THE CATHARSIS APPLICATION PROGRAM AS A TREATMENT METHOD FOR STRESS REDUCTION

A Doctoral Dissertation Research

Submitted to the Graduate Faculty of

Argosy University, San Francisco Bay Area Campus

College of Education and Behavioral Science

In Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

Counseling Psychology

By

Sharon Foster

August 2015

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Dissertation Committee Approval:

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ABSTRACT

The purpose of this study was to evaluate the Catharsis Application Program (CAP). The CAP is a therapeutic process combining graphic expression under musical induction. The CAP falls within the field of expressive art therapy, and is an element within a family of therapies defined by the National Center for Complementary and Alternative Medicine as a mind-body intervention. The aim of this study was to investigate the effectiveness of the CAP as a method to reduce perceived stress among adults. A pre-test post-test design was implemented using the Perceived Stress Scale. The mean score for the Perceived Stress Scale declined from M = 19.69 to M = 16.55 between the pre-test and the post-test, implying that the sample (*N=29)* benefited from reduced stress levels through exposure to CAP. There was no significant difference between the mean change scores with respect to age, gender, ethnicity, race, or marital status. Stress reduction appeared to be greater among the male participants than among the female participants. However, not every individual in the sample reported reduced stress levels. A few of the participants (n = 4, 13.8%) reported the same or increased stress levels after exposure to CAP. Consequently, CAP did not work for everyone, but it worked for the majority of participants. Recommendations for future research includes using a control group, a larger sample size, and a mixed methods approach, involving quantitative and qualitative methods (based on a content analysis of the transcripts of interviews with CAP participants) to address more complex research questions.

ACKNOWLEDGEMENTS

First I would like to express my gratitude to the creators of the Catharsis Application Program (CAP), Chantal Desmoulins, DEA, Director of Program Development and Education and Dr. Alain Amouyal, CEO of Silicord US Productions and composer. This research project would not be possible without your creation of the program.

I would like to thank my chairperson Dr. Brian Salinas and readers Dr. Roche Brown, Dr. Naomi O'Keefe, and Dr. Scott Griffith for their support during the dissertation process. Thank you Dr. Ron Fischer for the statistical analysis support, Dr. Brenda Young for your editing expertise and Dr. Christopher Cunningham for offering to take referrals.

I would like to express my deep appreciation to my cousin Fred Semken who is an author and holds a Juris Doctor degree. His perseverance and commitment to excellence has been inspirational. Allez-y Fred! I would also like to thank my brother Danny for his words of encouragement during this long arduous journey. His perseverance in pursuing his dream of an acting career has also been inspirational.

Many friends have helped me stay on track during the dissertation process. Dr. Kadi Holland and Dr. Lisa Cordeiro, thank you so much for your love and support and taking the initiative and sending so many emails and texts to inquire about my ongoing progress. I appreciated your gentle nudges more than you both will ever know. Dr. Nilou Tarani, going through the program with you made the experience joyful and exciting, I thank you for all the fun times we had together.

Many thanks to my dear friends Marion, Joann, Roxann, Alexis, Carol, Yvonne, Ricky, Magda, and Holden, for trusting in me and giving up their precious time in order to support my work. I would also like to express my gratitude to all of the participants in the study who graciously supported my research.

I wish to express my appreciation to my close friends who have been patient and supportive during my many educational endeavors: Walden, Maggie, Sigmund, Rico, Joan, Jamie, Mike, Gail, and Nancy. Your thoughtfulness will always be remembered.

Finally, I wish to thank the many wonderful parents and children that I have worked with over the past 20 years in my position as a School Psychologist. The enriching education I have learned from my many memorable shared experiences could never be gleaned from reading textbooks.

DEDICATION

I would like to dedicate this dissertation to my life partner, Garry. I want to thank you for your emotional support, extreme patience and profound belief in me. I also want to express my gratitude for your enduring love and caring tenderness. You made me a beautiful home that is a warm, calm and a safe place to be and I will be forever grateful. I appreciate you for everything you are and I cannot imagine living without you. I am so happy we plan to spend the rest of our lives together as man and wife.

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CHAPTER 1: INTRODUCTION

Background

The purpose of this study was to evaluate the Catharsis Application Program (CAP). The CAP is an original therapeutic process combining graphic expression under musical induction while utilizing psychological testing as an assessment tool to measure progress. The CAP falls within the field of expressive art therapy, and is an element within a family of therapies defined by the National Center for Complementary and Alternative Medicine as a mind-body intervention because it capitalizes on the use of the senses to effect change by helping the body's relaxation response to generate a calm and confident state of being associated with perceptions of health. Expressive art therapy refers to using emotional, intuitive, and inner feelings to create outer art forms (Rogers, 1993). The aim of the current study was to investigate the effectiveness of the CAP as a method to reduce perceived stress among adults in the United States.

History of CAP

The CAP originally developed in Europe between the years 1981 to 2008 (Desmoulins, 2013). The CAP began as the Catharsis Technique, a music therapy program. Dr. Amouyal composed the music and numerous therapists confirmed that after listening to the Catharsis Technique, the music relieved their clients' tensions. The CAP was being practiced throughout France as a standard therapeutic method in 1986. The CAP has been utilized in Europe for more than two decades, and offers professionals a unique and pleasurable methodology to assist clients in uncovering the underlying causes to a wide range of emotional issues (Desmoulins, 2013). In Europe, CAP has mainly been used with the psychiatric, geriatric, memory care, rehabilitation patients, and it has

been applied in speech pathology programs in working with children who are on the Autistic Spectrum. In the United States, however, the CAP program only recently achieved accreditation in 2013, when further training of licensed health care professionals in the CAP methodology also began (Desmoulins, 2013).

Structure of the CAP

The CAP is divided into a 13-session process, unfolding over three months in one-hour weekly contact sessions with a final evaluation given on the 13th week. Participants are asked to draw during the selection of music that is played and are not instructed on what specifically to draw or how to draw their composition. The participants are free to comment on his or her drawing in writing or verbally and in session. The CAP technique facilitates stimulation of verbal and nonverbal expression of possible frustrations and stressors. The CAP aims to inspire creative expression leading to feelings of relief and peace (Desmoulins, 2004; Opica Report 2010). In addition, the CAP involves drawing and music, which engages the brain in multiple forms of activity such as attention, memory, semantic and syntactic processing, and imagery (Janata et. al., 2002; Peretz & Zatorre, 2005). The CAP integrates aspects of expressive and Jungian analytical psychology.

The CAP uses music composed and recorded with no intention of creating a certain effect on listeners. Therefore, music therapy can be considered non-conditioning. Music therapy is "the systematic application of the symbols, activities, and styles of music to bring about desirable changes in behavior" (Solomon & Heller, 1982, p. 161). Music therapy became popular in the 1940's. In 1950, the National Association for Music Therapy was founded (Solomon & Heller, 1982). Originally considered an

alternative modality, music therapy "uses music to effect positive change in the psychological, physical, cognitive, or social functioning of individuals with health or educational problems" (American Art Therapy Association, 2004). The CAP uses graphic expression with music therapy, and is conducted as follows.

First CAP Session

In the first CAP session, the client completes three simple tests to provide information as part of the initial assessment: (a) a self-assessment questionnaire with ten questions (five minutes); (b) a test of the symbology of the space (five minutes); and (c) the Tree Test (15 minutes). In this study, the Perceived Stress Survey (PSS) was used as the assessment measurement instead of the three recommended tests to obtain quantitative data. Following the administration of the PSS, the client was instructed to draw without music (20 minutes). At the end of the first session, the client is instructed to write a comment regarding the process (5 minutes) and to describe his or her feelings (5 minutes). The CAP manual emphasizes that Session One is very important as the duration is short and clients do not have enough time to anticipate what is coming next. It is spontaneous; therefore, it should reveal information. Clients who are anxious, closed, or with strong self-defenses may require the therapist to adapt the assessment process. The manual highly recommends that the focus of the first session be on the therapeutic intervention and not the assessment process. It indicates that the landscape of the first drawing reveals key points of the client's point of view. This initial data should provide a practitioner with a guideline on how to approach each individual in a flexible and creative manner.

Subsequent CAP Sessions

In the next ten CAP sessions, the client completes the steps listed in Table 1 with the same structure during all 10 sessions. The CAP manual suggests that if clients request feedback from the therapist, then it is important to explain to the clients that their subconscious requires time to process on its own. Any comments will disturb the ongoing actual process. In order to maximize the effects of the therapeutic process, the therapist should postpone comments or analysis until the end of the program.

Table 1

Outline of CAP Sessions 2 to 11

Step 1	10 min	Welcome	The clients are welcomed and asked to speak about their personal experience during the period between the previous session and the present time.
Step 2	5 min	Recall Instruction	The therapist recalls the instruction and structure of the session.
Step 3	25 min	Drawing	The clients are instructed to draw from inspiration while listening to the musical selection without being provided with any instruction on the title of the music or what to draw

Step 4	10 min	Commentary	The clients are asked to write down their thoughts and feelings aroused during the induction at the end of the session.
Step 5	10 min	Verbalization	
Step 6		End of Session	The therapist observes and records how the clients are leaving the room.

Theoretical Framework

The theoretical foundation of the CAP Program based on Jung's contribution to the field of psychology in explaining human behavior, is his belief in the collective unconscious. During his own four years of psychotherapy, he noticed he was drawing geometrical figures, circles, and squares. He hypothesized that if he could understand his drawings, then he could understand the reason for his own life and humankind's existence. He named these drawings mandalas, in which all sides of the picture perfectly balance around the center point. Jung believed that by analyzing his and his clients' mandalas, additional insight into problems and solutions could be found. He encouraged his clients to go further into the dream scenario by visualizing mandalas, and attaching myths, symbols, and art to the visualized pictures. He believed this would promote a more comprehensive understanding of psychological conflict. He believed in the personal unconscious, which contains repressed and neglected ideas and abilities, the racial or collective unconscious, and the wisdom of all ages in the form of archetypes.

The most common archetypes include the persona, the shadow, the anima, the animus, the self, the child, birth, rebirth, death, power, magic, unity, the hero, the wise old man, God, the demon, and earth mother (Hall & Lindzey, 1978; Kaufman, 1984; Kovel, 1976; O'Connell & O' Connell, 1980). Jung believed that certain archetypes, such as the anima, animus, shadow, and the persona, operate as almost separate systems. The ego frequently identifies with the persona, and the shadow (man's animal side) frequently repressed into the personal unconscious. Neurotic behavior is believed to be the result of conflict between the personal unconscious and the collective unconscious; Jungian therapists help their clients experience the unconscious as deeply as possible. The information that lies hidden in the unconscious is believed to have the potential to promote well-being. Exploration of the unconscious typically occurs through the interpretation of dreams. Clients are encouraged to work on symbols during therapy and to paint and draw dream symbols in detail.

Problem Statement

The widespread human problem that underpins this study is perceived psychological stress, commonly termed only as "stress," defined as an individual's overwhelming feeling of pressure in response to a perceived stressor (i.e., any event, experience, or environmental stimulus that the individual perceives as a threat). Perceived psychological stress occurs when the perceived pressure exceeds an individual's perceived ability to cope, creating a psychological imbalance (Palmer, Cooper, & Thomas, 2003). Individuals who are better able to cope with perceived stress have better social connectivity, physical and psychological health, and greater self-efficacy (Parkerson, Broadhead, & Tse, 1990; Von Ah, Ebert, Ngamvitroj, Park, & Kang,

2004; Walsh, Feeney, Hussey, & Donnelan, 2010). Desmoulins (2013) proposed that the CAP method could have positive effects on an individual's physical and emotional reactions to stress based on clinical reports, thereby improving the individual's quality of life; however, empirical research evidence did not support this claim. The specific research problem that underpinned the current study, therefore, is that in 2013 there was an absence of objective evidence to determine whether the CAP is effective in reducing perceived levels of stress among adults in the United States. This gap in the research and literature provided a rationale and direction for the researcher to evaluate the CAP to determine its effectiveness as a method of promoting stress reduction.

Purpose Statement

The purpose of this study was to determine whether the CAP could effectively be used for stress reduction among adult participants in the United States. The research design was a "one group pre-test post-test" defined as a study in which a single group is exposed to a treatment, and a dependent variable is measured to assess the effect of the treatment (Fraenkel & Wallen, 2010, p. 265). The dependent variable in this study was perceived stress, measured with the Perceived Stress Scale (PSS) before and after exposure of the participants to the CAP, under the care of a specialized trained therapist. The PSS is a self-report instrument for measuring the perception of stress. According to Cohen, Kamarack, and Mermelstein (1983), "It is a measure of the degree to which situations in one's life are appraised as stressful" (p. 5). High scores on the PSS reflected high levels of perceived stress. Inferential statistical analysis determined whether the PSS post-test scores (collected after exposure to the CAP) were significantly reduced relative to the PSS pre-test scores (collected before exposure to the CAP).

Research Question

This study was guided by one research question: Will there be a change in the participants' pretest and post-test scores on the PSS after completing the CAP program? as well as (b) to test the research hypothesis that the pre- and post-test scores of the PSS will indicate a significant difference; therefore, demonstrating CAP is a viable method for stress reduction.

Hypothesis

The research hypothesis tested in this study was that the pre-test and post-test scores of the PSS will indicate a significant difference; therefore, demonstrating that the CAP is a viable method for stress reduction.

Significance of the Study

The study is significant in that the evaluation and development of the CAP in the United States contributes to a movement in healthcare toward more holistic approaches involving the use of mind-body interventions to help people improve overall quality of life (Astin, Shapiro, Eisenburge, & Forys, 2003). This movement also includes the introduction of mind-body intervention approaches into the mainstream biomedical academic curriculum to help nurses, doctors, and mental health workers learn and broaden their attitudes towards their future roles as health-care professionals (Hassed, 2004; Koenig, Hooten, Lindsay-Calkins, & Meador, 2010; Maddox, 2001).

The researcher believes that the results of this study will highlight the effectiveness of the CAP as a recently accredited stress management technique in the United States, and will have a significant impact on the future development of the CAP and the training of CAP therapists.

CHAPTER 2: SURVEY OF THE LITERATURE

Introduction

This survey of the literature critically reviewed the available published information on mind-body interventions with specific reference to expressive art therapy, and aimed to provide a background to enable the researcher to address the research question: RQ1: Will there be a change in the participants' pre and post test scores on the PSS after completing the CAP?

The literature was identified online using the search engines: JSTOR, ProQuest, PsychINFO, PsychARTICLES, ERIC, PubMed (MEDLINE), and Web of Science. The following search terms were used: Art Therapy, Expressive Therapy, Mind-Body Intervention, Music Therapy, Meditation, Relaxation, Mindfulness, Stress, and Stress Management. The inclusion criteria were articles should be mainly based on primary or secondary research evidence, available in full-text, written in the English language, and published in scholarly peer reviewed journals between 1954 and 2014.

This survey of the literature is organized into the following 19 sections: (a) Definition of Stress; (b) Classical Research on Stress; (c) Measurement of Stress; (d) Biochemical Impact of Stress; (e) Physiological Impact of Stress; (f) Psychological Impact of Stress; (g) Impact of Stress on Substance Abuse; (h) Coping with Stress; (i) Impact of Stress on Society; (j) Mind-body Intervention Programs; (k) Expressive Therapies; (l) Art Therapy; (m) Drama Therapy; (n) Music Therapy; (o) Multimodal Therapy; (p) Physiological Impact of Expressive Therapies; (q) Psychological Impact of

Art Therapy; (r) Active Ingredients of Art Therapy; and (s) Development of Theoretical Framework.

Definition of Stress

Stress can be defined as a process that disturbs, or is likely to disturb, the normal physiological or psychological functioning of an individual. From a psychological perspective, "Stress is any change that you must adapt to, ranging from the negative extreme of actual physical danger to the exhilaration of falling in love or achieving some long desired success" (Davis, Robbins-Eschelman, & McKay, 2000). Stressful experiences are an everyday part of life for many people. According to Selye, “Only the dead have no stress” (Selye, 1956, as cited in Davis et al., 2000).

The word stress originated in the 14th century in the English language and developed from the intermingling of Anglo Saxon and Norman French. The word stress derived from the Middle French word *desresse* (disress) which in turn derived from the Latin *stictus* (compressed). By the 16th century, the word stress was used to indicate subjecting a material thing, a bodily organ, or a mental faculty, to stress or strain including overwork and fatigue (Proffitt, 1997).

Classical Research on Stress

In the 1920s, Cannon (as cited in Davis et al., 2000) conducted the first systematic study of the relation of stress to disease. He demonstrated that stimulation of the autonomic nervous system and the sympathetic system that prepared the individual for the “fight or flight” response, characterized by hypertension, tachycardia, and increased cardiac output. He noted that its reaction was useful for early humans who would have to

fight or flee predators; but in civilized human beings, the stress resulted in diseases such as cardiovascular disorders.

Selye was a Hungarian endocrinologist who, in his seminal work *The Stress of Life* (1956), was the first to define stress as a biological interaction, not an event. He subsequently published 33 books and about 1,600 articles on the subject (as cited in Davis et al., 2000). Selye theorized that in order to survive the potentially damaging effects of stress, the individual needs to be able to respond appropriately, and build up a tolerance. Selye was also the first to identify a causal relationship between stress and heart disease, and the serious implications of long-term exposure to stress.

Selye's term for the process of responding to a change in the environment was the General Adaptation Syndrome, within which the individual progresses through three states: alarm, resistance, and exhaustion. A challenge or threat occurs and the individual then identifies and reacts to the stressor, compensating with psychological and physiological reactions. Selye characterized stress as "the non-specific response of the body to any demand." The demand could be physical, emotional, or psychological in origin, triggering a biochemical cascade to the hypothalamus-pituitary-adrenal axis (HPA axis). The HPA cascade translates into physical, behavioral, and emotional responses, which engages one of three measures: halting, coping, or interrupting. In turn, further responses designed to return the system to a state of resting and preparedness then occur to complete the stress cycle. Stress, therefore is perceived not as an event, but a process.

According to Selye, if the individual does not complete the stress cycle with a period of rest and recovery, then the HPA cascade remains engaged with associated biochemical stimulation. This can produce problems with organ function, as well as lead

to anxiety states and insomnia. Selye suggested that the mindset of an individual and his or her state of physical and emotional health has a profound impact on whether these problems continue long-term. Consequently, individuals who care for themselves are more able to cope with an over-stimulated internal state, and take action through behavioral changes to reduce its negative implications. This awareness in turn means the individual will complete the stress cycle by resting and recovering, even if he or she is not in a position to do this immediately. Failure to complete the stress cycle will result in the next stressful event sitting on top of the first uncompleted one, and producing excessive negative responses. The detection of the HPA cascade defined Selye's principle contribution to stress research. By identifying the biochemical process occurring, it ensured that the study of stress would continue because scientific analysis could quantify it.

Since the pioneering research of Cannon and Selye, the study of stress has had implications wider than those of physiology and biochemistry, through medicine and healthcare, within fields of psychology, business, sociology, and politics. A substantial industry has been created along with the development of tools and instruments to identify and quantify stress, the appearances of experts on stress management, and the implementation of strategies and methodologies for reducing the negative impact of stress on individuals, groups, and society as a whole. The CAP was developed in the context of this industry.

Measurement of Stress

For about a quarter of a century, the psychological components of stress have been commonly measured by the administration of self-report questionnaires such as the

Perceived Stress Questionnaire (PSQ, Levenstein, Prantera, Varvo, Scribano, et al., 1993); *The Psychology Student Stress Questionnaire* (PSSQ, Cahir & Morris, 1991) and the *Perceived Stress Scale* (PSS, Cohen & Willamson, 1988). The PSS is reputed to be "the most widely used psychological instrument for measuring perception of stress" (Cohen, 1994, p. 3). The PSS developed from the appraisal theory developed by Lazarus (1966). According to Lazarus, individuals experience stress based on two factors: perception that the stressor is overwhelming, and perception that there are few available resources to handle the stressor. The original PSS consisted of 14 self-report questions. Cohen and Williamson (1988) developed the PSS-10, which also intends to measure the degree to which one perceives "aspects of one's life as uncontrollable or unpredictable and overloading" (Roberti, Harrington, & Storch, 2006, p. 135).

Self-report instruments have been challenged as a valid and reliable way to measure stress in individuals because they only capture the psychological components and do not collect evidence of the physiological or biochemical changes that take place in response to perceived stress (Gruzelier, Smith, Nagy, & Henderson, 2001). Furthermore, because the questions are subjective, and the respondents may be in a heightened state of awareness when asked to answer them, self-report instruments may not provide the most accurate and precise representation of the respondent's feelings (Rick & Briner, 2000).

Gruzelier et al. (2001) argued that when testing for the impact of stress there is a requirement for both biochemical and self-reported data to better evaluate both perceptual and actual changes occurring among individuals experiencing stress. Stress levels are linked to the concentrations of cortisol in saliva. Subsequent research on the impact of stress has tended to involve the use of biochemical markers of stress, such as salivary

cortisol, to cross-correlate with self-reported assessments of perceived stress (Bardi, Koone, Mewaldt, & O'Connor, 2011; Haussmann, Vleck, & Farrar, 2007; Lee, Glass, Mcatee, Wand et al., 2007; Loft, Thomas, Petrie, & Booth, 2007; Ng, Koh, Mok, Chia, et al., 2003; Vedhara, Miles, Bennet, Plummer, et al., 2003).

Biochemical Impact of Stress

Perceived stress may have an impact on biochemical and physiological factors that may have a positive or negative effect on the mood and behavior of an individual (McEwen, 2006). The responses of the hypothalamic-pituitary-adrenal axis may produce adverse effects on the brain that may link to changes in cognitive function including memory and learning (Lupien, Fiocco, Wan, Maheu, et al., 2005). Perceived stress influences the production of specialized cell-adhesion molecules that are essential in connecting nerve cells, stabilizing synaptic connections and enabling transmission of cell-to-cell signals (Bisaz, Conboy, & Sandi, 2009; Bisaz & Saudi, 2010; Bisaz, Schachner, & Sandi, 2011).

The biochemical systems that make up an individual's stress response to a perceived stressful situation can be engaged even if the situation is not stressful (Schacter, Addis, & Buchner, 2007). The set of perceptions held by an individual engaged in a stress response results from an internal set of responses, which can be broadly termed *"as if.*" In other words, an individual may react "as if" the situation was real, even if the situation is not real. The biochemical stress response engages the non-conscious processing system via the amygdala and the hippocampus and responds before relaying this information to other neural networks that externally verify the perceived threat. However, remembering the past and imagining the future are not the same in

terms of brain circuitry. Although both engage the hippocampus, there is more hippocampal activity when imagining future events over remembering the past suggesting more areas of the brain are stimulated in initiating rather than consolidating a memory (Schacter, Addis, Hassabis, Martin, et al., 2012, Squire, Van der Hurst, McDuff, Frascino, et al., 2010).

Research has indicated that the Neural Cell Adhesion Molecule (NCAM) plays a crucial role in creating and reinforcing the pathways required to create memories. Rats exposed to chronic stress have depleted reserves of NCAM, a molecule shown to be crucial in development of memories (Bisaz et al., 2011). Exposure to chronic stress also adversely affects NCAM in humans (Bisaz & Sandi, 2010, Bisaz et al. 2009; 2011) and this may be a significant factor in the development of depression, anxiety, and diabetes (Reagan, Grillo, & Piroli, 2008).

Psychological Impact of Stress

An individual feels stressed when the perceived pressure to a perceived stressor exceeds an individual's perceived ability to cope, creating a psychological imbalance (Palmer, Cooper, & Thomas, 2003). The inability of an individual to cope with perceived stress is associated with feelings of anxiety, irritability, insecurity, nervousness, lack of motivation, depression, and forgetfulness (Cohen, Janicki-Deverts, & Miller, 2007). Many studies demonstrate the ways in which perceived stress may also interfere negatively with the quality and content of memory, particularly if the individual perceives the memory as traumatic (Henckens, Hermans, Pu, Joels, et al., 2009).

Impact of Stress on Health

Several physical disorders are reported to result from perceived stress, including skin diseases and disorders of the cardio-vascular, endocrine, gastrointestinal, musculoskeletal, and respiratory systems (Sadock & Sadock, 2007). Psychosomatic disorders such as headaches, stomach acidity, back pain, and stiffness in the neck and shoulders may also significantly increase among individuals who perceive that they feel stressed (Kane, 2009).

Impact of Stress on Substance Abuse

Perceived stress has been identified as a factor linked to substance abuse and vulnerability to addiction (Sinha, 2008). The negative emotions resulting from perceived stress may increase cravings for substances such as cannabis, which do not always eliminate stress, but may exacerbate anxiety states (Hyman & Sinha, 2009). The excessive use of alcohol may be justified by an individual who perceives that the relief from perceived stress obtained by this behavior benefits him or her more than the alcohol harms (Sinha, Fox, Hong, Berquist, et al., 2009).

Impact of Stress on Academic Performance

Perceived stress is known to have an impact on the academic performance of students and may be a critical factor determining whether a student passes or fails a test or examination (Hashmat, Hashmat, Amanulla, & Aziz, 2008; Sohail, 2013). Test anxiety, or examination stress, is prevalent to varying extents amongst all student groups, involving a complex combination of physiological over-arousal, maladaptive emotions, and cognitive impairment, interfering with normal learning processes and lowering academic performance (Hembree, 1988). Absenteeism and poor grades have been linked

to poor stress management strategies among students (Dhaliwal, 2003). A high level of perceived stress has been associated with high dropout rates among medical students (Lovecchio & Dundes, 2002). Furthermore, a high percentage of medical students have reported that perceived stress has resulted in psychiatric morbidity and burnout by the end of their studies (Dahlin & Runeson, 2007; Nandi, Hazra, Sarkar, Mondal, et al., 2012).

Coping with Stress

The significant word in the above statements regarding the ability of individuals to cope with stress is "perceived." An individual's internal ability to cope with an external stressor is not the quantifiable facts of the situation. Coping with stress is a subjective and not an objective process. Whether or not individuals feel stressed and their ability to react to potentially stressful situations is a function of their perceptions (i.e., their thoughts, attitudes, beliefs, and feelings about what they see, hear, touch, and smell). The psychological impact of stress depends upon an individual's personal assessment of a situation itself through the filter of perceptions. If individuals do not react to or judge their inner experiences of external stressors, then they will not feel stressed.

Many factors are associated with how individuals respond to stressors at specific times in their lives. The ability of an individual to cope with stress depends on the individual's character, capabilities, and personal beliefs about what works for him or her. As a result, some individuals thrive when presented with a stressor, while others react in a negative way. Every individual perceives stress through a slightly different filter, given the context of the stressful situation, and the state of mind experienced at that moment in

time. In other words, what one person may perceive as stress, another does not. Furthermore, a situation that an individual perceived as stress at one time in life may not be perceived as stressful at another time. The perception and processing of stress is influenced by mediating factors that explain why some individuals may respond to particular stressors at particular times in their lives and not others (Sawatzky, Ratner, Richardson, Washburn, & Sudmant, 2012). The direct effect of stress on mood is negative because of certain factors which can include (a) the ability of the individual to appraise the potential danger of the presenting situation; (b) a sense of perspective associated with the individual's physical and emotional health and well-being; and (c) the individual's coping strategies (i.e., whether an individual resorts to emotion-based or problem-focused strategies). A positive example of a mediating factor is the relationship between stress and mood when mediated by well-developed coping skills (MacKinnon, Fairchild, & Fritz, 2007). The mediated effect of coping on the relationship between stress and mood is positive because coping tends to improve the mood and at the same time, reduce the stress. Individuals who apply mediating factors positively to eliminate or reduce perceived stress have better social connectivity, physical and psychological health, and greater self-efficacy (Parkerson et al., 1990; Von Ah et al., 2004; Walsh et al., 2010).

The ability of individuals to cope with stress may relate to socio-demographic factors such as age and gender. Older individuals may perceive more stress than younger individuals may because of financial pressures, as well as marital and family problems (Harth, Biggs, & Thong, 1990). Older students in university courses with young adult peers, however, may be more able to deal with stressors effectively through support

networks, practical strategies of prioritizing and organizing time and workloads, and by having a more positive attitude towards the future (Steele, Lauder, Caperchione, & Anastasi, 2005). One study discovered an interaction between gender and age with respect to the ability of medical students to cope with stress. Older females outperformed both younger and older males (Haist, Wilson, Elam, Blue, et al., 2000).

Impact of Stress on Society

This literature review so far has focused mainly on the impact of perceived stress on individuals; however, to better comprehend the context, it is essential to recognize the impact of stress in the wider social and economic setting of society. Impact studies demonstrate that the potential influence of stress is on not only the health and well-being of individuals, but furthermore on society. Stress is considered sufficiently significant to warrant attention at governmental levels. For example, the Youguv (2012) survey in the UK indicated that 48% of polled workers reported more stress than 12 months ago. In the same year in, 7.5 million working days were lost due to occupational stress-based conditions. Frequently identified occupational stressors include heavy workload, not finishing jobs on time, role conflicts, work-family conflicts, ambiguity, and lack of support.

Occupational stress may result in negative consequences, such as absenteeism, high turnover, and burnout syndrome (Adams, 1999; Aitken, Clarke, Sloane, Sochalski, & Silber, Ball, 2002; Malach Pines, 2002; Rajan, 2015; Von Dras, Pouliot, Flittner, & Malcore, 2004). As the effects of stress are now widely accepted to impact on society and the economy, the study of stress will continue to grow and develop. The following is a contribution to this study, explaining how the symptoms of stress may be relieved using

various modalities of mind-body intervention, focusing on expressive therapies, specifically art therapy.

The American Psychological Association defines stress as "any interference that disturbs a person's mental and physical well-being" (2012). The toll stress takes on the nation's health and finances is of great concern to our health care system. Findings from the APA study Stress in America: Missing the Health Care Connection (2012) reported that among the 2,020 American adults surveyed, 1,424 reported as having been diagnosed with one or more of the following conditions: an anxiety disorder, arthritis, asthma, cancer, chronic pain, diabetes Type 1, diabetes Type 2, depression, heart disease or heart attack, high cholesterol, high blood pressure, overweight, and/or obesity. Many of these somatic diseases are brought on by stress and they are conditions based on research that can be prevented or controlled with a healthy lifestyle and interventions that do not include medicine. The Stress in America survey found behavioral health and stress management needs are not adequately addressed by our healthcare system, and psychological factors such as stress are affecting the general population's medical status (American Psychological Association, 2012).

Mind-Body Intervention Programs

Clinicians in the fields of psychology, psychiatry, social work, counseling, and medicine, practice multiple modes of therapy to help individuals cope with perceived stress, of which mind-body intervention programs are a component. The United States National Center for Complementary and Alternative Medicine defines mind-body intervention as "interactions among the brain, mind, body and behavior and the powerful ways in which emotional, mental, social, spiritual and behavioral factors can directly

affect health" (Astin et al., 2003). Mind-body intervention programs use multiple modalities including expressive therapies (Malchiodi, 2005); mindfulness meditation (Cohen-Katz, Wiley, Capuano Baker, & Shapiro, 2004; Rosenzweig, Reibel, Greeson, Brainard, & Hojat, 2003; Shapiro, Oman, Thoresen, Plante, & Flinders, 2008); hypnosis (Gruzelier, 2002); cognitive behavioral therapy (Gaab, Sonderegger, & Ehlert, 2006); time management training (Cleary & Horsfall, 2011; Häfner & Stock, 2010; Wendelien, 2003) as well as other various types of relaxation and stress management techniques (Manzoni, Pagnini, Castelnuovo, & Molinara, 2008; Robb, 2000). The following review focuses on expressive therapies.

Expressive Therapies

Expressive therapy comprises the use of art, music, dance/movement, drama, poetry, creative writing, play, and sand tray within the context of psychotherapy, counseling, and rehabilitation or health care. Certain types of expressive therapies are also considered "creative arts therapies;" more specifically, art, music, dance/movement, drama, and poetry/creative writing according to the National Coalition of Creative Arts Therapies Associations (NCCATA, 2004a). Expressive therapies are sometimes referred to as "integrated approaches" when purposively used in combination with other treatment modalities (Malchiodi, (2005).

Art Therapy

Art therapy uses images, art media, the creative process, and respects the clients' responses to the art as reflections of development, abilities, personality, interests, concerns, and conflicts. It is a therapeutic intervention to aid in the reconciliation of emotional conflicts, increase self-esteem, foster self-awareness, to increase reality

orientation, develop social skills, and reduce anxiety (American Art Therapy Association. 2004).

Expressive art therapy began with clinical interest in children's drawings, which has a long documented history in Europe. Goodenough (1926) reported that as early as 1885 in England, an article by Cooke described developmental stages in children's drawings. Since then, numerous studies of projective drawing have been part of assessment batteries of cognitive ability by analyzing human figure drawings. Goodenough's (1926) book, *Measurement of Intelligence by Drawings*, serves as a training and instructional manual for administering and scoring the drawings. Goodenough's standardized and validated Draw a Person (DAP) test became accepted and widely used as a technique of assessing intelligence (Van Hutton, 1994). More recently, children's drawings have been used as part of an assessment tool, with the intent to focus on the inner psychological and personality dynamics of the child. According to Koppitz (1968), the emphasis in the literature has shifted over the years from comparative investigation of graphic production to clinical analyses of drawings, to longitudinal studies to monitor developmental trends.

Expressive art therapy developed in the 1980s following clinical interest in children's drawings. In his book, *The Arts and Psychotherapy*, McNiff (1981) stated that expressive therapies are those that introduce action to psychotherapy and that, "action within therapy and life is rarely limited to a specific mode of expression" (p. viii). While talk therapy continues to be the primary modality of communication in therapy, practitioners of expressive therapies are aware of the fact that people have different expressive and learning styles. Individuals may be inclined to be visual, tactile,

kinesthetic, or prefer the auditory channel for communicating. When therapists are able to include various expressive modalities in their work with clients, they can enhance each person's abilities to communicate in a more individualized manner.

Art therapists have been looking for ways to describe the elements shared by this mode of therapy. For this purpose, the Therapist Group Process Rating Scale (TG-PRS) was designed to compare music therapy with verbal therapy (Goldberg, Coto-McKenna, & Cohn, 1992). This rating scale is also used to rate any type of creative arts therapy group. In discussing the TG-PRS, Goldberg et al. (1992, p. 413) stated:

> Creative arts group psychotherapy provides a synthesis of personal and interpersonal work facilitated by nonverbal creative arts processes. The arts allows members to discover, uncover, externalize and examine positive and negative feelings, strengths, weaknesses, fears and fantasies through symbolic expression in music, movement, art, drama and poetry.

Drama Therapy

Drama therapy is defined as the purposeful and systematic use of drama and theatrical disciplines to help the client achieve emotional and physical integration and find mind-body balance and personal expression. An active approach helps the clients explain their experience, resolve their problems, and achieve catharsis. It also extends the person’s insight into inner experience and self-awareness. Additionally, it helps the client to observe various roles while increasing role and relationship flexibility (National Drama Association, 2004). Dance and movement therapy is based on the notion that that the physical body and mind are interrelated, and the integration of both modalities is beneficial to the cognitive, emotional, physical, and social functioning of the client (NCCATA, 2004b). Poetry therapy and bibliotherapy are interchangeable terms. This modality uses poetry and other forms of literature, such as books for treatment, healing,

and personal growth (NCCATA, 2004c). Play therapy is a model often used with children who have experienced trauma. This technique helps clients prevent or resolve psychological difficulties and allow for maximum personal improvement (Axline, 1969). Sandplay is a form of therapy that uses a sandbox and small models that enable the client to explore his or her psyche in a nonthreatening format.

Music Therapy

Music therapy began in rehabilitation settings in the United States for World War II veterans. Music therapy appeared to be an effective treatment for individuals who experienced traumatic brain injury, neurological conditions, and Posttraumatic Stress Disorder (PTSD) (Sacks, 2007). Therapy with music has been widely considered helpful in cases of psychological trauma (Stein & Kendall, 2004), although the exact reasons for its helpfulness is still being researched.

In the 1950s, the National Association for Music Therapy was founded (Sacks 2007). Music therapy is "the systematic application of the symbols, activities, and styles of music to bring about desirable changes in behavior" (Solomon & Heller, 1982, p. 161). Sacks (2007) noted that music and art had been used since the time of Aristotle as an avenue to understanding people's emotional problems. Techniques matching individuals' emotional states to music with a similar mood have been believed to aid in a person's ability to vent suppressed emotions such as anger or sadness, or to stimulate positive emotions in individuals with a depressed mood (Sacks, 2007).

Music therapy has also been defined as the functional application of music by a therapist to change behaviors and promote educational goals. For children and adolescents who have experienced trauma, research shows that the resulting impact on

their brains connected with difficulties in emotional regulation, behavior problems, or concentration, and deficits in visual memory (Stein & Kendall 2004).

One method found effective in establishing emotional regulation in trauma survivors involves music and movement (Stein & Kendall 2004). A neuroscientist and former musician and record producer, Levitan (2006), has investigated how music affects human brains, thoughts, and emotions. He reported that the regions of the brain that develop into the visual, auditory, and the sensory cortex are all undifferentiated in an infant. Levitan (2006) found that music engages all of the sensory areas of the brain and facilitates their differentiation and development. Music also plays a critical role in language development by engaging the cerebellum, the motor cortex and the frontal lobes (Levitan, 2006). Music activates both hemispheres, which helps transferring information from one side to be other (Stein & Kendall 2004). According to Sacks (2007), listening to music activates the motor cortex, subcortical structures, and the cerebellum. Research has shown that children with high levels of music training have an increased ability to manipulate information in working and long-term memory and have better skills in geometric representation and reading (Gazzangia, 2008).

Sacks (2007) proposed that music has a special relationship to memory. He stated that music embeds and activates sequences of knowledge in action when other forms of information do not work. Levittown used functional magnetic imaging to analyze each the neural pathways while subjects listened to music. He found that the auditory cortex was activated first; then the frontal lobes; then the limbic system, which transmitted dopamine; and finally the nucleau accumbens, the brains reward system. According to

Levitan (2006), based on the brain's pathways, listening to music is wired to improve mood.

Multimodal Therapy

The CAP exemplifies an integrated approach to expressive therapy, also known as multimodal therapy, which involves combining graphic expression under musical induction. Multimodal therapy involves two or more expressive therapies to create awareness, foster emotional growth, and improve communication and relationships with others (Knill, Barba, & Fuchs, 1995). Knill et al. stated that multimodal therapy distinguishes itself from art therapy, drama therapy, music therapy, and dance or movement therapy because it is a theory grounded in the interrelatedness of the arts (1995). Knill et al. observed that all expressive therapies have inherent differences. They noted that visual expression is conducive to more private, isolated work, and it lends itself to enhancing the process of individuation; music often taps into feelings and may enhance the ability to express emotions; and dance/movement tends to offer opportunities for interaction and forming relationships (1995).

Physiological Impact of Expressive Therapies

Physiological responses to expressive therapies have been revealed through neurological research. A research team led by Alluri from the University of Jyvaskala, Finland recorded the brain responses of participants listening to music (Alluri, Toiviainen, Jaaskelainen, Glerean, et al., 2011). Using functional magnetic resonance imaging (FMRI) and computer algorithms, they analyzed the musical content of the brain's processing and found that musical pulse recruits motoric areas in the brain; hence, music and movement are closely intertwined. Comparison of the brain responses and the

musical features revealed that music listening recruits the auditory areas of the brain that also employs large-scale neural networks. The limbic areas of the brain, which are associated with emotions, were also found to be involved in rhythm and tonality. The processing of timbre was associated with activations in the default mode network, noted to be associated with mind wandering and creativity. They noted that brain areas related to emotion and reward have in previous studies been found to be activated during intensely pleasurable moments of music listening. Other neurological research using magnetic resonance imaging (MRI) scans to visualize the brain when engaged in different thoughts, timeframes, and emotions reflect a distinct state of creativity while the brain is in a relaxed state, such as that induced by mind-body interventions (Gusnard, Raichle, & Raichle. 2001; Simpson, Snyder, Gusnard, & Raichle, 2001).

The physiological impact of mind-body interventions may include beneficial changes to the immune system. In a randomized controlled trial based on analysis of blood samples, Kiecolt-Glaser, Marucha, Atkinson, and Glaser (2001) found that perceived stress in the control group was associated with immunological dysregulation by reducing the concentrations of CD3+ and CD4+ T-lymphocytes; however, participants who were exposed to a mind-body intervention involving hypnotic-relaxation training were protected from these stress-related decrements.

Psychological Impact of Expressive Art Therapy

There is a relative lack of research-based evidence regarding the effectiveness of expressive art therapy as a method for relieving symptoms of stress and other psychological disorders. Only a limited number of rigorously designed experimental outcome studies have been conducted. The majority of the arguments for art therapy

published before the year 2000 came from qualitative case studies, and expressed in narrative form with little or no attempt to summarize or quantify the findings (Saunders & Saunders, 2000). Relatively few quantitative evaluations of art therapy programs have been published in the 21st century, and are compromised by methodological flaws. The pre-test post-test design has been commonly used in quantitative experimental studies to determine the effectiveness of art therapy; however, researchers do not always assign a control group (not exposed to art therapy) and a treatment or intervention group (exposed to art therapy). In the absence of data to compare the outcomes in control and treatment groups, it is not possible to determine whether the art therapy was the specific causal mechanism through which symptoms of stress and other psychological disorders were relieved (Reynolds, Nabors, & Quinlan, 2000).

The randomized controlled trial is currently regarded as the gold standard research design that should ideally be conducted to test the effectiveness of any kind of intervention intended to improve the health and well-being of the community (Shultz, Altman, & Moher, 2010). A randomized controlled trial approach involves the random assignment of the participants into parallel groups: (a) the treatment group(s) exposed to a prescribed intervention; and (b) the control group(s) who are not so exposed (but they may be prescribed a placebo). Random assignment takes place after the participants have been assessed for eligibility and recruited, but before the intervention begins. After randomization, the two (or more) groups of participants are followed up in exactly the same way. The only differences between the two groups are those intrinsic to the treatments being compared (i.e., in the context of this review, the treatments are expressive art therapies). Kapitan (2010) argued that to construct an evidence-based

model of the efficacy of art therapy, a randomized controlled trial of sufficient scope would be necessary to strengthen further the basis of the claim. To date, only one such trial has been conducted (Crawford, Kilaspy, Barnes, Barrett, et al., 2012).

The limited quantity and quality of the available statistical evidence to support the efficacy of art therapy may due to the disinclination of expressive art therapists toward quantitative research (Deaver, 2002). Furthermore, the complexities of expressive art therapy may not be so easily regulated by the rigid standards that other types of clinical interventions attempt to maintain. The nature of art therapy is often unstructured and unconstrained in order to allow temporal and physical freedom for each individual to unfold, to self-actualize, and to grow both emotionally and spiritually (Rogers 1993). The manifestation and duration of these processes vary from one individual to another, and so the measurements of the outcomes of art therapy are not so easily forced into a clean, controlled, time-constrained experimental design, which is required to conduct a formal randomized controlled trial (Kaplan, 2000).

One of the first pre-test post-test studies to evaluate the effectiveness of an art therapy program was that of Saunders and Saunders (2000). This study used a one group pre-test post-test design involving 94 children presenting symptomatic behaviors associated with individual or family dysfunction, including hyperactivity, poor concentration, poor communication, defiant behavior, lying, blaming, poor motivation, change in sleep routine, manipulation, and aggression. The severity of the symptomatic behaviors was scored at the start and at the end of the art therapy program through discussions with the children and their parents. A statistically significant reduction in the

symptomatic behavior scores revealed that the art therapy program appeared to have a significant positive impact on the lives of the children and their families.

Eaton, Doherty, and Widrick (2007) published a review of 26 articles reporting the results of qualitative and quantitative research to determine if art therapy was an effective treatment for traumatized children (e.g., to reduce symptoms of anxiety, depression, phobias, and post-traumatic stress). The conclusion of this review was that art therapy appeared to be an effective method to relieve the negative psychosocial consequences of childhood trauma. Furthermore, art therapy was shown to facilitate the development of a strong client-therapist relationship, and this was one of the most important predictors of a successful client outcome. Most of the reviewed studies, however, did not use experimental methods that involved the random assignment of the participants into a control group and an experimental group. The researchers raised the issue that randomly assigning traumatized children to a control group was an ethical dilemma that could not be resolved. Furthermore, the researchers emphasized the difficulties they encountered in reviewing art therapy studies because many authors did not provide detailed information regarding exactly what modality of the art therapy was chosen, the degree of its formal or informal structure, and the duration of the therapy.

Campbell (2009) investigated the impact of art therapy on symptoms of stress, specifically anxiety, using a meta-analysis of six studies that specifically aimed to use art therapy to reduce anxiety, using a control group or a single group pre-test post-test research design. A statistical analysis of the scores collected using self-report instruments revealed a high overall effect size (Hedges' $g_, = .81$, 95% CI = 0.52, 1.10). This value was within the range of effect sizes reported for several other types of

therapeutic interventions that specifically aim to reduce anxiety. Hirai and Clum (2006) reported that self-help interventions for anxiety symptoms had an average effect size of .62. Manzoni, Pagnini, Castelnuovo, and Molinari (2008) reported that relaxation techniques as a treatment for anxiety had effect sizes within the range of .51 to .57. Reger and Gahm (2009) reported an effect size range of .49 to 1.14 for cognitive behavioral treatment (CBT) for anxiety. Mitte (2005) reported that CBT had an effect size of .82 for generalized anxiety disorder. Furthermore, Cambell's study revealed that (a) art therapy is equally as effective in reducing symptoms of anxiety in both children and adults; (b) art therapy was most effective to reduce anxiety in individuals who had no psychological disorders or complicated life situations; and (c) there was no significant correlation between the duration of the art therapy and the effect size.

Slayton, Archer, and Kaplan (2012) conducted a review of the literature including studies from 1999-2007 to evaluate the effectiveness of the outcomes of art therapy. Thirteen quantitative studies were reviewed, most of which applied one-group pre-test post-test designs with no control groups. Because they only used single treatment groups and lacked control groups, the weakness of these studies was that they measured change, but they could not determine conclusively the outcomes were the consequences of art therapy. The authors concluded that there is only a very limited body of quantitative data available to support the claim that art therapy is effective in treating a variety of symptoms, age groups, and disorders.

Holttum (2013) provided a critical review of the only randomized control trial conducted to determine the effectiveness of art therapy (Crawford et al., 2012). This trial, designed for patients diagnosed with schizophrenia, was called the Multicentre

Evaluation of Art Therapy in Schizophrenia (MATISSE) trial. The MATISSE researchers concluded that the art therapy "as delivered in the trial study did not lead to measurable improvements in patient outcomes or provide a cost-effective use of resources" (p. 41). Holttum criticized this conclusion for two reasons. First, of the 140 participants allocated randomly to each of the activity groups and the art therapy groups, less than one-third attended more than nine sessions out of a possible 40 sessions through the year. The high rate of the attrition and the fact that most of the participants received very little treatment invalidated the elaborate statistical comparison of the outcomes in the activity groups and the art therapy groups. Secondly, the research could not prove a general principle about the effectiveness of art therapy and the conclusion had no external validity. The results only revealed the lack of effectiveness of art therapy as it was done in the trial, which was different from how it is normally be done in practice.

Holttum highlighted that a randomized controlled trial is not necessarily the most effective way to determine the effectiveness of art therapy. Qualitative research, however, provides more insight into possible helpful (and less helpful) aspects of art therapy. For example, Holttum cited the qualitative research of Morgan, Knight, Bagwash, and Thompson (2012) who explored participants and therapists' experiences and the role of art therapy in addressing the symptoms of borderline personality disorder. This qualitative study provided some new insight into art therapy by showing that it could be unhelpful if the participants became stigmatized because they perceived that prescribing art therapy meant that the therapists "didn't know what to do with me" (p. 93).

Active Ingredients of Art Therapy

With respect to art therapy, Kapitan (2012, p. 48) posed the question, "What are its active ingredients?" It is possible that certain non-verbal visual ingredients of art therapy may produce psychological healing effects, but more research is required to isolate the key ingredients that generate the specific emotional changes that may be observed among participants in practice. Kim, Kang, Chung, and Hong (2012) constructed multiple linear regression models to compare the effectiveness of several art therapy tools as predictors of the levels of a psychological state, including symptoms of child abuse or neglect, sexual abuse, trauma, schizophrenia, dementia, depression, and attention deficit. These tools were the PPAT, FSA, and SMC. The PPAT (Gantt, 1990) is a creative assignment in which the participant is directed to draw a person picking an apple from a tree. The FSA (Betts, 2003) requires the participant to color three given stimulus pictures. The SMC (Curry & Kasser, 2005) requires the participant to paint a series of given geometric shapes. For each of the art therapy tools, a predictive model was developed. The dependent variable was the level of the participant's psychological state and various elements or ingredients of the art therapy were used as independent or predictor variables. Sets of independent variables that best explained the dependent variable were identified using a stepwise procedure. The effect sizes (R^2) for the regression models for the PPAT, the FSA, and the SMC were .61, .45, and .59 respectively. The results indicated all the art therapy tools were applicable to predict the emotional symptoms of psychological disorders. The PPAT, involving the drawing of a person picking an apple from a tree, appeared to be the most effective. The implications were that different ingredients within art therapy might induce different outcomes. It is

possible that the creative element of the PPAT is an important factor, because the PPAT is based on free drawing, unlike the FSA and the SMC, in which the participants are given contour lines.

Development of Theoretical Framework

Lewin, the founding father of social psychology, surmised, "nothing is quite so practical as good theory" (Gay & Weaver, 2011, p. 34). The implications are that a theoretical framework is essential to guide effective research, leading to a practical framework, involving designing, describing, and implementing appropriate research methodologies. Accordingly, the theoretical framework that underpins this study developed based on the review of research on the impact of stress, and the effectiveness of expressive therapies, specifically art therapy, to reduce the symptoms of stress and other psychological disorders, and concludes by synthesizing all of the concepts into one theory.

The use of expressive therapies is underpinned by psychodynamic theory, rooted in the classical philosophies of Freud, Jung, and Bion. Psychodynamic theory supports the use of short-term, dynamically oriented individual psychotherapy, supportive psychotherapy, hypnotherapy, relaxation techniques, and cognitive therapy (Horne, Sowa, & Isenman, 2000). Psychodynamic theory posits that (a) the personal growth of an individual (specifically, in the context of this study, the management of stress, supported by CAP) takes place in a safe, supportive environment; (b) a safe, supportive environment is created by therapists who are genuine, warm, empathic, open, honest, and caring; (c) personal growth is also influenced by creative processes that help individuals find their inner essence or source; (d) when individuals find their inner essence or source,

they tap into the universal energy source, otherwise known as the collective unconscious, or the transcendental experience, which is the essential source of all types of mind-body intervention; and (e) the collective unconsciousness derived from elements within the mental structure of each individual includes non-threatening well-disguised images. Accordingly, Rogers (1993) argued that person-centered expressive art therapy is a process of personal discovery that comes from profound emotional depth. It leads individuals directly into their unconscious, revealing unknown facets of their personalities, bringing to light new information and awareness, and cloaking perceptions of stress as harmless elements by censoring stress as harmless in the eye of the consciousness. When using CAP for therapeutic purposes, it follows that the participants do not need to make judgments about the aesthetic value of their art form, or the harmonic flow of the music, they just interpret the art and music subjectively, to let go, to express, to release, and to relax.

The following chapter discusses the methodology used to address the stated research question and test the stated hypothesis. Included is a description of the research design, selection of participants, instruments, and the methods used to collect and analyze the data.

CHAPTER 3: METHODOLOGY

The purpose of this study was to investigate whether the Catharsis Application Program (CAP) might be considered a viable practice for stress reduction. The research question driving this project was, After participating in CAP for 12 full sessions, will there be a significant difference in the pre- and post-test scores of the Perceived Stress Scale? If the results provided an affirmative answer to the questions, it would be recommended that this research be repeated using a control group and larger sample population. The CAP has never been empirically tested; this project will conclude if the CAP is worth further investigation.

Research Design

This quantitative, independent sample study investigated whether The Catharsis Application Program (CAP) affected stress level scores using one group pre-test post-test design. A dependent *t* test was used to determine if there was a significant difference between pre- and post-test scores of the Perceived Stress Scale (Cohen, 1994). The test statistics and effect sizes were determined and the results were compared to expectancy and reported.

Selection of Participants

Thirty-three participants were recruited for the study. The participants responded to advertisements posted in various libraries in the San Francisco area of Northern California. The advertisement described the need for participation in a stress reduction study (see Appendix A). Individuals in this study ranged between the ages of 40 and 65 plus. Individuals referred to the researcher were screened to determine if they were appropriate candidates for this study.

Interested parties contacted the researcher directly via telephone. A brief overview of the study was provided and the researcher inquired whether the caller had any of the following exclusion criteria: a current diagnosis of any mental health disorder, a current regimen of psychotropic medications for a mental health disorder, or active participation in mental health treatment. For those callers who met the initial eligibility criteria, the researcher scheduled a follow up interview. The individuals who did not meet eligibility criteria and who were seeking treatment received a list of various resources in their community.

Pre-Screening

Selected participants met with the researcher at a private office to complete the informed consent and pre-screening process. The self-selected participants were fully informed and given voluntary and informed consent concerning the risks and advantages of this study. Each participant was guided through the informed consent process. The researcher explained all the elements of participants' rights and the consent form required for participation in the research study. Each individual was provided a sufficient amount of time to read and digest the information and ask questions. A copy of the signed consent document was provided to the participant along with this researcher's contact information.

Procedures

After the screening process, chosen participants were given a detailed explanation of the study, a review of the consent to participate form, and demographic information form to complete that included age, gender, race, ethnicity, and marital status. This

information was analyzed and presented in this study, as it could potentially be useful for replication studies in the future.

During the first session of CAP, a copy of the Perceived Stress Scale (PSS) was presented for self-administration. After the PSS was completed, participants received their art materials along with verbal instructions. The researcher demonstrated how to use the art materials before the participants began their drawings. The date the participant met with the researcher was counted as session one of the study participation. Start and end dates differed for the participants depending on which group they were a member.

As noted earlier, this researcher had a list of mental health resources readily available if requested by participants. This researcher currently holds a Master of Science (MS), degree. This researcher is also a Credentialed School Psychologist in the state of California. Based on sound clinical judgment, if a participant appeared to be in need of mental health support at any time during the course of this research project, a referral to a California licensed mental health professional for eight sessions would have been offered to the participant and paid by this researcher. This offer was included in the informed consent form.

Instrumentation: Perceived Stress Scale

The self-report questions are presented in a 5-point Likert scale: 0 = never, 1 = almost never, 2 = sometimes, 3 = fairly often, and 4 = very often, indicating feelings over the past 30 days (Cohen & Williamson, 1988).

PSS-10 scores are obtained by reversing scores on the four positive-natured questions: numbers 4, 5, 7, and 8, and then summing all the scores. A higher score

indicates a higher perception of stress (Cohen, 1994). Norm group scores were established specifically on the PSS-10. Normative scores were derived from a telephone poll with a sample of 2,387 respondents across the United States. Mean scores ranged from 11.9 to 14.7 with a standard deviation range of 5.0 to 7.2 (Cohen, 1994).

Cohen, Kamark, and Mermelstein (1983) conducted a study examining the reliability of the PSS. Three samples were self-tested and all scores were statistically compared. One sample consisted of 332 college students (121 male and 209 female). The mean age was 19.01 with a standard deviation of 2.75. The second sample consisted of 114 participants drawn from a college psychology class, which included 53 males and 60 females. One participant failed to indicate gender. The mean age for this sample was 20.75 with a standard deviation of 4.41. The third sample was a smoking cessation group of 64 participants, which included 27 males and 37 females; the median age was 38.4 years old with a standard deviation of 11.57. Results from this initial study reported mean scores of men and women in student samples as 23.18, and 23.67, and 25.0 in the smoking cessation sample group. Mean PSS scores for females were 23.57 (*SD* = 7.31) and 25.71 (*SD* = 7.79) in the student samples, and 25.6 (*SD* = 8.00) in the community smoking cessation sample. Mean PSS scores for males were 22.38 (*SD* = 6.79) and 21.73 (*SD* = 8.42) among two student samples, and 24.0 (*SD* = 7.80) in the smoking cessation group sample. The test results revealed mean scores for females, which were slightly higher than the mean scores for male participants in all samples; however, the difference was not statistically significant (Cohen et al., 1983). In 1988, Cohen and Williamson reevaluated the psychometric properties of the PSS on a larger normative sample of 2,387 males and females 18 years or older. The participants included were considered a

representative sample of individuals living in the United States. The study specifically tested the PSS-10. Individuals were cold-called and verbally administered test questions (Cohen & Williamson, 1988). The PSS-10 data was factor analyzed, using a principal components method with varimax rotation. In the principal components analysis, all items loaded positively on the first factor at .42 or above. Two factors emerged with eight values over 1.0 (3.4 and 1.4), composed of negatively and positively worded items (Cohen & Williamson, 1988, p. 45) This indicated that the shorter version of the PSS is as psychometrically sound as the original longer version. Reports again indicated adequate internal validity (alpha co-efficient = .78) and noted that the measure moderately related to other measures of perceived stress.

A more current recent study investigating the psychometric properties of the PSS-10 test sampled 281 undergraduate students in three different university settings (Roberti, Harrington, & Storch, 2006). The data obtained for internal consistency and validity, including, internal and convergent were analyzed and compared to the data from the psychometric properties of the original PSS questionnaire. According to Roberti et al. (2006), "The PSS-10 is a reliable and valid self-report measure of perceived stress within a non-clinical multi-site sample of United States University students" (p. 143). Results noted that the abridged PSS-10 scores were also correlated with other current measures of stress in the literature (Roberti et al., 2006).

Data Analysis

The data analysis was conducted using IBM SPSS version 20.0. The socio-demographic characteristics of the sample were summarized using frequency data (counts and percentages). The reliability of the PSS at the pre-test and post-test was estimated

using Cronbach's alpha. The PSS scale was operationalized, and the descriptive statistics (mean, standard deviation, and 95% confidence intervals (CI) were computed. A paired sample, or a dependent *t* test determined if there was a significant difference in the pre- and post-test scores. Pearson correlation coefficients were also calculated.

The statistical methods for this research were chosen to test the hypothesis generating this study. The research instruments were chosen due to scientific rigor and common usage among stress researchers (Cohen, 1998; Lovibond & Lovibond, 1995). It is anticipated that if more studies are conducted in the future with this or another stress reduction practice, the above procedure can be easily replicated. It is also anticipated that future projects might be inspired by this dissertation research.

CHAPTER 4: RESULTS

Restatement of the Purpose

This chapter presents the results in four sections. The first section describes the characteristics of the study participants. The second section presents a descriptive analysis of the scores for the Perceived Stress Scale (PSS). The third section provides the evidence using inferential statistical analysis to (a) address RQ1: Will there be a change in the participants' pre and post test scores on the PSS after completing the CAP program? as well as (b) test the research hypothesis that the pre and post test scores of the PSS will indicate a significant difference; therefore, demonstrating CAP is a viable method for stress reduction. The final section summarizes the findings.

Characteristics of the Study Participants

Table 2 below summarizes the characteristics of the study participants, as self-reported in the Demographic Questionnaire. The number of participants fell from $N = 33$ at the pre-test to $N = 29$ at the post-test, representing an attrition or dropout rate of 4/33, 12.1%. Because the inferential statistical analysis required an equal number of participants at the pre-test and the post-test, the information in Table 2 only applies to the 29 participants who self-administered the 10 item Perceived Stress Scale (PSS) at the both the pre-test (immediately before) and the post-test (immediately after) the Catharsis Application Program (CAP) sessions.

The proportion of male and female participants was approximately equal ($n = 15$, 51.7% were female). They ranged in age from 40 to > 65 years old ($M = 51.78$, $SD = 8.05$). The most frequent age group was 40-47 years old ($n = 11$, 37.9%) followed by 48-55 years old ($n = 9$, 31.0%). The ethnic group of over half of the participants ($n = 15$,

51.7%) was Caucasian/Not Hispanic. About one quarter (*n* = 7, 24.1%) were Asian/Not Hispanic, and the remainder were African American, Multiracial, or Caucasian/Hispanic. The majority of the participants (*n* = 18, 62.1%) were married, the remainder were single, living with a companion, or divorced. Over three quarters (*n* = 23, 79.3%) reported their sexual orientation as heterosexual. The participants reported that they had from zero to four dependents, with the most frequent group having (*n* = 13, 44.8%) having zero dependents.

Table 2

Participant Characteristics

Characteristic	Category	Frequency (*N* = 29)	
		n	%
Gender	Female	15	51.7%
	Male	14	48.3%
Age (Years)	40-47	11	37.9%
	48-55	9	31.0%
	56-65	7	24.1%
	>65	2	6.9%
Ethnicity	Caucasian/Not Hispanic	15	51.7%
	African American	4	13.7%
	Caucasian/Hispanic	3	10.3%
	Asian	7	24.1%
	Multiracial	4	13.8%
Marital Status	Single	2	6.9%
	Married	18	62.1%
	Companion	5	17.2%
	Divorced	4	13.8%
Sexual Orientation	Heterosexual	23	79.3%
	Bisexual	2	6.9%
	Gay	3	10.3%
	Not reported	1	3.4%
Dependents	0	13	44.8%
	1	3	10.3%
Table 2 Cont.			
	2	5	17.2%
	3	5	17.2%
	4	3	10.3%

Descriptive Analysis of Perceived Stress Scale

The scores for the 10 items in the PSS were each recorded with a 5-point Likert scale: 0 = never, 1 = almost never, 2 = sometimes, 3 = fairly often, and 4 = very often, reflecting the respondent's feelings over the past 30 days. The PSS-10 scores were obtained by reversing the scores for the four positive-natured items (4, 5, 7, and 8) and then summing all the scores. The minimum possible score was 0. The maximum possible score was 40. A higher score indicated a higher perception of stress; therefore, a lowering of the score reflected stress reduction.

The frequency distributions of the PSS-10 scores at the pre-test and post-test are illustrated in Figure 1 and 2. Figure 3 illustrates the change scores (post-test minus pre-test). Table 3 summarizes the reliability and descriptive statistics for the PSS-10 scores.

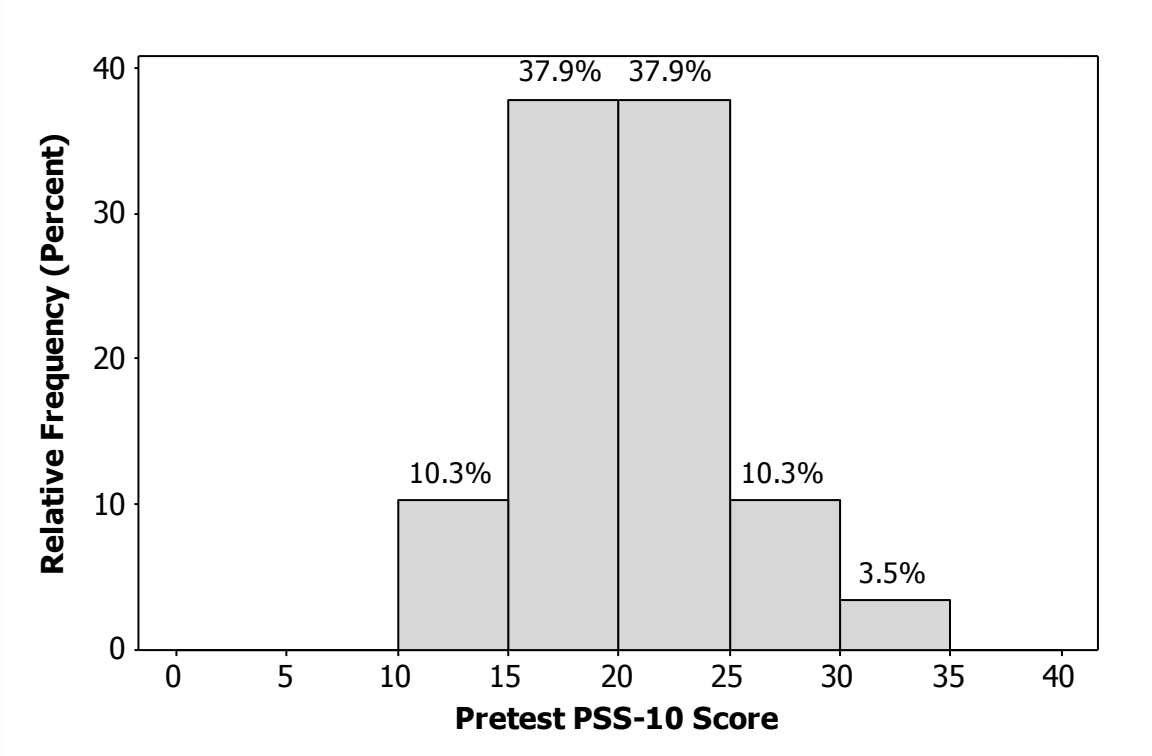

Figure 1. Frequency distribution histogram of Pre-test PSS-10 scores

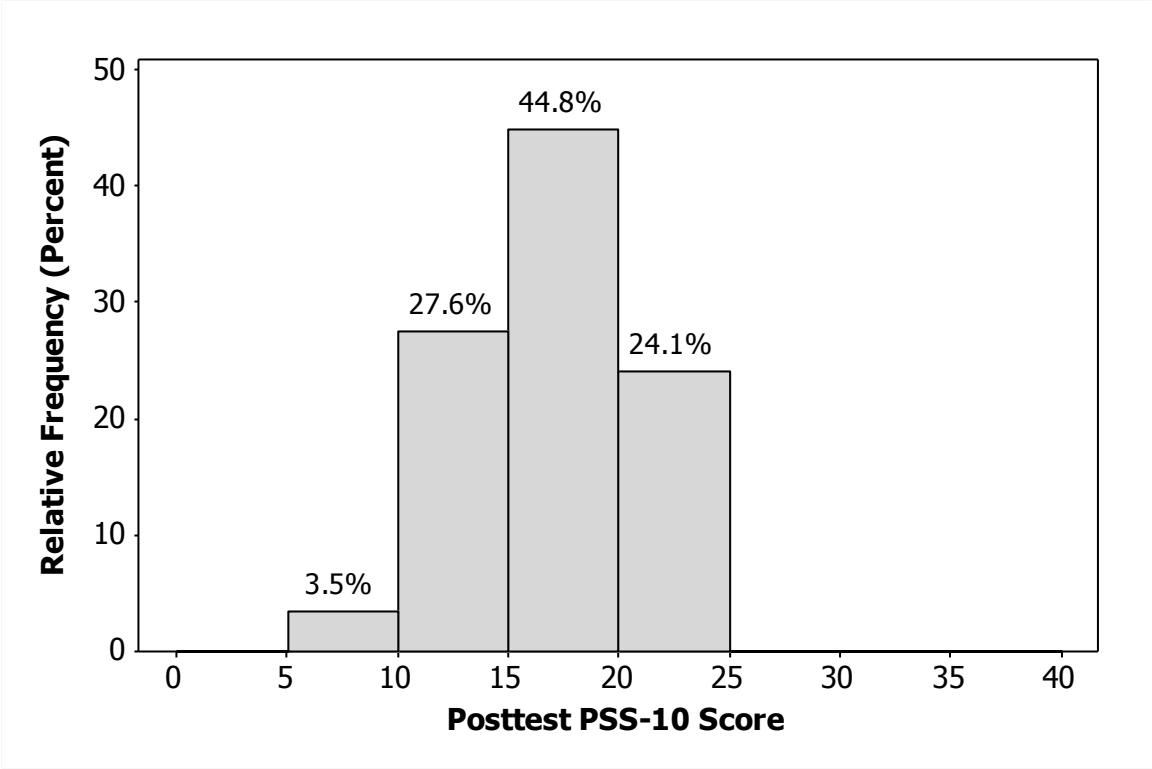

Figure 2. Frequency distribution histogram of Post-test PSS-10 scores

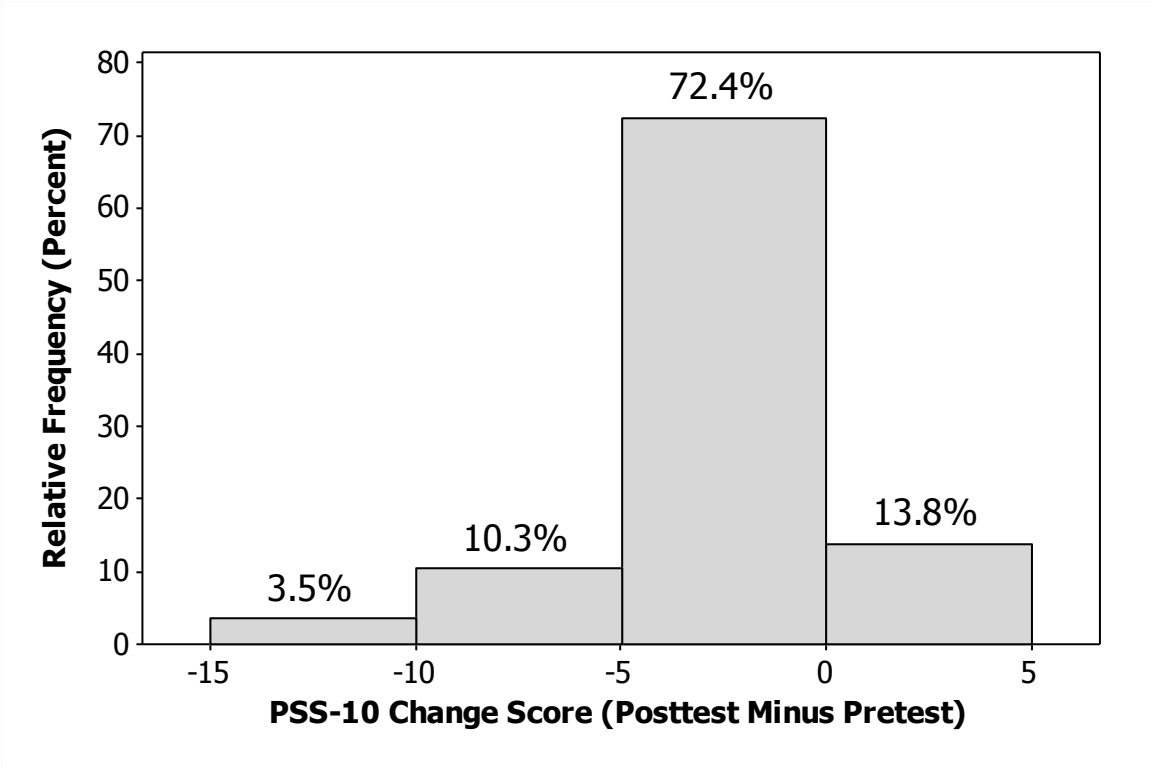

Figure 3. Frequency distribution histogram of PASS-10 Change Scores

The frequency distributions approximated bell-shaped curves, reflecting that the PSS scores were approximately normally distributed. At the pre-test, about three quarters of the participants (*n* = 22, 75.8%) scored between 15 and 20 in the middle range of the PSS scale, whereas only *n* = 3, 10.3% scored between 5 and 10, at the lower end of the scale (see Figure 1). After exposure to the CAP, however, (see Figure 2) the mode of the frequency distribution of the post-test scores shifted downwards, to between 15 and 20 (*n* = 13, 44.8%); therefore, a higher proportion of the participants scored between 5 and 10 (*n* = 8, 27.6%). The frequency distribution of the change scores (i.e. post-test minus pre-test) were mainly negative (see Figure 3) because most of the participants (*n* = 25, 86.2%) reported a reduction in stress levels after exposure to CAP. The change scores were, however, between 0 and 5 for a few participants (*n* = 4, 13.8%) implying that their stress levels remained the same or increased after exposure to CAP.

Table 3

Descriptive and Reliability Statistics of PSS-10 Scores at Pre-test and Post-test (N = 29)

Statistics	Pre-test	Post-test	Change (Post-test minus Pre-test)
N	29	29	29
M	19.69	16.55	-3.14
SD	4.45	3.41	2.85
95% CI Lower Limit	18.00	15.26	-4.22
95% CI Upper Limit	21.38	17.85	-2.05
Minimum	11	7	-13.00
Maximum	31	21	2.0
Outliers (Z score > 3)	0	0	1
Cronbach's alpha	.779	.661	

The internal consistency of the PSS-10 scale was adequate, indicated by Cronbach's alpha = .779 at the pre-test and .661 at the post-test. The descriptive statistics

in Table 2 reflected the general reduction in stress levels of most participants after the CAP. The mean PSS scores declined from M = 19.69 at the pre-test to M = 16.55 at the post-test, representing a mean change (post-test minus pre-test) of -3.14. At the pre-test the range of the scores was wide (from 11 to 31, SD = 4.45), but was narrower (7 to 21, SD = 3.41) at the post-test. The 95% confidence intervals (CI) of the change scores (-4.22, -2.05) did not capture zero, so that the mean change (M = -3.14) was significantly different from zero.

One outlier (a female participant with ID number 19) was identified (a change score of -13, with a Z-score of -3.4, exceeding the normal limits of ± 3) and was part of a pattern. The greatest reduction in the change scores (e.g., participants with ID numbers 3, 13, 26, and 19 in Figure 4, all female, with change scores ≥ -5) also had the highest pre-test scores (≥ 25). Conversely, no stress reduction was reported by participants with the lowest pre-test scores (e.g., participants with ID numbers 7 and 9 in Figure 4, both female, each with a small positive change score of +2, and pre-test scores of 11 and 12 respectively). Consequently, the change scores and the pre-test scores were significantly negatively correlated (Pearson's r = -.643, $p < .001$).

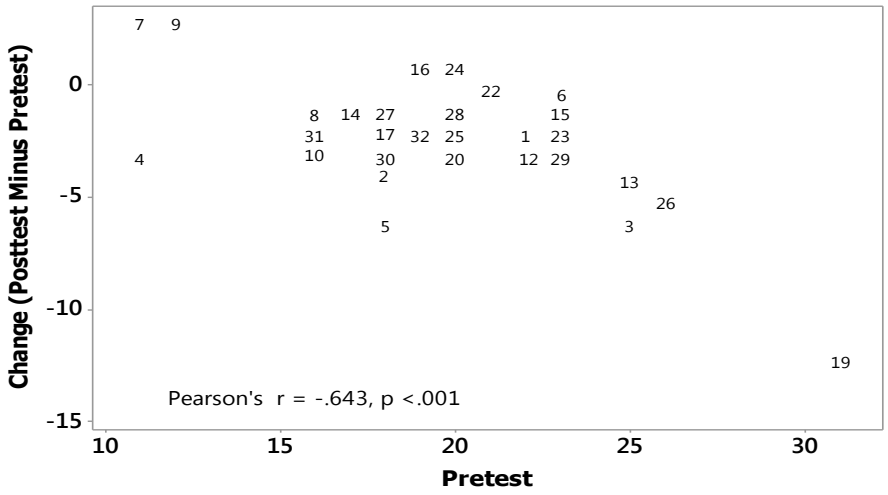

Figure 4. Correlation between change scores (post-test minus pre-test) and pre-test scores (Note: Points in scatterplot are participant ID numbers)

The error bar chart in Figure 5 illustrates the patterns in the mean change scores ± 95% CI partitioned by the age and gender of the participants. There was no clear systematic pattern in the change scores with increasing age or gender, other than the width of the 95% CI reflected the wider range in scores of the female participants, compared to the male participants. The strongly overlapping 95% CI reflected the probability of no significant difference between the mean change scores with respect to age and gender.

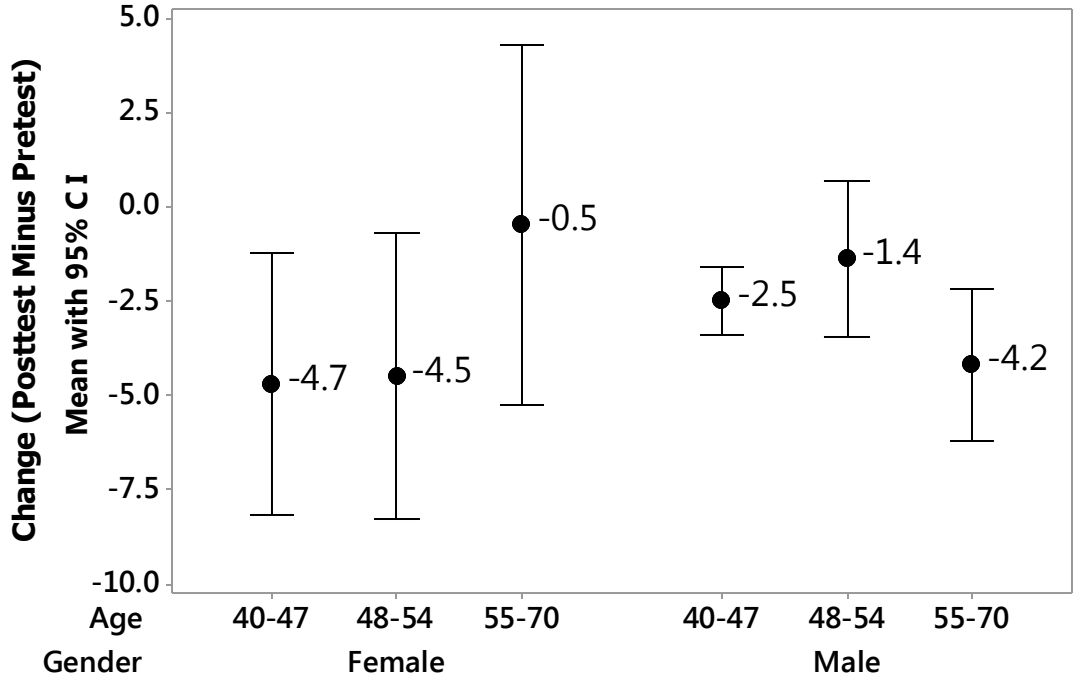

Figure 5. Comparison of change scores (M ± 95% CI) by age and gender

The mean change scores for the female participants (M = -3.53, 95% CI = -1.55, -5.52) and for the male participants (M = -2.71, 95% CI = -1.66, -3.76) included 95% CI that did not capture zero. Consequently, the mean change scores for both male and female participants were both significantly different from zero at the .05 level.

The error bar chart in Figure 6 illustrates the patterns in the mean change scores ± 95% CI partitioned by the ethnicity of the participants. There was no clear systematic pattern in the change scores with respect to African American, Asian, Caucasian, or Multiracial participants. The strongly overlapping 95% CI reflected the probability of no significant differences between the mean change scores of the four ethnic groups.

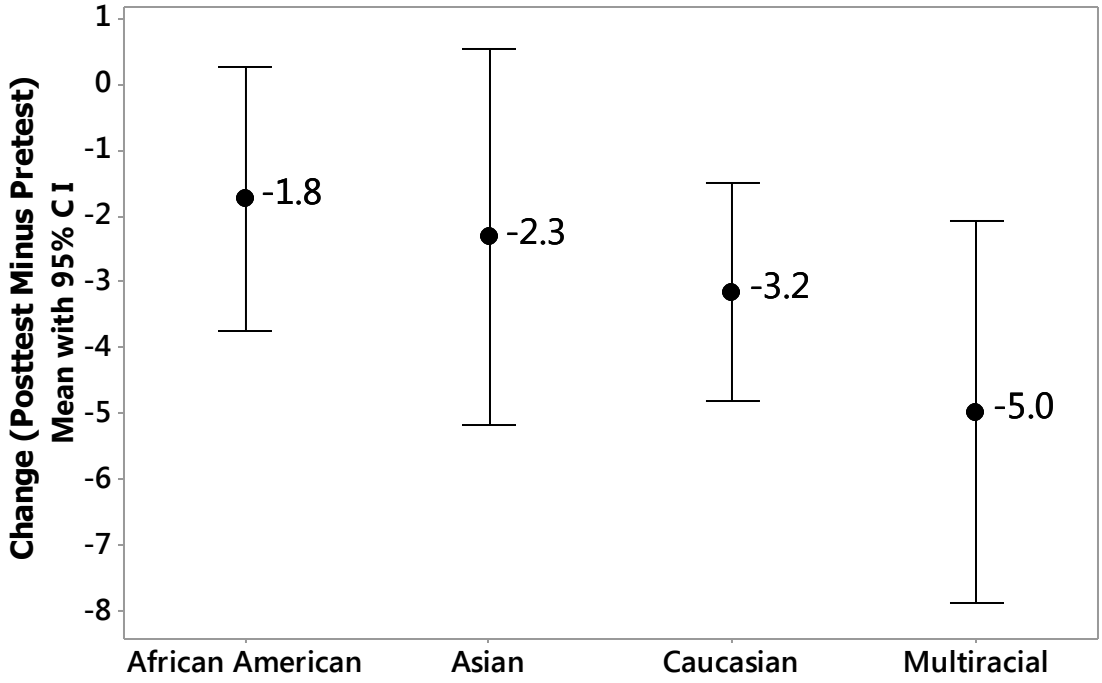

Figure 6. Comparison of change scores (*M* ± 95% CI) by ethnicity

The error bar chart in Figure 7 illustrates the patterns in the mean change scores ± 95% CI partitioned by the marital status of the participants. There was no clear systematic pattern in the change scores between companion, divorced, married, or single participants. The strongly overlapping 95% CI reflected the probability of no significant differences between the mean change scores with respect to marital status.

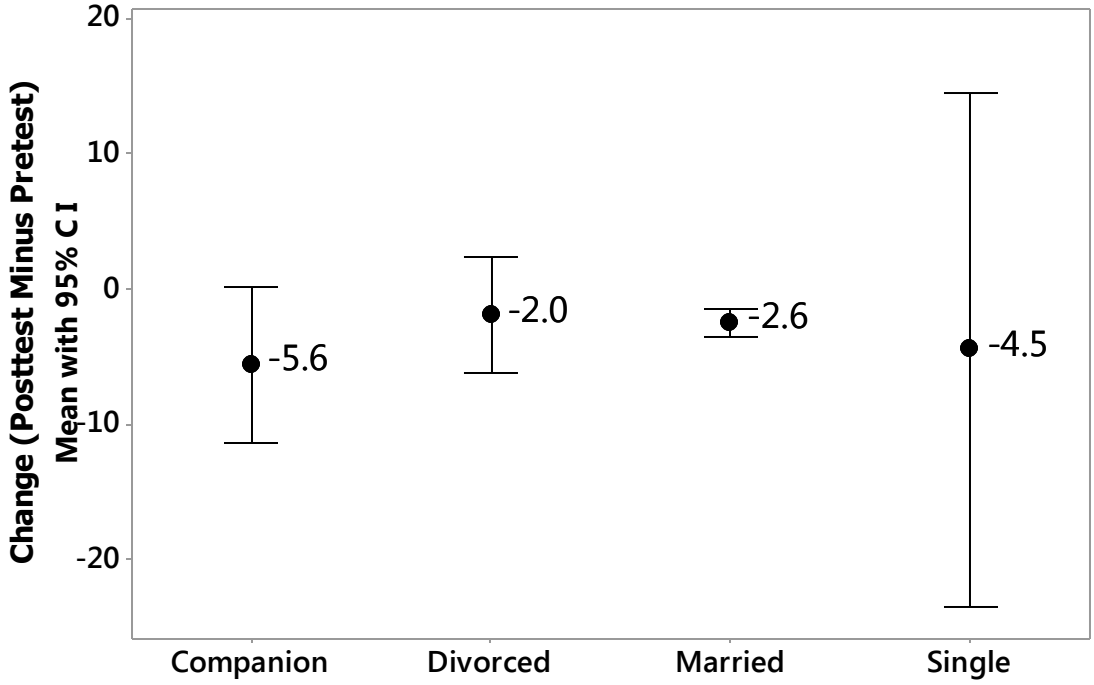

Figure 7. Comparison of change scores ($M \pm 95\%$ CI) by marital status

Testing of Hypothesis

This section presents the statistical evidence to test the research hypothesis that the pre-test and post-test scores of the PSS would indicate a significant difference; therefore, demonstrating that CAP is a viable method for stress reduction. A paired sample or dependent *t*-test was used to test the hypothesis. The test assumed that the paired data (i.e., the pre-test and post-test scores) would be positively correlated. The upward sloping scatterplot in Figure 8 and the significant Pearson's correlation coefficient ($r = .768$, $p < .001$) confirmed that this assumption was satisfied.

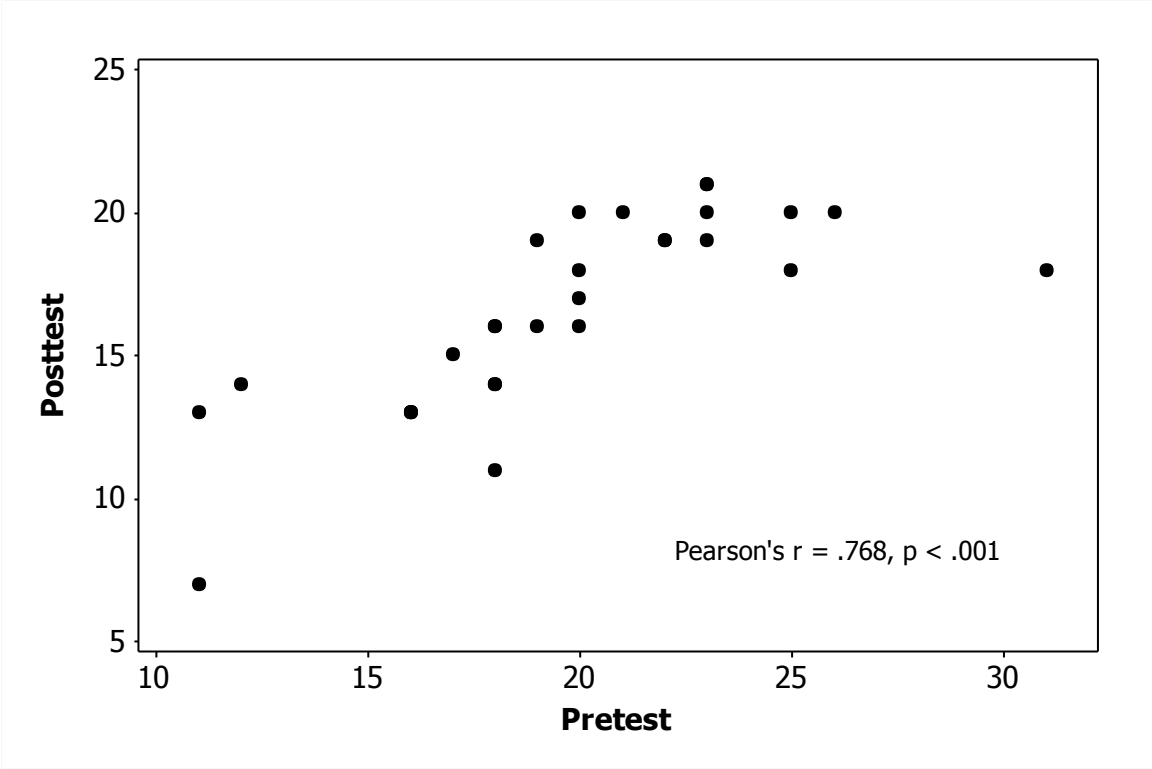

Figure 8. Correlation between pre-test and post-test scores

The computational formulae for the paired samples or dependent *t*-tests determined if the mean value of the change scores (post-test minus pre-test) was significantly different from zero. The null hypothesis was that the mean change score was not significantly different from zero. The decision rule was to reject the null hypothesis if the $p < .05$ for the *t*-test statistic, implying a probability of 1 in 20 chance that the results were due to random chance. The results of the *t*-tests conducted (a) all participants; (b) excluding the one outlier (participant ID number 19); (c) only the female participants, and (d) only the male participants are presented in Table 4.

Table 4

Results of Paired Samples or Dependent t-test

Participants	*N*	Change Score		*t*	*df*	p	Effect Size Cohen's d
		M	SD				
All participants	29	-3.14	2.85	-5.93	28	<.001*	1.10
Excluding one outlier	28	-2.79	2.16	-6.80	27	<.001*	1.29
Female	15	-3.53	3.58	-3.82	14	.002*	0.99
Male	14	-2.71	1.82	-5.59	13	<.001*	1.49

Note: *Significant ($p < .05$)

The descriptive statistics in Table 3 reflected the general reduction in stress levels between the pre-test and the post-test, with change scores ranging from -2.79 to -3.53. The statistically significant (p: < .05) results of the *t*-tests in Table 3 were consistent with the rejection of the null hypothesis, and acceptance of the research hypothesis, because there was a significant difference between the pre-test and post-test scores. The mean change scores were significantly different from zero for all participants ($M = -3.14$, t (28) = -5.93, $p < .001$). The exclusion of one outlier (participant ID number 19) reduced the mean change score, but not change the significant outcome of the *t*-test (M = -2.79; t (27) = -6.80, $p < .001$). There was a significant difference between the pre-test and post-test scores for the female participants (M = -3.53, t (14) = -3.82, $p = .002$) as well as for the male participants (M = -2.71, t (13) = -5.59, $p <.001$).

Although the results were statistically significant, the *p*-value did necessarily imply that the results were also clinically significant. The effect sizes, given by Cohen's d (i.e., the mean change score between the pre-test and post-test, divided by the standard deviation of the change score) were computed to evaluate clinical significance. Clinical significance meant that the effect of CAP on the PSS scores was sufficiently large to be

meaningful in the context of the study. Ferguson (2009) recommended that the minimum effect size representing a clinically significant effect is d = .4, while d = 1.15 represents moderate effect, and d = 2.70 represents a strong effect. The results of this study indicated a moderate effect size of about one standard deviation difference in the PSS scale between the pre-test and post-test for all participants (Cohen's d = 1.10 including the outlier) with a stronger effect size (Cohen's d = 1.28) when the outlier was excluded. The effect of CAP on stress reduction in female participants represented just less than one standard deviation in the PSS scale (Cohen's d = 0.99). The effect size was larger, representing about one and a half standard deviations in the PSS scale (Cohen's d = 1.49) for the male participants. Consequently, based on Cohen's d, the effect of CAP on stress reduction appeared to be greater among the male than among the female participants.

Conclusion

The statistical evidence was interpreted to provide an affirmative answer to RQ1: Will there be a change in the participants' pre- and post-test scores on the PSS after completing the CAP program? Descriptive and inferential statistics based on analysis of the PSS scores of $N = 29$ participants were consistent with the research hypothesis that the pre and post test scores of the PSS would indicate a significant difference; therefore, demonstrating CAP is a viable method for stress reduction.

CHAPTER 5: DISCUSSION

Introduction

The purpose of this study was to determine if the Catharsis Application Program (CAP) is an effective method for stress reduction. The CAP is an original therapeutic process combining graphic expression under musical induction while utilizing psychological testing as an assessment tool to measure progress. The technique falls within the fields of expressive art therapy. The current study was designed to investigate the effectiveness of the CAP process in the reduction of perceived stress in older male and female participants aged between 40 and 65 plus.

A pre-test post-test research design was implemented using a valid and reliable instrument, the Perceived Stress Scale (PSS, Cohen, 1994) to measure the change in the stress levels of the participants. The following research question was addressed: RQ1: Will there be a change in the participants' pre and post test scores on the PSS after completing the CAP program? The research hypothesis was that the pre-test and post-test scores of the PSS would indicate a significant difference; therefore, demonstrating CAP is a viable method for stress reduction.

This chapter presents a summary of the findings, followed by an interpretation of the findings, and their practical implications in the context of the literature. Based on the findings of this study, there is a need for further research. The limitations of the study were considered with emphasis on threats to internal and external validity. The final section presents the conclusions.

Summary of the Results

The convenience sample consisted of $N = 29$ participants who volunteered by responding to advertisements posted in various libraries in the San Francisco of Northern California. All participants provided their consent to participate in the study. The instrument was administered on two occasions (the pre-test and post-test) before and after exposure to the CAP. The PSS-10 is a measure of the degree to which situations in the respondents' life are appraised as stressful (Cohen et al., 1983). The changes in the PSS-10 scores between the pre-test and the post-test were compared using descriptive and inferential statistics. Evidence was provided to identify a change in the participants' pre- and post-test scores on the PSS after completing the CAP program. The descriptive and inferential statistics indicated a significant ($p < .001$) difference between the pre-test and post-test scores of the PSS; therefore, demonstrating CAP is a viable method for stress reduction.

The interpretation of inferential statistics in medical and psychological research should ideally be based not on statistical significance but on clinical significance (Ferguson, 2009). Clinical significance means that there are meaningful relationships between the intervention and the outcomes that have nothing to do with the values of the test statistics or *p*-values, but must be evaluated using effect sizes. Consequently, the effect sizes (Cohen's d) were computed to measure the magnitudes of the differences between the pre-test and post-test scores in this study. The clinical significance of the results of this study was substantial, because the effect sizes were one standard deviation or more difference between the pre-test and the post-test.

Interpretation

The PSS-10 was designed for use with community samples in which measured stress could be influenced by multiple cultural, educational, environmental, and other factors (Cohen et al., 1983). The mean PSS-10 scores reported in this study were, however, obtained from a somewhat restricted convenience sample of $N = 29$ volunteers who were older than the general population ($M = 51.8$ years). Nevertheless, Table 5 indicates that the mean pre-test score before exposure to CAP reported in this study ($M = 19.69$) was comparable with other reported mean PSS scores ($M = 23.57$ to 25.64) derived from representative samples of the general population, using larger sample sizes ($N = 64$ to 570) and containing participants with lower mean ages, from 19.0 to 38.4 years. The implications are that the pre-test stress levels of the convenience sample used in this study were representative of the stress levels in the community.

Table 5

Comparison of PSS-10 Scores in Different Samples

Sample	N	Age (Years)	*PSS-10 Scores*		Reference
		M	*M*	*SD*	
Pre-test (before CAP)	29	51.8	19.69	4.45	This study
Post-test (after CAP)	29	51.8	16.55	3.41	This study
College Students	332	19.0	23.57	7.31	Cohen et al. (1983)
College Students	114	20.8	22.38	6.79	Cohen et al. (1983)
Smoking Cessation Group	64	38.4	25.60	8.00	Cohen et al. (1983)
Community (Male)	371	29.0	23.48	7.77	Andreou et al. (2011)
Community (Female)	570	29.0	25.64	7.89	Andreou et al. (2011)

Desmoulins (2013) proposed that exposure to CAP is effective in reducing an individual's physical and emotional reactions to stress. Now that the effectiveness of the program has been evaluated, the conclusions are not entirely consistent with the proposal of Desmoulins. The mean score for the PSS declined from $M = 19.69$ to $M = 16.55$

between the pre-test and the post-test, implying that the sample as a whole benefited from reduced stress levels through exposure to CAP. However, not every individual in the sample reported reduced stress levels. A few of the participants (n = 4, 13.8%) reported the same or increased stress levels after exposure to CAP. Consequently, CAP did not work for everyone, but it worked for the majority of participants.

Recommendations for Practice

The application of the significant results of inferential statistics based on a convenience sample to make value judgments about the effectiveness of interventions, and subsequently make policy decisions that may influence the lives of people may be controversial (Denzin & Lincoln, 2009). Zilak and McCloskey (2008) argued that the practical application of the results of statistical significance tests has cost, lives, jobs, and justice in the United States. Nevertheless, the implications of this study are that recommendations can be made for practice. The CAP appears to be a suitable method for stress reduction for all members of the community, because the stress reduction levels measured in this study did not appear to vary systematically with respect to the demographic characteristics (age, gender, ethnicity, or marital status) of the participants. Reducing stress levels in the community by encouraging people to participate in CAP is a practical recommendation. Although CAP may not necessarily reverse all of the challenges faced by all people suffering from stress, providing people with an opportunity to reduce their stress levels using expressive therapies may ultimately have a positive effect upon their quality of life and well-being (Malchiodi, 2005). The results of this study also support the recommendation that multimodal practices concerning the use of mind-body interventions such as the CAP should be considered for integration into the

medical, psychology and counseling academic curriculum at universities and medical schools (Hassed, 2004; Koenig et al., 2010; Maddox, 2001).

Recommendations for Further Research

Although this study concluded that the CAP appears to be an antecedent of reduced stress levels among one small convenience sample of 29 volunteers in California, it is necessary to conduct further research to provide results generalizable to the population as a whole. The research design used in the current study (a single group pre-test post-test) is a well-known design applied by several other researchers to evaluate the impact of stress management programs. For example, Lane, Seskevitch, and Pieper (2007) used the same design to determine that the PSS scores indicated the reduced in stress levels among a group of 133 participants exposed to meditation training. However, the pre-test post-test design is not the most rigorous design that can be implemented to evaluate the effectiveness of CAP. The advantage of a randomized controlled trial is that it minimizes sampling bias, by balancing out both the known and unknown factors that may confound the efficacy or effectiveness of the treatment(s) and by enhancing the external validity or generalization of the findings. A randomized controlled trial also permits the measurement of multiple outcome variables over a period of time. For example, higher PSS scores may be correlated with higher levels of biomarkers of stress, such as salivary cortisol (Van Eck & Nicolson, 1994). Therefore, the measurement of stress levels using salivary cortisol could be incorporated within a randomized controlled trial to corroborate the measurements of stress levels collected with the PSS. One of the major weaknesses of the PSS is that its ability to predict stress levels declines rapidly after four to eight weeks as a result of the overriding influence of new stressors

associated with daily annoyances, major stressful events, and changes in coping resources (Al Kalaldeh & Shosha, 2012). Consequently, if a randomized controlled trial evaluates CAP for several months, a biochemical marker of stress is more likely to identify the long-term outcomes of the stress management program than the PSS.

The disadvantage of a randomized controlled trial is that the sample size must be large enough to ensure recruiting sufficient participants in order to (a) assign them randomly into two or more groups and (b) provide adequate power to conduct inferential statistical analysis, so that the outcomes in the control and treatment groups can be accurately compared. Underpowered studies with sample sizes that are too small produce inconsistent or misleading results. Small sample sizes in randomized controlled trials are unethical and cannot be justified (Halpern, Karlawish, & Berlin, 2002; Maxwell & Kelley, 2011).

The use of the PSS as an instrument to measure stress levels in a randomized controlled trial would be an improved approach. Only one randomized controlled trial could be found in the literature in which the PSS was administered to measure the outcomes. Surwit et al. (2002) used the PSS to evaluate the usefulness of a group-based stress management program on the treatment of diabetes. The aim of the study was to examine whether stress management was effective for long-term glycemic control in diabetic patients. A sample of patients with Type II diabetes ($N = 72$) was assigned randomly into a control group (not exposed to the stress management program) and a treatment group (exposed to the stress management program). Although there was a significant difference between the treatment and control group in the mean levels of

hemoglobin (HbA1C), the PSS scores did not differ significantly between the control and treatment groups.

Future research is necessary to answer more difficult research questions about the efficacy of the CAP. For example, the research question "Why does CAP result in reduced stress levels" and "Why are the stress levels of some individuals reduced more than others?" need to be addressed. Statistics alone cannot answer questions beginning with "why." The problem with descriptive and inferential statistics is that they can only explain how variables are inter-related, but they cannot explain why they are related in terms of causes and effects. It is impossible to infer that a prescribed intervention is the cause of a particular outcome using statistical analysis alone (Pearl, 2009). Furthermore, the results of statistical analysis, based only on a comparison of mean values, cannot explain why some individuals respond more positively to an intervention than others. For this reason, qualitative research should supplement future studies of CAP using a mixed method approach with a sequential design. If quantitative and qualitative methods are applied in sequence, then the interpretation of the qualitative data may provide more meaningful information and insight to answer the research question than the quantitative data alone (Creswell, 2009). For example, if a group of CAP participants was interviewed and a content analysis of the interview transcripts was conducted, then qualitative themes could be extracted to explain the reasons the stress level of each participant was or was not perceived to be reduced following exposure to the program. The mixed methods approach supports the view that a broader range of evaluation tools is essential to evaluate the effectiveness of interventions. An abundance of arguments in the literature oppose the view that the statistical analysis of quantitative data collected in

a randomized control trial should be the gold standard in medical, psychological, and educational research (Denzin & Lincoln, 2008; Holttum, 2013).

Limitations

The findings of this study were limited by threats to internal validity associated with the use of the pre-test post-test design. Internal validity is the extent to which the factors out of the control of the researcher influence findings (Creswell, 2009). Due to threats to internal validity, it is not possible to conclude that a direct cause and effect relationship exists between the CAP and the reduction in stress levels. The findings of this study could potentially suffer from several threats to internal validity, including (a) selection bias; (b) the regression effect; (c) the attrition effect; and (e) the implementation effect; the possible impact of these threats to this merit consideration.

Selection bias occurs if the characteristics of the sample are not equivalent to the characteristics of the population from which the sample was drawn. Random sampling helps to avoid selection bias. People who volunteer to participate in research may have different perceptions compared to other members of the population who do not choose to volunteer, resulting in sampling bias (Fraenkel & Wallen, 2010). The convenience sample of people who gave their consent to participate in this study consisted only of volunteers. Because the sample consisted entirely of volunteers, and was not drawn randomly from the population as a whole, the findings of this study may have relatively limited external validity (i.e., the conclusions may not necessarily be generalizable to all people, at all times, and in all places, but may only apply to the study sample).

The regression effect, otherwise known as the regression toward the mean, is a serious threat to the validity of pre-test-post-test designs (Fraenkel & Wallen, 2010). The

regression effect occurs because the measures collected using self-report instruments are not precise, but include an unknown amount of random variation. In self-report instruments, random variation may be linked to response bias, which is the distortion of the item scores by respondents (Paulhus, 1991). The deliberate or unintentionally falsification of the answers in a self-report questionnaire results in a high level of measurement error. The regression effect occurs when item scores due to random variation or measurement error, are lower than they really should be at the pre-test and tend to automatically become larger, and closer to the mean, at the post-test. Conversely, scores that due to random variation or measurement error, are higher than they really should be at the pre-test and then tend to become smaller and closer to the mean at the post-test. Consequently, the mean change score between a pre-test and post-test is not necessarily caused entirely by the prescribed intervention. Some researchers have concluded that a significant change in scores between a pre-test and a post-test is caused directly by a prescribed intervention, whereas in fact, the change in scores could be due only to the regression effect (Nesselroade, Stigler, & Bates, 1980; Weeks, 2007). The possibility of a regression effect confounding the results of this study were that the greatest reduction in the change scores was among the participants with extremely high pre-test scores. Conversely, no stress reduction was reported by participants with the very low pre-test scores. It is possible that the extreme PSS scores were associated with the regression effect. The exclusion of outliers, however, did not change the outcome of the statistical analysis.

Attrition refers to the loss of participants between the pre-test and the post-test. In this study out of N = 33 participants at the pre-test, n = 4, 12.1% participants were lost

before the post-test. Attrition is an internal validity issue if the lost participants intentionally dropped out for a particular reason, and whose responses would be different from those who continued to participate (Fraenkel & Wallen, 2010). One participant had a family emergency and it is not known why three participants dropped out in this study, or whether their inclusion would make any difference to the results.

The implementation effect refers mainly to difficulties experienced in interpreting the results if the variables being measured lack evidence of reliability and/or validity. There has been statistical evidence to establish the validity and reliability of the PSS-10 (Cohen et al., 2003; Roboerti et al., 2006). Many studies have demonstrated that the PSS is a valid and reliable instrument to examine the relationships between perceived stress and different variables related to health, stress, and stress management. Al Kalaldeh & Shosha (2012) reviewed 16 studies that used the PSS between 2000 and 2010. The PSS was considered to be valid and reliable for use in a wide range of settings with various types of participants. The PSS is not limited to particular situations, and it includes items for measuring stress and reactions to stressful situations without prior determinants. The implementation effect also refers to difficulties that may occur if the instrument changes between the pre-test and the post-test. In this study, however, the instrument was the same at the pre-test and the post-test.

Delimitations

The limited scope of the sample study is a delimitation, the study occurred in a specific geographic location of California, San Francisco. The sample population included individuals ranging from 40 to 65 plus, therefore, individuals under 40 years old are not represented in this study. Participants responded to advertisements posted in San

Francisco's libraries; therefore, those individuals who do not attend San Francisco's public libraries were not included in this study unless they were referred by a friend (n=4). The instrument used in this study was a close-ended Likert scale, additional open-ended responses were not included which may have provided more qualitative information and honest answers.

Conclusion

This study based on a pre-test-post-test design concluded that the perceived stress levels of a convenience sample of $N = 29$ adults (measured with the valid and reliable Perceived Stress Scale, Cohen et al., 1983) were significantly lower after exposure to the Catharsis Application Program (CAP). The CAP is an original therapeutic process combining graphic expression under musical induction while utilizing psychological testing as an assessment tool to measure progress. The technique falls within the fields of expressive therapy. Descriptive and inferential statistical analysis of the PSS scores provided an affirmative answer to the research question: RQ1: Will there be a change in the participants' pre- and post-test scores on the PSS after completing the CAP program? The results were consistent with the research hypothesis that the pre-test and post-test scores of the PSS would indicate a significant difference; therefore, demonstrating CAP is a viable method for stress reduction. Accordingly, the recommendation for practice is that more people in the community should be given the opportunity to be exposed to the CAP process in order to help manage their stress levels.

A pre-test post-test design is not the optimal design for evaluating the effectiveness of interventions, and a randomized controlled trial with a larger sample size is recommended in the future to provide more definitive results with improved levels of

internal and external validity. A mixed methods approach involving a combination of quantitative methods (based on the statistical analysis of the trial data) and qualitative methods (based on a content analysis of the transcripts of interviews with CAP participants) is also recommended to address more complex research questions, such as "Why does CAP result in reduced stress levels" and "Why are the stress levels of some individuals reduced more than others?" Answering these difficult "Why" questions may ultimately provide the evidence required to improve the quality of the CAP process in the future, and facilitate the tailoring of its content to the unique needs of each individual participant.

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Appendix A

Recruitment Flyer

Argosy University San Francisco

The Catharsis Application Program: A Technique for Stress Reduction Volunteers Wanted for a Research Study

This study includes research on a non-medical stress reduction using a catharsis technique which combines music and art. Participants will attend 12 sessions in six weeks.

Art material, music compositions, and final consultations are provided at no charge to the participants. Participants may keep their art materials after the study if they desire to do so.

- Interested males and females must be between the ages of 40 and 65 plus years old.
- Experience stress often
- Must not be receiving treatment for stress

Call the researcher, Sharon Foster, to obtain more information about this research project if you have an interest in being a participant at (415)-361-8888.

This research is conducted under the direction of Brian Salinas, Ph. D.,

Counseling Psychology Doctoral Chair

American School of Psychology, Argosy University San Francisco

Appendix B

Informed Consent Form

Informed Consent to Participate in Research

The purpose of this research is to test the efficacy of a nonmedical stress reduction method. If you participate in this research, you will be asked to complete a brief pre-screening Depression and Anxiety Scale, (DASS).

If selected for the study, participants will first complete a pre test of the Perceived Stress Scale (PSS). Next participants will participate in 12 sessions of intervention that include 10 with music and 2 without music. Lastly, participants will complete a post-test of the PSS. Your participation will take approximately six weeks which will include 12 sessions to complete this research project.

Your participation is voluntary. You may refuse to participate in this study. Or you may withdraw or decide to discontinue your participation in the program or activity at any time, without fear of penalty or negative consequences.

The information and data you provide for this research will be treated with confidentiality and all of the raw data will be kept in a secure room in a locked file cabinet by this researcher. Results of this research will be reported as aggregate summary data only, and no individually identifiable information will be presented in the final research. There are certain limits to confidentiality, In instances where individual's report potential harm to self or others or if child or elder abuse are suspected, the rules of confidentiality must be broken and the researcher is mandated to report to the proper authorities. You also have the right to review the results of this research if you wish to do so. A copy of the results may be obtained by contacting the researcher, Sharon Foster, at 1-415-361-8888.

There are anticipated personal benefits from your participation in this research. It is hypothesized that the practice of the Catharsis Application Technique may aid in the expression of emotions that may provide a reduction in perceived feelings of stress. The results of this research may also be an important contribution to the field of mental health as a treatment technique for stress management. Expressive therapies also have risks and individuals may feel uncomfortable if sad or negative feelings are triggered during the session.

I,_____, have read and understand the foregoing information explaining the purpose of this research and my rights and responsibilities as a participant. My signature below designates my consent to participate in this research according to the terms and conditions listed above.

_____ _____

Participant's Signature Date

_____ _____

Researcher's Signature Date

Appendix C

Perceived Stress Scale (PSS)

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by circling how often you felt or thought a certain way.

Name: Date:

Age: Gender (*Circle*): M F Other:

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

1. In the last month, how often have you been upset because of something that happened unexpectedly? **0 1 2 3 4**
2. In the last month, how often have you felt that you were unable to control the important things in your life? **0 1 2 3 4**
3. In the last month, how often have you felt nervous and stressed? **0 1 2 3 4**
4. In the last month, how often have you felt confident about your ability to handle your personal problems? **0 1 2 3 4**
5. In the last month, how often have you felt that things were going your way? **0 1 2 3 4**
6. In the last month, how often have you found that you could not cope with all the things that you had to do? **0 1 2 3 4**
7. In the last month, how often have you been able to control irritations in your life? **0 1 2 3 4**
8. In the last month, how often have you felt that you were on top of things **0 1 2 3 4**

9. In the last month, how often have you been angered because of things that were outside of your control? **0 1 2 3 4**

10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? **0 1 2 3 4**

Please feel free to use the *Perceived Stress Scale* for your research. The PSS Manual is in the process of development, please let us know if you are interested in contributing.

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