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Examining the Relationships Among Vicarious Trauma, Health Behaviors, and Maladaptive Coping

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Abstract

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by

Stephanie Waitt

MA, The Chicago School of Professional Psychology, 2005

BS, Baylor University, 2003

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Health Psychology

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Abstract

Vicarious trauma can impact anyone working with a traumatized person. The constructivist self-development theory asserts that vicarious trauma can negatively distort how the helper thinks about the world and can cause increased stress. Researchers have explored stress and coping models and have studied how increased stress can negatively impact coping and health behaviors. However, researchers have not explored how vicarious trauma, coping, and health behaviors are related. The purpose of this correlational study was to examine the relationships among vicarious trauma, health behaviors (healthy eating, physical activity, cigarette smoking, and risky drinking), and maladaptive coping. The study sample consisted of 102 Texas Children's Advocacy Center (TX CAC) and Texas Child Protective Services (TX CPS) employees with direct exposure to a client's trauma. Participants completed a self-administered online survey designed to measure vicarious trauma, health behaviors, and maladaptive coping. Linear and logistic regression analyses indicated vicarious trauma was significantly related to healthy eating and maladaptive coping. Maladaptive coping was significantly related to physical activity. However, maladaptive coping was not a significant mediating factor in the relationship between vicarious trauma and health behavior. The data indicated TX CPS and TX CAC employees continue to experience cognitive distortions associated with vicarious trauma, have some decreased health behaviors, and are using maladaptive coping strategies. Results of the study may be used to reduce the risk of vicarious trauma to TX CAC and TX CPS employees so they can continue to help children and families heal from trauma.

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Dedication

This research project is dedicated to the hardworking and caring individuals who help those exposed to trauma. You bear witness to some of the worse tragedies but give survivors the empowerment and strength to overcome. Your job is valuable. Your job is special. Because of your hard work you are exposed to unthinkable acts. You may have a heavy heart and carry that upset home with you each day. This research study was conducted for each of you as a way to help you continue to fight for the people you serve. You deserve to have peace and happiness. You make the world a better place every single day. Thank you for all that you do to help children, individuals, and families overcome tragedy.

Acknowledgments

I honestly could not have completed this research project without the support and help I had through this process. I want to first thank my Chair, Miranda van Tilburg. You were a cheerleader and a guide. Your knowledge and expertise helped me create a study that I am proud of. Writing a dissertation is not easy. In fact, it is the hardest thing I have done, but your encouragement helped see me through. You never gave up on me, even when I gave up on myself. Thank you for being a mentor and a leader.

I also need to thank my family, especially my husband. You saw the bad and the ugly side of writing my dissertation and completing my PhD. You sacrificed time with me so I could work on assignments and writing. You believed in me and never let me forget that. You encouraged me, and that encouragement saw me through to the end. Thank you for supporting me. I have completed my dream thanks to your love and support.

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Chapter 1: Introduction to the Study

Vicarious trauma is a type of indirect trauma that can impact anyone in the helping profession and develops after a helping professional has been exposed to the traumas of others (Bride, 2007; Catanese, 2010; Horwitz, 2006; McCann & Pearlman, 1990b; Newell & MacNeil, 2010). Vicarious trauma causes cognitions about the world to become distorted due to this trauma exposure (McCann & Pearlman, 1990a; Newell & MacNeil, 2010). Individuals with vicarious trauma will experience psychological stress due to these cognitive distortions or disrupted thinking (Catanese, 2010; Jordan, 2010; Newell & MacNeil, 2010; Voltmer, Rosta, Aasland, & Spahn, 2010). Vicarious trauma has been shown to cause disrupted thinking in the following areas: (a) dependency and trust, (b) safety, (c) control, (d) esteem, and (e) intimacy (Dunkley & Whelan, 2006a; McCann & Pearlman, 1990; Way, VanDeusen, & Cottrell, 2007). An example of a cognitive distortion related to safety is that the world does not appear to be safe. This thinking has been shown to cause isolation and withdrawal (Ilesanmi & Eboiyehi, 2012).

As individuals developed signs of vicarious trauma, distorted thinking caused stress and changes in behavior (Dunkley & Whelan, 2006a; Way et al., 2007). Researchers found changes in thinking and behavior also impacted how a person coped with stress (Carver, Scheier, & Weintraub, 1989). In addition, researchers examined how nonvicarious trauma and stress impacted coping and health behaviors (e.g., Anda, Tietjen, Schulman, Felitti, & Croft, 2010; Bober, Regher, & Zhou, 2006; Boscarino, 2006; Calhoun, Wiley, Dennis, & Beckham, 2009; Campbell, Greeson, Bybee, & Raja, 2008). The problem is researchers have not explored how vicarious trauma is related to

health behaviors and coping. Understanding this relationship can help researchers develop interventions to improve health and functioning for those who experience vicarious trauma while performing their jobs, and to keep employees effective and able to help others in need.

The consequence of vicarious trauma is that individuals working to help others may struggle on the job. Individuals working for Texas Children's Advocacy Centers (TX CAC) and Texas Child Protective Services (TX CPS) are at increased risk for vicarious trauma. These individuals are exposed to child and family traumas as part of their mission to restore the lives of abused children through advocacy, prosecution, investigation, education, and therapy (CACTX, 2014). The TX CAC and TX CPS employee are at increased risk due to their daily direct exposure to trauma. TX CAC employees have a difficult job. This was evidenced by the 25% turnover rate among investigative workers compared to a 3% turnover rate for individuals in a supervisory position (Bride, 2007; Horwitz, 2006; Texas Department of Family and Protective Services, 2011; Texas State Child Fatality Review Team, 2010). Therefore it is important to examine the relationships among vicarious trauma, health behavior, and coping to improve the work environment for TX CAC and TX CPS employees.

It is important to identify the relationships among vicarious trauma, health behavior, and coping because it has implications for social change. Understanding the relationships among variables can lead to interventions to decrease the risk of vicarious trauma for TX CAC and TX CPS employees. Furthermore, reducing vicarious trauma may also reduce turnover. Unfortunately, high turnover may have an adverse effect on

the children and families the agency aims to protect. Officials at the Texas Department of Family and Protective Services (TX DFPS), an agency that works to protect children from abuse, suggested that decreasing employee turnover would improve agency outcomes, improve family outcomes, and reduce the number of child deaths (as cited in TXSCFRT, 2010; Van Hook & Rothenberg, 2009). Therefore, retaining workers can help ensure that cases are properly and successfully managed. Additional research is needed to improve worker quality of life in addition to outcomes for families and children served by TX CAC and TX CPS. The goal of this research study was to gain this additional insight by exploring the relationships among vicarious trauma, health behaviors, and coping.

In this chapter I provide an overview of the research study, including a brief review of the literature, a description of the theoretical constructs, and an identification of relevant variables. Additionally, I present the research question, sampling procedure, methodology and data analysis plan, study materials, assumptions and limitations, and an explanation of the study's significance.

Background

Researchers wanting to understand how working with trauma impacted the helper found that working with trauma survivors caused greater stress and decreased life satisfaction (Pearlman & Mac Ian, 1995; Van Hook & Rothenberg, 2009). These helpers experienced decreased satisfaction due to disrupted cognitions, or thoughts about self, others, and their environment (e.g., Bell, Kulkarni, & Dalton, 2003; Betts Adams, Matto, & Harrington, 2001; Bober, et al., 2006; Dunkley & Whelan, 2006). Researchers found vicarious trauma altered individual perceptions of the world, and these cognitive

distortions caused individuals to withdraw, feel depressed and anxious, and develop trauma symptoms such as intrusive thoughts and nightmares (Catanese, 2010; Zen, Whooley, Zhao, & Cohen, 2012). Vicarious trauma hurts the individual working with the traumatized client when that individual begins to incorporate the trauma material into a personal worldview. A disrupted worldview challenges interactions with others on a personal and professional level.

Vicarious trauma is different from other types of job-related stressors. On the one hand, vicarious trauma develops after being exposed to others' traumatic experiences through a helping relationship (Bell, et al., 2003; Devilly, Wright, & Varker, 2009; Harrison & Westwood, 2009; Newell & MacNeil, 2010). On the other hand, vicarious trauma is experienced only when individuals work with trauma survivors (McCann & Pearlman, 1990). All individuals working in compassionate helping relationships are at risk for developing symptoms of indirect traumas such as secondary traumatic stress, compassion fatigue, and burnout (Knight, 2010). These indirect traumas are discussed further in Chapter 2. Although all individuals working with trauma are at risk for these indirect traumas, the alteration in cognitive schema is the unique factor that distinguishes vicarious trauma from these other indirect traumas (Catanese, 2010; Knight, 2010). Individuals working for TX CAC and TX CPS will experience general job stressors but will also be at increased risk for vicarious trauma (Knight, 2010; Sexton, 2009). Much is known about how vicarious trauma impacts the individual's life, however, researchers have not explored how vicarious trauma is related to health behavior and coping.

Researchers have explored relationships among nonvicarious trauma, stress, health, health behavior, and coping variables. Some researchers suggested trauma was linked to ill health as evidenced by traumatized individuals with increased disease, physical complaints, and illness (Adams & Riggs, 2008; Bell, et al., 2003; Catanese, 2010; Newell & McNeill, 2010; Nixon, Mazzola, Bauer, Kreuger, & Spector, 2011). Additionally, the impact of job-related stress on health has been explored, indicating that work stress was related to increased ill health (Bauwens & Tosone, 2010; Haagsma et al., 2012; Maia, McIntyre, Pereira, & Ribeiro, 2011; Nixon et al., 2011). During times of stress, individuals are more susceptible to illness and disease due to decreased immune system activation (Sachs-Ericsson, Hernandez, & Kendall-Tackett, 2009). Therefore, it is beneficial for people to practice healthy behaviors during times of stress. People are less likely to practice healthy behaviors, like physical activity and healthy eating, during times of stress and are more likely to practice unhealthy behaviors like substance use. Researchers have shown that increased stress is related to coping. Stress influences the strategies a person will use to decrease the stress (Folkman & Lazarus, 1980). Lastly researchers have explored the relationship among coping, stress, and health behavior. Researchers found that coping style during times of stress determined whether individuals engaged in positive or negative health behaviors (Pettit, Jacobs, Page, & Porras, 2009).

Research Problem

Vicarious trauma increases stress, and stress is associated with ill health (Boscarino, 2006; Calhoun, et al., 2009; Campbell, et al., 2008). Stress also influences

coping, and coping will determine whether a person engages in healthy or unhealthy behaviors. My review of the literature revealed that (a) vicarious trauma created cognitive distortions that caused stress and difficulty remaining effective on the job (Catanese, 2010), (b) increased stress was related to adverse health (Adams & Riggs, 2008; Bell, et al., 2003), (c) cognition determined behavior that promoted or demoted health (Baldwin, Rothman, Vander Weg, & Christensen, 2012), and (d) cognition was a factor in how individuals chose to cope with stress (Folkman & Lazarus, 1980). Despite this knowledge, researchers have not addressed the types of relationships that may exist among vicarious trauma, health behavior, and coping. The problem is that although vicarious trauma changes thinking and causes stress, it is not known whether these cognitive distortions are also related to health behaviors and coping.

Purpose of the Study

In this study the relationships among vicarious trauma, health behaviors, and maladaptive coping were explored using a quantitative, cross-sectional design. Regression analyses were used to identify the relationships among these three variables. Vicarious trauma was the predictor variable. The dependent variable was health behavior. Maladaptive coping was considered the mediating variable in this study.

Research Question and Hypotheses

The primary research question was the following: Are there relationships among vicarious trauma, health behaviors (physical activity, healthy eating, risky drinking, and cigarette smoking) and maladaptive coping? The hypotheses tested in the study were:

H_{01}: Vicarious trauma is not related to health behaviors (physical activity, healthy eating, risky drinking, and cigarette smoking).

H_{a1}: Vicarious trauma is related to health behaviors (physical activity, healthy eating, risky drinking, and cigarette smoking).

H_{02}: Vicarious trauma is not related to maladaptive coping.

H_{a2}: Vicarious trauma is related to maladaptive coping.

H_{03}: Maladaptive coping is not related to health behaviors (physical activity, healthy eating, risky drinking, and cigarette smoking).

H_{a3}: Maladaptive coping is related to health behaviors (physical activity, healthy eating, risky drinking, and cigarette smoking).

H_{04}: The relationship between vicarious trauma and health behaviors (physical activity, health eating, risky drinking, and cigarette smoking) is not mediated by maladaptive coping.

H_{04}: The relationship between vicarious trauma and health behaviors (physical activity, healthy eating, risky drinking, and cigarette smoking) is mediated by maladaptive coping.

Theoretical and Conceptual Framework of the Study

This study's hypotheses were based on the theory of constructivist self-development (McCann & Pearlman, 1990), which implies that as individuals are exposed to trauma through their clients' stories, they will experience distorted thinking. These changes in thinking affect the trauma worker's thoughts about self and others (McCann & Pearlman, 1990; Williams, Helm & Clemens, 2012). Specifically, vicarious trauma

impacts thoughts related to dependency and trust, safety, control, esteem and intimacy (Dunkley & Whelan, 2006; McCann & Pearlman, 1990; VanDeusen & Cottrell, 2007). This theoretical concept was relevant to the study because cognitive beliefs also drive participation in health behaviors. For example, individuals who had positive attitudes about engaging in physical activity and healthy eating were more likely to engage in these behaviors (Baldwin,et al., 2012; Keller et al., 2012; Lucan, Barg, Karasz, Palmer, & Long, 2012). In contrast, individuals who had negative attitudes about physical activity and healthy eating were more likely not to engage in physical activity or healthy eating (Louis, Chan, & Greenbaum, 2009; Padden, Conners, & Agazio, 2011; Shuaib et al., 2011; Zen, et al., 2012). Chapter 2 includes a more thorough description of the constructivist self-development theory. Cognition is the primary factor in vicarious trauma and is a significant factor in health behaviors (Baldwin, et al., 2012).

Furthermore, studies on constructivist self-development theory indicated that cognition was related to individual coping behaviors. For example, researchers found coping changed during times of stress based on thoughts related to the situation (Carver et al., 1989; Folkman & Lazarus, 1980; Folkman, Lazarus, Gruen, & DeLongis, 1986; Wang & Heppner, 2011). Researchers on coping noted that individuals used thoughts about the situation to choose coping strategies that decreased the stress (Carver, 1997; Folkman & Lazarus, 1980). The chosen coping strategy will either increase healthy behaviors or decrease healthy behaviors. Cognition determines attitudes about health behaviors (Hoyt, Stanton, Irwin, & Thomas, 2013; Hurlbut, Robbins, & Hoke, 2011; Rabinowitz, Hartlaub, Saenz, Thompson, & Gallagher-Thompson, 2010; Wilkinson et al.,

2012). For example, individuals who developed a coping plan were more successful at maintaining healthy behaviors (de Freitas Agondi, Gallani, Bueno, Rodrigues, & Cunha, 2012; Puterman, DeLongis, Lee-Baggley, & Greenglass, 2009). Researchers provide support for a connection between cognition, the primary factor associated with vicarious trauma, and health behavior and coping, but there is no research to show how vicarious trauma is related to health behavior and coping. Chapter 2 contains a more thorough examination of this research.

Nature of the Study

No researchers have explored the relationships among vicarious trauma, health behavior, and coping. Therefore, it is important to determine whether relationships exist. The study sample and data collection methods are described in the following sections.

Population

The population of interest in this study was Texas Children's Advocacy Center (TX CPS) and Texas Child Protective Services (TX CPS) employees due to their trauma exposure and subsequent risk for vicarious trauma (Catanese, 2010). TX CAC and TX CPS employees around the state of Texas volunteered to respond to assessment questions. Volunteers completed assessments online via Survey Monkey. Individuals from various positions such as investigator, case aide, forensic interviewer, family advocate, Sexual Assault Nurse Examiner (SANE), therapist, counselor, clinical program manager, executive director, and caseworker were included. All participants reported having had an active caseload during the previous 30 days. Participants who were

supervisors, support staff, volunteer coordinators, board members, finance managers, and administrators were excluded.

Questionnaires

The variables of interest in this study were analyzed using existing assessment tools designed to measure the constructs. Vicarious trauma, the predictor variable, was measured using the Trauma and Attachment Belief Scale (TABS) (McCann & Pearlman, 2003). Health behavior was measured by assessing four different types of behaviors that contribute to health: physical activity, healthy eating, risky drinking, and cigarette smoking. Two different assessment tools were used to measure these health behaviors. Physical activity was measured using the Rapid Assessment Physical Activity Scale (RAPA) (Topolski et al., 2006). Diet was measured using the Starting the Conversation (STC) diet tool (Paxton, Strycker, Toobert, Ammerman, & Glasgow, 2011). Risky drinking was measured by asking three questions about the frequency of consuming alcohol during a 30-day period (Glasgow et al., 2005). Lastly, cigarette smoking was measured by asking participants if they had smoked any number of cigarettes in the previous 7 days (Glasgow et al., 2005). The final assessment tool, the Brief Cope (COPE) was used to measure the mediator variable, maladaptive coping (Carver, 1997). Chapter 3 includes a more thorough description of these assessment tools.

Statistics

Data was analyzed using regression analyses. Vicarious trauma was the independent variable, and the dependent variable was health behaviors (physical activity,

healthy eating, risky drinking, and cigarette smoking). Maladaptive coping was the mediator variable.

Definitions

Adaptive coping: strategies that help the individual attempt to deal with the problem and reduce emotional upset (Boden, Bonn-Miller, Vujahovic, & Dreschen, 2012; Carver, et al., 1989; Duhachek & Oakley, 2007).

Cigarette smoking: considered an unhealthy behavior measured by any incident of smoking a cigarette during a 7-day period (Glasgow et al., 2005).

Cognitive distortions: Perceptions or thoughts that become negatively changed and inaccurate (McCann & Pearlman, 1990).

Coping: Cognitive, emotional, and behavioral efforts a person will use to handle stressors, based on the transactional model of stress and coping (Folkman & Lazarus, 1980).

Health behaviors: Actions that promote health and wellness, reduce illness, and improve quality of life (Pettit, et al., 2009). These may include healthy eating and exercise.

Healthy eating: A diet that consists of healthy and nutritious eating according to the Dietary Guidelines for Americans 2010 (Paxton, et al., 2011; U.S. Department of Agriculture & U.S. Department of Health and Human Services, 2010).

Indirect trauma: Trauma that individuals working with trauma survivors may experience, such as burnout, secondary traumatic stress, compassion fatigue, and

vicarious trauma (Bober, et al.,, 2006; Bride, 2007; Devilly, et al., 2009; Newell & McNeil, 2010).

Maladaptive coping: maladaptive coping is associated with increased stress and emotional upset (Boden, et al., 2012; Carver, et. al., 1989; Duhacek & Oakley, 2007).

Physical activity: defined by the Physical Activity Guidelines for Americans as strength training, flexibility, and aerobic activities (U.S. Department of Health and Human Services, 2008).

Risky drinking: an incident of binge drinking (four drinks for women or five drinks for men) in a 30-day period (Glasgow, et al., 2005).

Stress: Conflict due to personal demands and available resources that impacts well-being and causes a person to feel overwhelmed and emotionally upset (Lazarus & Folkman, 1984; Miller & McCool, 2003).

Trauma: Psychological distress that develops after exposure to a traumatic or overly stressful event (American Psychiatric Association, 2013).

Vicarious trauma: Cognitive distortions that develop over time as a result of exposure to another's trauma (McCann & Pearlman, 1990b; Pearlman, 2003).

Assumptions

There were several assumptions for this study, including those involving external variables that could have influenced data. It is possible that decreased health behaviors were related to issues other than vicarious trauma and maladaptive coping. For example, researchers have found that high caseload contributed to job stress and increased turnover (Van Hook & Rothenberg, 2009). However, to measure the relationships among vicarious

trauma, health behavior, and coping, it was important to test for variables that could have confounded results. These confounding variables included age, caseload number, and numbers of years working in the current position. These factors are known to increase levels of stress and influence health behavior independent of trauma exposure (Lazarus & Folkman, 1984; Miller & McCool, 2003). First, I assumed that individuals investigating child abuse and working with children engaged with a children's advocacy center were exposed to greater trauma and therefore at increased risk for vicarious trauma. This assumption was based on the disproportionate turnover of investigative workers compared to other departments within TX CAC and TX DFPS (Texas State Child Fatality Review Team [TXSCFRT], 2010). Individuals were asked to report their job title to ensure volunteers had direct trauma exposure. Second, I assumed that individuals experienced decreased health and illness due to vicarious trauma rather than job stress. Previous researchers found that caseload numbers were associated with increased stress (Jankoski, 2010; McCann & Pearlman, 1990b; Way et al., 2007). I controlled for job stress in the analyses by examining caseload number and the number of individuals and families served during the 30-day response period. I assumed that older individuals working for TX CAC or individuals who have worked for the agency longer would demonstrate different coping behaviors than younger individuals or newer employees. I also assumed the participant sample included people with effective and ineffective coping skills and that the sample varied in age and experience.

Study Limitations

Although my intention was to explore the relationship among variables in the population of interest, there were some limitations to this study. For example, assessment tools designed to measure health behaviors and coping strategies were subjective assessments and therefore could not be used to measure health behaviors and coping objectively. Furthermore, people tend to overestimate healthy eating and physical activity and underestimate cigarette smoking and risky drinking (Glasgow et al., 2005). However, I was not interested in the absolute level of these behaviors among TX CAC and TX CPS employees. Rather, I was interested in the relative amounts of physical activity, healthy eating, cigarette smoking, risky drinking, and application of coping strategy within levels of vicarious trauma. I assumed that measures would be valid to show relative differences between subjects rather than absolute levels of coping and health behaviors.

The cross-sectional design was also a limitation for this study. This design did not allow me to determine cause and effect. However, this design was a suitable option for determining the degree of the association. An understanding the nature of the relationship can guide future researchers to examine the how the variables are associated. Lastly, study results were not generalizable to other individuals working with trauma survivors because the sample was limited to TX CAC and TX CPS employees. Despite these limitations, this study provided novel information to guide future research.

Significance

This study was significant for several reasons. First, this study furthered understanding of how individuals working with trauma victims are impacted by vicarious

trauma. Understanding the relationships among vicarious trauma, health behavior, and coping can inspire researchers to examine how variables impact each other and to identify specific obstacles to healthful living during times of stress. Furthermore, this understanding can encourage policy development and interventions to help individuals at risk for vicarious trauma.

TX CPS employees have a challenging job of investigating allegations of child abuse and are exposed to numerous children in traumatic situations. The individual consequences of vicarious trauma can also negatively impact families and children. This study was socially significant because finding a relationship among variables can provide support to develop interventions and strategies to improve TX CAC and TX CPS employees' quality of life. Interventions are needed to help individuals be better equipped to serve traumatized children and families.

Lastly, it was important to understand how vicarious trauma and health behavior were related due to the risk for adverse health and the complications associated with poor health. Individuals working for TX CAC and TX CPS indicated decreased health behaviors, as consistent with the general population (Centers for Disease Control and Prevention [CDC], 2011). This suggested that these individuals may be at increased risk for adverse health and these employees could benefit from increased education and opportunities to improve health. Additionally, work-related illnesses are costly to companies. According to Workers' Compensation Benefit data (CDC, 2009), the United States spent $85 billion dollars on medical expenses resulting from injuries, illnesses, and lost wages from workers injured or made ill on the job. It can become expensive for

employers to repeatedly hire and train new staff (Sexton, 1999; Verhaeghe et al., 2003). Researchers also indicated higher turnover caused greater workplace negativity for coworkers (Sexton, 1999; Verhaeghe et al., 2003). This pattern creates a vicious cycle and can impact the organization as a whole creating additional stress for all employees. The outcomes of this study can be used to help organizations develop programs and interventions to improve wellness and functioning of individuals working with clients who have experienced trauma. Improving worker wellness and functioning can help retain workers, improve worker as well as client outcomes, and equip workers to better assist traumatized children and families.

Conclusion

Vicarious trauma has the potential to distort thoughts about self and others over time, alter emotional and behavioral functioning, and impact anyone working to help victims of trauma. Previous research indicated that cognitions determined how individuals behaved (McCann & Pearlman, 1990b; Pearlman, 2003). However, the relationships among cognitive distortions, coping, and health behavior have not been explored. The aim of this study was to understand these relationships. I hypothesized that coping mediated the relationship between vicarious trauma and health behaviors. This hypothesis was tested using a mediation analysis. TX CAC and TX CPS employees with increased trauma exposure were the population of focus of this study due to their daily exposure to trauma, potential job stress, and their increased risk for vicarious trauma. These individuals have the power to help children and families but face challenges as they investigate these crimes. Additional research in this area can help these individuals

not only manage their risk of vicarious trauma but also continue to help abused children. Chapter 2 provides a review of research on vicarious trauma, coping, and health behaviors. Chapter 3 provides a more thorough discussion of the research strategy.

Chapter 2: Literature Review

Vicarious trauma is defined as cognitive distortions that develop over time as a result of trauma exposure (McCann & Pearlman, 1990a; McCann & Pearlman, 1990b). Anyone working to help a traumatized individual is at risk for developing these cognitive distortions. According to Catanese (2010) and Dunkley and Whelan (2006), 62% of sex offender treatment managers, 63% of judges who reviewed sex crimes, and 45.9% of telephone counselors reported cognitive distortions associated with vicarious trauma. Individuals at risk for vicarious trauma are also at risk for adverse consequences of vicarious trauma, including psychological, cognitive, affective, and social consequences (Ilesanmi & Eboiyehi, 2012; McCann & Pearlman, 1990a; McCann & Pearlman, 1990b). These feelings can also impact worker productivity. Vicarious trauma is an occupational hazard for those who engage empathically with traumatized individuals. Due to the large number of individuals at risk for vicarious trauma and the associated negative consequences, it is vital to learn how vicarious trauma impacts health behavior and coping.

Not all workers encountering traumatized individuals are equally affected by vicarious trauma. As indicated above, 50-60% of workers exposed to traumatized clients report distorted cognitions (Catanese, 2010; Dunkley & Whelan, 2006). That leaves 40-50% of workers who do not develop vicarious trauma. Therefore, it is important to examine factors associated with the development of vicarious trauma. One factor may be coping. Working with trauma victims is stressful, and the way a worker copes with this

stress may predict whether he or she develops distorted cognitions. A second factor may be health behaviors. Taking care of oneself emotionally and physically may prevent maladaptive outcomes. Researchers have learned that increased stress was correlated with decreased health behaviors and increased illness in normal populations (Brusseau, Kulirina, & Cothran, 2011; Krueger & Cheng, 2008). The cognitive distortions associated with vicarious trauma will change how a person evaluates his or her situation, abilities, and resources, but there is a lack of research that explains how this relates to coping strategy and health behavior. My research study addressed this gap.

The purpose of this chapter is to thoroughly review existing literature on vicarious trauma, coping, and health behavior as they relate to this study. I provide a review of research on vicarious trauma, coping, and health behavior, and explain how they may be related. Constructivist self-development theory, the theory of vicarious trauma and models of coping, is also addressed in this chapter.

I searched for peer-reviewed articles on vicarious trauma, coping, and health behaviors in the following databases: PsycINFO, ERIC, PsycARTICLES, PsycEXTRA, ProQuest Dissertations and Theses, and SocioINDEX. I targeted seminal research older than 5 years as well as more recent studies. The following search terms helped narrow research results: *vicarious trauma*, *vicarious trauma and work*, *vicarious trauma and cognition*, *theory and vicarious trauma*, *coping and vicarious trauma*, *health behavior*, *health behavior and occupational stress*, *health behavior and stress*, *health behavior and cognition*, *health behavior and trauma*, *health behavior and coping*, *health behavior and*

support, *coping theory*, *coping and stress*, *coping and health*, and *health and vicarious trauma*.

Background

Vicarious trauma is defined as cognitive distortions that develop over time as a result of trauma exposure (McCann & Pearlman, 1990a; McCann & Pearlman, 1990b). Anyone working to help a traumatized individual is at risk for developing these cognitive distortions. Vicarious trauma can have adverse psychological, cognitive, affective, and social consequences for the worker (Ilesanmi & Eboiyehi, 2012; McCann & Pearlman, 1990a; McCann & Pearlman, 1990b). Research indicates that individuals working with trauma survivors have increased risk for psychological distress as evidenced by feelings of hopelessness, depression, anxiety, isolation, and decreased confidence in self and others (Dunkley & Whelan, 2006; Jankoski, 2010; Jordan, 2010; McCann & Pearlman, 1990b; Trippany et al., 2004). These feelings can also impact worker productivity. Vicarious trauma is an occupational hazard for those who engage empathically with traumatized individuals. Due to the large number of individuals at risk for vicarious trauma and the associated negative consequences, it is vital to learn how vicarious trauma impacts health behavior and coping.

Not all workers encountering traumatized individuals are equally affected by vicarious trauma. As indicated above, only 50-60% of workers exposed to traumatized clients develop cognitive distortions associated with vicarious trauma, which suggests that other workers exposed to traumatic experiences do not develop vicarious trauma (Catanese, 2010; Dunkley & Whelan, 2006). It is important to examine factors associated

with the development of vicarious trauma. One factor is coping. Working with trauma victims is stressful, and the way a worker copes with this stress may predict whether he or she develops distorted cognitions. It is important to explore how coping and vicarious trauma are related. A second factor is health behavior. Taking care of oneself emotionally and physically may prevent maladaptive outcomes. Researchers found that increased stress was correlated with decreased health behaviors and increased illness in normal populations (Brusseau, et al., 2011; Krueger & Cheng, 2008). Vicarious trauma increases individual stress, and this increased stress is likely related to the health behavior of individuals exposed to trauma. Increased stress relates to coping and health behavior, but cognition, the primary factor associated with vicarious trauma, may also be related to health behavior coping. Cognition about situation, abilities, and resources also relates to health behaviors (Bruin et al., 2012; Escalante-Guerrero, De la Roca-Chiapas, & Macias-Cervantes, 2012; Gaitan-Sierra & Hyland, 2011; Keller et al., 2011). Individuals who work with trauma survivors are exposed to traumatic information, but not all individuals develop vicarious trauma. The cognitive distortions associated with vicarious trauma change how a person evaluates his or her situation, abilities, and resources, but there is a lack of research on how this relates to coping strategy and health behavior.

Constructivist Self-Development Theory and Vicarious Trauma

McCann and Pearlman (1990a) applied the theory of constructivist self-development to explain the psychological impact of vicarious trauma on therapists and other professionals working with traumatized individuals. Indirect exposure to trauma over time caused people working with trauma to experience a change in cognition and

develop an altered worldview (McCann & Pearlman, 1990a; Williams, et al., 2012). Individuals who are exposed to trauma and develop cognitive distortions related to vicarious trauma will start to think differently about themselves, other people, and their environment. Researchers learned that individuals had higher cognitive disruption on the Traumatic Stress Belief Institute Scale (TSI) related to dependency and trust, safety, control, esteem, and intimacy (Betts Adams, et al., 2001; Dunkley & Whelan, 2006; Jenkins & Baird, 2002; Varra, Pearlman, Brock, & Hodgson, 2008). The TSI is an assessment tool used to measure cognitive distortions that develop as a result of trauma and exposure to trauma (Chamberlain & Miller, 2008). According to constructivist self-development theory, vicarious trauma disrupts cognitions related to dependency and trust, safety, control, esteem, and intimacy (Dunkley & Whelan, 2006; McCann & Pearlman, 1990a). Researchers agree that vicarious trauma is harmful to individuals working with trauma because their thinking will become negatively distorted.

Vicarious trauma distorts cognition in several ways. As thoughts of safety become distorted, individuals doubt their ability to protect themselves and question others' intentions (McCann & Pearlman, 1990a; McCann & Pearlman, 1990b). The individual no longer feels safe in the world, and the world seems uncertain. This can make the world seem like a scary place. The second distortion related to trust and dependency consists of difficulty believing one is dependable and others can be trusted (McCann & Pearlman, 1990b; Tosone, Nuttman-Shwartz, & Stephens, 2012; Way et al., 2007). Increased distrust may cause individuals to experience conflict in relationships. In addition, decreased self-esteem predicts decreased self-intimacy, which leads to further doubt of

self and others (McCann & Pearlman, 1990a; Way et al., 2007). This can damage therapeutic relationships and decrease the worker's competency. This will not only harm the trauma provider but also can cause further harm to the trauma survivor. Vicarious trauma impacts not only those working with trauma but the trauma survivor as well.

Individuals with vicarious trauma reported more distress as thoughts became more distorted (McCann & Pearlman, 1990a; Way et al., 2007). The cognitive distortion regarding control causes individuals to believe they were no longer able to manage their behaviors and emotions or to predict others' behaviors and emotional reactions (McCann & Pearlman, 1990b). Feeling out of control can cause a person to feel anxious, confused, and lost. Individuals may start to become isolated as they experience increased anxiety and fear. People with vicarious trauma who reported cognitions related to intimacy not only reported increased distrust but also no longer felt emotionally connected to self or others (Catanese, 2010; Dunkley & Whelan, 2006; McCann & Pearlman, 1990a; VanDeusen & Way, 2006; Weismoore & Esposito-Smythers, 2010). This thinking further increases isolation. Vicarious trauma changes how the individual behaves and interacts with others because of their increased cognitive distortion.

Researchers learned that increased trauma exposure increased risk for vicarious trauma (McCann & Pearlman, 1990a; Way et al., 2007). Individuals who provided therapy to abuse survivors had greater faulty and negative cognitions related to trust and intimacy than other mental health professionals (Catanese, 2010; VanDeusen & Way, 2006; Way et al., 2007). Furthermore, the longer an individual worked with sexual abuse victims, the more likely he or she was to report higher cognitive distortions of intimacy

(Jankoski, 2010; McCann & Pearlman, 1990b; Way et al., 2007). Trauma exposure over time causes individuals to no longer trust others or self and increases the likelihood that individuals will have greater difficulty valuing and caring for self and others.

The risk of vicarious trauma is a concern for anyone working with trauma, but not everyone working with trauma will experience vicarious trauma. People respond to trauma exposure in different ways, and some individuals will experience decreased functioning while others will demonstrate resiliency (Hernandez, Engstrom, & Gangsei, 2010; Roberts et al., 2008). The different coping strategies an individual can use may be related to individual risk for vicarious trauma. For example, professionals who used personal self-care had reduced risk of vicarious trauma, whereas individuals who neglected self-care had increased cognitive disruption (Adams & Riggs, 2008; Catanese, 2010; Harrison & Westwood, 2009; Newell & McNeil, 2010; Renshaw et al., 2011). Many individuals report vicarious trauma. This suggests individuals are not adequately managing their exposure to trauma. It is important to understand whether the cognitive distortions related to vicarious trauma are related to the strategies a person uses to manage exposure to trauma. According to constructivist self-development theory, individuals use their environment, psychological needs, cognitive beliefs, available resources, personal history, and trauma to construct cognitions. These cognitions will determine how individuals adapt to their environment and their exposure to trauma (McCann & Pearlman, 1990a).

Additional research is needed to help individuals manage the adverse consequences of vicarious trauma. Specifically, researchers need to explore how the

cognitive distortions associated with vicarious trauma relate to coping and health behavior. Before conducting research in this area, it is important to review what is known about vicarious trauma. I begin by identifying individuals at risk for vicarious trauma. Because vicarious trauma is often addressed in the literature as other indirect traumas, I also describe these and distinguish them from vicarious trauma.

Individuals at Risk for Vicarious Trauma

Anyone exposed to others' trauma is at risk for vicarious trauma. Individuals at risk for vicarious trauma include (a) individuals who work with sexual abuse survivors (Johnson & Hunter, 1997), (b) veterans (Jordan, 2010; Voss Horrell et al., 2011), (c) telephone counselors (Dunkley & Whelan, 2006), (d) police, (e) first responders, (f) investigators, (g) prosecutors, (h) nurses, and (i) criminal justice professionals (Catanese, 2010; Dreier, & Wright, 2010; Mansour, Al-Gamal, Puskar, Yacoub, & Mahammad Marini, 2011; Hatcher & Noakes, 2010; Sexton, 2009). Another population at increased risk for vicarious trauma is Children Advocacy Center (CAC) employees and Child Protective Services (CPS) workers (Bride, 2007; Horwitz, 2006). CAC and CPS employees investigate and prosecute allegations of child abuse, witness horrible crimes against children, and are frequently exposed to trauma. These employees' risk of vicarious trauma is further evidenced by high turnover rates. Specifically, officials from the state of Texas reported that investigators had a 30% annual turnover rate in 2009. This rate increased to 40-75% for individuals who investigated child abuse cases (TXSCFRT, 2010). Employee turnover complicates work environments and increases stress. Vicarious trauma, health behaviors, and coping strategies may play a role in

employee turnover. TX CAC employees are at increased risk for vicarious trauma due to their constant exposure to trauma and work environments. It is necessary for researchers to continue to explore vicarious trauma to help these professionals decrease their risk of adverse effects of vicarious trauma and improve their functioning. This population may benefit from research that addresses how vicarious trauma is related to coping and health behavior.

Vicarious Trauma as a Type of Indirect Trauma

The term *indirect trauma* has been used to describe the various types of psychological stressors that individuals working with trauma survivors may experience (Knight, 2010). These traumas include burnout, secondary traumatic stress, compassion fatigue, and vicarious trauma (Bober, et al., 2006; Bride, 2007; Devilly, et al., 2009; Jenkins, 2002; Knight, 2010; Newell & McNeil, 2010). Individuals working with trauma are not only at risk for developing symptoms of vicarious trauma but are also at increased risk for developing symptoms of other indirect traumas as well. Some researchers have suggested vicarious trauma, secondary traumatic stress, burnout, and compassion fatigue are different names for the same issue, and researchers often use these terms synonymously (Knight, 2010; Newell & McNeil, 2010). Other researchers have indicated a clear difference between vicarious trauma and the other indirect traumas (Knight, 2010). It is necessary to understand how vicarious trauma is different from these secondary traumas to understand how vicarious trauma was measured in this study.

Burnout

Burnout is an occupational stressor that causes emotional exhaustion due to work stress. Burnout can impact any employed individual (Harrison & Westwood, 2009; Newell & McNeill, 2010). Researchers indicated burnout impacted workers in the following ways: (a) employees felt overwhelmed and failed in their work duties, (b) employees experienced feelings of negativity, (c) employees felt undervalued and underappreciated (Bell, et al., 2003), (d) employees experienced apathy and emotional numbness (Devilly, et al., 2009), and (e) employees reported emotional exhaustion (Newell & McNeil, 2010). Van Hook and Rothenberg (2009) suggested burnout was different from vicarious trauma. Burnout symptoms develop as a result of organizational difficulties, whereas vicarious trauma symptoms develop after exposure to traumatic stories (Knight, 2010; McCann & Pearlman, 1990; VanDeusen & Way, 2006). Another difference is the increase in cognitive disruption caused by vicarious trauma (Horwitz, 2006; VanDeusen & Way, 2006; VanHook & Rothenberg, 2009). Burnout may cause emotional upset similar to vicarious trauma however, unlike vicarious trauma, burnout is not associated with cognitive distortions. Lastly individuals with burnout may not have vicarious trauma but individuals with vicarious trauma are at increased risk for burnout.

Secondary Traumatic Stress (STS)

Secondary traumatic stress is defined as a set of symptoms identical to post-traumatic stress disorder (PTSD) that develop after exposure to clients' traumatic material (Bride, 2007). These symptoms include intrusive memories and distressed emotions (Bride & Figley, 2009; Devilly, et al., 2009). Trauma exposure is necessary for

both STS and vicarious trauma symptom development. Despite this similarity vicarious trauma is different from STS. A study compared responses on assessment tools developed to measure STS and vicarious trauma and the endorsement of cognitive distortions on the vicarious trauma scale was the significant difference (Jenkins & Baird, 2002). Researchers found vicarious trauma caused cognitive upset, whereas STS was associated with psychological upset (Catanese, 2010; Devilly, et al., 2009; Way et al., 2007).

Compassion Fatigue

Compassion fatigue is known as difficulty or inability to connect emotionally and empathically with clients (VanHook & Rothenberg, 2009). It can impact any individual engaging in an empathic helping relationship with another person (Craig & Sprang, 2010; Knight, 2010). Trauma exposure is not required to develop symptoms of compassion fatigue. In a study by Bride, Radey, and Figley (2007) three instruments designed to measure compassion fatigue were compared with five instruments that measured vicarious trauma. The endorsement of trauma exposure was the significant difference between vicarious trauma and compassion fatigue (Bride, Radey, & Figley, 2007). Compassion fatigue and vicarious trauma share similar symptoms. Researchers have indicated vicarious trauma and compassion fatigue are two separate issues.

Helping professionals working with trauma are at risk to develop burnout, (emotional exhaustion related to work stress), STS, (PTSD symptoms due to trauma exposure), compassion fatigue, (emotional exhaustion due to an empathic helping relationship), and vicarious trauma, (cognitive disruption due to trauma exposure). Each

can negatively impact the provider. Only vicarious trauma disrupts cognition. . In the next section I discuss the symptoms of vicarious trauma in greater detail.

Symptoms of Vicarious Trauma

Witnessing the traumatic stories of others can have a life altering impact on the helper (Catanese, 2010; Sexton, 2009). Researchers have indicated that individuals working with traumatized clients were more vulnerable to incorporating his or hers clients' traumatic experience into their cognitive worldview (Chamberlain & Miller, 2008; Hernandez, et al., 2010; Newell & McNeil, 2010). The five cognitive distortions most affected by vicarious trauma are (a) safety, (b) trust and dependency, (c) esteem, (d) control, and (e) intimacy (Dunkley & Whelan, 2006; Versola-Russo, 2005). The cognitive distortions associated with vicarious trauma also caused negative behavioral, emotional, interpersonal, and physiological changes (Devilly, et al., 2009; Jankoski, 2010; Jordan, 2010, Newell, MacNeil, 2010). Vicarious trauma causes individuals to think differently and can cause upsetting emotions and changes in behavior. For example, research demonstrated that as individuals reported increased cognitive distortion they also reported decreased self-esteem, decreased self-efficacy, less effective clinical skills (Adams & Riggs, 2008; McCann & Pearlman, 1990b; Tosone, et al., 2012), and greater emotional upset (i.e. negativity, numbness, hopelessness, depression, negativity, anxiety, and anger) (Jordan, 2010). Vicarious trauma is similar to other forms of trauma, stress, and psychological distress. Individuals with vicarious trauma have greater difficulty regulating and managing distress (e.g., Bober, et al., 2006; Catanese, 2010; Harrison, & Westwood, 2009; Ilesanmi & Eboiyehi, 2012; Jankoski, 2010; Jordan, 2010). Vicarious

trauma leaves individuals feeling emotionally overwhelmed and the belief he or she cannot adequately care for self. Individuals with vicarious trauma feel under valued, unworthy, and disinteresting (Way et al., 2007). Beliefs and emotions of this nature are likely to cause changes in behavior.

Cognitive distortions associated with vicarious trauma can alter behaviors. Researchers indicated that as cognitive distortions increased individuals engaged in less self-care, neglected or overcompensated for work, and neglected personal boundaries (Catanese, 2010; Newell & McNeill, 2010; VanDeusen & Way, 2006). People with vicarious trauma tend to disengage from others and experience increased relationship difficulty. Researchers found individuals with increased cognitive distortions on the TSI scale also had increased stress, decreased productivity, increased aggression, difficulty making decisions, and increased isolation (Catanese, 2010; Dunkley & Whelan, 2006; VanDeusen & Way, 2006; Weismore & Esposito-Smythers, 2010). Vicarious trauma complicates daily functioning. A trauma survivor deserves a helper that is present, engaged, and pleasant. Vicarious trauma can strip the helper of this ability. Therefore, it is important for individuals at risk of vicarious trauma to engage in behaviors that will decrease risk and help the individual remain focused and engaged with the client.

Health behaviors help decrease health risks and improve wellness. Next I will discuss how vicarious trauma can influence health.

Health and Vicarious Trauma

Researchers suggested vicarious trauma caused distress similar to trauma (Harrison & Westwood, 2009; Way et al., 2007). Trauma and health are closely related.

Trauma triggers the hypothalamic-pituitary-adrenal axis and the sympathetic nervous system, and this activation causes the immune system to over-react (Kendall-Tackett, 2009; Sledjeski, Speisman, & Dierker, 2008; Templin, Lewandowski, Ramaswamy, Ozkan, & Mohanesh, 2008). This physiological response is related to increased illness and a weakened immune system (Sledjeski, et al., 2008; Templin, et al., 2008). In order to decrease risk of adverse health individuals are urged to engage in health behaviors to improve immune functioning, create positive feelings, and promote wellness. The continued incidence of vicarious trauma raises a question that perhaps vicarious trauma is an obstacle for individuals to use health behaviors.

Vicarious trauma will increase psychological distress (Catanese, 2010). Increased psychological distress makes it more challenging to participate in health behaviors (Zen et al., 2012). Specifically, individuals' with increased distress reported increased illness due to decreased physical activity, increased treatment noncompliance, and increased substance abuse (Szanton, Taylor, Page, & Campbell, 2009; Calhoun, et al., 2009; Zen, et al., 2012). Decreased health behavior will cause ill health. For example, decreased health behavior has been linked to cardiovascular diseases, headaches, hives, rashes, gastrointestinal problems, heart attacks, and strokes (Betts Adams, et al., 2001; Catanese, 2010; Nixon, et al., 2011; Shirom, et al., 2011; Verhaeghe, 2003). Therefore, it is important to understand how vicarious trauma and health behavior are related. If individuals working with trauma want to remain healthy it is vital to improve and maintain health behaviors. Increased illness and decreased health can create additional stress and upset for an individual. For example, increased illness was associated with

increased work absenteeism (Dalsey & Sun, 2009; Sexton, 1999), decreased worker productivity (Verhaeghe, 2003; Mohren, Swaen, Kant, van Schayck, & Galama, 2005), decreased job control, and decreased employee empowerment (Nixon, et al., 2011). These consequences will surely impact the individual's stress levels and also cause harm to clients and colleagues.

Trauma exposure not only increases risk of vicarious trauma but may also increase risk for adverse health. Increased distress is associated with changes in health behavior. It is a vicious cycle, trauma exposure creates cognitive distortions, cognitive distortions causes psychological distress, increased psychological distress decreases health behaviors, decreased health behaviors increases adverse health risk, increased health risk increases stress, and increased stress will further complicate individuals lives. Perhaps the cognitive distortions that develop with vicarious trauma relate to this cycle. It seemed possible that coping behaviors were related to vicarious trauma and individual health behaviors. Next I will discuss what researchers have learned about coping in order to understand how vicarious trauma, coping, and health behavior are possibly related.

Coping with Vicarious Trauma

Coping consists of thinking, emotional, and behavioral efforts an individuals uses to handle daily stressors, work stressors, personal stressors, and stressors in relationships (Bober, et al., 2006; Catanese, 2010; Folkman & Lazarus, 1980; Wang & Heppner, 2011). It was clear trauma exposure was a unique stressor that any individual working with trauma survivors could encounter. It was not clear why some individuals exposed to trauma developed vicarious trauma and others did not. All individuals are impacted by

trauma stories. One study found that some individuals were able to construct their worldview in a more positive and encouraging manner, finding meaning in their work and in the victim's stories (Hernandez, et al., 2010), and feeling empowered and competent (Bauwens & Tosone, 2010; Harrison & Westwood, 2009). A dissertation study explored the level of psychological distress among a group of therapists working with traumatized clients. The results of this study suggested that coping strategy was related to increased PTSD symptomology (Weaks, 1999). Perhaps individuals who do not develop symptoms of vicarious trauma are able to apply effective coping strategies and reduce psychological distress associated with trauma exposure. Numerous research studies suggested strategies such as utilizing support, consultation, and supervision were coping strategies that reduced risk of vicarious trauma (Harrison & Westwood, 2009; McCann & Pearlman, 1999; Pearlman & Saakvitne, 1995; Trippany et al., 2004; Tu, 2011; VanDeusen & Way, 2006). This research is helpful for individuals to keep in mind as they begin work with trauma survivors because these coping strategies will reduce the risk of vicarious trauma symptoms. It seemed more likely that many individuals working with trauma were not using these support tools to cope with the stress of trauma exposure. Increased turnover rates among agencies serving high numbers of traumatized individuals indicated many individuals struggle with job satisfaction (Van Hook & Rothenberg, 2009; TXSCFRT, 2010). It seemed important to continue to explore how the cognitive distortions associated with vicarious trauma were related to coping.

There are numerous models and theories of coping. Researchers have learned coping involves numerous strategies based on individual differences, personality factors,

and environmental factors (Green, Choi, & Kane, 2010; Wang & Heppner, 2011). The next section discusses models of coping. I start with a discussion of how coping models were developed and end with an explanation of the model that most closely supports relationships among vicarious trauma, health behaviors, and coping.

Model of Stress and Coping

The early model of coping, the transactional model of stress and coping, suggested that individuals evaluated, or appraised, their situation and resources, and selected a coping strategy based on this appraisal (Folkman & Lazarus, 1980). Early coping researchers asserted there were many coping strategies an individual may choose to manage stress. Numerous researchers sought to identify the coping strategies most used by individuals. Originally researchers applied factor analysis tests to individual coping factors and learned individuals used either problem focused coping or emotion focused coping (Folkman & Lazarus, 1980; Green, et al., 2010). Problem focused coping includes strategies like active coping, planning, restraint coping, and seeking social support (Carver, et al., 1989; Green, et al., 2010; Folkman & Lazarus, 1980). These strategies are more goal directed and solution focused. Conversely, emotion focused coping consists of strategies like venting emotions, behavioral disengagement, denial, acceptance, and turning to religion (Carver, et al., 1989; Folkman & Lazarus, 1980). Emotion focused coping strategies help individuals reduce emotional distress. Researchers later learned that coping consisted of more than attempts to solve the problem or reduce emotional upset. A study applied factor analysis and found coping strategies factored into four categories, active coping, social coping, meaning based

coping, and avoidant coping. This was different from the two dimensional model of coping suggested by Folkman and Lazarus (Carver, et al., 1989; Duhachek & Oakley, 2007; Green, et al., 2010). It has also been found that problem focused and emotion focused coping strategies were not mutually exclusive. For example Folkman and Lazarus (1980) asserted *seeking social support* was a problem focused coping behavior. However, studies later indicated *seeking social support* helped solve the problem and reduced emotional distress (Carver, et al., 1989). Thus, coping strategies can serve different purposes.

People may not use the same coping strategies for all types of stress. For example, a study suggested that individuals used more problem solving and active planning to manage stress at work and used more social support or emotional venting to address personal stressors (Carver & Scheier, 1994; Duhachek & Oakley, 2007; Somech & Drach-Zahavy, 2012). Coping can be highly situation dependent. Green, Choi and Kane (2010) found that use of coping strategies was based on level of emotional upset and cognitive beliefs about the situation. In this study individuals that reported perceived control of the situation applied coping strategies that solved the problem. Those that reported they were not in control of the situation reported using more strategies aimed at reducing emotional upset (Green, et al., 2010). This study supported the transactional coping model.

There are numerous factors that can influence coping strategy. Situational factors will also influence coping. Exposure to trauma is a situation unique to those working with traumatized individuals. Coping could either benefit or impede individual attempts to

manage this unique stressor. One could assume that problem focused coping strategies would benefit an individual dealing with exposure to traumatized individuals. However, problem focused coping was less effective at reducing stressors when individuals had no control over the stressor (Rotondo & Kincaid, 2008; Somech & Drach-Zahavy, 2012). This may be the case for caseworkers helping traumatized individuals who have little to no opportunity to change the trauma already experienced by their clients. On the other hand, emotion focused coping has not been found to either help or hamper stress (Rotondo & Kincaide, 2008; Somech & Drach-Zahavy, 2012). There was a need to move away from the dichotomy of coping proposed by the transactional stress model and examine effective coping strategies for exposure to trauma.

When faced with a stressor a person will make an active attempt to deal with this stressor, and the strategy will either help the individual or it will further harm the individual. Adaptive coping strategies help the individual attempt to deal with the problem and reduce the emotional upset (Boden, et al., 2012; Carver, et al., 1989; Duhachek & Oakley, 2007). Examples of adaptive coping strategies are active coping, planning, positive reframing, use of instrumental support, acceptance, and religion (Carver, 1997). Maladaptive coping, on the other hand, is associated with increased stress and emotional upset (Boden, et al., 2012; Carver, et al., 1989; Duhacek & Oakley, 2007). Maladaptive coping consists of strategies such as self-distraction, denial, substance use, behavioral disengagement, venting, and self-blame (Carver, 1997). Although the effectiveness of a coping strategy -and hence it being either adaptive or maladaptive- depends on the individual, the stressor and the situation. Researchers have shown that

coping strategies were associated with either increased or decreased emotional distress. For example, individuals who reported adaptive coping strategies reported increased perceived control, decreased stress, increased self-esteem, and improved well-being (Bauwens & Tosone, 2010; Harrison & Westwood, 2009; Tobert & Moneta, 2013; Wang & Heppner, 2011; Zhang & Cai, 2012). Individuals who used maladaptive coping strategies reported feeling out of control, had increased substance use, increased secrecy, anger, and aggression (Bride & Figley, 2009; Carver, et al., 1989; Tobert & Moneta, 2013; Wang & Heppner, 2011; Weaks, 1999; Zhang & Cai, 2012). It seemed fair to ask that if adaptive coping was more helpful to the individual then why were people not always turning to these strategies to reduce stress. Perhaps some stressors, such as vicarious trauma, impede attempts to cope successfully.

Looking at coping as an adaptive or maladaptive model can help provide insight to why some individuals experience vicarious trauma and others do not. Perhaps individuals with vicarious trauma choose coping strategies that cause further psychological distress. Trauma researchers found that maladaptive coping mediates self blame, increased PTSD symptoms, and increased difficulty overcoming trauma (Najdowski & Ullman, 2009). Vicarious trauma creates distress and cognitive distortions similar to trauma symptoms. There was evidence to support that individuals chose coping strategies based on their cognitions related to self and self capability (Beer & Moneta, 2010). Increased confidence in self was correlated with adaptive coping and decreased confidence in self was correlated with maladaptive coping (Beer & Moneta, 2012). Vicarious trauma is associated with decreases in one's confidence in self, others, and the

world. My review of the suggested these cognitive distortions could be more related to maladaptive coping strategies.

Coping behaviors also influence health behaviors. Researchers found that coping strategies determined whether individuals engaged in healthy behaviors, such as physical activity and healthy eating, or if individuals engaged in less healthy behaviors, like substance abuse. (Wilkinson, et al., 2012; de Freitas, et al., 2012; Puterman, et al., 2009). Individuals who used adaptive coping strategies had decreased weight gain and were more likely to engage in healthy diet practices. Individuals who used maladaptive coping strategies had less healthy diet practices and increased weight gain (Rabinowitz, et al., 2010). A study of 235 women with trauma histories were asked to discuss their history of childhood trauma, current stress levels, coping, and health. The results of this study indicated that a history of trauma and coping strategy significantly related to negative health concerns in adulthood (Hager & Runtz, 2012). Researchers also found that suggested trauma symptoms were correlated to maladaptive coping and decreased health behaviors such as treatment noncompliance and increased substance use (Bride & Figley, 2009; Ruiz-Parraga & Lopez-Martinez, 2013; Talbot, et al., 2013; Wang & Heppner, 2011; Zhang & Cai, 2012). Thus, coping strategy was predictive of health outcomes, decreased health behavior, and adverse health when maladaptive coping was used.

In conclusion, coping either helps the individual manage stress or harms the individual's ability to manage stress. It seemed likely that increased vicarious trauma could be related to increased maladaptive coping and adverse health. As it was unknown whether stress associated with vicarious trauma was related to coping strategy and if the

chosen coping strategy would relate to health behaviors it was necessary I continued to explore this relationship. Coping and health behaviors seemed to be related, however this study also sought to understand the relationship between vicarious trauma and health behavior. This will be the topic of the next section.

Health Behaviors and Vicarious Trauma

Individuals may use health behaviors to promote a healthy lifestyle, improve health, increase emotional, spiritual, and physical wellbeing, and cope with stress (Centers for Disease Control and Prevention [CDC], 2011; Davis, et al., 2011; Hurlbut, et al., 2011; Libby, Pilver, & Desai, 2012; Louis, et al., 2009; Tucker, et al., 2011). Health behaviors include physical activity, eating nutritiously, following treatment recommendations, obtaining adequate sleep and relaxation, and seeking social support (Hurlbut, et al., 2011). Health behaviors improve health and wellness and can also decrease stress. Specifically studies indicated that routine physical activity and healthy eating was related to decreased stress (Cox et al., 2011; Davis, West, Weeks, & Sirovich, 2011; Gaitan-Sierra & Hyland, 2011). Increased stress was associated with the following behaviors: increased substance abuse, increased aggression, (Flores, et al., 2010), decreased healthy eating (Padden, et al., 2011), decreased physical activity, (Copeland-Linder, et al., 2011; Krueger, & Chang, 2008; Widome, et al., 2011; Zen, et al., 2012), and weight gain (Cox, et al., 2011; Keller, et al., 2012; Padden, et al., 2011). Thus, stress and health behaviors were related but it was not clear what was cause and effect. Health behaviors can improve health and decrease stress or increase levels of stress.

There were no studies noting the association of stress with vicarious trauma, but, based on the previous discussion, it was not unreasonable to hypothesize that vicarious trauma was also associated with changes in health behaviors. This notion was supported by researchers that found personal trauma, resulting in PTSD, was associated with decreased health behaviors (Boden, Kimerling, Jacobs-Lentz, Bowman, Weaver, Carney, et al., 2012; Campbell, et al., 2008; Qureshi, Pyne, Magruder, Shculz, & Kunik, 2009; Zen, et al, 2012). Perhaps individuals exposed to trauma and experience vicarious trauma also experienced decreased health behaviors. This idea was important to consider due to the consequences of decreased health behaviors and the relationship to adverse health. Decreased health behavior relates to increased illness and increased illness relates to increased stress (Brusseau, et al., 2011; Keller, et al., 2012; Kira, et al., 2008; Louis, et al., 2009; Zen, et al., 2012). Stress, health behaviors, and health have reciprocal relations and each influences the other.

It was adequately documented that vicarious trauma caused cognitive distortions, and researchers also documented a relationship between cognition and health behaviors. For example, individuals' beliefs and attitudes influenced healthy behaviors (Baldwin, et al., 2012; Keller, et al., 2012; Lucan, et al., 2012). Studies suggested individuals who reported more negative thinking, such as distrust of the world, also reported decreased health behaviors despite intentions and plans to engage in healthy behaviors (Jatturong, Wichianson, Bughi, Spruijt-Metz, & Nguyen-Rodriguez, 2009; Keller, et al., 2011; Louis, et al., 2009; Zen, et al., 2012; Lucas, et al., 2008; Possemato, Wade, Anderson, & Ouimetti, 2010). Individuals were more likely to engage in health behaviors if an

appraisal of the situation determined he or she would have a positive experience (Folkman & Lazarus, 1980; Gaitan-Sierra & Hyland, 2011). These individuals also perceived the world as safe and fair (Keeley, Wright, & Condit, 2009). Thoughts about self and situations relates to health behaviors. An individual's thoughts about his or her ability, control, and available support determined participation in health behavior (Bruin, et al., 2012). Individuals who believed he or she had greater self-control and had positive thoughts of self were more likely to engage in healthy behaviors like healthy eating and physical activity (Bruin, et al., 2012; Churchill & Jessop, 2010; Gaitan-Sierra & Hyland, 2011; O'Conner, et al., 2009; Schuz, et al., 2012). Thus, cognitions are important predictors of health behaviors. This implies that individuals with cognitive distortions related to vicarious trauma may have more difficulty maintaining health behaviors.

Individuals working with trauma are urged to practice self care and use various healthy behaviors and adaptive coping strategies. However, this review indicated that individuals struggled to apply helpful practices as they developed cognitive distortions due to vicarious trauma. The beliefs a person has regarding self, others, and the world are necessary for starting and maintaining health behaviors (Churchill, & Jessop, 2010). Thoughts about self, others, and the world are compromised due to vicarious trauma and I asked if these distortions also compromised health behavior.

Conclusion

Vicarious trauma is an issue that may impact many individuals with an empathic desire to help others overcome trauma. The symptoms of vicarious trauma impact mood, behavior, and cognition. Researchers suggested healthy behaviors and adaptive coping

improved risk of vicarious trauma and improved functioning. Despite all this information many individuals, especially Texas Children's Advocacy Center (TX CAC) and Texas Child Protective Services (CPS) employees, continue to struggle with vicarious trauma as evidenced by high turnover rates. Perhaps vicarious trauma is related to individual health behaviors and coping. Researchers have suggested that vicarious trauma created cognitive disruption and these disruptions caused stress and behavioral changes. Researchers also indicated that during stressful times the coping skills and health behaviors an individual chose depended on personal experiences, cognitive schema, and thoughts about self and others. Previous literature has not explored the relationship between the cognitive distortions associated with vicarious trauma, health behaviors, and coping.

Studying this relationship was important to gain further insight into vicarious trauma. Establishing a relationship among variables has the ability to guide future research to help individuals better manage risks of trauma exposure. It was necessary to explore the relationship between health behaviors and vicarious trauma to help provide insight to why individuals continued to struggle with vicarious trauma. The purpose of this study was to understand how vicarious trauma was related to health behaviors and coping strategy. In the next chapter I discuss the research plan to explore this relationship.

Chapter 3: Research Method

Study Aim and Hypothesis

The first purpose of this study was to determine how cognitive distortions associated with vicarious trauma are related to health behaviors. Vicarious trauma has been found to distort cognitions related to self and others, and this can lead to changes in behaviors (Bell, et al., 2003; Betts Adams, et al., 2001; Dunkley & Whelan, 2006; Harrison & Westwood, 2009; McCann & Pearlman, 1990; Way, VanDeusen & Cottrell, 2007). Vicarious trauma may impact individuals' health behaviors such as healthy eating, physical exercise, cigarette smoking, and risky drinking. The second purpose of this study was to examine how coping strategies are related to vicarious trauma and health behaviors. Researchers found that individuals working with trauma were at increased risk for stress due to trauma exposure, and during times of stress individuals used various strategies to cope with the stress (Bell, et al., 2003; Betts Adams, et al., 2001; Lazarus et al., 1986; Shirom et al., 2011). Researchers also found that during times of stress individuals experienced decreased health due to changes in health behavior (Brusseau, et al., 2011; Krueger & Cheng, 2008). Findings indicated that vicarious trauma created cognitive distortions that increased stress, and increased stress was related to changes in health behavior and coping strategies. The multivariate relationships between these cognitive distortions associated with vicarious trauma, health behavior, and coping has yet to be explored. I hypothesized that vicarious trauma was related to healthy behaviors (physical activity and health eating) and unhealthy behaviors (risky drinking and cigarette smoking) and this relationship was mediated by maladaptive coping.

In this chapter I describe the method for testing the study's hypotheses. I present the research design and rationale, methodology including sampling procedure, population of interest, procedures for recruitment, and instruments. I also address threats to validity and ethical procedures

Research Design and Rationale

I used a quantitative cross-sectional design, which was appropriate for several reasons. First, researchers created assessment tools to measure each variable of interest. I used these psychometrically sound instruments to build upon existing research. Second, the purpose of this study was not to compare and contrast but to determine whether vicarious trauma was related to health behavior and coping. Third, a cross-sectional study was appropriate because the focus was on how the population was experiencing trauma exposure, health behaviors, and coping. Findings can be used to identify the prevalence of vicarious trauma in the population (TX CAC employees and TX CPS employees) and to explain how vicarious trauma related to coping strategies and health behaviors.

Vicarious trauma was the predictor variable. Vicarious trauma was defined in this study as the five cognitive distortions that develop over time after an individual is exposed to others' trauma (McCann & Pearlman, 1990b). Vicarious trauma was measured by scores on the Trauma and Attachment Belief Scale (TABS) (McCann & Pearlman, 2003). Health behaviors were the dependent variable. Health behaviors are actions that promote health and wellness and help reduce illness (Pettit, et al., 2009). The health behaviors of interest in this study were healthy eating, physical activity, risky drinking, and cigarette smoking. Maladaptive coping strategy was the mediating variable.

Coping was defined in this study as cognitive, emotional, and behavioral strategies individuals use to manage stress. Maladaptive coping refers to strategies associated with increased stress, problems, and emotional upset (Boden, et al., 2012; Carver, et al., 1989; Duhacek & Oakley, 2007). Data was assessed using a mediation analysis. Regression analysis was an appropriate test because it was needed to determine how variables were related.

Methodology

Study Population

The population of interest in this study was Texas Children Advocacy Center (TX CAC) and Texas Child Protective Services (CPS) employees. There are numerous positions within TX CAC, and each job has various responsibilities. Each county in Texas has a CPS agency, and there are 68 CACs in Texas. Each serves about 40,000 children a year (CACTX, 2014). TX CAC and TX CPS employees include CPS investigators, sexual abuse nurse examiners, forensic interviewers, therapists, counselors, family advocates, lawyers, and case aids. Agencies partner with local law enforcement professionals in investigating cases, prosecuting offenders, and helping families heal from allegations of abuse. Employees are exposed to a large amount of trauma and witness the harm and criminal acts to children and families. In 2013, TX CACs worked to help children who were sexually abused (68%), physically abused (12%), at risk (10%), witnessed violence (6%), neglected (1%), or murdered (<1%) (CACTX, 2014). Trauma exposure may have contributed to difficulty coping and maintaining healthy behaviors.

Sample

The study sample included Texas Children's Advocacy Center (TX CAC) and Texas Child Protective Services (CPS) employees. I was interested in how vicarious trauma related to other variables; therefore, individuals with greatest trauma exposure who were at greatest risk for vicarious trauma were included. Employees working directly with children and families were invited to participate in the study. The sample was convenient rather than random because it included volunteers. I focused on those whose job role was investigator, case aide, forensic interviewer, family advocate, SANE nurse, director, manager, therapist, or caseworker. Supervisors, support staff, and administrators were excluded from participation. To capture a sample that was representative of the population, I offered offices in various areas of the state of Texas the opportunity to participate. The headquarters for TX CAC and TX CPS is located in Austin, TX. Every office and every direct service employee was provided an opportunity to participate. Many did not wish to participate because of high demands, caseloads, and concerns about time commitment

Procedures for recruitment, participation, and data dollection. The Texas Children's Advocacy Centers and Child Protective Services supported my research efforts. I contacted Catherine Bass, Director of Program Services at TX CAC headquarters, to request permission to contact CAC and CPS employees for participation in the study. Ms. Bass agreed to submit a proposal to each TX CAC executive director, who was responsible for granting permission to contact individual CAC employees. Dan Powers, Senior Vice President of Clinical Services at CAC of Collin County, provided

permission to contact his employees. Debbie Hall, Assistant Director of Program Services of CAC of Texas, provided permission to contact CAC employees through the CAC of Texas in Austin. Several CPS agencies around the state chose to participate. CPS supervisors in the following counties agreed to invite their employees to participate: Baxer, Travis, Medina, Montgomery, Livingston, Grayson, Cooke, Collin, Dallas, Harris, Taylor, Jones, and Nueces. CAC executive directors and CPS supervisors helped distribute website information to employees via an email I drafted. The email included an explanation of the study and provided a Survey Monkey link that directed research participants to informed consent documents and study questions.

Informed Consent and Ethical Procedures

Walden University approved this study, and the approval number was 12-23-14-0227623. All participants were provided informed consent via the Survey Monkey website. Survey Monkey is a web-based survey tool. Survey Monkey ensures privacy of test data and participant data by using SSL enabled security. Survey data were was protected on a secure server. Individuals were asked to participate on a voluntarily basis and were told the purpose of the study was to provide additional information regarding vicarious trauma. Informed consent also included the expectations that participants would complete survey within 30 days and that there were no consequences for not participating. After answering survey questions, participants were provided information on how to exit the study and were given a debriefing statement via Survey Monkey.

The statement of informed consent included not only the nature and expectations of the study but also a description of the risks of participation. Anonymity was likely a

major concern of many participants. All responses were anonymous. No personal identifying information (names, birth dates, address, etc.) was collected. All participants were assigned an ID number based on the order the completed survey was received. For example, the first participant who completed the assessment was assigned the number 1, the second was given the number 2, and so on. Only the ID number was stored with the survey questions. In this way the data collected remained anonymous. Data remained anonymous. I managed data on my personal, secure, password-protected computer. Data will be kept for 3 years following dissertation completion and approval and will only be used for future publications. Participation was self-directed and individuals were able to complete survey questions on their own time. I was not able to monitor whether individuals completed questions in a private room. Participants were advised to complete the survey alone in a secure location (e. g., office, car, home) where others would not be able to see their responses.

Participants were also concerned about time and additional stress related to participation. In the informed consent document, I explained that participation was voluntary and individuals could leave the study at any time without consequence. Individuals were asked to report their subjective experience in the previous 30 days. Some survey questions required participants to report on their subjective experiences and may have seemed invasive. If participants became upset, they were able to terminate their participation. They were also advised they could skip the question. In addition, they were provided with my contact information in the event that they became or if they had any questions or concerns. All participants were provided with recommendations to seek

assistance through a local mental health agency, primary care physician, or local 211 community resource line to obtain local referrals, if needed.

Instrumentation and Operationalization of Constructs

I used preexisting psychometrically sound assessment tools to measure the variables of interest. The Trauma and Attachment Belief Scale (TABS), Brief COPE, Rapid Assessment Physical Activity Scale (RAPA), Starting The Conversation (STC), and Practical Health Behavior Scale were used. In the following section I describe these instruments in greater detail. I also identify confounding variables that could have impacted assessment scores.

Demographic Variables

Participants were asked to provide their demographic information (gender, age, caseload number, and number of years in current position). These variables are known to be associated with increased risk for vicarious trauma and unhealthy behaviors such as substance abuse. Participants were asked to report their exact age and caseload information. Participants reported the average number of open cases on their caseload in the last 30 days. This was coded according to number reported. High caseload is also considered a risk factor for vicarious trauma. Individuals reported the length of time, in years, that they were employed in their current position. Individuals who worked in their position for less than 1 year were coded with a 0; all others were coded according to the length of time indicated. Time on the job can also influence vicarious trauma scores. Individuals employed by the agency for a longer period of time have greater trauma exposure. This information helped provide a description of the population.

Instrumentation and Operationalization of Vicarious Trauma

Vicarious trauma is defined as cognitive distortions that develop over time due to exposure to others' trauma (Dunkley & Whelan, 2006; McCann & Pearlman, 1990; Williams, et al., 2012). Researchers developed an instrument to measure these cognitive distortions (Pearlman, 2003). This scale is described below.

Vicarious trauma assessment. The Trauma and Attachment Belief Scale (TABS) was used to measure vicarious trauma (Pearlman, 2003). The TABS applies constructivist self-development theory and is used to measure the five cognitive schemas impacted by vicarious trauma. Specifically, The TABS is used to measure cognitions about self and others related to safety, trust, esteem, control, and intimacy (Dunkley & Whelan, 2006; Jankoski, 2010; McCann & Pearlman, 1990a; Mendell, 2012; Pearlman, 2003; Saakvitne, Tennen, & Affleck, 1998; Way et al., 2007; Williams, et al., 2012). The TABS is a revised version of the Traumatic Stress Institute Belief Scale (TSI), the assessment tool used to define the construct of vicarious trauma (Pearlman, 2003). Permission to use this scale for this study was requested and granted (Appendix A).

Participants responded to questions based on their experience in the last 30 days. These included questions such as, "When I am alone, I don't feel safe" (self-safety), "I can trust my own judgment" (self-trust), "People are wonderful" (other-esteem), and "I hate to be alone" (self-intimacy) (Ippen & Kulkarni, 2005). The TABS consists of 84 questions. Participants endorsed test items through a 6-point scale (1 = *disagree strongly*, 6 = *agree strongly*). The TABS consists of 10 subscales to measure the five cognitive distortions associated with vicarious trauma. There are two subscales for each cognitive

distortion; one to measure thoughts about self and the other to measure thoughts about others. The ten subscales are 1) self-safety, 2) other-safety, 3) self-trust, 4) other-trust, 5) self-esteem, 6) other-esteem, 7) self-intimacy, 8) other-intimacy, 9) self-control, and 10) other-control (Ippen & Kulkarni, 2005). All scales were scored using *t*-scores (*M* = 50, *SD* = 10) (Aidman, 2003). The sub-scales scores provided a total *t*-score (Aidman, 2003). Higher *t*-scores indicated greater cognitive disruption due to vicarious trauma (Garro 2003; NCTSN, 2012). Researchers found TABS scores were consistently higher for individuals working with trauma survivors then individuals in general outpatient treatment (Pearlman, 2003; Pearlman & Mac Ian, 1995; Schauben & Frazier, 1995). Individuals in treatment for trauma had higher TABS total scores than those who were not in treatment for trauma, and these scores were positively correlated with scores on the PTSD checklist (Garro, 2003; Pearlman, 2003).. The sub-scales are helpful to ascertain which cognitions are disrupted and help identify themes in cognition. I was interested in vicarious trauma rather then individual cognitive distortions, therefore, I used the TABS total score. In other studies higher total *t*-scores on the TABS (t = >60) was indicative of greater cognitive disruption and vicarious trauma (NCTSN, 2012; Schauben & Frazier, 1995). I used the total TABS score as evidence of vicarious trauma. I sought to understand if higher *t*-scores on the TABS were related to coping strategy and health behavior. Future research can expand on this study and explore how particular cognitive distortions impact coping and health behavior.

The TABS was appropriate to use in this study because it was specifically designed to measure vicarious trauma. Researchers support the instruments effectiveness.

In a sample of 1,743 adults the TABS was found to have adequate psychometric properties (Devilly, et al., 2009; Garro, 2003; NCTSN, 2012; Pearlman, 2003). Test-retest reliability over 12 days produced acceptable reliability for total score (pearson *r* = .75) and for sub-scales (.60 through .79). Furthermore internal consistency was strong (Cronbach's alpha = .96) (NCTSN, 2012). Reliability was established using inter-rater measures and comparing scores with the previous version of this assessment, Traumatic Stress Institute Belief Scale Revision L, 1994 (Garro, 2003; NCTSN, 2012). Test items assessed cognitive distortion as they related to vicarious trauma. Content validity was established after collecting 100 statements from trauma survivors that supported the five areas of cognitive distortion. These statements were assigned to the supported content area by a panel of experts. Items were deleted from the assessment if choices were not consistent among the developers (NCTSN, 2012). TABS test items were correlated with TSI test items. Intercorrelations (.20 to .88) suggested overlap between most test items (Aidman, 2003; Garro, 2003; McLean, Wade, & Encel, 2003). The TABS has appropriate criterion validity. The TABS has been used to assess trauma in clinical practice, assess vicarious trauma, and examine effects of vicarious trauma (NCTSN, 2012; Pearlman, 2003). The TABS fit the purpose of this study.

This instrument has sufficient psychometric properties, but there are concerns about the assessments generalizability. Specifically the standardization sample was disproportionately female (72.7%), Caucasian (74.7%) and younger (average age 35.5) then the general population (Aidman, 2003; Garro, 2003; NCTSN, 2012; Pearlman, 2003). However, this may be representative to the CPS and CAC population as younger

women are drawn to the field. The TABS was an appropriate measure for this study due to the TABS' widely accepted use and popularity in previous research, theoretical framework, and ability to measure vicarious trauma (Garro, 2003; Pearlman, 2003).

Instrumentation and Operationalization of Health Behaviors

Health behaviors, for the purposes of this study, were operationalized as physical activity and healthy eating. This study also assessed for unhealthy behaviors, cigarette smoking, and risky drinking. These four variables are considered health behaviors because each behavior will impact individual health, either promote health or decrease health, and contribute to increased illness and mortality rates (Glasgow, et al., 2005). The purpose of this study was to explore how vicarious trauma related to health behaviors therefore it was necessary to assess healthy behaviors (physical activity and healthy eating) and unhealthy behaviors (cigarette smoking and risky drinking). I cannot assume that vicarious trauma is only related to healthy or unhealthy behaviors. Including both demonstrated whether vicarious trauma was related to healthy or unhealthy behaviors. There are numerous assessment tools to measure health behaviors and it should be noted these lack significant validation. Health behaviors are difficult to assess without daily diary logs and observations (Glasgow, et al., 2005). Most assessment tools designed to measure health behavior are lengthy, complicated, and generally focus on only one health behavior. The scales chosen for this study had an easier response, were used in previous research, and were designed based on federal guidelines for healthy behaviors (Glasgow, et al., 2005).

Physical activity assessment. The Rapid Assessment Physical Activity Scale (RAPA) was designed to measure physical activity (Topolski, et al., 2008). Permission to use the RAPA was provided at http://depts.washington.edu/hprc/rapa. The RAPA was developed according to Federal guidelines for recommended daily physical activity. According to the Physical Activity Guidelines for Americans, adults should engage in at least 150 minutes a week of moderate to intense physical activity, 75 minutes a week of vigorous to intense aerobic physical activity, and strength training that engages all major muscle groups at least 2 days a week (U.S. Department of Health and Human Services, 2008). The RAPA provides visual examples of light physical activities, moderate activities, and vigorous activities to help participants answer questions (Appendix B). Participants responded "yes" or "no" to 9 total test items such as a) "I rarely or never do any physical activities", b) "I do some light physical activity every week", and c) "I do 20 minutes or more a day of vigorous physical activities, 3 or more days a week" (Topolski, et al., 2006). The RAPA used two subscales: aerobic and strength/flexibility. The first subscale (aerobic exercise) included 7 items. The subscale score was based on the highest item number endorsed "yes". For example if a participant answered "yes" to question #2, "I do some light or moderate physical activities, but not every week," he or she scored a 2. However, if the individual responded with "yes" to item #7, "I do 20 minutes or more a day of vigorous physical activities, 3 or more days a week", he or she received a score of 7. Scores of at least a 6 indicated regular physical activity and the highest possible score was 7 (active physical activity; Topolski, et al., 2006). The second scale, "strength and flexibility" involved two items, "I do activities to increase muscle strength, such as lifting

weights or calisthenics, once a week or more" and "I do activities to improve flexibility, such as stretching or yoga, once a week or more". Endorsing at least one of these items suggested sufficient strength and flexibility training.

The developers of the RAPA report a score of 6 or more suggests sufficient physical activity, and a score of 6 indicated sufficient physical activity in this study (Topolski, 2006). The second scale, strength training and flexibility, was scored separately. For this study any score on this scale was added to the score on the physical activity scale. The highest possible score a participant could receive in this study was a 9 and the lowest score was a 1. Lower scores indicated inadequate physical activity and higher scores indicated adequate physical activity.

The RAPA was appropriate to assess physical activity in this study. It was designed to assess physical activity in older adults (age 50 and older) (Topolski, et al., 2006). The RAPA has also been helpful to assess physical activity in younger populations. A review of physical activity assessment scales determined the RAPA was sufficient to use in research regarding physical activity (Williams, Frei, Vetsch, Dobbels, Duhan, & Rudell, 2012). The RAPA has been used to assess adults', adolescents', and childrens' physical activity levels (Glasgow, et al., 2005). This instrument is effective for all ages. The RAPA was a good measure for this study because it was developed based on the U.S. Physical Activity Guidelines for Americans (Glasgow, et al., 2005). The RAPA was quick and easy for participants to complete. The physical pictures reduced confusion about questions and pictures were culturally sensitive and appropriate for most settings (Glasgow, et al., 2005).

The RAPA was also an appropriate instrument to use due to its psychometric properties. During validation, the RAPA outperformed other established measures of physical activity including the Behavioral Risk Factor Surveillance System (BRFSS), the Patient Centered Assessment and Counseling for Exercise (PACE) and the Community Healthy Activities Model Program for Seniors (CHAMPS). Increased RAPA scores were also positively correlated with increased intensity and frequency of physical activity. This finding suggested significant sensitivity to change (81%) (Topolski, et al., 2006). This scale has 77% positive predictive value and 75% negative predictive value as evidenced by higher RAPA scores associated with physical activity standards and lower RAPA scores associated with below standard activity levels (Topolski, et al., 2006). More evidence was needed to determine reliability for this scale, and a search of the literature did not demonstrate any studies citing such psychometric properties. Additionally, the sampling population for validation was small (N=115) and consisted mostly of senior citizens in one Washington city (Topolski, et al., 2006). However, the scale has demonstrated effectiveness in younger populations (Glasgow, et al., 2005). The RAPA was also suitable for this study due to the ease of administration and fair preliminary validity data.

Healthy eating assessment. Healthy eating was another factor of interest in this study and was measured using the Starting the Conversation (STC) diet assessment tool. Permission to use this tool was not needed. A. Paxton (personal communication, July 9, 2013) provided permission and noted this assessment tool was free to use. Governmental guidelines for healthy eating were used to develop test items. The U.S. Department of

Health and Human Services collaborated with the U.S. Department of Agriculture and developed the Dietary Guidelines for Americans 2010. These guidelines suggest that Americans should consume foods rich in nutrients (i.e. vitamins, minerals, and have positive health effects), establish consistent and well-balanced eating patterns that satisfy throughout the day, and the amount of calories consumed balance with physical activity and the body's metabolic process (U.S. Department of Agriculture & U.S. Department of Health and Human Services, 2010). The STC was another brief assessment tool (8 test items) and was used to measure food consumption. The STC asks questions like, "How many times a week did you eat fast food meals or snacks?", "how many regular sodas or glasses of sweet tea did you drink each day?", and "how many times a week did you eat desserts and other sweets (not the low-fat kind)?" Respondents had three options to rate the frequency certain foods were consumed in the past week. For example, for the question "how many servings of fruit did you eat each day?" participants could check "5 or more", "3-4", or "2 or less". The test was scored based on the value assigned to each item response. For the current example the response, "5 or more" received a score of "0", "3-4" received score of "1", and "2 or less" received a score of "2" (Paxton, et al., 2011). Response items scores were added to produce a total score. Low scores indicated a more healthy diet and high scores determined a less healthy diet. The total score was used in this study. A cutoff score was not necessary to determine a relationship among variables.

The STC was validated over a 4-month period and used a sample of 463 patients in a self-management diabetic intervention program (Paxton, et al., 2011). This test has strong sensitivity to change, as evidenced by improved scores as these individuals

participated in a treatment intervention (*M* for control group = 1.16 vs. *M* for treatment group = .46, $p<.05$) (Paxton, et al., 2011). Furthermore test-re-test correlation (r =.66) suggested the test was reasonably stable over time (Paxton, et al., 2011). Test items and the summary score of the STC were intercorrelated (r =.39-.59) and the fruit and vegetable test items most correlated (r =.41) (Paxton, et al., 2011). This demonstrated low internal reliability. However, the STC was an appropriate measure to use for this study due to these acceptable psychometric properties, ease of response to test items, and ability to measure healthy diet patterns.

Another assessment assessed both cigarette smoking and risky drinking.

Instrument for cigarette smoking and risky drinking. Participants were asked a few questions about their level of drinking and cigarette smoking via two sections of the Practical Health Behavior Measure (Glasgow et al, 2005). Permission to use this assessment was granted from American Academy of Family Physicians (Appendix C). The items for this assessment were developed from the Behavioral Risk Factor Surveillance System (BRFSS), an expert panel, and normative information from the Healthy People 2010 goals (CDC, 2010; Glasgow, et al., 2005). This brief assessment asked individuals to rate their drinking based on number of drinks consumed in the last 30 days. The first question asked, "During the past 30 days, how many days per week did you have at least 1 drink of any alcoholic beverage?" If respondents answered "none" they were asked to move on to the next section, otherwise questions asked about the level of alcohol consumption (Glasgow, et al., 2005). If participants checked "yes" they were asked, "on the days that you did drink, about how many drinks did you drink on

average?" Lastly, individuals answered, "Considering all types of alcoholic beverages, how many times during the past 30 days did you have 4 (for women)/5 (for men) or more drinks in a setting". Research for the Practical Health Behavior Measure suggested criteria for binge drinking is five drinks for men and four drinks for women (Glasgow, et al., 2005). Any responses that indicated one or more incidents of binge drinking was considered an unhealthy behavior.

Next participants were asked one question about cigarette smoking. This question asked, "Have you smoked cigarettes in the last 7 days?" Participants responded either "yes" or "no". This assessment tool did not provide scoring criteria. Any positive endorsement to the question regarding cigarette smoking in the last 7 days was scored with a "1" and was considered an unhealthy behavior. A score of "0" was classified as healthy behavior. This assessment tool has not been validated or standardized. Despite the lack of psychometric qualities, this assessment was suitable in this situation to allow participants to report smoking behavior.

Instrumentation and Operationalization of Coping

Coping was operationally defined as the cognitive, emotional, and behavioral strategies a person uses to manage stress (Folkman &Lazarus, 1988). There are numerous instruments designed to assess individual coping strategy. The Brief COPE was used in this study. The Brief COPE measures adaptive coping and maladaptive coping. The individual scales of the Brief COPE made it possible to assess maladaptive and adaptive coping separately (Carver, 1997; Folkman & Lazarus, 1988). This scale is based on

coping theory proposed by Folkman and Lazarus (1988). It also considers individuals choose to cope with stressors in various ways.

Coping assessment. The Brief COPE was designed to be a shorter version of the COPE. Permission to use this instrument was not needed as the developer and publisher granted assess via a website (http://www.psy.miami.edu/faculty/ccarver/sclBrCOPE.html). The COPE is often used in health studies (Carver, 1997). The Brief COPE contains 14 scales, derived from the original scale, and each scale has only 2 items. This instrument contains a total of 28 items (Carver, 1997). Each scale represented a different coping strategy. The researcher of the Brief COPE suggests the scale can be used to assess coping strategy separately as well as assess adaptive coping and/or maladaptive coping strategies. Adaptive coping consists of the following scales: 1) active coping, 2) planning, 3) positive reframing, 4) acceptance, 5) religion, and 6) using instrumental support. It was important to understand if vicarious trauma related maladaptive coping. For the purpose of this study I used the following scales to assess maladaptive coping: 1) humor, 2) self-distraction, 3) denial, 4) venting, 5) substance use, 6) behavior disengagement, 7) self-blame, and 8) using emotional support (Carver, 1997). A strength of this assessment is the ability to modify it for most research needs (Carver, 1997; Carver, 1994; Carver, et al. 1993). Respondents responded to statements like, “I have given up trying to deal with it”, “I have been getting emotional support from others”, or “I’ve been making jokes about it”. Participants responded to test items using a 4-point Likert scale (1 = *not at all*, 2 = *a little bit*, 3 = *a medium amount*, 4 = *a lot*) to report frequency of each coping strategy (Carver, 1997).

For the purpose of this study, research participants were asked to respond to questions based on how they handled issues they faced at work in the last 30 days.

The Brief COPE was scored in the following manner. First, the score for each individual scale was summed. This produced a score for each maladaptive coping strategy. For example the self-blame scale contained items 13 and 26. If a person chose, "3 = *I've been using this a medium amount"* for item number 13 and chose, "2 = *I've been doing this a little bit"* for item number 26 the total score for self-blame was 5. Next I added the sum of each maladaptive coping subscale and this sum was used as the maladaptive coping score.

This scale was useful for this study because it measured maladaptive coping strategies and participants were able to complete questions quickly and easily. The COPE also has adequate psychometric properties. For example, validity factor analysis accounted for 72.4% of variance (Carver, 1997). Items remained consistent with the original COPE. Scales that formed a single factor on the original COPE formed single factors on the Brief (Carver, 1997). The scale was shown to be sensitive to an environmental trauma. Participants completed the Brief COPE 3-6 months following Hurricane Andrew, again 6 months later, and a third time 1 year post-Hurricane (Carver, 1997). Scores changed over time and suggested the scale was sensitive to change (Carver, 1997). Internal validity was tested using this data. First factor analysis determined 72.4% of variance. Lastly the subscales were assessed with factor analysis. The findings determined that internal consistency was average (*alpha* = >50) or higher on all scales. This scale was validated using a small sample (N = 126) but was representative of the

population (Carver, 1997). Despite this limitation, the scale has demonstrated usefulness in assessing coping in other populations (Carver, et al., 1993). It can be adapted to various situations. Due to the questionnaires appropriate psychometric properties and the questionnaires ability to test a theoretical concept of coping it was acceptable to use in this current study.

Statistics and Data Analysis Plan

The predictor variable in this research study was vicarious trauma. The dependent variable was health behaviors (physical activity, healthy eating, risky drinking, and cigarette smoking). The mediating variable was coping. The research question stated: Are there relationships among vicarious trauma, health behaviors (physical activity, healthy eating, risky drinking, and cigarette smoking) and maladaptive coping?

H_{01}: Vicarious trauma (TABS scores) is not related with health behaviors (RAPA scores, STC scores, risky drinking, and cigarette smoking).

H_{a1}: Vicarious trauma (TABS scores) is related to health behaviors (RAPA scores, STC scores, risky drinking, and cigarette smoking).

$H_{02:}$ Vicarious trauma (increased TABS scores) is not related to maladaptive coping (increased Brief COPE scores).

$H_{a2:}$ Vicarious trauma (increased TABS scores) is related to maladaptive coping (increased Brief COPE scores).

$H_{03:}$ Maladaptive coping (increased Brief COPE scores) is not related to health behaviors (decreased RAPA scores, increased STC scores, increased risky drinking, and increased cigarette smoking).

$H_{a3:}$ Maladaptive coping (increased Brief COPE scores) is related to health behaviors (decreased RAPA scores, increased STC scores, increased risky drinking, and increased cigarette smoking).

$H_{04:}$ The relationship between vicarious trauma (increased TABS scores) and health behaviors (decreased RAPA scores, increased STC scores, increased risky drinking, and increased cigarette smoking) is not medicated by maladaptive coping (increased Brief COPE scores).

$H_{04:}$ The relationship between vicarious trauma (increased TABS scores) and health behaviors (decreased RAPA scores, increased STC scores, increased risky drinking, and increased cigarette smoking) is mediated by maladaptive coping (increased Brief COPE scores).

These hypotheses were tested using logistic and linear regression.

Data Analysis Plan

This study used regression analyses to examine the relationships among cognitive distortions associated with vicarious trauma, health behaviors, and maladaptive coping. Logistic regression was used for categorical dependent variables (cigarette smoking and risky drinking) and linear regression for continuous dependent variables (maladaptive coping, physical activity, diet, and vicarious trauma). Collected data was entered and analyzed using SPSS (Statistical Package for the Social Sciences) 21.0 Graduate Pack. All data was electronically collected reducing data errors and preventing missing values. Data was screened and checked for minimum and maximum values for each variable. I describe this in greater detail in Chapter 4. If a correlation was found to be significant, a

regression analysis was ran to evaluate how the dependent and independent variables were related. All regression analyses were controlled for age, time on job, and caseload number.

Sample characteristics were presented using descriptive statistics for demographic, independent, dependent, and mediating variables. Categorical variables, such as caseload number, number of years in current position, risky drinking, and cigarette smoking, were presented with percentages and frequency for each variable. Continuous variables, such as age, TABS scores, RAPA scores, STC scores, and maladaptive coping scores, were presented with means and standard deviations. Variable characteristics are described in Chapter 4.

Linear regression assumed the following. It was assumed variables were related linearly. Scatter plots as well as histograms were assessed to determine linearity of variables. Next an examination of a residuals plot identified standardized residuals in excess of +/- 3.3 (corresponding to; p=.001) and were considered outliers (Tabachnick & Fidell, 2013). A residual scatter plot was used to test for the assumption of linearity, and homoscedasticity of residuals. The assumption is met by a near rectangular distribution with the majority of scores located in the center (Tabachnick & Fidell, 2013). A visual inspection of these diagrams and descriptive statistics for kurtosis and skewness (indicating departure from a bell-shaped curve) helped determine whether the data for the study variables satisfied the assumption of a normal distribution (Tabachnick & Fidell, 2013).

Vicarious trauma was the independent variable and health behaviors (physical activity, healthy eating, cigarette smoking, and risky drinking) were the dependent variables. Data analysis included 9 regression analyses: (1) Vicarious trauma predicting diet, (2) vicarious trauma predicting physical activity, (3) vicarious trauma predicting cigarette smoking, (4) vicarious trauma predicting risky drinking, (5) maladaptive coping predicting vicarious trauma, (6) maladaptive coping predicting physical activity, (7) maladaptive coping predicting diet, (8) maladaptive coping predicting risky drinking, and (9) maladaptive coping predicting cigarette smoking. Linear regression was used for continuous variables (diet and exercise) and logistic regression analysis was used for dichotomous variables (cigarette smoking and risky drinking). Each regression provided a regression coefficient (b) indicating the magnitude and direction of the relationship between the independent and dependent variables, and R^2 indicating goodness-of-fit. The Sobel test was used to test the mediation affect of maladaptive coping on vicarious trauma and each health behavior.

The Sobel test of mediation includes a product of coefficient to test for standard error (Sobel, 1982). The purpose of the Sobel test is to calculate critical ratio significantly different from zero (z-value = $a*b/SQRT(b^2*s_a{}^2+a^2*s_b{}^2)$. It was used to test the indirect effect of vicarious trauma on health behaviors via coping; a = raw (unstandardized) regression coefficient for the relationship between vicarious trauma and maladaptive coping; s_a = the standard error of this score; b = raw coefficient for the relationship between maladaptive coping and each health behavior (physical activity, diet, cigarette smoking, risky drinking); s_b = standard error of this score (Preacher & Leonardelli, 2014;

see figure 2). First a linear regression analysis predicted the relationship between vicarious trauma and maladaptive coping, this gave the value of *a* and s_a. Next a regression analysis predicted the relationship of vicarious trauma and maladaptive coping predicting health behaviors, this gave the value of *b* and s_b (Preacher & Leonardelli, 2014). Lastly *t*-test scores for regression between vicarious trauma and maladaptive coping and the association between maladaptive coping and health behaviors tested the difference between coefficients of each relationship and zero. Sobel test requires that *P*-values be used due to the assumption of normal distribution and a two-tailed *z*-test. Critical values +/- 1.96 maintained 95% confidence interval.

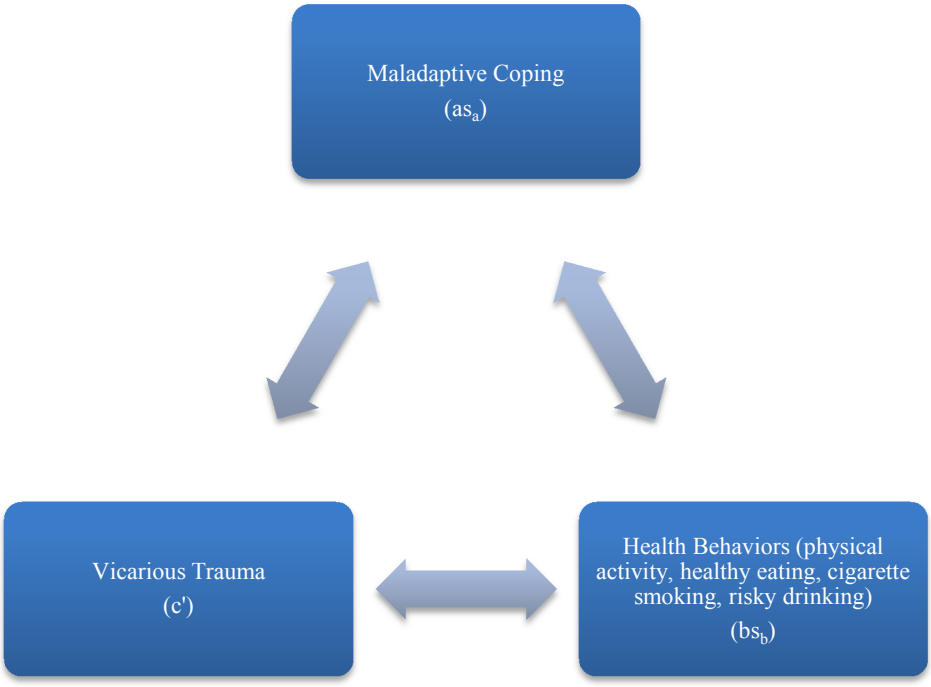

Figure 1: **Model for mediation for vicarious trauma as independent variable, health behaviors as dependent variable, and maladaptive coping as mediating variable.**

Power analysis. In order to ensure that results were significant it was important to have a sufficient sample size. Sample size was calculated to confirm/reject my primary

hypothesis that vicarious trauma was associated with health behaviors. No studies on the association between vicarious trauma and health behaviors were available to estimate the effect size. Therefore, I based my effect size estimate on a study on childhood trauma and adult health behaviors. A study among 1225 women indicated an effect size of 0.35 (Walker, Gelfand, Katen, Koss, Korff, Bernstein, et al., 1999). Using G* Power to calculate power, significance level (alpha) = 0.05, power =80%, effect size 0.35 and two independent variables (coping and trauma) as well as three control variables it was determined the total sample size needed for this study was 113.

Threats to Validity and Limitations

There were several threats to validity. Assessment tools could have skewed results. Assessments were self report and were not exact measures of health behavior or coping behaviors. The instruments for health behavior did not have the best reliability and validity. However, these tools did provide a picture of individual health behaviors. Assessments were subjective measures. This was important to understand whether people working with trauma used healthy or unhealthy behaviors. Furthermore, most coping questionnaires and health behavior assessments are only approximations of actual behaviors. It was not possible to assess these exact behaviors without daily logs or observation. This was not possible for my research study. These tools may not be an exact measure but they were sufficient to measure relative use of health and coping behaviors across participants. In this study I was not interested in measuring the absolute value of minutes of exercise, servings of vegetables, or most frequently used coping behavior. I was interested in assessing a relative measure of these behaviors: Do people

who experience vicarious trauma, exercise less than people who do not, or do people who experience vicarious trauma, use adaptive coping more than people who do not? These measures were sufficient for measuring the relative quantity of health behaviors and maladaptive coping.

There are numerous factors that increase risk of vicarious trauma and influence coping strategy and health behaviors. It was possible participants experienced other stressful events (a death, move, economic change, etc.) and these stressors could have skewed test results. Other factors that could increase risk of vicarious trauma and further skew results are relationship status, personality characteristics, gender, a history of mental or physical illness, general work stressors, personality factors, and a history of childhood abuse and neglect (Adams & Riggs, 2008; Anda, et al., 2010; Catanese, 2008; Hernandez, et al., 2010). Participants reported on their experience in the past 30 days and were not be asked to recall how past events influenced responses. This study sought to understand how vicarious trauma in the current work situation related to coping and health behavior. These factors could have skewed results but the focus of this study was to determine if a general relationship existed between vicarious trauma, coping, and health behavior. Determining a relationship existed can further future research to understand how variables are related.

Another limitation was the cross-sectional design of this study. This comes with two major drawbacks: recall bias and inability to determine cause and effect. However the association between vicarious trauma and health behaviors had not been tested, as of yet, thus this type of study was appropriate to establish the association. Longitudinal

studies are clearly needed to further study the relationships among vicarious trauma, health behaviors, and maladaptive coping.

The sample was also a limitation to the study. The population of interest was Texas CAC and CPS employees, and the sample demonstrated this population. However, it was not possible to generalize the results of this study to other individuals working with trauma. Texas may be unique to their guidelines, practices, and cases. Future research is warranted to further generalize this information to the general population of individuals working with trauma.

Conclusion

The purpose of this research study was to understand how vicarious trauma was related to various health behaviors (physical activity, healthy eating, cigarette smoking and risky drinking) among a sample of Texas CAC and Texas CPS employees. The sample aimed to include 113 participants to ensure sufficient power and to obtain a representative sample. Participants completed assessments via an online survey tool, Survey Monkey. Assessments were designed to measure cognitive distortions associated with vicarious trauma, maladaptive coping behaviors, physical activity, healthy eating, risky drinking, and cigarette smoking. The hypothesis for this study stated that vicarious trauma was related to physical activity, healthy eating, risky drinking, and cigarette smoking (health behaviors) and this relationship was mediated by maladaptive coping. This hypothesis was tested using regression analyses. This research can be pivotal in not only understanding how individuals working with trauma experience trauma exposure, but also provide insight to self-care strategies. The results of this study can lead to future

research to gain additional knowledge on ways to assist individuals at risk for vicarious trauma.

I describe the data and the results of this study in the next chapter.

Chapter 4: Results

The purpose of this study was to examine the relationship between vicarious trauma and health behaviors and whether this was mediated by maladaptive coping among a sample of Texas Children's Advocacy Center (TX CAC) employees and Texas Department of Family and Protective Services (TX DFPS) employees. In this chapter I present the study instruments, sample characteristics, sample size, data collection process, and data analysis.

Research Question and Hypotheses

The research question and hypotheses for this study are as follows. The research question asks: Is there a relationship among vicarious trauma and health behaviors (physical activity, healthy eating, risky drinking, and cigarette smoking)? There are four hypotheses for this research question.

H_{01}: Vicarious trauma is not related with physical activity.

H_{a1}: Vicarious trauma is related with physical activity.

H_{02}: Vicarious trauma is not related with healthy eating.

H_{a2}: Vicarious trauma is related with healthy eating.

H_{03}: Vicarious trauma is not related with risky drinking.

H_{a3}: Vicarious trauma is related with risky drinking.

H_{04}: Vicarious trauma is not related with cigarette smoking.

H_{a4}: Vicarious trauma is related with cigarette smoking.

The second research question asks: Is there a relationship between vicarious trauma and maladaptive coping? There is only one hypothesis for this research question.

H_{01}: Vicarious trauma is not related with maladaptive coping.

H_{a1}: Vicarious trauma is related with maladaptive coping.

The third research question asks: Is there a relationship among maladaptive coping and health behaviors (physical activity, healthy eating, risky drinking, and cigarette smoking)? There are four hypotheses for this question.

H_{01}: Maladaptive coping is not related with physical activity.

H_{a1}: Maladaptive coping is related with physical activity.

H_{02}: Maladaptive coping is not related with healthy eating.

H_{a2}: Maladaptive coping is related with healthy eating.

H_{03}: Maladaptive coping is not related with risky drinking.

H_{a3}: Maladaptive coping is related with risky drinking.

H_{04}: Maladaptive coping is not related with cigarette smoking.

H_{a4}: Maladaptive coping is related with cigarette smoking.

The last hypothesis asks: Are the relationships among vicarious trauma and health behaviors (physical activity, healthy eating, risky drinking, and cigarette smoking) mediated by maladaptive coping? This question also has four hypotheses.

H_{01}: The relationship between vicarious trauma and physical activity is not mediated by maladaptive coping.

H_{a1}: The relationship between vicarious trauma and physical activity is mediated by maladaptive coping.

H_{02}: The relationship between vicarious trauma and healthy eating is not mediated by maladaptive coping.

H_{a2}: The relationship between vicarious trauma and healthy eating is mediated by maladaptive coping.

H_{03}: The relationship between vicarious trauma and risky drinking is not ediated by maladaptive coping.

H_{a3}: The relationship between vicarious trauma and risky drinking is mediated by maladaptive coping.

H_{04}: The relationship between vicarious trauma and smoking is not associated with maladaptive coping.

H_{a4}: The relationship between vicarious trauma and smoking is associated with maladaptive coping.

Sample Demographics

I began data collection on January 15, 2015 and completed it on April 25, 2015. A total of 145 individuals working for TX DFPS and TX CAC provided consent and volunteered for participation. The focus of this study was individuals who had direct contact with traumatized clients, so administrative staff were excluded from participation. This left 127 individuals who worked with direct trauma. Of these participants, 8 individuals started the survey but completed less than 50% of the questions; therefore, they were removed from the study. Few items were missing due to participants skipping the question. In these instances, the sample average was added to replace the missing value. Next, I screened data for outliers using Mahalanobis Distance. Frequency for Mahalanobis Distance indicated three cases were above the 13.28 critical value and were removed from analysis. A visual inspection of the residuals scatterplot indicated two

possible outliers. To eliminate the impact of outliers on data analysis, I removed cases with Mahalanobis Distance greater than 14.00. This left a total sample of 102 valid cases.

Table 1shows sample demographic information. The high number of female participants was likely representative of the population as a larger number of females enter the helping profession than men (Way et al., 2007). Most participants' job responsibilities were to help individual children disclose and talk about their traumatic experience, which suggested that sample participants were at increased risk for vicarious trauma. High caseload numbers also suggested the sample was at increased risk for vicarious trauma. Another indication was age and years working. Younger individuals are at increased risk because they have less experience in the field and less developed resiliency skills (Knight, 2010). Lastly individuals with more years working directly with traumatized clients are also at increased risk for vicarious trauma. The sample represented individuals at risk for vicarious trauma.

Table 1.
Demographic Characteristics of Study Sample (N = 102)

Characteristic	Mean	Std. Deviation
Age	36.46	10.91
Caseload #	25.46	19.12
Years Working	4.80	5.16
	Frequency	%
Job Title		
Clinical Director	13	12.7
Counselor/Therapist	30	29.4
CPS Caseworker/Investigator	16	15.7
Executive Director	4	3.9
Family Advocate	18	17.6
Forensic Interviewer	20	19.6
Forensic Nurse	1	1.0
Gender		
Male	8	7.1
Female	103	92.8

Note: Caseload# = monthly caseload number

Table 2 presents descriptive information for all study variables. An initial review of participants' characteristics suggested there was evidence of vicarious trauma demonstrated by an average TABS *t*-score of 60 or above. Participant healthy eating scores ranged from 2 to 14; higher scores indicated a less healthy diet. Physical activity scores ranged from 1 to 7; higher scores indicated adequate physical activity. Maladaptive coping scores ranged from 16 to 45; 92.2% of participants reported they were nonsmokers, and 80.4% were nonrisky drinkers.

Table 2.

Mean, Standard Deviation, Minimum and Maximum Values for Variables Vicarious Trauma, Healthy Eating, Physical Activity, and Maladaptive Coping and Percentage and Frequency for Risky Drinking and Cigarette Smoking.

Variable	Mean	Std. Deviation	Min.	Max.
Vicarious trauma	61.80	6.30	50	80
Healthy eating	8.98	2.43	2	14
Physical activity	3.51	1.69	1	7
Maladaptive coping	29.00	5.81	16	45
	%	Frequency		
Smoking (1)	7.8	8		
Nonsmoking (0)	92.2	94		
Risky Drinking (1)	18.6	19		
Nonrisky Drinking (0)	80.4	82		

Data Analysis

The data analysis method for this study included both linear and logistic regression. Data was first assessed to determine whether all assumptions and parameters for regression were met.

Data Screening

The first step of the screening process was to test for multicollinearity, normality,

linearity, and homoscedasticity. A regression analysis included vicarious trauma as the dependent variable; independent variables were caseload number, years working in current position, age, healthy eating, physical activity, and maladaptive coping. Although hypothesis testing involved several regression analyses, this initial regression was to determine sample distribution. First, variables were assessed for normality by checking Shapiro-Wilk tests for each variable of interest. All variables were within .05 significance except maladaptive coping (significance = .422). However a review of the histogram indicated a normal distribution, meaning most scores centered around the mean (Tabachnick & Fidell, 2013).

Next, normality of regression residuals were checked by regressing average caseload number, years working in current position, age, healthy eating, physical activity, and maladaptive coping (IV) on vicarious trauma (DV). The regression residuals had a normal distribution and indicated a chi-square distribution (Figure 2). A visual review of the data plot showed data points were clustered together above and below 0 and most points were within two standard deviations. Next the data was screened for the assumption of linearity to demonstrate the direction of relationship of variables. Linearity assumes the relationship between variables is a straight line (Tabachnick & Fidell, 2013). The review of the scatter plot showed a near straight line for vicarious trauma as the dependent variable and age, average monthly caseload number, years working in current position, healthy eating, physical activity, and maladaptive coping as the independent variables. The assumption of linearity was met. The assumption of residuals was

confirmed through a review of the residuals table and indicated a positive skew (minimum -2.353 and maximum 3.00) (Figure 2).

Next, collinearity statistics were assessed for multicollinearity to ensure that variables were not related (Tabachnick & Fidell, 2013). It was important to check for multicollinearity to ensure that variables were independent and did not correlate with one another. A review of the data indicted tolerance was .9 and variance inflation factor (VIF) remained below 1. This suggested a possible concern for multicollinearity because tolerance was not above .1. No condition index was over 30, but Dimension 2 had eigenvalue of .776. This suggested a possible concern for multicollinearity for any values over .50. In order to have multicollinearity, a condition index must be >30 and two or more variables must have values > .50. Dimension 2 had only one variable over .50 (Tabachnick & Fidell, 2013). Multicollinearity did not appear to be an issue.

Lastly, regression assumes homoscedasticity. Homoscedasticity means the error variance is approximately the same across all levels of each independent variable (Tabachnick & Fidell, 2013) Homoscedasticity assumes scatterplots of variables should have nearly the same width and a wider middle section (Tabachnick & Fidell, 2013). Homoscedasticity was assessed using the following formula: $3.002^2 / .663^2 = 20.52$ (Tabachnick & Fidell, 2013). The assumption of homoscedasticity was met. The data appeared to meet assumptions and parameters for regression. It was suitable to proceed with regression analysis to test the mediation effect of maladaptive coping on vicarious trauma and health behaviors. All analyses were completed using IBM SPSS Version 21.

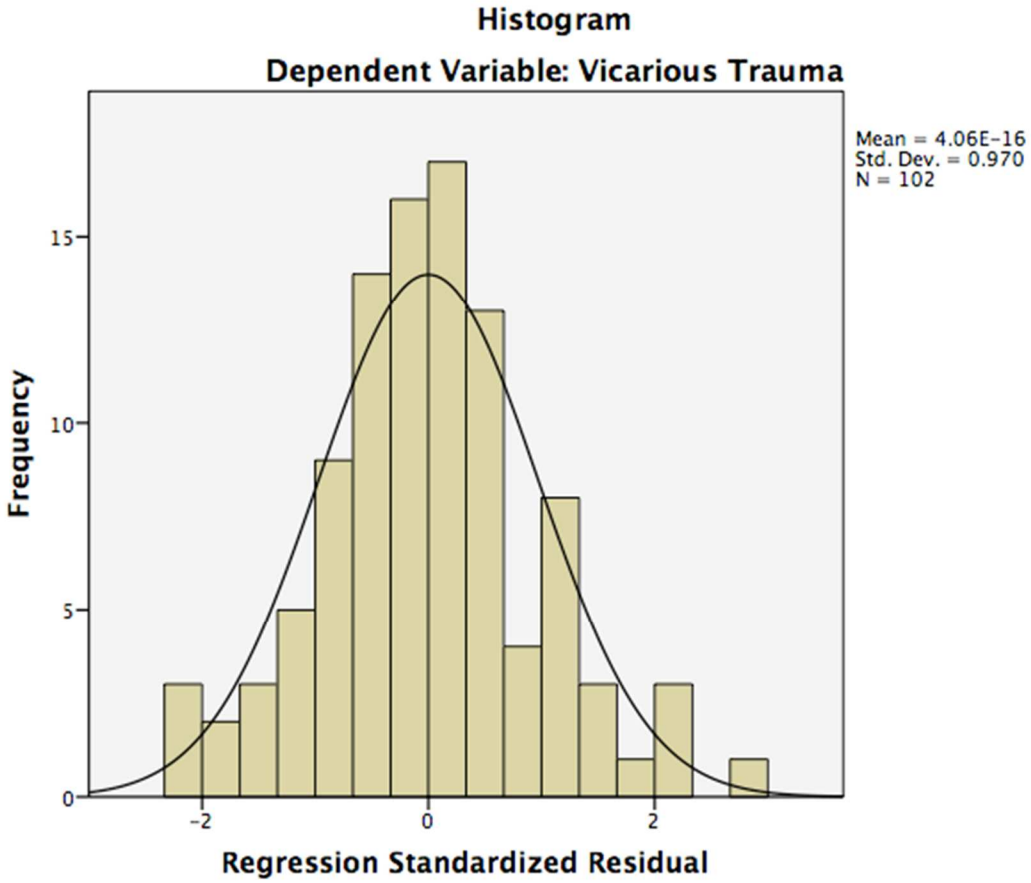

Figure 2: Sample distribution with vicarious trauma as dependent variable with caseload number, years working in current position, age, physical activity, health eating, and maladaptive coping as independent variables.

Relationship Between Vicarious Trauma and Health Behaviors

The first research question asked if vicarious trauma and health behaviors were related. Using multiple regression analyses, I assessed vicarious trauma as the independent variable and each health behavior (healthy eating, physical activity, smoking, and risky drinking) as the dependent variable. Each regression was run initially with control variables: age, caseload number, and number of years working in current position. All tables include regression analyses with and without control variables.

Vicarious Trauma and Healthy Eating

Pearson correlation indicated the relationship between vicarious trauma and healthy eating was significant (Table 3). A linear regression showed that while controlling for caseload number, years working in current position, and age, vicarious trauma was significantly related to healthy eating, $R^2 = .10$, F(4, 97) = 2.69, $p = .03$ (Table 5). However, linear regression analysis of the main effects of vicarious trauma and healthy eating, without control variables, was not significant, $R^2 = .03$, F(1, 100) = 3.57, $p = .06$ (Table 4). Vicarious trauma was related to healthy eating (Table 4), and thus Alternative Hypothesis 1a was supported.

Table 3.

Pearson Correlations for Vicarious Trauma and Healthy Eating, Physical Activity and Maladaptive Coping.

Variables	1.	2.	3.
1. VT	1.00		
2. HE	-.18*	1.00	-
3. PA	.04	-	1.00

*Notes: HE= Healthy Eating, PA=Physical Activity, VT=Vicarious Trauma; (*p<.05. p<.001**).*

Table 4.

Linear Regression Analyses for the Main Effects of Independent Variable Vicarious Trauma and Dependent Variable Healthy Eating.

Model Term	Standardized regression coefficient, Beta	Unstandardized regression coefficient, B	*Std. Error*	*t-score* (*df*=101)
Model 1[a]				
(Constant)		12.15	2.51	4.83
Caseload#	-.23	-.03	.01	-2.21*
Years	.12	.05	.05	1.14
Age	-.00	-.00	.02	-.04
VT[a]	-.11	-.04	.04	-1.04

(table continues)

Model Term	Standardized regression coefficient, Beta	Unstandardized regression coefficient, B	*Std. Error*	*t-score* (*df*=101)
Model 2[b]				
(Constant)		13.41	2.36	5.68
VT	-.18	-.07	.03	-1.89

*Notes: VT=Vicarious Trauma; R^{2a}= .10; R^{2b}=.03 (*p<.05).*
a. Linear regression with control variables (Caseload#, years, age).
b. Linear regression without control variables

Vicarious Trauma and Physical Activity

In the next Pearson correlation, I examined the relationship between vicarious trauma and physical activity. This relationship was not significant (Table 3). Thus hypothesis 2a was not supported.

Vicarious Trauma and Cigarette Smoking

Logistic regression was used to examine the relationship between vicarious trauma and cigarette smoking; 94 participants reported not smoking and 8 participants reported smoking. Therefore, the odds of smoking were small, odds ratio = .08, 95% Confidence Interval (CI) (.80 – 1.10). After conducting the logistic regression, I found that vicarious trauma and cigarette smoking were not significantly related, $X^2(8) = 9.40$, $p = .30$ (Table 5). The logistic regression for vicarious trauma and control variables and their relationship to cigarette smoking also did not indicate any significant relationships, $X^2(4) = 5.13$, $p = .27$. The model indicated 2.7% (Nagelkerke R^2) of the variance in smoking. Vicarious trauma was not significantly related to cigarette smoking; therefore, Hypothesis 3a was not supported (Table 5).

Table 5.

Logistic Regression for Independent Variable Vicarious Trauma and Dependent Variable Cigarette Smoking.

Model Term	*B*	Std. Error	Wald X^2 (*df*=8)	Odds Ratio	95% CI Lower	Upper
Model 1[a]						
(Constant)	1.07	4.81	.05	2.93		
Caseload#	-.05	.04	1.64	.94	.86	1.03
Years	-.10	.10	1.00	.89	.72	1.10
Age	.04	.03	1.14	1.04	.96	1.12
VT[a]	-.05	.08	.47	.94	.80	1.10
Model 2[b]			(*df*=1)			
(Constant)	1.99	4.30	.21	7.31		
VT[b]	-.07	.07	1.04	.92	.80	1.07

Notes: Caseload# = Average caseload number; Years = years working in current position; VT=Vicarious Trauma. (p<.05).
a. Logistic regression using control variables (Caseload#, Years, Age)
b. Logistic regression without control variables.

Vicarious Trauma and Risky Drinking

Logistic regression was also used to look at how vicarious trauma was related to risky drinking; 82 participants reported not engaging in risky drinking, and 19 reported risky drinking behaviors. The odds of risky drinking were small, odds ratio = .23, 95% CI (.97 – 1.18). The relationship between vicarious trauma and risky drinking was not significant, $X^2(8) = 12.95$, $p = .11$ (Table 6). I used logistic regression to examine the relationship between vicarious trauma and risky drinking, while controlling for caseload number, years working in current position, and age. I did not find a significant relationship, $X^2(8) = 12.95$, $p = .11$. The model indicated .7% (Nagelkerke R^2) of the variance in risky drinking and classified 81.2% of cases. Vicarious trauma was not significantly related to risky drinking, so Hypothesis 4a was not supported (Table 6).

Table 6.
Logistic Regression for Independent Variable Vicarious Trauma and Dependent Variable Risky Drinking.

Model Term	*B*	Std. Error	Wald X^2 (*df*=8)	Odds Ratio	95% CI Lower	Upper
Model 1[a]						
(Constant)	-3.36	3.00	1.25	.03		
Caseload#	-.04	.02	2.80	.95	.90	1.00
Years	.02	.06	.11	1.02	.90	1.15
Age	-.04	.03	1.90	.95	.88	1.02
VT[a]	.07	.04	2.32	1.07	.97	1.18
Model 2[b]			(*df*=1)			
(Constant)	-3.06	2.44	1.58	.04		
VT[b]	.02	.03	.44	1.02	.95	1.10

Notes: Caseload# = Average caseload number; Years = years working in current position; VT=Vicarious Trauma. (p<.05).
a. Logistic regression using control variables (Caseload#, Years, Age).
b. Logistic regression without control variables.

Based on the above analyses vicarious trauma was significantly associated with health behavior, specifically, healthy eating.

Relationship between Vicarious Trauma and Maladaptive Coping

The second research question asked if maladaptive coping and vicarious trauma were related. The hypothesis for this research question stated maladaptive coping and vicarious trauma were related. This hypothesis was tested using Pearson correlation (Table 7).

Table 7.
Pearson's Correlation for Maladaptive Coping and Vicarious Trauma

Variables	1.	2.
1. VT	1.00	
2. MC	.31**	1.00

Notes: VT=Vicarious Trauma, MC=Maladaptive Coping. (p<.05. p<.001**).*

Vicarious Trauma and Maladaptive Coping

The relationship between vicarious trauma and maladaptive coping was significant (Table 8). The linear regression of main effects for caseload number, years working in current position, age, and vicarious trauma was significantly related to maladaptive coping, R^2= .13, F(4, 97) = 3.86, p < .001 (Table 8). The linear regression of

main effects for vicarious trauma and maladaptive coping, without control variables, was also significant, R^2= .08, F(1, 100) = 10.87, p < .001 (Table 8). Vicarious trauma was significantly related to maladaptive coping. Hypothesis 2 was supported.

Table 8.

Linear Regression Analyses of the Main Effects of Independent Variable Vicarious Trauma and Dependent Variable Maladaptive Coping.

Model Term	Standardized Regression coefficient Beta	Unstandardized regression coefficient *B*	Std. Error	*t*-score *(df*=101*)*
Model 1[a]				
(Constant)		10.68	5.87	1.81
Caseload#	-.14	-.04.	.03	-1.38
Years	.02	.02	.12	.23
Age	-.14	-.07	.05	-1.30
VT[a]	.35	.09	.38	3.70
Model 2[b]				
(Constant)		11.16	5.43	2.05
VT[b]	.31	.28	.08	3.29*

Notes: VT=Vicarious Trauma. (p<.05. p<.001**).*
a. Linear regression with control variables (Caseload#, Years, Age).
b. Linear regression without control variables.

Relationship between Maladaptive Coping and Health Behaviors

The third research question of this study stated that maladaptive coping was related to health behaviors (healthy eating, physical activity, smoking, and risky drinking). This research question had 4 hypotheses and required 4 separate analyses (Table 9).

Table 9.
Pearson's Correlations for Maladaptive Coping, Healthy Eating, and Physical Activity

Variables	1.	2.	3.
1. MC	1.00		
2. HE	.07	1.00	
3. PA	.21*	-	1.00

Notes: HE = Healthy Eating; PA = Physical Activity; MC=Maladaptive Coping. (p<.05. p<.001***).*

Maladaptive Coping and Healthy Eating

A correlation matrix examined the relationship between maladaptive coping and healthy eating. The relationship between maladaptive coping and healthy eating was not significant (Table 9). Alternative Hypothesis 1a was not supported.

Maladaptive Coping and Physical Activity

Correlation analysis identified the relationship between maladaptive coping and physical activity. The correlation (r = .21) between maladaptive coping and physical activity was significant (Table 9). The linear regression analysis of the main effects of caseload number, years working in current position, age, and maladaptive coping was significantly related to physical activity, R^2= .10, $F(4, 97) = 2.75$, p = .03 (Table 10). The linear regression analysis of the main effects of maladaptive coping and physical activity, without control variables, was also significant, R^2= .04, $F(1, 100) = 4.91$, p = .02 (Table 10). Maladaptive coping was significantly related to physical activity, and alternative Hypothesis 2a was supported.

Table 10.

Linear Regression Analyses for the Main Effects of Independent Variable Maladaptive Coping and Dependent Variable Physical Activity.

Model Term	Standardized regression coefficient Beta	Unstandardized regression coefficient *B*	Std. Error	*t*-score (*df*=101)
Model 1[a]				
(Constant)		2.86	1.05	2.70
Caseload#	.01	.00	.00	.18
Years	-.11	-.03	-.03	-1.01
Age	-.16	-.02	-.01	-1.50
MC[a]	.20	.05*	.02	2.09*

(table continues)

Model Term	Standardized regression coefficient Beta	Unstandardized regression coefficient *B*	Std. Error	*t*-score (*df*=101)
Model 2[b]				
(Constant)		1.68	.84	2.00
MC[b]	.21	.06	.02	2.21*

*Notes: MC = Maladaptive Coping; R^{2a}= .10; R^{2b}=.04. (*p<.05).*
a. Linear regression with control variables (Caseload#, Years, Age).
b. Linear regression without control variables

Maladaptive Coping and Cigarette Smoking

The third regression looked at the relationship between maladaptive coping and cigarette smoking; 94 participants reported not smoking and 8 participants reported smoking and the odds of smoking was small, odds ratio = .08, 95% Confidence Interval (CI) (.80 – 1.10). Logistic regression determined the relationship between maladaptive coping and cigarette smoking was not statistically significant, $X^2(8)=6.03$, $p=.64$. The logistic regression model using control variables was also not statistically significant, $X^2(4)=4.80$, $p=.30$. The model explained 0.2% (Nagelkerke R^2) of the variance in cigarette smoking and classified 92.2% of cases. Maladaptive coping was not significantly related to cigarette smoking, thus Hypothesis 3a was not supported (Table 11).

Table 11.

Logistic Regression for Independent Variable Maladaptive Coping and Dependent Variable Cigarette Smoking.

Model Term	*B*	Std.Error	Wald X^2 (*df*=8)	Odds Ratio	95% CI Lower	Upper
Model 1[a]						
(Constant)	-2.93	2.51	1.36	.05		
Caseload#	-.06	.04	1.88	.93	.85	1.02
Years	-.11	.11	1.06	.89	.71	1.10
Age	.03	.03	1.10	1.04	.96	1.11
MC[a]	.02	.06	.16	1.02	.90	1.16
Model 2[b]			(df=1)			
(Constant)	-3.05	1.91	2.55	.47		
MC[b]	.02	.06	.10	1.02	.90	1.15

Note: Caseload# = Average caseload number; Years = years working in current position; MC=Maladaptive Coping
a. Linear regression using control variables (Caseload#, Years, Age).
b. Linear regression without control variables.

Maladaptive Coping and Risky Drinking

Logistic regression examined how maladaptive coping was related to risky drinking; 82 participants reported not engaging in risky drinking and 19 reported risky drinking behaviors and the odds of risky drinking was small, odds ratio = .23, 95% CI (.97 – 1.18). The relationship between these two variables was not significant, $X^2(8)=4.93$, $p=.76$ (see Table 12). Logistic regression for maladaptive coping and risky drinking, while controlling for caseload number, years working in current position, and age found no significance, $X^2(4)=7.95$, $p=.09$. The model explained 4% (Nagelkerke R^2) of the variance in risky drinking and classified 81.2% of cases. Maladaptive coping was not significantly related to risky drinking, thus Hypothesis 4a was not supported.

Table 12.

Logistic Regression for Independent Variable Maladaptive Coping and Dependent Variable Risky Drinking

Model Term	*B*	Std. Error	Wald X^2 (*df*=8)	Odds Ratio	95% CI Lower	Upper
Model 1[a]						
(Constant)	-1.26	1.89	.44	.28		
Caseload#	-.03	.02	1.85	.96	.91	1.01
Years	.03	.06	.25	1.03	.91	1.15
Age	-.04	.03	1.57	.95	.89	1.02
MC[a]	.06	.04	2.11	1.07	.97	1.17
Model 2[b]			(*df*=1)			
(Constant)	-3.62	1.42	6.46	.02		
MC[b]	.07	.04	2.48	1.07	.98	1.17

Note: Caseload# = Average caseload number; Years = years working in current position; MC=Maladaptive Coping
a. Linear regression using control variables (Caseload#, Years, Age).
b. Linear regression without control variables.

The four analyses for hypothesis 3 indicated that maladaptive coping was related to physical activity. Hypothesis 3 was supported.

The Relationship of Vicarious Trauma and Health Behaviors as Mediated by Maladaptive Coping

The last hypothesis stated the relationship among vicarious trauma and health behaviors would be mediated by maladaptive coping. For these analyses vicarious trauma (X) was considered the predictor variable, maladaptive coping (M) was considered the mediator variable, and each health behavior (healthy eating, physical activity, risky drinking, and cigarette smoking) (Y) were used as the outcome variable. Baron and Kenny (1981) described mediation as a path analysis. The following "paths" were required for this analysis, 1) the direct effect for the relationship between vicarious trauma and healthy eating, 2) the indirect effect of vicarious trauma and maladaptive coping, and 3) the indirect effect of maladaptive coping and each health behavior. The

Sobel test assessed mediation and a Sobel test calculator was found at: http://www.quantpsy.org/sobel.htm (Table 13).

Table 13.

Results of Mediation for Independent Variable Vicarious Trauma, Mediating Variable Maladaptive Coping and Dependent Variables Healthy Eating, Physical Activity, Cigarette Smoking, and Risky Drinking.

Hypothesis	Direct effect of VT and MC	Std. Error of VT and MC	Direct effect of MC and HB	Std. Error of MC and HB	*Z* Value (Mediation effect)	*p*-value
VT related to HE mediated by MC	.28	.08	.06	.04	1.37	.16
VT related to PA mediated by MC	.01	.02	.06	.03	.48	.62
VT related to CS mediated by MC	-.07	.07	.05	.07	.58	.56
VT related to RD mediated by MC	.02	.03	.07	.04	.62	.53

Notes: VT=vicarious trauma; HE=healthy eating; MC=maladaptive coping; PA=physical activity; CS=cigarette smoking; RD=risk drinking; HB=health behaviors; p<.05

The first mediation analysis assessed vicarious trauma as the independent variable, healthy eating as the dependent variable, and maladaptive coping as the mediation variable. This mediation required Beta coefficients and standard errors for the paths between vicarious trauma and maladaptive coping and the path between maladaptive coping and healthy eating (Baron & Kenny, 1981). Before the Sobel test could determination mediation it was necessary to obtain coefficient information. This information was obtained from two regression analyses 1) vicarious trauma as the independent variable and maladaptive coping as the dependent variable and 2) vicarious trauma and maladaptive coping as the independent variables and healthy eating as the dependent variable, Sobel test = 1.37, p = .16 and 1.2% variance is error (Figure 3).

Maladaptive coping was not a significant factor mediating the relationship between vicarious trauma and healthy eating. Hypothesis 4a was not supported.

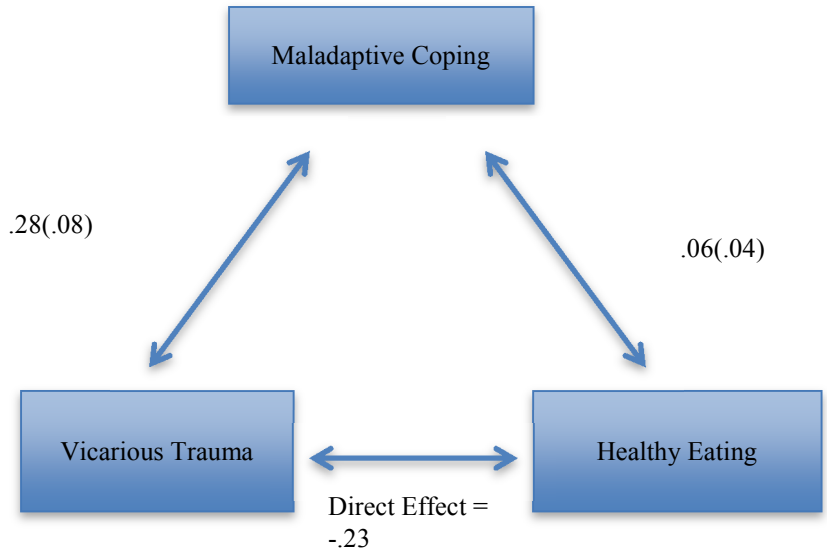

Figure 3: Model for test of mediation B and SEa Coefficients including direct effects of vicarious trauma and health eating.

Although vicarious trauma was related to healthy eating and maladaptive coping, maladaptive coping was not a significant factor that accounted for this relationship.

For the next analysis vicarious trauma (X) was considered the independent variable, maladaptive coping (M) was considered the mediator variable, and physical activity (Y) was the dependent variable. The following "paths" were required for this analysis, 1) the direct effect for the relationship between vicarious trauma and physical activity, 2) the indirect effect of vicarious trauma and maladaptive coping, and 3) the indirect effect of maladaptive coping and physical activity. The Sobel test assessed this mediation using Beta coefficients and standard errors for the paths between vicarious trauma and maladaptive coping and the path between maladaptive coping and physical

activity (Baron & Kenny, 1981). Before the Sobel test could determinate mediation it was necessary to obtain coefficient information. This information was obtained from two regression analyses 1) vicarious trauma as the independent variable and maladaptive coping as the dependent variable and 2) vicarious trauma and maladaptive coping as the independent variables and physical activity as the dependent variable, Sobel test = .48, p = .62 and 0% of variance in error (Figure 4). Maladaptive coping was not a significant factor mediating the relationship between vicarious trauma and physical activity. Hypothesis 4_b was not supported. Vicarious trauma was not related to healthy eating or maladaptive coping, and maladaptive coping was not a significant factor that accounted for this relationship. Hypothesis 4_b was not found to be significant.

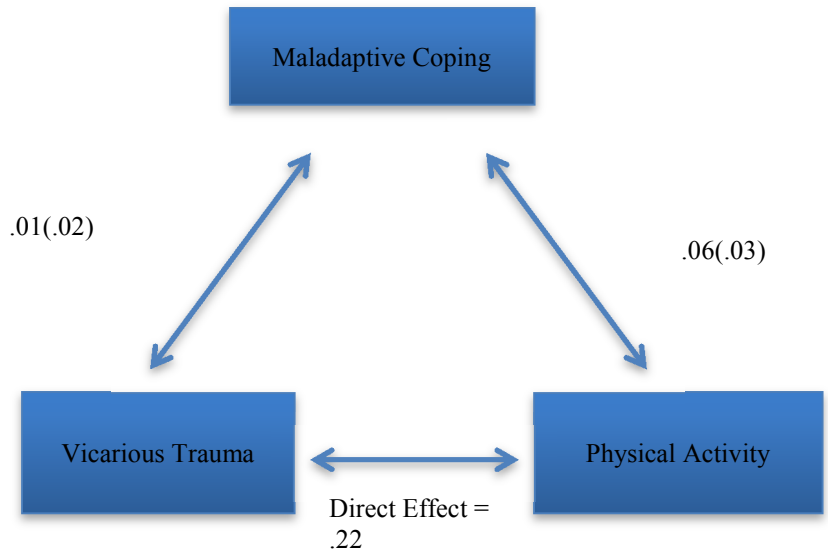

Figure 4. Model for test of mediation B and SEa Coefficients, including direct effect of vicarious trauma and physical activity.

The next analysis used vicarious trauma (X) as the predictor variable, maladaptive coping (M) as the mediator variable, and cigarette smoking (Y) as the outcome variable.

The following "paths" were required for this analysis, 1) the direct effect for the relationship between vicarious trauma and cigarette smoking, 2) the indirect effect of vicarious trauma and maladaptive coping, and 3) the indirect effect of maladaptive coping and cigarette smoking. The Sobel test required Beta coefficients and standard errors for the paths between vicarious trauma and maladaptive coping and the path between maladaptive coping and cigarette smoking (Baron & Kenny, 1981). Before the Sobel test could determination mediation it was necessary to obtain coefficient information. This information was obtained from two regression analyses 1) vicarious trauma as the independent variable and maladaptive coping as the dependent variable and 2) vicarious trauma and maladaptive coping as the independent variables and cigarette smoking as the dependent variable, Sobel test = -.58, p = .56 and 0% variance is error (Figure 5). Maladaptive coping was not a significant factor mediating the relationship between vicarious trauma and cigarette smoking. Hypothesis 4_c was not supported. Vicarious trauma was not related to cigarette smoking, and maladaptive coping was not a significant factor that accounted for this relationship.

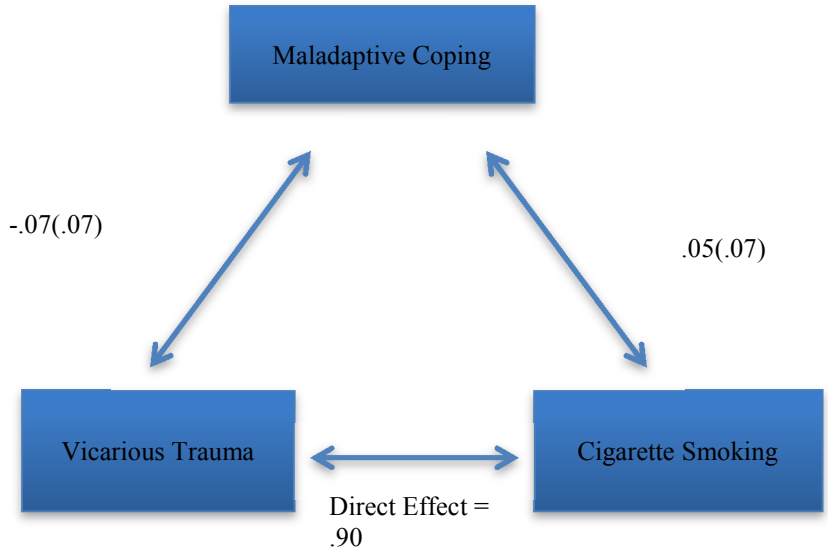

Figure 5. Model for test of mediation B and SE_a Coefficients, including direct effects of vicarious trauma and cigarette smoking.

The last mediation analysis considered vicarious trauma (X) as the predictor variable, maladaptive coping (M) as the mediator variable, and risky drinking (Y) as the outcome variable. The following "paths" were required for this analysis, 1) the direct effect for the relationship between vicarious trauma and risky drinking, 2) the indirect effect of vicarious trauma and maladaptive coping, and 3) the indirect effect of maladaptive coping and risky drinking. The Sobel test assessed this mediation required Beta coefficients and standard errors for the paths between vicarious trauma and maladaptive coping and the path between maladaptive coping and risky drinking (Baron & Kenny, 1981). Before the Sobel test could determinate mediation it was necessary to obtain coefficient information. This information was obtained from two regression analyses 1) vicarious trauma as the independent variable and maladaptive coping as the dependent variable and 2) vicarious trauma and maladaptive coping as the independent

variables and cigarette smoking as the dependent variable, Sobel test = .62, p = .53 and 0% variance is error (Figure 5). Maladaptive coping was not a significant factor mediating the relationship between vicarious trauma and risky drinking. Hypothesis 4_d was not support

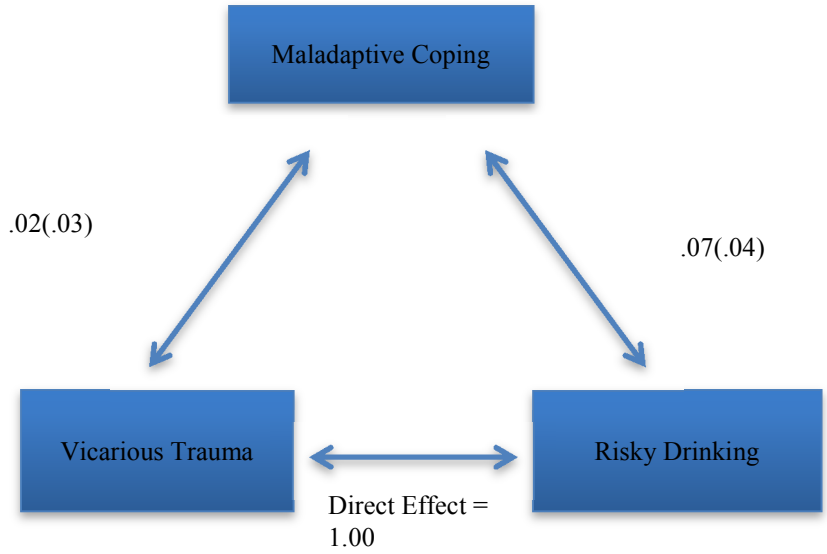

*Figure 6.*Model for test of mediation B and SEa Coefficients, including direct effects of vicarious trauma and risky drinking.

Vicarious trauma was not related to risky drinking and maladaptive coping was not a factor that accounted for this relationship. This study's main hypothesis was not found to be significant.

Conclusion

The purpose of data analysis was to understand the relationship among vicarious trauma and four different health behaviors, healthy eating, physical activity, cigarette smoking, and risky drinking. It was hypothesized that vicarious trauma and health behaviors were related, and this hypothesis was supported. Vicarious trauma was

associated with a health behavior, healthy eating. The second hypothesis predicted that vicarious trauma and maladaptive coping would not be related. This null hypothesis has been rejected and the alternative hypothesis was accepted. Vicarious trauma was significantly related to maladaptive coping. The third hypothesis was also supported. The third hypothesis predicted that maladaptive coping was related to health behaviors. Regression analysis demonstrated that maladaptive coping was significantly related to a health behavior, physical activity. The final hypothesis was not supported. It was predicted that vicarious trauma was related to health behaviors as mediated by maladaptive coping. Although the relationships between vicarious trauma and healthy eating and vicarious trauma and maladaptive coping were significant, the mediation analysis was not significant. Maladaptive coping was not the factor that contributed to an effect between vicarious trauma and health behaviors. I discuss the implications of these analyses in Chapter 5.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this study was to examine the relationships among vicarious trauma and four health behaviors (physical activity, healthy eating, cigarette smoking, and risky drinking) and to determine whether this relationship was mediated by maladaptive coping. A group of Texas Children's Protective Services (TX CPS) employees and Texas Children's Advocacy Center (TX CAC) employees who were at high risk for vicarious trauma due to direct exposure to traumatized clients participated in the study. Previous researchers had identified that increased exposure to the trauma of others increased risk of vicarious trauma (Catanese, 2010). Vicarious trauma is an occupational stressor that impacts individuals who are exposed to others' traumatic experiences (McCann & Pearlman, 1990a; McCann & Pearlman, 1990b). Researchers have learned this indirect trauma exposure causes individuals to develop distorted thinking patterns regarding self and others, and these thoughts impacts how individuals relate to self, others, and clients (McCann & Pearlman, 1990a; Williams, et al., 2012). Studies also indicated that individuals with distorted thinking and individuals with increased stress may use more maladaptive behaviors to cope with the stress (Boden, et al., 2012); Duhacek & Oakley, 2007). Studies indicated individuals with increased stress who used more maladaptive coping had decreased health due to poor health behaviors (Copeland-Linder et al., 2011; Flores et al., 2010; Padden, et al., 2011; Zen et al., 2012). The focus of this study was to combine the information from numerous research studies to understand whether these variables were related. I contributed to previous studies by

looking at how vicarious trauma and health behaviors were related and whether maladaptive coping mediated this relationship.

The primary hypothesis, vicarious trauma is related to health behaviors as mediated by maladaptive coping, was not supported. This study found only a significant association between vicarious trauma and one health behavior: healthy eating. Vicarious trauma was not related to physical activity, cigarette smoking, or risky drinking. The hypothesis that vicarious trauma and health behaviors are related was partially accepted. I also found that vicarious trauma was significantly related to maladaptive coping, and the hypothesis that vicarious trauma and maladaptive coping were related was accepted. The third hypothesis that maladaptive coping was related to health behaviors was partially supported. Maladaptive coping was significantly related to physical activity but was not significantly related to the other health behaviors (healthy eating, cigarette smoking, and risky drinking).

Interpretation of the Findings

I found that vicarious trauma was not related to health behaviors as mediated by maladaptive coping. These results both support and contradict previous research studies.

Vicarious Trauma and Health Behavior

Previous studies suggested the thought distortions associated with vicarious trauma predicted various negative outcomes such as increased emotional upset, increased relationship conflict, and decreased self-esteem and self-efficacy (Devilly, et al., 2009; Jankoski, 2010; Jordan 2010, Newell & MacNeil, 2010). Furthermore, these negative outcomes were related to decreased health behaviors (Calhoun, et al., 2009; Gill, et al.,

2009; Zen, et al., 2012), which indicates a possible link between vicarious trauma and health behaviors. My research study provided support that vicarious trauma is associated with decreased health behaviors. Specifically, vicarious trauma was associated with decreased healthy eating habits. Individuals working with TX CPS and TX CAC were not only at increased risk for vicarious trauma and increased cognitive distortions related to self and others, but were also at increased risk for decreased health behaviors.

Vicarious trauma was related to lower healthy eating scores. The data also suggested that sample volunteers had other less healthy behaviors. First, participants had physical activity and healthy eating scores lower than the federally recommended standards. As a result, the sample may be at increased risk for adverse health issues and disease due to lesser healthy eating and physical activity (Catanese, 2010; Nixon et al., 2011; Shirom et al., 2011). However, it is not clear from this study that these employees are at increased risk compared to the U.S. population, in which inactivity and less optimal eating habits are common (U.S. Department of Agriculture & US Department of Health and Human Services, 2010). Unhealthy individuals can negatively impact the work environment due to absenteeism, employee morale and productivity, and turnover rates (Mohren, et al., 2005; Nixon, et al., 2011; Verhaeghe, 2003). The study participants may be at risk for adverse health issues that can negatively impact their work environment and co-workers. Researchers have concluded that vicarious trauma can negatively impact the helpers' relationship with the client (Adams & Riggs, 2008; McCann & Pearlman, 1990b; Tosone, et al., 2012), and being ill and struggling with consequences of poor health may further complicate the relationship.

There were some findings that contradicted previous studies. Although sample participants had exposure to trauma, they did not have increased substance use. Most sample participants were nonsmokers and nonrisky drinkers. Also, nonsmoking and nonrisky drinking are behaviors that promote health, which indicated that sample participants engaged in some healthy behaviors despite their exposure to trauma (Zen, et al., 2012). Not only does this information not support previous research, but it is also a limitation to the study. Absence of these risk factors reduced the study's power to find associations with vicarious trauma. Next, health behavior measures are self-reported recalls of behaviors and may not accurately capture health behaviors (Glasgow et al., 2005). A behavior is considered a health behavior because it is an action that improves health (Centers for Disease Control and Prevention [CDC], 2011). I did not assess individuals' health externally. Instead, I asked individuals to report the number of times they engaged in physical activity, the number of times they consumed healthy foods, and the number of times they smoked cigarettes or engaged in risky drinking behaviors. The best way to capture accurate health behaviors is to have an external source monitor and record health behaviors (Glasgow et al., 2005). Health behavior assessment tools are criticized for a lack of validation, and researchers have suggested the most accurate way to record health behaviors is to use daily diary logs or observation (Glasgow et al., 2005). However, the assessment tools used were easier for participants to accept, were used previously in studies assessing health behaviors, and were developed based on federal guidelines. Lastly, I did not consider the health behaviors of individuals prior to working with traumatized individuals. Individuals could have been engaging in more adequate

health behaviors prior to working with traumatized clients or vice versa. Future researchers should assess changes in health behavior over time.

Sample Participants and Vicarious Trauma

Researchers implied that increased exposure to another person's trauma increased the risk for developing cognitive distortions related to self, others, and the world (Dunkley & Whelan, 2006; McCann & Pearlman, 1990b) including vicarious trauma (Knight, 2010; Newell & McNeil, 2010). My study data supported these findings. Participants reported an average caseload of 25.46 and an average time working with traumatized clients of 4.8 years. The sample average TABS score above 60 suggested participants were at risk for vicarious trauma. The sample also engaged in less than healthy behaviors during the 30 days of the study.

Vicarious Trauma and Maladaptive Coping

During times of stress, such as vicarious trauma, individuals will use either adaptive coping strategies or maladaptive coping strategies to manage and reduce stress (Boden, et al., 2012; Carver, et al., 1989; Duhachek & Oakley, 2007; Folkman & Lazarus, 1980). Study participants used both adaptive and maladaptive coping strategies as evidenced by scores on the BriefCOPE. The data suggested that higher maladaptive coping strategies scores related to higher vicarious trauma scores. Maladaptive coping is not mutually exclusive and this was supported in the data that individuals with vicarious trauma also used adaptive coping strategies (Carver, 1997). Adaptive coping can reduce stress, while maladaptive coping may increase stress (Boden, et al., 2012; Duhacek & Oakley, 2007), and I found evidence for this in the current study.

Maladaptive Coping and Health Behaviors

The study data indicated that higher maladaptive coping scores were associated with higher physical activity scores. Maladaptive coping was not associated with other health behaviors (healthy eating, risky drinking, and cigarette smoking). This finding supported previous studies. Previous researchers reported that individuals who used maladaptive coping strategies had less healthy behaviors such as poor eating, decreased physical activity, and increased substance use (de Freitas et al., 2012; Rabinowitz et al., 2010; Ruiz-Parrage & Lopez-Martinez, 2013; Talbot et al., 2013; Wilkinson et al., 2012). Substance use is commonly associated with maladaptive coping, but my findings contradicted these previous studies. The reason for these contradictory findings is not clear. It may be that my measure was not accurate in this group. It is also possible that individuals reported more positive behaviors due to bias. Furthermore, I did not consider participants health behaviors prior to working with traumatized individuals. It is possible participants were physically active and were nonsmokers or nonrisky drinkers prior to working with traumatized individuals and continued to maintain these behaviors despite their exposure to trauma. Lastly, few participants reported cigarette smoking or risky drinking, but this number was not large enough to assess these behaviors.

In summary, I found that employees of a Texas Children's Advocacy Center and Texas Child Protective Services reported scores indicative of vicarious trauma. Individuals had cognitive distortions associated with vicarious trauma, and individuals were using maladaptive coping behaviors. I also found that vicarious trauma and maladaptive coping were associated with lesser health behaviors. I did not find evidence

that maladaptive coping was the factor mediating the relationship between vicarious trauma and health behaviors. In other words, the data indicated that individuals may experience decreased health behaviors due to cognitive distortions associated with vicarious trauma. I added to existing literature on vicarious trauma, health behaviors, and coping, but my study had limitations.

Limitations of the Study

One limitation was lack of power. I aimed for 113 participants according to the G*Power analysis. However, after eliminating outliers, I had only 102 participants providing valid data. Using an effect size calculator found at danielsoper.com, I entered the observed R^2 for each regression analysis to determine effect size (f^2). The effect size ranged from .03 to .14, indicating trivial effect (Tabachnick & Fidell, 2013). In reality the number needed to enroll in the study to find a significant effect would be 434 subjects. In addition, low variability in certain measures, particular the low rates of smoking and risky drinking, added to the reduced power to find significant associations.

Another limitation of this study was the use of a convenience sample. TX CPS and TX CAC workers are busy, and it was possible that individuals did not take part in the study due to their busy schedules, creating a biased sample. Volunteer participation may have resulted in a biased sample. Volunteers may have had more free time to complete assessments. Participants could have agreed to participate in the study because they wanted to express their views, whether positive or negative, on their job. Furthermore, I focused only on Texas Children's Advocacy Center and Texas Child Protective Services workers and did not focus on other individuals who have indirect

trauma exposure, such as those in law enforcement, law, or health care fields. The results of this study cannot be generalized to this larger population. TX CAC and CPS employees face different challenges than other individuals working with trauma. I did not ask participants about additional occupational stressors they may have been experiencing, and it is possible that other stressors could account for increased maladaptive coping and decreased physical activity and unhealthy eating. The use of self-report measures was another limitation to this study. Recall issues and response bias were limitations and may have influenced the validity of the results. Participants were asked to answer honestly and truthfully, but they may have over or underreported to provide more socially acceptable answers.

I did not assess participants' physical health, and it is not certain whether individuals had adverse health complications or not. I only looked at health behaviors and not at the participants' physical health. Researchers suggested vicarious trauma was associated with decreased health (Sledjeski, et al., 2008; Templin, et al., 2008), but it is also possible that ill health is due to other factors not accounted for in this study. Future researchers should assess the physical health of individuals working with traumatized individuals.

Lastly, the cross-sectional study design was a limitation. I found a relationship between vicarious trauma and maladaptive coping but could not conclude that vicarious trauma caused maladaptive coping or vice versa. Similarly, I could not examine whether changes over time were found in the variables of interest, such as health behaviors.

Recommendations

Although the primary hypothesis was not supported, data suggested that individuals working for Texas Children's Advocacy Centers and Texas Child Protective Services had increased vicarious trauma and decreased health behaviors. Although it is not known whether the decreased health behaviors in the sample were similar to the general population, results still indicate the need for interventions to decrease vicarious trauma and increase health behaviors among these workers. It is important for future researchers to explore the barriers to health among individuals working with traumatized individuals.

I found that the cognitive distortions associated with vicarious trauma were related to decreased health behaviors and increased maladaptive coping. Therefore, future researchers should investigate which cognitive distortions are associated with decreased health behaviors and maladaptive coping. Researchers indicated vicarious trauma is related to five cognitive distortions (Dunkley & Whelan, 2006; McCann & Pearlman, 1990a). As a result of being exposed to trauma, individuals start to think differently about themselves, others, and the world in the areas of safety, trust, self-esteem, intimacy, and control (Ippen & Kulkarni, 2005). Future researchers should examine how each type of cognition relates to maladaptive coping or health behaviors. Perhaps certain cognitions are more related to decreased health behaviors and maladaptive coping. For example, researchers can examine how scores on the esteem and self-esteem scales of the TABS relate to maladaptive coping behaviors. Understanding which distortions, if any, are related to maladaptive coping or decreased health behaviors can help researchers focus

attention on the issue. This type of research can also be used to develop interventions and programs to help those working with trauma better cope with trauma exposure.

Implications

Positive Social Change

The increased risk for vicarious trauma for individuals working with TX CPS and TX CAC indicates that opportunities are needed for workers to have more opportunities to challenge distorted thinking and learn new ways to cope with distress and upset. This study provided data to suggest changes are needed at the individual and organizational level to help improve workers' functioning.

This study has implications for positive social change at the individual level. Data indicated individuals working directly with traumatized individuals are at increased risk for vicarious trauma. Individuals working with trauma need not ignore this warning and need to take precautions to reduce risk. Individuals should understand their risk and advocate for support, supervision, and time away from work in order to avoid risk for vicarious trauma. Individuals working with trauma are responsible for self care. Organizations are responsible as well.

Organizations are in a position to create programs that allow for individuals to receive education about risks of working with trauma and offer proper training in self care. Organizations can benefit employees by providing education and implementing programs that encourage healthy eating and physical activity. These types of programs will help decrease risk for poor health. It is likely that promoting health practices in the work place will not only improve health but will also reduce absenteeism and turnover.

Families and individuals involved with TX CAC and TX CPS can be also be negatively impacted by vicarious trauma. If organizations apply policies that encourage methods known to reduce vicarious trauma and individuals have opportunities to learn to use more adaptive coping the TX CAC and TX CPS workers will be better equipped to help traumatized children and families.

Conclusion

Individuals working with traumatized individuals remain at risk for vicarious trauma. It is advantageous for individuals working with trauma and the organizations they work for to continue to understand this risk in order to prevent ill health, absenteeism, turnover, increased stress, and additional harm to clients and their families (Adams & Riggs, 2008; Jordan, 2010; McCann & Pearlman, 1990b). This study was focused on trying to understand the barriers that prevented individuals working with trauma from health and wellness. Specifically this study sought to find out how vicarious trauma contributed to health behaviors and maladaptive coping. The results of this study indicated that vicarious trauma was significantly related to some decreased health behaviors and maladaptive coping. This relationship was not mediated by maladaptive coping, suggesting that the cognitive distortions associated with vicarious trauma may be the barrier to health and wellness. This study's findings can aid in understanding ways to reduce risk for vicarious trauma and improve coping for individuals working with traumatized individuals. More studies are needed to examine the role of vicarious trauma and health behaviors. This study contributed to studies on vicarious trauma and coping.

It is important that individuals and organizations continue to equip employees with tools to effectively cope with vicarious trauma.

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Appendix A: Permission to Use TABS

Stephanie Evans-Waitt Graduate Student Walden University 100 Washington Ave. S #900 Minneapolis, MN 55401

Re: *Trauma and Attachment Belief Scale (TABS)* Dear Ms. Evans-Waitt—

wps®

Western Psychological Services A Division of Manson Western Corporation 12031 Wilshire Boulevard Los Angeles, CA 90025-1251
www.wpspublish.com

August 13, 2013

In follow-up to your email of 13Aug'13, supported by Dr. Miranda van Tilburg's letter of support on 03May'13, this serves to provide terms that will permit you to adapt the format of the TABS for administration and scoring via a secure, password-protected on-line environment, for sole application within your registered graduate study, examining if there is a relationship between Vicarious trauma and health behaviors.

Western Psychological Services will authorize you to adapt and arrange for delivery of English TABS material as described – parallel with and consistent to the entire prevailing item set, and using prevailing response categories – including your administering the scale a specific number of times within the project, and your creating a scoring-only computerized key for tabulation of item responses, as based on our proprietary hand-scoring key. Our authorization is for the sole purpose of conducting the above-described study, and not for continued or commercial use, and is subject to satisfaction of the following conditions:

. (1) You must purchase from WPS a non-exclusive license for the anticipated number of TABS administrations.

. (2) The license fee for this described use of the TABS will be based on prevailing prices for the hand- scored TABS Test Form (W-393A), less 20% Research Discount. Note that we license this instrument in units of twenty-five (25) with a minimum licensed fee of one hundred uses; shipping and handling fees are not applicable to licensing fees (e.g., 100 total adapted TABS administrations @ $41.25/25 = $190.00 x 80% =

$152.00 total license fee).

. (3) The license fees must be prepaid in U.S. dollars drawn on a U.S. bank or by international money order (Visa, MasterCard, Discover and American Express are accepted and swiftest), and are non- refundable. To ensure proper handling of your licensing arrangements, and to guarantee the rate in condition 2 above, please send the payment to my attention with a signed copy of this letter, within the next sixty (60) days. *Allow the emphasis that you must contact WPS Rights & Permissions to arrange payment of your license fees; please do not contact WPS Customer Service for this purpose.*

. (4) Each reprint (or viewing) of the TABS material must bear – such as on each screen of TABS item presentation – the required copyright notice that will be provided to you by WPS. WPS maintains its proprietary rights to all material directly sourced from our copyrighted material as contained within TABS research adaptations.

. (5) With specific regard to the on-line administration, access to the TABS items must be granted only by a secured password that you provide solely to participants in the study.

Stephanie Evans-Waitt Graduate Student Walden University August 13, 2013

Page Two of Two

. (6) You agree to provide WPS with one copy of all articles (including research reports, convention papers, journal submissions, theses, etc.) that report on the TABS use in your research. The articles should be marked to the attention of WPS Rights & Permissions. WPS reserves the right to cite or reference such reports; you will of course receive proper acknowledgment if we use your research results.

. (7) WPS acknowledges that you will need to adapt our copyrighted scoring key for the purpose of computerized evaluation of responses to your research instrument –– and you have our authorization to do so provided you agree to destroy the adapted key following completion of your research. Also, documentation for your computerized adaptation of the TABS key must bear the required copyright notice that will be provided to you by WPS.

and

(8) You acknowledge that – by undertaking a licensed modification in format

and/or content of WPS's proprietary, formally published material – you assume full and sole responsibility for the WPS content used within your study and related results determined as a result of the investigation. You further agree to indemnify WPS, its assignees and licensees, and hold each harmless from and against any and all claims, demands, losses, damages, liabilities, costs, and expenses, including legal fees, arising out of the use of WPS-published material from which your uses shall derive.

Upon receipt of your license payment with signature to this letter (see below), WPS will send to you the required copyright notice (see conditions #4 and #7), and we'll issue and send to you a license to create the online adaptation and to administer and score it the specified number of times.

NOTE: To source the administration instructions, item content, and scoring guidelines needed for your customized application, please refer to the TABS Manual. In case you do not have (or have direct access to) the TABS Manual (W-393B), this message serves for the next 60 days as your authorization to purchase one at 20% Research Discount (and note that discounted orders cannot be completed over our website); if you have questions about ordering the Manual, contact WPS Customer Service at 800/648-8857 or 424/201-8800, weekdays 7:30am to 4:00pm Pacific.

WPS appreciates your research interest in the TABS, as well as your consideration for its copyright. Please feel free to contact me if you have any questions. I look forward to your reply.

Sincerely yours,

Fred Dinkins Rights & Permissions Specialist WPS Rights and Permissions e-mail: fdinkins@wpspublish.com

FD:sc

I agree to the terms stated herein.

_____

_____ Date Stephanie Evans-Waitt, Walden University

Appendix B: RAPA Visual Examples

Examples of physical activity intensity levels:

Light activities

- your heart beats slightly faster than normal
- you can talk and sing

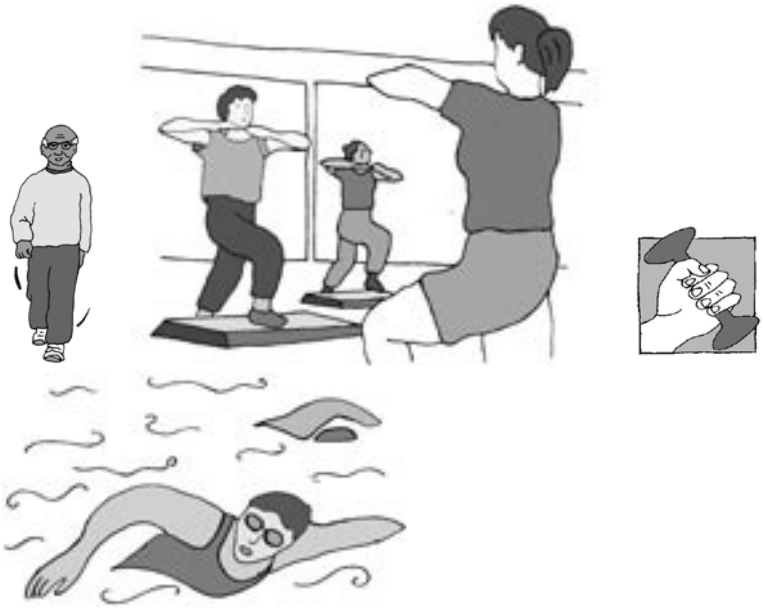
Stretching

Walking Leisurely

Vacuuming or Light Yard Work

Moderate activities

- your heart beats faster than normal
- you can talk but not sing



Aerobics Class

Fast Walking

Strength Training

Swimming Gently

Vigorous activities

- your heart rate increases a lot
- you can’t talk or your talking is broken up by large breaths

Jogging or Running

Stair Machine

Tennis, Racquetball, Pickleball or Badminton

Appendix C: Permission to Use Practical Health Behavior Measure

July 01, 2013

Stephanie Evans Walden University

Dear Ms. Evans,

The American Academy of Family Physicians (AAFP) thanks you for your request for permission to use the following:

Figure 1. from “Practical and relevant self-report measures of patient health behaviors for primary care research” Written by Glasgow, R. E.□From Annals of Family Medicine□Published 2005, Vol 3, No 1

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