61) = .394$, $p = .533$). Thus, after controlling for level of training, total EI scores did not make the expected contribution to explaining variance in EDA at the .05 level.

Hierarchical MLR was used to address the contributions of EI subscale scores to explaining the variance in EDA after controlling for training level. As above, EDA and training level were entered in step 1 with EDA as the dependent variable. At the end of step 1, training level explained 3.7% of the variance in EDA ($R^2 = .037$, $R^2_{adj} = .021$, $F(1,59) = 2.287$, $p = .136$). In step 2, EI scale scores were entered as a block with forward selection. Forward selection uses statistical means to determine which variables are entered into the equation and in what order (Tabachnik & Fidell, 2007). Variables are entered only when they significantly contribute to improving model fit and in the order of the greatest improvement. The results of step 1 were as reported above. At the end of step 2, only scores on Managing Emotions were entered into the equation. Training level

and managing emotions together explained 13.6% of the variance in trainees' EDA scores which was significantly different from zero at $p < .05$ ($R^2 = .136$, $R^2_{adj} = .106$, $F(2,58) = 4.553$, $p = .015$). The change in variance explained in step 2 was also statistically significant from zero at $p < .05$ ($\Delta R^2 = .098$, $\Delta F(1,58) = 6.603$, $p = .013$). This indicates that managing emotions, but not training level, significantly explained the variance in EDA as expected at the .05 level: explaining 9.8% of the variance in EDA above and beyond the contribution of training level. Table 4 shows the results of hierarchical MLR's on EDA.

Table 4: Hierarchical regression of training level, total EI, and EI subscales on EDA(sqrt)

Regression with total EI ($N = 64$)									
Step	Variable	*B*	β	*R*	R^2	Adj. R^2	*F*	ΔR^2	ΔF
1	Training	-.153	-.184	.184	.034	.018	2.164		
2	Training EI Total	-.154 -1.285	-.185 -.079	.200	.040	.008	1.268	.006	.394
Regression with EI subscales ($N = 63$)									
Step	Variable	*B*	β	*R*	R^2	Adj. R^2	*F*	ΔR^2	ΔF
1	Training	-.163	-.193	.193	.037	.021	2.287		
2	Training EI-MAN	-.188 -7.03	-.233 -.315	.368	.136	.106	4.553*	.098	6.603*

Note. Missing scores were omitted. EI subscales entered as a block with forward selection. Only Managing Emotions was entered into the equation. * = significant at $p > .05$.

Question 4 explored the contribution of total EI and EI subscales to HRV-HF after controlling for level of training. As above, this question was addressed by

hierarchical MLR. Step 1 entered HRV-$HF_{n.u}$ as the dependent variable and training level as the criterion variable. At the end of step 1, training level explained 4% of the variance in HRV-HF which was not statistically different from zero at $p < .05$ ($R^2 = .04$, $R^2_{adj} = .02$, $F(1,55) = 2.317$, $p = .134$). Step 2 entered EI total scores. At the end of step 2 the two variables combined to explain 4.3% of the variance ($R^2 = .043$, $R^2_{adj} = .008$, $F(2,54) = 1.219$, $p = .304$). The change in variance explained in step 2 was not statistically significant from zero at $p < .05$ ($\Delta R^2 = .003$, $\Delta F(1,54) = .156$, $p = .694$). The contributions of EI subscales to variance in HRV-$HF_{n.u}$ were then examined. Step 1 was carried out as above. Step 2 entered EI subscale scores as a block with forward selection. At the end of step 2, no EI subscale scores were entered into the equation. These results indicate that neither total EI nor any individual subscales showed the expected contributions to explaining variance in HRV-$HF_{n.u}$ at the .05 level. Table 5 shows the results of hierarchical MLR on HRV-$HF_{n.u}$.

Table 5: Hierarchical regression of training level, total EI, and EI subscales on HRV-$HF_{n.u.}$

Regression with total EI ($N = 57$)									
Step	Variable	*B*	β	*R*	R^2	Adj. R^2	*F*	ΔR^2	ΔF
1	Training	-3.522	-.201	.201	.04	.023	2.317		
2	Training EI Total	-3.508 17.71	-.200 .053	.208	.043	.008	1.219	.003	.156

Note. Missing scores were omitted. No results are given for EI subscales because forward selection resulted in no subscales being entered in the equation.

Hierarchical MLR was then used to explore the contribution of total EI and EI subscales to explaining the variance in HRV-SDNN. Step 1 entered HRV-SDNN as the dependent variable and training level as the criterion variable. At the end of step 1, training level explained 1.4% of the variance in HRV-SDNN, which was not statistically different from zero at $p < .05$ ($R^2 = .014$, $R^2_{adj} = -.004$, $F(1,55) = .765$, $p = .386$). Step 2 entered EI total scores. At the end of step 2, the two variables combined to explain 10.4% of the variance, which was not significance at $p > .05$ ($R^2 = .104$, $R^2_{adj} = .07$, $F(2,54) = 5.409$, $p = .052$). The change in variance explained in step 2 was statistically significant from zero at $p > .05$ ($\Delta R^2 = .09$, $\Delta F(1,54) = 5.409$, $p = .024$). This indicates that total EI, but not training level alone, made a significant contribution to variance in HRV-SDNN as expected at the .05 level: explaining 9% of the variance in HRV-SDNN above and beyond training level.

The contributions of EI subscales to variance in HRV-SDNN was then examined. Step 1 was carried out as above. At the end of step 1, training level explained less than 1% of the variance in HRV-SDNN ($R^2 = .007$, $R^2_{adj} = -.013$, $F(1,52) = .341$, $p = .562$). Step 2 entered EI subscale scores as a block with forward selection. At the end of step 2, only scores on Perceiving Emotions were entered into the equation. Training level and Perceiving Emotions together explained 10% of the variance in trainees' HRV-SDNN scores, which was not significantly different from zero at $p < .05$ ($R^2 = .101$, $R^2_{adj} = .066$, $F(2,51) = 2.870$, $p = .066$). However, the change in variance explained in step 2 was significantly different from zero at $p < .05$ ($\Delta R^2 = .095$, $\Delta F(1,51) = .6371$, $p = .025$). This indicates that perceiving emotions, but not training level, significantly explained the variance in HRV-SDNN: explaining 9.5% of the variance in HRV-SDNN above and

beyond the contribution of training level. Table 6 shows results of the regression of training level, total EI, and EI subscales on HRV-SDNN.

Table 6: Hierarchical regression of training level, total EI, and EI subscales on HRV-SDNN(sqrt)

Regression with total EI ($N = 57$)									
Step	Variable	*B*	*β*	*R*	R^2	Adj. R^2	*F*	ΔR^2	ΔF
1	Training	-.180	-.117	.117	.014	-.004	.765		
2	Training EI Total	-.173 8.848	-.113 .300	.322	.104	.070	3.118	.090	5.409*
Regression with EI subscales ($N = 57$)									
Step	Variable	*B*	*β*	*R*	R^2	Adj. R^2	*F*	ΔR^2	ΔF
1	Training	-.125	-.081	.081	.007	-.013	.341		
2	Training EI-PERC	-.214 4.524	-.138 .313	.318	.101	.066	2.870	.095	5.371*

Note. Missing scores were omitted. EI subscales entered as a block with forward selection. Only Perceiving Emotions was entered into the equation. * significant at $p > .05$.

Summary

In summary, statistical analyses to address the research questions yielded results as follows:

1. The hypothesis that counseling trainees' level of training is positively correlated with emotion regulation as measured by EDA, HRV-HF, and HRV-SDNN was not supported. No significant correlations occurred at $p < .05$.
2. The hypothesis that counseling trainees' ability EI, as indicated by total and scale MSCEIT scores, is positively correlated with emotion regulation as measured by

EDA, HRV-HF, and HRV-SDNN was partially supported. Correlations significant at $p < .05$ occurred between (a) EDA and Managing Emotions, (b) HRV-SDNN and total EI, and (c) HRV-SDNN and Perceiving Emotions.

3. The hypothesis that, after controlling for level of training, variance in stimulus-evoked EDA is explained by total EI and EI subscales was partially supported. After controlling for level of training, Managing Emotions explained a significant amount of the variance in EDA at $p < .05$. Total EI, Perceiving Emotions, Using Emotions, and Understanding Emotions did not explain a significant amount of variance at $p < .05$.
4. The hypothesis that, after controlling for level of training, variance in stimulus-evoked HRV-HF is explained by total EI and EI subscales was not supported at $p < .05$.
5. The hypothesis that, after controlling for level of training, variance in stimulus-evoked HRV-SDNN is explained by total EI and EI subscales was supported for total EI and the Perceiving Emotions scale. Regression with total EI indicated it contributed significantly to the variance in HRV-SDD at $p < .05$. Regression with EI subscales found only the Perceiving Emotions subscale contributed significantly to the variance in HRV-SDD at $p < .05$.

CHAPTER 5: DISCUSSION

This study investigated relationships among master's level counseling trainees' level of training, emotional intelligence (EI), and psychophysiological correlates of emotion regulation. A review of research suggests that counselor facility in emotion regulation has important implications for counselor training, the counseling relationship, and counseling outcomes. The literature also suggests that (a) few resources are available for counselor educators as a guide for facilitating trainees' emotion regulation, (b) counselors' and trainees' emotion regulation is frequently problematic, and (c) further research is needed. This study is the first to combine psychophysiological indicators of emotion regulation with criterion-measured EI in research on counselor training.

Discussion of Findings

Chapter 4 showed that data analyses found partial support for the study's hypotheses. The following sections will discuss these findings in the context of current literature on counselor training, EI, and emotion regulation. The research questions were:

1. What is the relationship between level of training and emotion regulation among counseling trainees when viewing and responding to an emotionally distressed client presented on video?
2. What is the relationship between ability EI and emotion regulation among counseling trainees when viewing and responding to an emotionally distressed client presented on video?

3. To what extent does ability EI contribute to explaining electrodermal activity (EDA) in counseling trainees, after controlling for the effects of training level, when viewing and responding to an emotionally distressed client presented on video?
4. To what extent does ability EI contribute to explaining heart rate variability (HRV) in counseling trainees, after controlling for the effects of training level, when viewing and responding to an emotionally distressed client presented on video?

Level of Training, EDA, and HRV

Research Question 1 explored the correlation between the level of training of master's level counseling trainees and their facility with emotion regulation as operationalized by EDA and HRV. The study hypothesized that higher levels of training would be related to lower levels of EDA (a measure of emotional arousal) and higher levels of HRV (a measure of flexible emotion regulation). However, correlation analyses did not support this hypothesis. This finding runs contrary to expectations derived from theoretical models of counselor development. The Integrated Developmental Model of supervision (IDM; Stoltenberg, McNeill, & Delworth, 1998) suggests that Level 1 (beginning) trainees tend to be self-focused, and much of their attention is taken up with the need to regulate personal emotions such as anxiety, frustration, and hopelessness: reflecting multiple challenges to emotion regulation. The model states that advanced trainees learn to better manage personal affect and shift focus to the client.

The model by Ronnestad and Skovholt (2003) is based on qualitative interpretation of interviews using a modified grounded theory methodology, which derived a theme of increasing emotional comfort with the counseling process. They identified a Beginning Student phase followed by an Advanced Student phase, and they

linked the transition between these phases to a theme of increasing comfort and decreasing anxiety related to the counseling process. However, as noted in Chapter 2, there is scant empirical research which supports these predictions, and results of this study appear to contradict this feature of these models.

An explanation for the seeming contradiction between the findings of the current study and the theme derived by Ronnestad and Skovholt (2003) may lie in how appraisal affects the experience of emotions. Ronnestad and Skovholt were not measuring emotions or emotion regulation, but were conducting semi-structured interviews based on topics considered relevant to counselor development, one of which was *Predominant Affect*. Asking trainees to reflect on remembered emotions introduces the influence of self-appraisals, and research suggests that the experience of emotional arousal may be viewed differently according to how the emotion is appraised (Schartau, Dalgleish, & Dunn, 2009). The appraisals of advanced trainees may affect how they remember emotions in terms of valence and intensity.

The finding that training level did not correlate with psychophysiological indicators of emotion regulation is less unexpected when considering previous empirical research on trainees' emotions. As noted in Chapter 2, research in this area is scant, but studies point to emotional dysregulation during counseling sessions as a problematic occurrence in trainees (Melton, Nofzinger-Collins, Wynne, & Susman, 2005; Williams, Judge, Hill, & Hoffman, 1997). For example, Cook (2010) found that counseling trainees' self-report assessment of emotion regulation skill did not differ significantly between pre-practicum trainees and those in internship. Furthermore, Heibert, Uhlemann, Marshall, and Lee (1998) found that a semester of counselor training had little

effect on trainees' self-reported anxiety during counseling sessions. Findings in the current study that comprised pre-clinical and advanced clinical counseling students seem to reflect findings in the literature regarding emotional skills and experiences of counseling trainees contrary to what counselor develop theorists (Stoltenberg et al., 1998; Ronnestad & Skovholt, 2003) have hypothesized.

Several considerations may help explain this finding. The first may simply be that participants lacked specific training in methods of emotion regulation suited to the unique conditions of counseling. Hence, training would not be related to emotion regulation facility. Though counseling training curriculum often includes the topic of self-awareness (Hill & Lent, 2006), it seems that assisting trainees in meeting the personal emotional demands encountered in-session is rarely an explicitly stated goal of counselor training models. Programs may differ widely in their emphasis and approach to assisting trainees in this regard. Hill and Lent (2006) conducted an exhaustive meta-analytic review of the effectiveness of helping skills training models. They found only one previous review of helping skills training that mentioned deconditioning of trainee anxiety as a training component. This corresponds to observations by Greason and Cashwell (2009) and Melton et al. (2005) that approaches to helping skills training have lacked a structured and deliberate approach to enhancing trainee skill at internal processes important for emotion regulation specifically and emotional information processing generally.

Supervision presents a similar picture. As noted in Chapter 2, select supervision models deliberately address trainees' skill with personal emotions, but this is not true for all. While managing supervisee anxiety is an often-stated goal of supervisors, various

approaches and interpretations regarding supervisee anxiety have been suggested (Bernard & Goodyear, 2008). Regarding supervisor approaches to supervisee anxiety, a valid, if rough, summation might be *not too little, not too much, and for the right reason*. Thus, supervisees may not get consistent approaches or skill training in the management of personal emotions. Another consideration related to training and supervision is the possibility that the typical time span covering beginning to advanced graduate training is insufficient for new skill in emotion regulation to develop or show an effect.

A final consideration is, of course, variations in participant characteristics. Research suggests that trainees are vulnerable to negative self-appraisals that are associated with non-facilitative personal emotions (Melton et al., 2005; Williams et al., 1997). Individual characteristics regarding self-appraisal may be a source of influential variance. Furthermore, while research on counseling trainee self-efficacy indicates that self-efficacy increases with training (Larson & Daniels, 1998), other research indicates that the increase does not follow a linear course, but varies according to training targets (Hill et al., 2008). Thus, it must be considered that the influence of unmeasured personal and training variables masked variance in emotion regulation from training level.

Ability EI and EDA

Research Question 2 explored the relationship between ability EI and emotion regulation indicators among counseling trainees when viewing and responding to an emotionally distressed client presented on video. Partial support was found for the study's hypothesis that EDA would correlate with measures of total and subscale EI. However, results indicate that trainees' emotional arousal correlates negatively with ability in the Managing Emotion subscale only. EDA scores represent the increase in

emotional arousal occurring from interacting with a video-recorded client. This finding suggests that, regardless of training level, trainees' with better skill at managing emotions are likely to experience less increased emotional arousal stemming from interacting with clients. Other subscales of ability (perceiving, using, or understanding emotions) do not appear to be related to trainees' increased emotional arousal.

Research Question 3 addressed the respective contributions of total and subscale EI to explaining EDA in counseling trainees when viewing and responding to an emotionally distressed client presented on video, after controlling for the effects of training level. Regression analysis exploring the contribution of total EI to EDA after controlling for level of training indicated that total EI did not contribute meaningfully to EDA. A separate regression, with EI subscale scores entered as a block, explored the contributions of EI subscale scores and found that scores of Managing Emotions explained 9.8% of the variance in EDA above and beyond training level. This indicates that ability to manage emotions in self and others is significantly related to a psychophysiological indicator of emotion regulation.

It is interesting to note the low correlation between EDA and total EI scores. Studies with EDA indicate its validity as an indicator of emotional arousal occurring in response to specific emotional stimuli. This may help explain why this indicator was sensitive to skill at managing emotions but not overall ability at emotional information processing (total EI score). Previous studies have found the Managing Emotions subscale to be a more sensitive indicator than total EI (e.g., Schneider, Lyons, & Williams, 2005; Lopes, Salovey, & Strauss, 2003); but it is important to note that no

research could be found investigating the associations among ability EI and its subscales using the psychophysiological correlates examined in this study.

Ability EI and HRV

The study hypothesized that HRV measures of emotion regulation would correlate positively with total and subscale EI. Support was found with emotion regulation measured as the standard deviation of HRV (HRV-SDNN) but not with normalized high frequency HRV (HRV-$HF_{n.u}$). Trainees' HRV-SDNN correlated positively with total EI and Perceiving Emotions. These results suggest that overall EI and ability to perceive emotions correspond to overall ability of the autonomic nervous system (ANS) to flexibly adjust physiological arousal in response to emotional demands. The correlation between total EI and HRV-SDNN makes sense given the view of total EI as an overall indicator of emotional information processing and HRV-SDNN as an overall indicator of adaptive emotional responding (Berntson et al., 1996). The correlation between HRV-SDNN and perceiving emotions and not with other EI subscales is intriguing. However, no previous research could be located that examined ability EI and HRV, making interpretation difficult.

Research Question 4 addressed the respective contributions of total and subscale EI to explaining HRV in counseling trainees when viewing and responding to an emotionally distressed client presented on video, after controlling for the effects of training level. Separate regression analyses, one with total EI and another with EI subscales entered as a block, found that neither total nor subscale EI significantly explained the variance in HRV-$HF_{n.u}$ after controlling for level of training. However, in the case of HRV-SDNN, hierarchical regressions, one with total EI and another with EI

subscales, found that total EI and Perceiving Emotions explained 9% and 9.5% respectively of the variance beyond the contribution of training. Regression results taken as a whole further support the indications of the correlation tables. Training had little effect on the variance in trainees' emotion regulation. Although effect sizes were modest, with R^2 ranging from .101 to .136 (Cohen, 1998), total and scale EI abilities made significant contributions.

Interestingly, expected correlations with EI and subscales did not occur for HRV-$HF_{n.u}$. This again raises questions which are difficult to address with the current research base. However, indications may be sought in how different psychophysiological measures reflect ANS activity. High frequency changes in interbeat intervals are theorized to reflect the rapid-acting parasympathetic branch of the ANS (Appelhans & Luecken, 2006). HRV-$HF_{n.u}$ expresses this parasympathetic nervous system (PNS) activity. Rather than isolating fast-acting PNS activity, the standard deviation of normal-to-normal interbeat intervals reflects the interaction of both PNS and sympathetic nervous system (SNS) influences and better represents overall variability. Because HRV-SDNN represents the sum of influences on HRV, it may be a more representative indicator of overall emotional information processing.

This study found an expected correlation between HRV-$HF_{n.u}$ and HRV-SDNN. Because they share a direct common component of PNS influence on interbeat intervals, the correlation found between them makes sense. In contrast, EDA and HRV-SDNN share a component of SNS activity, because EDA is SNS modulated. Therefore, one might expect a significant correlation between those measures. However, the SNS influence occurs in distinct physiological activities: eccrine sweat glands in the case of

EDA and heartbeat intervals in the case of HRV-SDNN. These distinct activities express both common and differing modulating influences. This may help explain the lack of correlation found in this study between EDA and HRV measures.

The results noted above reflect previous research with total and subscale EI. For example, previous research found differences in whether total EI or subscale EI scores were more sensitive indicators. In addition, effect sizes and correlation coefficients in this study were comparable to previous research, where significant correlations have been moderate as a rule (Mayer, Salovey, & Carusso, 2002). However, it is important to note that no research could be found using EI and EI subscales with the variables in this study. Therefore, previous EI research sheds little light on factors influencing the correlations found here, and greater insight must await future research. Nevertheless, correlations between EI skills and adaptive emotional flexibility make sense given the group of empirical studies linking EI with adaptive social functioning (e. g. Lopes, Salovey, Beers, & Cote, 2005) and adaptive coping with stress (e.g. Mayer, Perkins, Caruso, & Salovey, 2001). Furthermore, the correlations found in the current study occurred in those EI scales showing the greatest internal consistency (total EI, Perceiving Emotions, and Managing Emotions), and factor analysis has repeated supported the validity of these scales (Rossen, Kranzler, & Algina, 2007).

Taken as a whole, the findings discussed above present the picture that graduate level training has little influence on trainees' in-session emotion regulation. While this appears contrary to theoretical predictions in stage models of counselor development, it accords with previous empirical research on trainees' in-session emotions and emotion regulation. On the other hand, trainee skills with emotional information processing as

measured by total EI, Managing Emotion, and Perceiving Emotions appear to be sensitive indicators of facility at in-session emotion regulation regardless of graduate level training received.

Limitations

In light of certain limitations, due caution should be exercised in interpretation of the results of this study. Sample size and missing scores on some measures resulted in a lower boundary of $n = 55$ for some analyses. This means that regression results should be interpreted for explanatory, not predictive, purposes. Causal inferences cannot be made based on correlation evidence. Hence, correlations between psychophysiological correlates of emotion regulation and measures of EI do not infer that one causes the other and do not rule out the causal influences of other variables.

Limitations should also be considered regarding the study design. Trainees' were responding to a client presented on video. Therefore, caution should be exercised when generalizing trainees' possible reactions to clients seen in person. In addition, trainees' appraisals of the subject of the video might have been influenced by individual previous experience and cultural backgrounds. Finally, psychophysiological reactions might contain an artifact of reaction to the testing environment.

When interpreting the low correlations between training and emotion regulation, it should be kept in mind that participants were not explicitly instructed to regulate their emotions. They were instructed to act as counselors. Participants lacking skill at emotion regulation strategies supportive of the unique demands of counseling are liable to fall back on familiar or default strategies not contextually appropriate for counselors.

Thus, lack of training in emotion regulation compounds the influence of personal characteristics on emotion regulation variability.

Threats to external validity occur from convenience sampling used in this study. Participants came from two university counseling programs which are regionally similar and accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP, 2009). Hence, results may not generalize to trainees in non-CACREP-accredited programs. Caution also should be exercised when generalizing to other CACREP-accredited programs because program-specific variables might have affected the outcomes in this study. Finally, a self-selected sample of volunteer participants may introduce response bias and not reflect the characteristics of the counseling student population.

Notwithstanding the limitations discussed above, this study has notable strengths. The study was a direct response to a need in the counselor training literature for reliable information on the emotional responses of counseling trainees in counseling situations. The study's quasi-experimental design and objective means of operationalizing variables were attempts aimed at overcoming numerous challenges related to measuring emotions as they occur in counseling situations. To the best my knowledge, this study is the first to utilize psychophysiological correlates of emotion regulation in the study of counselor training and EI. It stands as a needed supplement to previous research with those variables which relied on self-report, and it contributes new research to the literature on counselor training.

Implications and Recommendations for Future Research

Mennin and Farach (2007) stated that research into emotions has been historically plagued by conflicting definitions, misunderstandings about the role of emotions, and lack of conceptual clarity. This may help explain the paradoxical picture presented by the literature review in Chapter 2: Counselors' emotions have profound implications for counseling outcomes, yet are historically understudied and poorly understood. This study is the first to combine psychophysiological correlates of emotion regulation with the study of counselor training and EI. Results of this study uniquely contribute to current research on the implications of emotion regulation and EI for counselor training. This section will discuss the study's theoretical and practical implications for counselor training.

A theoretical implication of this study regards models of counselor development. These models suggest that the combination of training and experience yields changes over time in counselors' ability to manage personal emotions, leading to lower anxiety and greater comfort with the counseling process. Although Ronnestad and Skovholt (2003) derived this view from qualitative research, the results of the current study using psychophysiological measures of emotion regulation do not support a relationship between increased training and improved regulation of trainee emotions. Trainee self-appraisals may be implicated in this conflicting finding. Research which combines self-report with psychophysiological measures of emotion regulation may shed further light on this area and may elucidate the relationships between emotion psychophysiology and cognitive/emotional appraisal.

Development models have been researched qualitatively (Stoltenberg, 2005), and qualitatively derived terms, such as *comfort,* lend themselves to differing interpretations and explanations. Counselor development research would benefit from greater discrimination in defining emotion-related terms. In addition, the current study operationalized training level dichotomously. Emotion regulation research with training operationalized as scores on instruments of counselor development may bring needed clarity to the internal dynamics of counselor development.

Results of the current study have implications for counselor education generally and models of helping skills training specifically. When structuring and evaluating counselor education programs, support for counseling outcomes is arguably a prime consideration. As discussed in Chapter 2, challenges to counselors' emotion regulation often result in regulation strategies that are ineffective or non-facilitative of counseling goals, and research associates counselors' non-facilitative emotion regulation with a variety of negative outcomes. The finding that training did not correlate with emotion regulation or emotional information processing supports the view that counselor education may overlook the need to enhance these skills in trainees (Binder & Strupp 1997; Greason & Cashwell, 2009).

Models of helping skills training commonly include training in relationship skills (Buser, 2008; Hill & Lent, 2006), and theory and research indicate that emotions are the primary referent for determining the quality of a relationship (Van Kleef, 2010). Hence, two of the most frequent targets for training are expressions of empathy and reflections of emotion (Hill& Lent, 2006). However, skill at expressions of empathy, reflections of emotion and meaning, and building the therapeutic relationship are founded on competent

processing of client emotional information, such as accurately perceiving and understanding client emotions. Yet the results of the current study did not find a correlation between the amount of training received and an overall measure of competence at processing emotional information. Models of helping skills training may be improved by incorporating a structured approach to skills such as perceiving and understanding client emotions, and research is needed on how this might affect demonstrated skills.

Competent execution of skills relies not only on processing client emotions but trainees' personal emotions as well. This is due to the power of emotions to limit attention, communicate below the level of cognitive awareness, and reprioritize behavior. Therefore, trainees must skillfully process and regulate personal emotions in order to accurately work with client emotions and avoid counter-transference. The current study did not find correlations between trainee emotion regulation and training level. This raises the question of whether helping skills training should incorporate structured support for enhancing trainees' emotion regulation. To answer this question, focused research is needed on how trainees' emotion regulation is associated with the demonstration of learned helping skills.

Non-significant correlations between training and emotional information processing found in this study also have implications for evaluation. Hill and Lent (2006) found that accurate demonstration of empathy was one of the most often-used means of evaluating trainee competence at helping skills. Yet observable deficits in skill demonstration may stem from internal deficits in emotional information processing. If trainees lack competence in emotional information skills such as perceiving and

understanding emotions, assessment and remediation of more complex external skills becomes problematic. A means of training and assessing internal competencies at emotional information processing could lead to more meaningful evaluation of observed competence. In addition, Hill and Lent (2006) recommended research on trainee characteristics that moderate the effectiveness of helping skills training. Emotional information processing skill may be one such moderating variable which research could investigate.

This study found that total EI, Perceiving Emotions, and Managing Emotions correlated with better trainee emotion regulation while engaged in a video-simulated client interaction. This finding recommends the utility of EI for assisting trainees in conceptualizing and enhancing emotional self-regulation. By extension, EI may also have application for enhancing trainee emotional information processing. The question remains of how the EI model and concepts can best be applied. Research-based models are needed for applying EI constructs to counselor education and skills training. A model is needed for applying the overall structural concept of EI abilities, as well as the teaching of specific EI skills, which could be easily integrated into helping skills training.

As discussed in Chapter 2, trainee deficits in processing emotional information may be more easily revealed in supervision than in class-based instruction. Cooper and Ng (2009) used ability EI as a model for enhancing emotional information competence in supervisees. Their model provides a framework for how ability EI, and the supervisor's EI, can be applied to enhance supervisees' competence in perceiving, using, understanding, and managing emotions in client and self. Such a model applied to helping skills training would be of assistance to counselor educators seeking to support

trainees' competence with emotion regulation and emotional information processing. It would also encourage and provide a tool for needed research. Hill and Lent (2006) state that research into skills training has waned while the associations between training and counseling outcomes remain inconclusive (Buser, 2008; Hill & Lent, 2006). A model for using EI in counselor training might be a tool for research into training outcomes.

This study has implications for teaching EI due to the finding that graduate level counselor training did not correlate with EI skill. This result again raises the question of how EI may be taught and what conditions best support its improvement. Research reviewed in Chapter 2 indicated that formal efforts to teach EI skills have been few and have met with mixed results (e.g., Clarke, 2010; Gibson, 2004; Nelis, Quoidbach, Mikolajczak, & Hansenne, 2009), indicating that not enough is currently known about how EI develops and what conditions best support its development. The results of this study encourage more research to elucidate effective techniques for teaching EI.

As discussed, the study found inconsistencies in correlations between psychophysiological measures of emotion regulation and EI total and subscale scores. Notably, no correlation occurred between EI measures and normalized HRV-HF. One thing this suggests is that incorporating psychophysiology into the emotion regulation construct introduces nuance and complexity not often accounted for in past studies. This study, and others like it, encourages future research designs and methods that better take into account the complexity of the construct and conceptualize it with greater discrimination.

In summary, results of the current study suggest the need for counselor educators to take a more deliberate approach to training and assessing competence in trainee

emotion regulation and emotional information processing. Without ready means of assessment, counseling programs must make assumptions about the emotional competence of program applicants and trainees which they do not make about other areas of cognitive development. EI provides a starting point for developing structured means of training and assessing trainee skill at emotional information processing. Hence, research is needed to examine the viability and results of incorporating emotional information processing training into counselor education. Additional research is also needed on counselors' and trainees' in-session emotion regulation. Future research could verify or better discriminate the findings of the current study. For example, the current study operationalized training level dichotomously as beginning and advanced. Future research might find different results with training operationalized continuously. Likewise, research is needed which extends the investigation in the current study to more seasoned counselors. Finally, reviews looking at counselor education and helping skills models note the lack of client outcome research in support of these models and the challenge inherent in doing such research (e.g., Buser, 2008; Hill & Lent, 2006). Therefore, a high-priority goal regarding results of the current study would be exploring associations between client outcomes and trainees' skill at emotion regulation and emotional information processing.

Conclusion

This study found that psychophysiological correlates of emotion regulation did not correlate significantly with training. However, increased emotional arousal (EDA) was significantly negatively associated with Managing Emotions, and overall physio-emotional flexibility (HRV-SDNN) was significantly associated with total EI and

Perceiving Emotions. The study is unique in counselor training research for integrating ability indicators with measurement of emotions as they occur in a quasi-experimental research design. This research fills a gap in counselor education research and has implications for the future of counselor training and research. In light of researched links between counselor emotion regulation deficits and negative counseling outcomes, counselor educators may see an opportunity to improve counseling outcomes by formally addressing the need for improved counselor emotion regulation in general and especially when interacting with clients in person. The study supports utilizing the construct of EI to conceptualize a means of integrating structured training in emotional information processing into counselor training models.

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APPENDIX A: EMAIL TO PROGRAM ADMINISTRATORS

Dear Program Administrator,

My name is Keith Hill and I am a doctoral student at the University of North Carolina at Charlotte. I am conducting a study on the in-session emotions of counseling trainees. With your permission, I would like to invite your counseling students to participate. I would be most grateful if you would forward this email to counseling students in your program.

Dear Counseling Students,

You are invited to participate in a research study on the in-session emotions of counseling trainees. This study involves new research that may enhance our understanding of counselors' in-session emotions and the factors that promote adaptive emotional regulation. This knowledge may help improve counselor training and effectiveness.

Who Can Participate

You may participate in this study if:

- You are a counseling student over 21.
- You are enrolled in a CACREP-accredited program.
- You have taken, or are enrolled in, a class in basic counseling skills or internship class.

You are not eligible to participate if:

- You are under 21.
- You are not a currently enrolled counseling student, have never been enrolled in basic counseling skills class, or are currently enrolled in practicum class.

What You Will Do

If you choose to participate, you will fill out a short demographic questionnaire and take an online emotional intelligence assessment, which is expected to take approximately 45 minutes. You will also come to the counseling lab where we will measure your baseline heart rate and skin conductance using sensors placed on your arms and fingers. Then we will take these same measures as you role play being a counselor in a five-minute video simulation. Your total time commitment is expected to be less than 30 minutes once you arrive at the counseling lab. You will be compensated $20 for your participation.

Results of Participation

No risk or negative consequence is expected from your participation. The video-simulation is intended to elicit a moderate emotional reaction which is typical of counseling sessions. Measurement apparatus is safe and produced under FDA regulations.

Your participation may contribute to the improvement of counselor training and our understanding of counselor emotional reactions. In addition, your responses to the measures may contribute to your self-awareness and effectiveness as a counselor.

Any information about your participation, including your identity, will be kept confidential. If you choose to participate, you may contact me by email at keithhill@carolina.rr.com or by phone at 704-668-3892. If you have any questions about the study, please contact me, or you may contact my dissertation chair, Dr. Kok-Mun Ng, at 704-687-8963. This research project has been reviewed and approved by the University of North Carolina at Charlotte Institutional Review Board for the Protection of Human Subjects.

Thank you
Keith Hill

APPENDIX B: RECRUITMENT HANDOUT AND PRESENTATION

My name is Keith Hill and I am a doctoral student at the University of North Carolina at Charlotte. I am conducting a study on the in-session emotions of counseling trainees. This study involves new research that may enhance our understanding of counselors' in-session emotions and the factors that promote adaptive emotional regulation. This knowledge may help improve counselor training and effectiveness.

Who Can Participate

You may participate in this study if:

- You are a counseling student over 21.
- You are currently enrolled in a CACREP-accredited counseling program.
- You have taken, or are enrolled in, a class in basic counseling skills or internship class.

You are not eligible to participate if:

- You are under 21.
- You are not a currently enrolled counseling student, have never been enrolled in basic counseling skills class, or are currently enrolled in practicum class.

What You Will Do

If you choose to participate, you will fill out a short demographic questionnaire and take an online emotional intelligence assessment, which is expected to take approximately 45 minutes. You will also come to the counseling lab where we will measure your baseline heart rate and skin conductance using sensors placed on your arms and fingers. Then we will take these same measures as you role play being a counselor in a five-minute video simulation. Your total time commitment is expected to be less than 30 minutes once you arrive at the counseling lab. You will be compensated $20 for your participation.

Results of Participation

No risk or negative consequence is expected from your participation. The video-simulation is intended to elicit a moderate emotional reaction which is typical of counseling sessions. Measurement apparatus is safe and produced under FDA regulations.

You will be compensated $20 for your participation. Your participation may contribute to the improvement of counselor training and our understanding of counselor emotional reactions. In addition, your responses to the measures may contribute to your self-awareness and effectiveness as a counselor.

Any information about your participation, including your identity, will be kept completely confidential. If you choose to participate, you may contact me by email at keithhill@carolina.rr.com or by phone at 704-668-3892. If you have any questions about the study, please contact me, or you may contact my dissertation chair, Dr. Kok-Mun Ng, at 704-687-8963. This research project has been reviewed and approved by the

University of North Carolina at Charlotte Institutional Review Board for the Protection of Human Subjects.

Thank you
Keith Hill

APPENDIX C: INFORMED CONSENT FORM

You are invited to participate in a research study on counseling trainees' in-session emotions and emotional intelligence. The purpose of the study is to investigate the in-session emotion regulation of counselors and the factors that support adaptive emotion regulation. This study involves new research that may enhance our understanding of counselors' in-session emotions and the training factors that promote the adaptive emotional regulation of counselors. This knowledge may help improve counselor training and effectiveness. The dissertation project is being conducted by Thomas Keith Hill, as part of completion of his doctoral studies in the Department of Counseling in the College of Education at the University of North Carolina at Charlotte. The responsible faculty member is Dr. Kok-Mun Ng.

You may participate in this study if you are a counseling student over 21, are enrolled in a CACREP-accredited program, and have taken, or are enrolled in, a class in basic counseling skills. You may also participate if you are currently enrolled in, or have completed, an internship class. You may not participate if you are under 21, not enrolled in a CACREP-accredited program, have never been enrolled in basic counseling skills class, or are currently enrolled in practicum.

Approximately 70 participants are being sought. In order to better understand counselors' emotional responses to clients, we will measure your responses to a five minute video-simulation of a counseling client. The video simulation will require you to listen to a brief client disclosure and then briefly respond as though you were the person's counselor. This part of your participation will also be video-recorded. The responses measured will be your electrodermal activity (skin conductance) and your heart rate, because these will give information about your emotions during the simulation. These measures will be taken using four minimally intrusive sensors placed on your left hand and forearms. No electrical current is introduced and there is no risk of harm from the measuring apparatus. Taking these measures will require you to come to the counseling lab of the University of North Carolina at Charlotte. Your time commitment is expected to be less than 30 minutes once you arrive at the counseling lab.

You will also be required to fill out a short demographic questionnaire and take an online assessment of emotional intelligence. This is expected to take approximately 45 minutes. Your total time commitment, including the questionnaires and time in the lab, is expected to be approximately 75 minutes.

No risk or negative consequence is expected from your participation at this time. However, the project may involve risks that are not currently known. The video-simulation is intended to elicit a moderate emotional reaction which is within the expected limits of your role as a counseling trainee. Measurement sensors are attached with adhesive to which some skin may be sensitive. Measurement apparatus is safe and produced under FDA standards.

Due to the time commitment, you will be compensated $20 for completing the study. Your participation may contribute to the improvement of counselor training and our understanding of counselor emotional reactions. In addition, your responses to the measures may contribute to your self-awareness and effectiveness as a counselor.

You are a volunteer. The decision to participate in this study is completely up to you. If you decide to be in the study, you may stop at any time. You will not be treated any differently if you decide not to participate in the study or if you stop once you have started. The $20 compensation will only be given once you have completed all aspects of the study.

Any information about your participation, including your identity, is completely confidential. Once you have completed all measures, your data records will be assigned a number. No data will have your name on it. All data will be secured in a locked location, and will be available only to myself and members of my dissertation committee. Video data will be identified by number and secured in a locked location. Some data will be initially recorded on password-protected laptop computer. However, no identifying data will be maintained on laptop computer. No published data will contain identifying information.

UNC Charlotte wants to make sure that you are treated in a fair and respectful manner. Contact the university's Research Compliance Office (704-687-3309) if you have questions about how you are treated as a study participant. If you have any questions about the actual project or study, please contact me at 704-668-3892, or you may contact my dissertation chair, Dr. Kok-Mun Ng, at 704-687-8963.

This form was approved for use on < > for use for one year.

I have read the information in this consent form. I have had the chance to ask questions about this study, and those questions have been answered to my satisfaction. I am at least 18 years of age, and I agree to participate in this research project. I understand that I will receive a copy of this form after it has been signed by me and the principal investigator of this research study.

_____ _____

Participant Name (PRINT) DATE

_____

Participant Signature

_____ _____

Investigator Signature DATE

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APPENDIX D: VIDEO RATING QUESTIONNAIRE

Dear _____

Thank you for agreeing to participate as a member of a panel of mental health practitioners to help review and ascertain the content of the video clip contained in the enclosed DVD. The purpose and process of your participation is detailed as follows.

Purpose

The video clip contains a 5-minute excerpt from an actual video diary and is used with the creator's permission. The video clip will be used in a dissertation study to simulate a counseling interaction which counseling trainees will engage in. You are asked to help ascertain if the content of the video is (a) appropriately representative of a disclosure of a client in a typical counseling session and (b) liable to evoke a moderate emotional response in a counselor.

Instruction

Please review the video clip and complete the attached expert panel review form. Kindly also complete the three questions regarding your professional qualifications and expertise. No identifying data will be requested of you.

Thank you very much for your assistance in this process. If you have any questions please contact me.

Keith Hill, M.A., L.P.C.
keithhill@carolina.rr.com
704-668-3892

Video Review Form

Please indicate your professional licensure (LPC, LCAS, etc.) _____

Please approximate your years of professional counseling experience _____

Your gender is (a)____ Female, (b) ____ Male, (c) Transgender/Transexual _____

Please indicate your degree of agreement with the following statements according to the scale below:

1 = *Strongly disagree*, 2 = *Disagree*, 3 = *Neither agree nor disagree*, 4 = *Agree,*
5 = *Strongly agree*

____ The video I viewed is representative of the type of issue I can expect to encounter as a counselor.

____ The video I viewed is liable to evoke a moderate emotional response in a counselor.

____ The person in the video evoked an empathetic response in me as a counselor.

APPENDIX E: DEMOGRAPHIC AND TRAINING LEVEL QUESTIONNAIRE

Counseling Student Demographic Questionnaire
Participant ID # _____

1. Age: _____.

2. Gender: (check one):
___ Male
___ Female

4. Race/ethnicity (check one):
___ White
___ African American
___ Latino American
___ American Indian/Alaskan Native
___ Asian/Pacific Islander American
___ Biracial/Multi-racial
___ Other (If international student, please specify your nationality: _____)

5. Indicate classes you are enrolled in or have completed (check all that apply):
Basic counseling skills class: ___ Currently enrolled ___ Completed
First internship: ___ Currently enrolled ___ Completed
Second internship: ___ Currently enrolled ___ Completed

6. Estimate of total direct client contact hours from practicum or internship _____

7. Estimate of total class and onsite supervision hours from practicum or internship _____

8. Counseling track/specialization (check one):
___ Community counseling
___ School counseling
___ Marital & couple family counseling
___ Student affairs
___ Other (please specify)_____.

9. Sources of training in addition to your current counseling program (check all that apply):
___ Work in a community mental health/counseling agency
___ Work in a university/College Student Counseling Center
___ Work in another professional counseling setting
(specify_____)
___ Skills training in another counseling-related field

THANK YOU FOR YOU ASSISTANCE

APPENDIX F: PARTICIPANT EMOTION SELF-RATING FORM

Neutral Video
The following questions refer to how YOU FELT during the video. Please circle the number that applies best.

1. Rate the greatest degree of emotional arousal you felt during the video?

0 1 2 3 4 5 6 7 8
None Some A great amount

2. How much positive or pleasant emotion did you feel during the video?

0 1 2 3 4 5 6 7 8
None Some A great amount

3. How much negative, unpleasant, or difficult emotion did you feel during the video?

0 1 2 3 4 5 6 7 8
None Some A great amount

Client Simulation Video
The following questions refer to how YOU FELT during the video. Please circle the number that applies best.

1. Rate the greatest degree of emotional arousal you felt during the video?

0 1 2 3 4 5 6 7 8
None Some A great amount

2. How much positive or pleasant emotion did you feel during the video?

0 1 2 3 4 5 6 7 8
None Some A great amount

3. How much negative, unpleasant, or difficult emotion did you feel during the video?

0 1 2 3 4 5 6 7 8
None Some A great amount

Participant ID _____

APPENDIX G: PSYCHOPHYSIOLOGICAL DATA COLLECTION PROTOCOL

1. Prepare data collection location as follows:
    a. A non-tilting stationary chair with arm rests placed in front of a steady table. Video monitor placed on table to be approximately one meter from participant. Data acquisition apparatus and supplies located on a table to one side of the participant. Laptop must be 6 ft distant from participant.
2. Prepare apparatus, and all supplies needed including:
    a. Room is neat and arranged.
    b. All apparatus is in place, connected, and functioning.
    c. Necessary forms are available.
    d. Disposable supplies are available (alcohol swabs, pre-gelled electrodes, cotton pads).
3. Greet participant and establish rapport.
4. Seat the participant in front of the video display.
5. Provide participant with a brief explanation of the study and data collection method and obtain verbal permission to proceed as follows:

    This part of the study collects data on trainees' emotions as they respond to clients. We will measure your skin conductance and your heart rate, because these measures tell us something about your emotions. To measure your skin conductance we are going to attach two sensors to the fingers of one hand. To measure your heart rate, we will attach a sensor

to each of your forearms. Once they are attached, we will explain each stage of data collection. Do you have any questions?

6. Prepare all electrode sites and attach sensors.
    a. Thoroughly clean electrode sites using micro-abrasion gel and alcohol swabs, and apply isotonic paste to electrode contact area.
    b. Attach pre-gelled EDA electrodes to the palmar surfaces of the distal sections of the middle two fingers of one hand.
    c. Attach pre-gelled HRV electrodes to the inner surface of each forearm four inches above the wrist.
7. Instruct participant to look at the screen, breath normally, relax, and restrict movement.
8. Confirm that filters are set correctly and signals are within normal limits. Make signal adjustments as necessary.
9. Begin psychophysiological data recording.
10. Cue instructions on the video screen as follows: *Please watch the screen as baseline readings are taken. This will take three minutes.*
11. Begin baseline, cue data event marker, and acquire three minutes of baseline data.
12. When baseline recording is complete, cue screen instructions for neutral video and ask participant to read them. Instructions on the video screen are as follows: *We are now going to show two minutes of video intended to provide a neutral watching experience. When you are ready to begin say "I'm ready."*
13. When participants indicate readiness, begin neutral video and cue neutral video event marker.

14. Upon completion of the neutral video, the three participant emotional self-rating questions will appear on the screen. Ask participants to verbally indicate their ratings according to the three questions on the screen and record their answers on that participant's rating form.
15. Cue instructions on video screen for the stimulus video and ask participant to read them. Ask participant to indicate when they have understood the instructions and are ready to begin.
16. Instructions are as follows: *The video you are about to watch is from a woman's video diary. She is not an actor. This is her actual diary, used with her permission. Assume that this woman is a client and you are her counselor. She will tell you her narrative for two minutes. After two minutes the video will pause for 30 seconds. With the video paused, please take the role of counselor and, speaking out loud, provide a counseling response that you think is appropriate. A timer will be visible on the screen to tell you when 30 seconds has passed. You can use the whole 30 seconds for your response if you choose but you don't have to. After 30 seconds the video will resume and the client will tell the second part of her story for another two minutes. The video will pause again for 30 seconds. Once again provide a counseling response that you think is appropriate. At the end of the 30 seconds, the video will end and another baseline screen will appear. Please remain seated for another two minutes for the final baseline. Please remember to keep your hands motionless. You may stop the video at any time by saying "Stop" or by using the remote near your hand. When you are ready to*

begin, say "I'm ready." The researcher will leave the room and return at the end of the final baseline.

17. When participant indicates understanding of instructions, cue simulation video and data event markers and leave the room.
18. When the recording period is complete, return and stop the recording.
19. Cue the on-screen video rating questions. Ask the participant to rate the video according to the three questions on the screen and record the answers.
20. Check and store data, and remove sensors.
21. Debrief participant to determine if any support is needed due to their response to the video or procedure.