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Adverse Childhood Experiences and Yoga: An Integrative Approach for Healing

A dissertation submitted in partial satisfaction of the  
requirements for the degree Doctor of Philosophy  
in Counseling, Clinical, and School Psychology

by

Ida Taghavi

Committee in charge:

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September 2021

The dissertation of Ida Taghavi is approved.

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May 2021

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I am deeply grateful for the mentors, colleagues, family, and friends who have supported me in this process. First, I would like to share my gratitude for my advisor, Dr. Maryam Kia-Keating. Without her consistent guidance, support, and belief in me, I would not be at this point in my academic career. I have so much appreciation for her approach in genuinely learning about me and my interests in psychology, and mentoring me in such a way that has led me to experience the reality of my dreams as a psychologist-in-training. Additionally, I am thankful for the mentorship from the rest of my dissertation committee, Dr. Heidi Zetzer and Dr. Melissa Morgan. Both have inspired me by their wisdom and passion for psychology in multiple educational capacities, including classes I have taken by them and taught under their supervision, clinical practicums, and research. I also feel fortunate for my relationships with other faculty in the Department of Counseling, Clinical, and School Psychology at the University of California, Santa Barbara who have supported me both professionally and personally. Learning besides, and building friendships with, my colleagues has also been a blessing, and a source of joy that has helped make this academic journey sustainable.

Next, I would like to acknowledge the unconditional support of my family. To my father Dr. Nader Taghavi, I believe that most of my accomplishments stem from your recognition and celebration of my strengths. To my mother Monir Ghanitabe, your sense of curiosity and perseverance to continuously learn and develop into a better person not only laid the foundation for influential conversations we share, but for values that I live according by. To my brother Kaya Taghavi, thank you for always having my back and cheering me on in life, wholeheartedly. Finally, I am thankful for my friends who have provided me with emotional support and many memorable adventures, and my two cats that have been by my side, figuratively and literally.

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University of California, Santa Barbara

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## PUBLICATIONS

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Kia-Keating, M., Alavi, S., Liu, S.R., **Taghavi, I.**, Sims, G., & Nerenberg, C. (*in preparation*). Post-Disaster Response and Resilience among Medical Providers.

Kia-Keating, M., Santacrose, D., & **Taghavi, I.** (*in preparation*). Participatory co-design in intervention development using CBPR and human centered design. *Handbook of Social*



*Inclusion*. Springer.

Kia-Keating, M., **Taghavi, I.**, & Modir, S. (*in press*). Parentification among Latinx youth: Cultural and contextual influences. In L. Hooper (Ed.) *Parentification: Racial, Ethnic, Cultural, and Contextual Influences on Culturally Tailored Assessment and Treatment*. Springer.

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**Taghavi, I.** & Kia-Keating, M. (2019, November). *Mentorship in trauma-informed prevention and resilience for Latinx youth*. International Society for Trauma Stress Studies, Boston, MA.

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**Taghavi, I.** (2019, April). *Mindfulness, Sexual Assault, and Posttraumatic Stress Among College Students*. 16th Hawai'i International Summit on Preventing, Assessing & Treating Trauma Across the Lifespan, Honolulu, Hawai'i.

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## ABSTRACT

### Adverse Childhood Experiences and Yoga: An Integrative Approach for Healing

by

Ida Taghavi

Lifelong physical, mental, emotional, and social impacts of trauma and chronic stress can result from adverse childhood experiences (ACEs). Data suggests that ACEs are a common experience with more than half of U.S. adults having experienced one or more ACE (e.g., Felitti et al., 1998; Center for Disease Control and Prevention, 2020). The potential for long-term health consequences of ACEs is clear (e.g., Hughes et al., 2017; Bellis et al., 2019) but less is known about effective interventions. It is critical to have a better understanding of approaches to resilience and recovery that simultaneously address physical, mental, and socio-emotional health, and lead to more positive long-term outcomes. One promising approach is yoga and mindfulness. Given the dearth of research in this area, this study examines the role of a yoga practice on physical, mental, and socio-emotional well-being of adults exposed to multiple ACEs. Adults who met the following criteria were recruited for a qualitative study: they endorsed four or more ACEs, indicating significantly greater risk for chronic health problems (Gomis-Pomares & Villaneuva, 2020), and practiced yoga regularly (i.e., once per week for at least six months). Twelve adults (ages 20-63 years; 9 identified as cisgender women, 2 as cisgender men, 1 as gender non-binary; 8 identified as White/Caucasian, 2 as Asian American/Pacific Islander, 1 as

Black/African American, 1 as Black/African American, Latinx/Hispanic, and Native American/Alaskan-Native) participated in in-depth, semi-structured interviews. An Interpretative Phenomenological Analysis (Smith et al., 2009) was employed to understand the lived experience of yoga on facets of health for individuals who have experienced adversity. Themes to emerge included: *counteraction of yoga and mindfulness to trauma-related symptoms, integration of the whole self in mind-body practice, corrective experiences through yoga and mindfulness, and healing beyond talk therapy*. These findings indicate that individuals with ACEs may experience yoga as a potentially valuable method for promoting healing through an integrative approach. Implications and future research will be discussed.

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## **CHAPTER I: INTRODUCTION**

### **Trauma and Adverse Childhood Experiences**

More than half of US adults have experienced one or more types of adverse childhood experiences (ACEs) (Center for Disease Control and Prevention, 2020). ACEs are potentially traumatic events that occur in childhood and adolescence which include abuse (emotional, physical, or sexual), neglect, and household dysfunction (e.g., parental conflict, substance abuse, mental illness) (Brown et al., 2009). The term “adverse childhood experience” stems from a landmark epidemiological study of over 13,000 US adults in the late 1990s, which indicated that ACEs were common, and that increased number of ACEs related to higher rates of multiple health risk factors, including mental health and substance use disorders, chronic diseases, including cancer, heart disease, stroke, and mortality (Felitti et al., 1998). Over the last two decades, scientists from various disciplines have provided theoretical and empirical explanations to understand the lifelong physical, mental, emotional, and social impacts of trauma and chronic stress that can result from ACEs.

ACEs have been shown in multiple studies to be associated with a wide range of negative health consequences across the lifespan. Specifically, research indicates how exposure to childhood adversity alters biological and psychological functioning, which impacts physical, mental, and socio-emotional health. In their review of physiological impacts of ACEs, Danese and McEwen (2012) explain how childhood exposure to adverse experiences often elicits repeated activation of the stress response system, which changes biological systems that are responsible for the maintenance of physiological stability, or allostasis. Furthermore, the chronic stimulation of the sympathetic nervous system leads to elevated inflammation levels and impaired immune cells, thus contributing to increased susceptibility to physical health conditions

and diseases (Danese & McEwen, 2012). ACEs have also been shown to change activation in brain regions. A meta-analysis of 38 articles on current structural neuroimaging research found that adults with childhood trauma exhibit reduced grey matter in prefrontal-limbic brain regions (i.e., prefrontal cortex, hippocampus, and amygdala), areas that are essential for emotion and stress regulation (Paquola, Bennett, & Lagopoulos, 2016). It has also been found that individuals with histories of chronic trauma present with decreased activity in brain regions associated with self-awareness, such as the medial prefrontal cortex, which can explain why such individuals often have difficulty defining a sense of self and purpose, and what the sensations in their bodies tell them about their emotions (van der Kolk, 2014).

Poor overall physical health outcomes have been consistently linked to ACEs. Recent systematic reviews and meta-analyses indicate that ACEs are associated with a variety of negative physical health outcomes, including higher risk of cardiovascular disease, respiratory disease, autoimmune disease, liver or digestive disease, cancer, diabetes, obesity, and premature mortality, with heightened risk of such outcomes for individuals with multiple ACEs (Bellis et al., 2019; Hughes et al., 2017). For instance, researchers have identified that those with two or more ACEs have a 57-80% increased risk of early death (Kelly-Irving et al., 2013). Risk health behaviors have also been linked with ACEs and contribute to physical health consequences, such as increased risk of smoking, heavy alcohol and illicit drug use, sexual risk-taking, interpersonal and self-directed violence (Bellis et al., 2019; Hughes et al., 2017).

Empirical evidence has supported the correlation of ACEs and the development of social and emotional consequences. ACEs have been shown to predict deviant and non-altruistic social behaviors, such as lying, theft, and assault, leading to social problems including aggression, violence, crime, judicial involvement and imprisonment (Gomis-Pomares & Villaneuva, 2020).

Like other studies on ACEs and health outcomes, Gomis-Pomares & Villaneuva (2020) discovered that multiple ACEs, specifically four or more, made the probability significantly stronger. Exposure to childhood adversity also has negative impacts on academic and occupational functioning. Associations between ACEs and cognitive and academic deficits, lower levels of education, employment, and assets, impaired work performance, and financial strain in adulthood have been found (Currie & Widom, 2010; Henry et al., 2018; Morrow & Villodas, 2017).

Adults with ACEs also have difficulties in social relationships. Children exposed to adversity tend to have anxious (i.e., insecure) and disorganized attachments to their caregivers, which are reflected similarly in their adult romantic relationships, as well as negative mental representations (i.e., internal working models) of their self and others (McCarthy & Maughan, 2010). ACEs have also been linked with interpersonal difficulties into adulthood, and engagement in poor parenting behaviors (Poole, Dobson, Pusch, 2018; Lomanowska et al., 2017). Furthermore, research suggests that exposure to cumulative adversity in childhood affects emotional development. Adults with a history of childhood adversity report greater emotion dysregulation, which includes non-acceptance of emotional responses, impulse control difficulties, and a lack of access to emotion regulation strategies (Rudenstine et al., 2019).

Negative mental health conditions are associated with a history of ACEs. A prominent study which examined World Mental Health surveys of adults assessed with childhood adversities and lifetime psychiatric disorders indicated strong associations between ACEs and all classes of disorders (i.e., mood disorders, anxiety disorders, behavior disorders, and substance disorders) across life-course stages (i.e., childhood, adolescence, young adulthood, and later adulthood) (Kessler et al., 2010). Evidence suggests that recent and lifetime mental health

disorders, including suicidality, share a graded relationship to the number of ACEs adults have experienced (Merrick et al., 2017).

The relationship between ACEs and the development of specific disorders, including the mechanisms that account for them have been widely established. Some of these mechanisms are experiential avoidance, maladaptive appraisals and coping, and emotion dysregulation, which have been shown to predict the development of obsessive-compulsive disorder (OCD) and anxiety disorders among individuals with a history of ACEs (Briggs & Price, 2009; Poole, Dobson, & Pusch, 2017). Increased anxiety and a lower sense of hope have also been found to be mechanisms of posttraumatic stress disorder (PTSD) among survivors of childhood adversity (Munoz et al., 2018).

## **Current Treatments for Trauma and Adversity**

### *Treatments for Trauma*

The wide range of deleterious health consequences associated with adverse childhood experiences necessitate appropriate treatment. While not all individuals with ACEs develop a PTSD diagnosis, some do as these experiences can be traumatic. Various forms of psychotherapy have been suggested to treat symptoms related to adversity and trauma. Consistent with clinical practice guidelines for the treatment of posttraumatic stress from multiple organizations [e.g., Veterans Health Administration and Department of Defense (VA/DoD), American Psychiatric Association (APA), 2004; International Society for Traumatic Stress Studies (ISTSS) Treatment Guidelines (Foa, Keane, & Friedman, 2009)], it has been determined that trauma-focused psychological interventions including exposure therapy [e.g., prolonged exposure (PE)], cognitive therapy [e.g., cognitive processing therapy (CPT)], and trauma-focused cognitive behavioral therapy (TF-CBT)] are the gold standard treatments for PTSD (Cusack et al., 2015).

These treatments reduce the impact of negative memories, thoughts and responses related to the traumatic event through psychoeducation, desensitization, as well as by challenging beliefs and cognitive processes, and organizing coherent autobiographical narratives by stating the facts and details of the thoughts and feelings associated with the traumatic memories, in a sequential format.

While traditional treatments for trauma, such as PE, CPT, and TF-CBT, are popularly used in clinical settings and often effective, they include limitations in trauma recovery. Bessel van der Kolk (2015) argues that exposure and cognitive-behavioral strategies are primarily focused on the past and the desensitization of feared responses, which miss important components of healing that involve restoring and repairing the brain and body's alarm systems to develop the physical understanding that danger has passed, as well as strategies to help individuals learn to enhance the quality of their present experience in life. Additionally, traditional psychotherapy is limited to cognitive models of processing, neglecting the physiological basis of traumatic stress, as expressed through physical and hormonal responses (van der Kolk, 2015). In the experience of trauma, the prefrontal cortex or "rational brain" that manages cognitive processing is inactive, and the limbic system or "emotional brain" is dominant, coordinating survival responses. This is why some trauma experts believe that treatments focused on somatic regulation and interoceptive awareness are essential (van der Kolk, 2015). With trauma, the body is not able to quickly return to equilibrium following threat, resulting in continued secretion of stress hormones, as the body remains in fight/flight/freeze mode, which leads to a range of negative health consequences (van der Kolk, 2015). Research has highlighted the concern that there are significantly high rates of dropouts from PTSD treatment (Reinhardt et al., 2017), as well as substantial residual symptoms (Larsen et al., 2019).

Additionally, treatment outcome studies have reported that trauma-processing treatments are less effective for individuals with histories of childhood trauma compared to adult-onset trauma (van der Kolk et al., 2007). Notably, in McDonagh-Coyle and colleagues' (2005) study that compared cognitive behavioral therapy (CBT) and present-centered therapy (PCT) to treat individuals with PTSD, their findings showed that neither CBT nor PCT ameliorated symptoms of depression, dissociation, and anger among individuals with PTSD related to childhood sexual abuse (CSA). Another question with traditional trauma treatments lies in their long-term impact. A recent review revealed that 49-70% of individuals receiving PE or CPT attained clinically significant reductions in PTSD symptoms, although nearly two-thirds of individuals receiving PE or CPT still met criteria for PTSD at posttreatment (Steenkamp, Litz, & Hoge, 2015).

In evaluating PTSD treatment, the Institute of Medicine determined that the currently available scientific evidence for the treatment for PTSD is inadequate (Institute of Medicine, 2008). Cusack and colleagues' (2016) meta-analytic and systematic review of PTSD treatments highlight factors that must be considered in selecting a treatment for PTSD, which include patient preference, access to treatment, and clinical judgment about the appropriateness of an intervention. Exposure therapy and CPT, for instance, are readily available in most Veterans Administration Medical Centers, but are less likely available in community-based mental health centers (Cusack et al., 2015). Thus, a need remains for improving and tailoring existing PTSD treatments for various populations.

### *Emotion Regulation*

There is growing attention to the importance of emotion regulation skills in the treatment of trauma. Significant problems in emotion regulation are associated with chronic trauma exposure (van der Kolk, 2005), causing the experience of becoming flooded or dissociating --

responses that impede the adaptive resolution of traumatic memories, and result in high dropout rates and worsening of symptoms in treatments (van der Kolk, 2006; van der Kolk et al., 2014). Research suggests that deficits in physical, socio-emotional, and mental development impacted by ACEs can hinder the emotion regulation abilities to deal with psychological distress and physical symptoms and illness, such as effective emotional expression, cognitive reappraisal, and dispositional mindfulness (Boyes, Hasking, & Martin, 2016; Cameron, Hamilton, & Carroll, 2018; Whitaker et al., 2014). Emotional dysregulation has been identified as the link connecting ACEs to negative psychological health, including anxiety, posttraumatic stress, and addictive behaviors (Poole, Dobson, & Pusch, 2017; Messman-Moore & Bhuptani, 2017; Poole et al., 2017). Evidently, research suggests that teaching skills to regulate arousal is an essential aspect of recovery (Cloitre et al., 2010). Learning to observe, tolerate, and interpret visceral sensations may substantially promote regulation of emotions (van der Kolk, 2014).

### *Mindfulness*

Techniques that cultivate mindfulness of internal states and physiological responses have demonstrated promise in addressing trauma and promoting resilience (Follette et al., 2006; Thompson et al., 2011). Characteristics of mindfulness, including nonjudgmental acceptance of thoughts, experiences, and emotions, emotion regulation, and present-moment awareness are noted as antithetical patterns that can target core symptoms of trauma (Follette et al., 2006; Lang et al., 2012). While the concept and practice of mindfulness is of growing interest in Western psychology, it stems from ancient Eastern contemplative traditions from over 2,600 years ago. Mindfulness meditation is the center piece of a number of evidence-based psychotherapy approaches (e.g., Dialectical Behavior Therapy, Acceptance and Commitment Therapy, Mindfulness-Based Stress Reduction, Mindfulness-Based Cognitive Therapy). Recent studies



have also shown that mindfulness-based interventions reduce symptoms in mental health conditions associated with ACEs, including generalized anxiety disorder (e.g., Roemer & Orsillo, 2002), recurrent depression (e.g., Segal et al., 2002), borderline personality disorder (e.g., Linehan, 1993), chronic pain (e.g., Kabat-Zinn, 1982), substance abuse disorder (e.g., Breslin, Zack, & McMMain, 2002), eating disorders (e.g., Kristeller, Baer, & Quilliam-Wolever, 2006), and PTSD (e.g., Kearney, et al., 2012). Furthermore, research indicates that mindfulness practice is associated with neurological changes and increased grey matter concentration in brain regions that were damaged by ACEs, and involve learning and memory processing, emotion regulation, and self-referential processing (Hölzel et al., 2011). Mindfulness meditation has also been to shown to shift gene expressions that regulate the physiological stress response (Kaliman et al., 2014).

The impact that mindfulness meditation has on reducing the negative impact of ACEs is demonstrated in a model by Ortiz & Sibinga (2017), which illustrates how mindfulness can mitigate the psychological, behavioral, and physiological changes associated with ACEs and trauma, specifically by reducing symptoms of depression and posttraumatic stress disorder associated with stress and trauma, and improving health behavior and biological markers of metabolic, neurologic, and inflammatory dysfunction and disease. One study examined the impact of an 8-week MBSR program on 50 women exposed to trauma including witnessing family violence, experiencing childhood physical or sexual abuse, or sudden loss of a loved one (Gallegos et al., 2015). The findings demonstrated a decrease in psychological distress such as perceived stress, depression, trait and state anxiety, emotion dysregulation, and posttraumatic responses (Gallegos et al., 2015). Beneficial effects (e.g., improvements in depression, PTSD, anxiety symptoms, and mindfulness scores) from such programs have shown to continue at

follow-up 2.5 years later (Earley et al., 2014). Experts continue to support the use of mindfulness-based trauma-informed approaches to address poor health outcomes associated with ACEs (Bethell et al., 2017; Ortiz & Sibinga, 2017).

### *Treatments for ACEs*

While a number of evidence-based interventions exist for adults with trauma symptoms, there is a paucity of research evaluating interventions specifically with adult with adverse childhood experiences. One systematic review of primary care interventions for the improvement of health outcomes in adult survivors of ACEs was conducted among 99 studies, which indicated that cognitive behavioral therapy (CBT) and mindfulness-based therapies were most effective (Korotona et al., 2016). Interventions like CPT, TF-CBT, eye movement desensitization and reprocessing (EMDR), imagery rescripting and rehearsal (IRR), and rational emotive behavior therapy (REBT) were also indicated as being helpful to populations exposed to adversity in childhood (Korotona et al., 2016). However, most of the studies demonstrating their efficacy and effectiveness were examined in populations with PTSD and not ACEs in particular. This distinction is noteworthy as trauma can impact physical and mental functioning differently for individuals with chronic childhood abuse than for those who experienced discrete traumatic events in adulthood (van der Kolk, 2015). For instance, EMDR has been identified as a powerful tool for resolving stuck traumatic memories, but not necessarily for the resolution of the effects of complex emotions, such as betrayal and abandonment, that accompany physical or sexual abuse in childhood (van der Kolk, 2015). In addition, while mindfulness-based interventions and CBT are most widely accepted current treatments for ACEs, they primarily target cognitive and emotional health outcomes, rather than physical and social health and neurobiological outcomes, and thus, it has been indicated that significant gaps in the literature remain, preventing

determination of a “gold standard” intervention for adult survivors of ACEs (Korotona et al., 2016; Lorenc et al., 2020).

### **Yoga and Adverse Childhood Experiences**

Because childhood adversity significantly affects the mind and the body (Van der Kolk, et al., 2015), a form of mindfulness meditation involving physical movement may be particularly salient for populations exposed to ACEs. Originating in India over 5,000 years ago, *yoga* is derived from the Sanskrit root, “yuj,” meaning “to yoke” or “to join.” In Eastern philosophy, yoga is commonly described as a practice that cultivates the union of the body and mind through a process of retraining the intellect, emotions, and will, enabling one to perceive life with greater awareness (Iyengar, 1966). It integrates *asanas* or physical postures, *pranayama* or breathing exercises, and *dhyana* or mindfulness meditation techniques. These elements of yoga are derived from the Eight Limbs of Yoga that were systemized in the yoga sutras by India’s sage Patanjali at least 1,700 years ago. The limbs of yoga include: attitudes towards the environment/abstinences (*yamas*), self-observances (*niyamas*), physical practice of postures (*asana*), breathing practice (*pranayama*), withdrawal of the senses (*pratyahara*), concentration (*dharana*), meditation (*dhyana*), and a state of enlightenment (*samadhi*) (Iyengar, 1966). Historically, yoga has been a form of philosophical and spiritual discipline to help practitioners cope with life’s suffering (*dukkha*) (Iyengar, 1966). Yoga is considered a form of mind-body therapy (National Center for Complementary and Integrative Health, 2017) and is now a widespread practice that is broadly accepted by Western populations over the past several decades. Based on nationally representative survey data from the Center for Disease Control and Prevention, yoga was identified as the most commonly used complementary health approach,

with an increase in use from 2012 (9.5%) to 2017 (14.3%) among U.S. adults (Clarke et al., 2018).

Yoga has been shown to have a wide range of both short-term and long-term health benefits. In a systematic review of the current knowledge of yoga practice and its effects on brain structure and function, as assessed with MRI, fMRI, and SPECT, it was found that studies collectively demonstrated that yoga had a positive effect on the hippocampus, amygdala, prefrontal cortex, cingulate cortex and brain networks including the default mode network (DMN) (Gothe et al., 2019). Studies have also shown that yoga can increase overall brain wave activity, including activation of gray matter in the brain, the amygdala and frontal cortex (Desai, Taoilior, & Bhatt, 2015). The practice of yoga supports the autonomic nervous system by increasing parasympathetic activity over sympathetic activity through changes in heart rate variability, thus leading to improved cardiovascular functioning (Vinay, Venkatesh, & Ambarish, 2016), blood pressure (Rosario & Leite, 2019), and a reduced risk of cardiovascular disease (Jeter, 2015). Yoga is also associated with positive changes in respiration, such as improvements in asthma (Eslami, 2018), and reducing the risk of respiratory disease (Jeter, 2015), muscle strength and physical mobility, improving symptoms of Parkinson's disease (Ni, Mooney, & Signorile, 2016), diabetes (Kumar et al., 2016), chronic insomnia (Datta, Tripathi, & Mallick, 2017), chronic pain (Kim, 2016), as well as some of the long-term consequences that impact the quality of life after stroke (Thayabaranathan et al., 2017). In addition to improving physical health problems, yoga can help to address the associated psychological effects (e.g., Thayabaranathan et al., 2017; Eslami, 2018).

Yoga is linked to the alleviation of mental health problems. Meta-analyses suggest that yoga is efficacious in treating mental health disorders including anxiety (Hofmann et al., 2016),

depression (Cramer et al., 2013), and PTSD (Gallegos et al., 2017). Symptom reduction through yoga has also been found in attention-deficit hyperactivity disorder (ADHD) (Abadi, Madgaonkar, & Venkatesan, 2008), eating disorders (Karlsen et al., 2018), obsessive-compulsive disorder (Shannahoff-Khalsa et al., 2019), schizophrenia (Vancampfort et al., 2012), and has been suggested to treat more complex psychiatric disorders, including psychoses, personality and developmental disorders (Shannahoff-Khalsa, 2010). In addition to addressing common comorbid conditions, there are many pathways by which the various elements and benefits of yoga address symptoms resulting from ACEs.

Components of yoga, such as breathing, physical postures, and mindfulness meditation, target physiological and psychological symptoms that may be consequences from adversity. Breathing in yoga is referred to as *pranayama*, which translates from Sanskrit as “expansion of life force.” In yoga, the breath is synchronized with physical movements to facilitate mindful awareness. Yoga breathing improves cardiac functioning (Jyotsna et al., 2013) and changes heart rate variability, affecting the autonomic nervous system by increasing parasympathetic modulation and decreased sympathetic modulation (Telles, Singh, & Balkrishna, 2011). Significant reduction in symptoms of posttraumatic stress and depression in trauma survivors have been indicated as a result of pranayama (Descilo et al., 2010).

*Asana* refers to body postures in yoga, which range from sitting or resting meditation poses to standing, inverted, twisting, and balancing poses. Furthermore, different styles of yoga incorporate these postures in unique combinations and sequences, focus on the rhythm of the transitions between postures, hold the postures at longer or shorter lengths, move at faster or slower paces through the postures, or sometimes move through the postures in higher temperatures. Accompanied by controlled inhalations and exhalations, the physical postures of

yoga emphasize a balance of dichotomous forces: strength and flexibility, stability and ease, effort and surrender. Positive physiological changes are associated with yoga postures. Asanas have been associated with changes in neurotransmitter functions, particularly increased brain gamma-Aminobutyric acid (GABA) levels (Streeter et al., 2007), which is associated with decreased depression and anxiety symptoms, improvements in blood pressure, perceived stress, health perception, flexibility, muscular strength and endurance (Cowen & Adams, 2005), and significant decreases in psychological distress, even in conditions of increased subjective life stressors (Franklin, Butler, & Bentley, 2018). Performing yoga postures have also demonstrated psychological effects, including self-esteem through an increased subjective sense of energy (Golec de Zavala, Lantos, & Bowden, 2017).

*Dhyana*, or meditation, is a significant element of yoga as it is the state aimed to be achieved through the union of breathing and moving through physical postures. Yoga is a form of meditation, increasing levels of trait mindfulness, and improving psychiatric symptoms, such as anxiety and depression (Gaiswinkler & Unterrainer, 2016; Shelov, Suchday, & Friedberg, 2009), as well as executive functioning (Luu & Hall, 2016). Analyses on the effects of dhyana have shown changes in autonomic and respiratory variables, such as an increase in blood volume and flow, decrease in breath and heart rate, and higher frequency in heart rate variability, which is associated with greater parasympathetic activity in the nervous system (Telles et al., 2013).

Yoga can be particularly useful in addressing the physiological and psychological consequences of ACEs. Yoga helps to regulate the physical response to stress by restoring the nervous system's sympathetic-parasympathetic balance, reducing allostatic load and cortisol levels, and increasing levels of GABA, resulting in symptom relief for psychiatric conditions exacerbated by stress, including PTSD, depression, and anxiety (Gothe, Keswani, & McAuley,

2016; Streeter et al., 2012). Brain imaging scans have also shown that yoga can decrease blood flow to the amygdala, the brain's center for fear activation, and increase blood flow to the prefrontal cortex, and shift laterality preference from the right hemisphere to the left hemisphere (Cohen et al., 2009). This physiological change is important for those exposed to stress and trauma because such experiences are associated with an over-activation in the amygdala causing excess arousal, and an under-activation in the prefrontal cortex, which disables the inhibitory control, working memory, executive function, and affective information processing and regulation needed to respond in healthy and effective ways (Thayer & Brosschot, 2005).

Moreover, West and colleagues (2017) suggest that incorporating a mind-body intervention like yoga may be beneficial to the treatment of trauma because of its emphasis on present moment awareness, and using the body to build interoceptive awareness, which counteracts the loss of awareness and integration of one's present emotional and physical being that is often associated with trauma. The heightened awareness of the body that is cultivated through yoga can help to detect physical sensations (e.g., body tension, pace of heartbeat, quality of breath) and provide information about one's social environment, which is a useful practice for accurately identifying triggered emotional responses (van der Kolk, 2015). Additionally, this awareness can foster emotion regulation by facilitating tolerance of physiological states, as opposed to engaging in avoidance, and enhance the ability to act on internal cues and take appropriate action (van der Kolk, 2015). Furthermore, awareness of the impermanent and transient nature of one's momentary experience is thought to lead to a transformative perspective on the self (Hölzel et al., 2011).

Yoga can also affect cognitions by promoting adaptive thinking through intentional and nonjudgmental focus on the present moment, which inadvertently decreases patterns of

repetitive, negative thoughts and ruminations found in individuals suffering from psychological distress (Sharma & Haider, 2013; Schuver & Lewis, 2016). The psychological benefits of yoga, such as increased mindfulness, interoceptive awareness, emotion regulation, and self-compassion are linked to decreases in stress, dysfunctional coping, and avoidance (Mehling et al., 2018; Dick et al., 2014; Snaith et al., 2018; Follete et al., 2006; Thompson & Waltz, 2010). Furthermore, mindfulness and yoga have been found capable of reactivating areas of the brain specifically devoted to processing trust, control, pleasure, and engagement that are often negatively affected by trauma (van der Kolk, 2014).

Yoga has also demonstrated effects on personal growth such as improvements in self-efficacy (Hewett et al., 2018), as well as gratitude, compassion, relatedness, acceptance, and empowerment (West et al., 2017). Highlighting yoga's effect on personal growth in addition to symptom reduction reflects a paradigm shift in the field of trauma treatment, as it acknowledges that individuals can experience both resilience and growth as well as distress following adversity (Poorman, 2002). Strengths-based interventions are important to the treatment of trauma because they emphasize the need to strengthen psychosocial and environmental resources, and promote positive development and empowerment (Cloitre et al., 2012). This may also explain the appeal of yoga for those struggling with psychological concerns because yoga can be perceived as a practice that promotes health and well-being, rather than a treatment for disorders (Bußsing et al., 2012). This may also be consequently addressing stigma that is attached to seeking psychological treatment (Sciarrino et al., 2017). Unfortunately, there is a paucity of research on treatment modalities that foster growth and resilience among individuals exposed to adversity (West et al., 2017).



While knowledge on the relationship between yoga and ACEs among adult individuals is limited, there is a growing body of research on the impact of yoga on psychological conditions, including traumatic stress. One landmark, randomized, controlled trial involving 64 adult women with chronic, treatment-resistant PTSD showed that after 10 sessions of yoga, participants exhibited statistically significant decreases in PTSD symptom severity, and greater likelihood of loss of PTSD diagnosis when compared with the control, which was a supportive women's health education group (van der Kolk et al., 2014). Additionally, only participants in the yoga group were able to maintain this symptom amelioration at post-treatment follow-up. The effect sizes in this study were comparable to well-researched psychotherapeutic and psychopharmacologic approaches (van der Kolk et al., 2014). Experts conclude that yoga may improve the functioning of traumatized individuals by helping them to tolerate physical and sensory experiences associated with fear and helplessness, and to increase emotional awareness and regulation (van der Kolk et al., 2014). In a more recent study, Price and colleagues (2017) extended the prior research by examining a lengthened version of a trauma-sensitive yoga treatment that is 20-weeks long, in order to compare the results to previous randomized controlled trial with shorter durations (e.g., van der Kolk, 2014), for women with chronic treatment-resistant PTSD. Their results demonstrated significant reductions in PTSD and dissociative symptomatology, which were greater than similar treatments with shorter duration, highlighting the advantage of more intensive trauma-sensitive yoga treatment.

Trauma-sensitive yoga (TSY) has also been examined specifically among adult women with a history of intimate partner violence from diverse ethnic backgrounds (Ong, Cashwell, & Downs, 2019). In a case study research design of five participants, analyses revealed an improvement in PTSD scores through a moderate change in participants' PTSD scores attributed

to the TSY intervention at post-test. Themes that collectively emerged from interviews included physiological, emotional, and spiritual benefits. Yoga as an adjunct to trauma-focused counseling for female survivors of sexual violence was also recently examined (Stevens & McLeod, 2019). Using an interpretative phenomenological analysis to explore the experience of the yoga program, themes included: the importance of being in a group, yoga as a means of facilitating personal learning and change, yoga as an on-going resource for living, suggesting that women recovering from rape and sexual abuse may benefit from the value of yoga as an adjunct to counseling (Stevens & McLeod, 2019). The positive psychological impacts of yoga for survivors of interpersonal trauma are also validated through a study that examined eleven survivors who practiced yoga regularly (Gulden & Jennings, 2016). Data analyses revealed that the emphasis of yoga on the mind and physical body fostered spiritual growth, self-acceptance, alleviation of trauma-related symptoms, and increased feelings of self-compassion, empowerment, and serenity.

Current research has also focused on the mechanisms of yoga that impact psychological health. For instance, Neukirch, Reid, & Shires (2019) investigated the role of interoceptive awareness and mental health outcomes, using a self-report measure of interoceptive awareness at baseline, during, and after a TSY intervention, in addition to qualitative interviews. In case studies of three participants with PTSD who completed the 8-week TSY series, results indicated that participants experienced significant increases in interoceptive awareness and significant decreases in PTSD symptoms, depression, anxiety, and stress (Neukirch, Reid, & Shires, 2019). Self-compassion is a construct for relating to oneself in a more positive, kind, understanding, and constructive way, especially in instances of perceived suffering. Crews, Stolz-Newton, and Grant (2016) explored the use of yoga in building capacity for self-compassion in teen and adult

female survivors of sexual violence. Their qualitative study demonstrated that practicing yoga in a group setting that is sensitive to the issues of trauma survivors (i.e., local center for survivors of sexual violence) heightened the participants' self-compassion, reduced traumatic stress, and improved overall physical and emotional wellness, by increasing their feelings of self-kindness, mindfulness, and connection to their communities (Crews, Stolz-Newton, & Grant, 2016). Across studies, yoga is indicated as a psychologically beneficial treatment to survivors of trauma.

### **Current Study**

Lifelong physical, mental, emotional, and social impacts of trauma and chronic stress can result from adverse childhood experiences, which research has indicated that a large portion of the U.S. population endorses (e.g., Felitti et al., 1998; Sacks & Murphy, 2018). While the long-term health consequences of ACEs have been increasingly examined (e.g., Hughes et al., 2017; Bellis et al., 2019), consequently urging the development of effective prevention and intervention strategies for mental health (e.g., O'Connell, Boat, & Warner, 2009, Korotona et al., 2016), what is less known are approaches to resilience and recovery that address the long-term physical, mental, and socio-emotional health consequences simultaneously. Aligned with the U.S. health care system's call for transformation into an integrated behavioral health model that is focused on "whole person," (Bethell et al., 2014, p. 9) health and well-being, the purpose of the current study is to examine whether yoga can help to disrupt the negative impact of ACEs on chronic health problems by using an integrated approach and serving multiple purposes. Specifically, the study aims to explore yoga's potential ability to target physical, mental, and socio-emotional well-being, which may have a unique contribution in protecting against adversity on the whole self that traditional mental health treatment is limited from. Extant

literature does not indicate a standard treatment for adults with ACEs, and current treatments are limited in healing both the body and mind together. Yoga is also a cost-effective treatment, which is a particularly important factor given the substantial cost burden on the health care system placed by ACEs (Bellis et al., 2019). With the high prevalence of ACEs, their significant health effects, and the push for integrative health models, there is a growing need to address the gap in research on interventions for adults suffering the consequences of ACEs.

## CHAPTER II: METHOD

### Research Design

**The Reason for Qualitative Methods.** Given the dearth of research that exists on the impact of yoga on individuals exposed to ACEs, there was a need for an exploratory study to understand this phenomenon. While there is a lack of both qualitative and quantitative research on ACEs and yoga, quantitative research examining PTSD and yoga has contributed to the psychological literature by providing numerical data on the levels of trauma symptoms and other mental health factors and outcomes. Qualitative research on PTSD and yoga has also highlighted the personal experiences of yoga practice. However, prior literature continues to leave unanswered questions about the experience of yoga's impact on multiple facets of health for individuals particularly with ACEs. Specifically, what is the lived experience of yoga on aspects of physical, mental, and social-emotional health for individuals who have experienced a significant amount of childhood adversity? Qualitative research is helpful in providing answers to this question by offering access into a person's inner world, and thus, maximal exploration of the phenomenon. According to researchers Denzin & Lincoln (2011) "qualitative researchers study things in their natural setting, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them" (p. 3). Subsequently, the immersion into the participants' world in order to make sense of the meanings they make of their lived experiences was helpful in developing a phenomenological understanding, and made a qualitative research method a natural choice in executing this study.

**Interpretative Phenomenological Analysis.** Of the established phenomenological approaches, the present study employed an Interpretative Phenomenological Analysis (IPA). IPA is a psychological-oriented approach that is concerned with making sense of participants' lived

experience, through a process of exploration, investigation, and interpretation (Alase, 2017). IPA inherits a philosophy that the “experience can be understood via an examination of the meanings which people impress upon it” (Smith et al., 2009). There is a theoretical commitment to making sense of participants holistically, as a cognitive, linguistic, affective, and physical being, and therefore assuming a connection between people’s talk and their thinking and emotional state, to ultimately learn something about the respondent’s psychological world (Smith & Shinebourne, 2012). In phenomenology, the researcher “describes the common meaning for several individuals of their lived experience of a concept or phenomenon” (Creswell & Poth, 2016, p.75). To explore and understand the phenomenon, a phenomenological study seeks to answer “what” participants experienced and “how” they experienced it (Moustakas, 1994). With an IPA approach, there is a specific emphasis in making sense of “how individuals are perceiving the particular situations they are facing, how they are making sense of their personal and social world” (Smith & Shinebourne, 2012, p. 54). The intention of the accumulation of data collection and methods is to provide rich, thick description of information.

**Researcher Positionality.** The primary researcher (IT) of the current study is a second-generation U.S., Iranian-American woman who was a doctoral student, psychologist-in-training at the time of the study, focusing her research on adversity, trauma, resilience, and mindfulness and holistic approaches. She is also a yoga practitioner and certified yoga teacher. While she has personal experience in yoga, she has not experienced four or more ACEs. Before commencing the study, IT assumed that yoga may be both challenging and beneficial to the health of individuals exposed to childhood adversity. She kept a research journal, in which she recorded her personal responses to interviews, and other relevant reflections. MKK (second author) supervised the study. She is an experienced researcher, faculty member, and licensed clinical

psychologist, with an extensive background in working with individuals exposed to trauma and ACEs. MKK also has personal experience as a participant in yoga practice.

## **Participants**

Participants of the current study included twelve adults, an amount that has been identified as being sufficient in reaching saturation through IPA (Alase, 2017). Eligibility was based upon individuals who endorsed four or more ACEs, indicating significantly greater risk for chronic health problems (Gomis-Pomares & Villaneuva, 2020), and practiced yoga regularly (i.e., at least once per week for at least six months). The participants resided in the U.S. (Massachusetts, New York, Wisconsin, Minnesota, Iowa, and California), Canada, and Italy. For this study, the mean age of the participants was 43.3, with a standard deviation of 14.5, and range of 43. The sample consisted of 9 cisgender women, 2 cisgender men, and 1 gender non-binary individual. Of the 12 participants, the amount of time that each practiced yoga regularly, as defined by at least once per week, ranged from 2 to 20 years, with 7 of the participants having practiced yoga for over 10 years. Additionally, the participants' number of ACEs ranged from 4 to 14, with 6 of the participants having had over 7 ACEs. The ethnic composition of the participants recruited was 66.8% White/Caucasian, 8.3% Black/African American, 8.3% Black/African American, Latinx/Hispanic, and Native/American/Alaskan-Native (multiracial), 8.3% Asian American/Pacific Islander, and 8.3% Asian American/Pacific Islander and White/Caucasian (biracial). See Table 1 for additional information about the participants' demographics.

Table 1

*Self-reported participant demographics (N = 12)*

No.	Name*	Pronouns	Race/Ethnicity	Age	Gender	S.O.	Years of YP	ACEs
1	Juan	He/him/his	Black/African American, Latinx/Hispanic, Native American/Alaskan-Native	28	Cis man	Heterosexual/straight	2	14
2	Teagan	She/her/hers	White/Caucasian	63	Cis woman	Heterosexual/straight	14	6
3	Nora	They/them/theirs	White/Caucasian	35	Non-binary	Pansexual/queer	3	8
4	Kim	She/her/hers	Asian American/Pacific Islander	20	Cis woman	Heterosexual/straight	3	10
5	Angie	She/her/hers	White/Caucasian	61	Cis woman	Heterosexual/straight	14	13
6	Jack	He/him/hers	White/Caucasian	49	Cis man	Heterosexual/straight	14	4
7	Frances	She/her/hers	White/Caucasian	50	Cis woman	Heterosexual/straight	13	7
8	Imani	She/her/hers	Black/African American	47	Cis woman	Heterosexual/straight	20	9
9	Emma	She/her/hers	White/Caucasian	36	Cis woman	Heterosexual/	10	11
10	Violet	She/her/hers	White/Caucasian	49	Cis woman	Heterosexual/straight	20	6
11	Lorenzo	He/him/hers	White/Caucasian	61	Cis man	Heterosexual/straight	7	4
12	Mia	She/her/hers	Asian American/Pacific Islander, White/Caucasian	21	Cis woman	Bisexual/queer	5	7



\*Pseudonyms are listed here to distinguish individual participants, while maintaining their anonymity

S. O. = Sexual Orientation

YP = Yoga Practice

Recruitment and data collection occurred during the COVID-19 pandemic, which made the research process entirely virtual. Recruitment was implemented through emails with social networks, including virtual announcements on social media and yoga studios. The flyer advertised for individuals that met some of the inclusion criteria for this study (i.e., individuals who practiced yoga at least once per week for at least six months, and had been exposed to ACEs), and who were interested in completing a 20-item ACEs questionnaire that determined further eligibility for a following 60- to 90-minute interview virtually via Zoom, a video-conferencing platform. The flyer also stated that the research study sought to understand the mental, physical, and socio-emotional impacts of yoga, and that participants would receive a \$30 Amazon Gift Card as an incentive for their participation (See Appendix A for flyer).

### **Sampling Method**

Methods of recruitment included convenience, volunteer, and snow-ball sampling. Purposive sampling methods were selected because of prior literature which has indicated that in a phenomenological research study, participants must be selected from a reasonably homogenous sample pool of participants, in order to understand the true phenomenon under examination (Alase, 2017). Smith et al. (2009) stated that “samples are selected purposively (rather than through probability methods) because they can offer a research project insight into a particular experience” (p. 48). Invitation letters sent to prospective participants and a snowball strategy have been recommended particularly for an IPA research study (Alase, 2017).

## **Procedures**

### **Email Screening**

Potential participants contacted an email address that was included on the recruitment flyer. Once the potential participants emailed and expressed their interest in participating in the study, the researcher emailed them back with a link to the eligibility-screening survey via Qualitrics®, a survey software, that included a consent form with the purpose and procedures of the study, a demographic questionnaire, and the 20-item ACEs questionnaire. If the potential participants' responses met the eligibility requirements (i.e., practiced yoga at least once per week for at least six months, and endorsed four or more total ACEs), the survey automatically directed them to a page that confirmed their eligibility to participate in the interview, and prompted them to submit their earliest available days and times for the interview if they were still interested, with their name and contact information. This approach to interview-scheduling is aligned with IPA research recommendations in allowing for the interview date and time to be left to the participants' decision, in order to support what is most comfortable to participants. The survey noted that their name and contact information would only be used for the purposes of scheduling the interview, and would not be linked to their responses to protect their confidentiality. Potential participants that did not meet the eligibility requirements were directed to a page of the survey that thanked them for their interest, but informed them that they were not eligible for the interview.

### **Consent Process**

The consent form was on the first page of the eligibility-screening survey provided to all potential participants (See Appendix B). They were informed of the procedures of the survey, including its screening purpose, a description of what the ACEs questionnaire measures, and the fact that only their ACE score (total score) would be collected, not the individual items. The practice of collecting a total ACE score, as opposed to individual items, has been advocated for

as it can prevent the elicitation of specific adversity disclosures, and it is recommended as part of the guidelines for the statewide screening implementation in California (Purewal et al., 2016). The potential participants were also informed of the procedures and purpose of the Zoom-conducted interview. Within the consent form, they were asked for consent to be audio-recorded during the interview, and informed that the interview would be transcribed for analysis with their permission. The potential participants were also told that confidentiality would be assured by storing all data on a secure server, using identification codes and pseudonyms to de-identify personal information from the data, and deleting audio-files at the end of the project. They were also informed of potential risks, including the possibility that participants could feel emotional discomfort when responding to questions and disclosing personal information. The potential participants were told that they had the right to refuse answering any questions and/or could withdraw from the study at any point and still be fully compensated for their participation. One participant declined answering one of the questions when the researcher recognized a sense of discomfort and reminded the participant that they could skip the question. All 12 participants remained for the entire interview, and they also indicated that they would be willing to be interviewed again if necessary. At the end of each interview, the interviewer thanked the individuals for participating and asked debriefing questions focused on processing the interview. Each of the participants were also given a list of mental health resources in case they felt the need to talk with someone after the interview.

## **Instruments**

### **Screening**

**Demographic questionnaire.** Demographic information was collected in a questionnaire that asked participants of their age, gender identity, sexual orientation, racial/ethnic identity, and for how long and often they had been practicing yoga (See Appendix C).

**Adverse Childhood Experiences Questionnaire.** The Adverse Childhood Experiences (ACEs; Felitti et al., 1998) Scale was used as a screening instrument prior to the interview, in order to identify participants that endorse four or more ACEs for eligible participation (See Appendix D). The ACE Scale is a 20-item measure that captures the total number of ACEs experienced per respondent. Responses are captured in a *yes* or *no* format, with the number of categories of ACEs totaled to produce a score within a range of 0–20. ACE categories capture whether a respondent has experienced emotional, physical, or sexual abuse and emotional or physical neglect; witnessed domestic violence; grew up with a mentally ill or substance-abusing household member; experienced the loss of a parent or a divorce; or had a household member incarcerated (Felitti et al., 1998). An expanded version of the original 10-item ACEs questionnaire was used in order to include other significant adverse childhood experiences not represented in the original ACEs questionnaire, consistent with previous studies (e.g., Barnett et al., 2020). The expanded ACEs questionnaire includes ten additional items such as whether the respondent was in foster care; experienced peer victimization or separation from a primary caregiver through deportation or immigration; a serious medical procedure or life-threatening illness; witnessed community violence; was detained, arrested, or incarcerated; discriminated against because of race, sexual orientation, place of birth, disability or religion; experienced abuse or threats from a romantic partner; or were in a situation when they or someone they love was seriously injured, feared injury or death, due to a natural disaster or other frightening situation (Finkelhor et al., 2015).

## Qualitative Research

**Semi-structured interviews.** The interview protocol can be viewed in Appendix E. The interviews were semi-structured, and were conducted in English and lasted approximately 60-90 minutes, as recommended for an IPA research study (Alase, 2017). The primary purpose of the interview was to gain an understanding of how individuals with a significant number of ACEs are impacted by yoga physically, mentally, socially, and emotionally, and the meaning that they make of their experience.

The interview questions were generated based on the literature related to a qualitative research study, and more specifically, an IPA research study. The research questions were open-ended, probing, with central and sub-central questions (Alase, 2017). They were framed broadly and openly, without an attempt to test a predetermined hypothesis of the researcher (Smith & Shineborough, 2012). The interviews were conducted in alignment with that of a qualitative research interview in that they were like ‘a conversation with a purpose’ (Smith, 2009). Because IPA is particularly participant-oriented, it is important for the interviewer to develop a bond with their participants and establish rapport with them so that they can feel relaxed about the process and express their lived experience, to know what the researcher wants, and to trust the researcher, which in turn is likely to result in obtaining quality data (Alase, 2017). To make this possible, the interviewer was active in the interview by using non-verbal encouragers (e.g. nodding), using reflection and validation, and asking for clarifications. Having the interviews audio-recorded assisted in maintaining eye contact with the participant throughout the interview, so that the interviewer did not have to take copious notes. Additionally, the audio-recordings of the interviews allowed for the data to later be shared with those on the research team who did not conduct the interview.

## **The Role of the Researcher**

In IPA, the researcher has a dynamic and active role in the research process (Smith & Shinebourne, 2012). This approach acknowledges that the researcher's interpretation of the participants' personal experiences is a two-stage process, where "the participants are trying to make sense of their world; the researcher is trying to make sense of the participants trying to make sense of their world" (Smith & Shinebourne, 2012, p. 53). Thus, the meanings that are constructed by individuals is influenced by the researcher's interpretation, understanding, and empathizing of participants' mental and emotional state from what they say (Smith & Shinebourne, 2012). Aligned with IPA's theoretical stance and on a social constructivist philosophy of science paradigm, the researcher prized that the research process of interviewing and analyzing consisted of their interpretation as well as the participants' experiences, to the extent that they could not remove, or bracket, their own experience out of the process.

## **The Role of the Research Team**

After the researcher conducted and audio-recorded interviews with all 12 of the participants, four research assistants that were closely supervised were involved in transcribing the interviews and checking the transcripts. They also included their reflections after transcribing interviews into an electronic memo-writing document. As trained by the researcher, the research assistants attended to and wrote descriptive, linguistic, and interpretative comments based on the participants' speech while transcribing the interviews and writing their memos. The research assistants were also trained in maintaining confidentiality of the data to protect the participants' privacy. The research team met weekly to discuss reflections and any triggers that may have been activated while transcribing the interviews. Training, data collection, and data analysis was

audited by MKK, ensuring that the data was collected appropriately and was being analyzed according to IPA tenets.

## **Data Analysis**

### **Trustworthiness in Qualitative Research**

**Credibility.** Regarding credibility as it relates to the qualitative analysis, methodological rigor was attained through the application of integrity, prolonged engagement and persistent observation in the field (Creswell & Poth, 2016). To achieve integrity, multiple methods of data collection were used through interviewing, audio-recording, and gathering information from multiple participants. During the interview, the researcher restated and summarized information from the participants, and then questioned the participants to allow for clarification and additional information to be provided as necessary.

**Transferability.** Transferability was demonstrated in this study through explicit acknowledgment of the cultural and social contexts that surrounded data collection. Dependability and comprehensibility were obtained through a review by an experienced researcher and psychologist (MKK) who audited the research process and data analysis.

### **Coding in Interpretative Phenomenological Analysis**

**The first stage of coding.** The first, second, and third stage of coding followed a process outlined by researchers of IPA methodology, Alase (2017) and Smith & Shinebourne (2012). The purpose of this multi-step process is to gradually develop a deeper level of understanding of the essence of the phenomenon in examination. The coding process was embarked by first reading through all written transcripts to obtain an overall sense of what the participants were saying verbally, and to also get a sense of the participants' state of mind. This first stage of coding included breaking down participants' narratives into significant phrases and statements

that held meaning, and generating codes to exemplify an understanding of their essence. These codes served as themes that moved participants' responses to a slightly elevated level of abstraction, which often invoked psychological terminology. This initial stage of coding allowed theoretical connections within and across cases to emerge.

**The second stage of coding.** In the next stage of the coding process, the emergent themes were listed in an electronic document, and the researcher looked for connections between the themes. This task involved organizing the emergent themes in an analytical and theoretical order. As such, themes were clustered together, and some themes emerged as superordinate concepts. Reference back to the transcripts was incorporated into this stage to make sure that the clustered themes still connected back to the primary source material.

**The third stage of coding.** The final stage involved producing a table of the clusters of themes, ordered coherently. The clusters of themes were given names and represented superordinate themes. During this process, some themes were dropped if they did not fit well with the emerging structure. By categorizing the clusters of themes in this way, the researcher most strongly captured the core essence of the research participants' lived experience.

### **Memo-writing**

The purpose of memo-writing was to allow time for the interviewer to reflect and record their initial impressions of the interview. In IPA, this creates an opportunity for the researcher to begin developing a sense of the data (Alase, 2017). The memos included the researcher's interpretations of the most significant aspects of the participants' experiences, their emotional and psychological presentation, and on how the participants made meaning of their lived experiences. The memo-writing process began after the first interview and concluded until the



end of the research process. For this study, the research utilized an electronic document in order to keep track of reflections that emerged throughout data collection.

After each interview, the researcher reflected on what the participant had shared, including impressions of the participant, by writing into an electronic document. Research team members also wrote their reflections and impressions after every interview they transcribed into an electronic document. The research team met every week to discuss these transcriptions and the interviews they had listened to and added reflections on. Through these notes, consistent patterns emerged throughout the interviews, supporting the coding scheme.

### **Computer Software**

MAXQDA® is a software program designed for qualitative data, which assisted in consolidating the large volumes of narrative data. In addition to storing data, the software provided visual displays of relationships within the data through diagrams.

## CHAPTER III: RESULTS

The results focused on understanding the impact that yoga has on individuals with ACEs, particularly four or more ACEs. More specifically, analyses explored how yoga has affected participants’ physical, mental, and socio-emotional health. Analysis of interview transcripts revealed four main themes, and a further set of subsidiary themes, as outlined in Table 2.

**Table 2.** IPA Analysis: Main Themes and Sub-themes.

Main Theme	Sub-theme
Counteraction of yoga and mindfulness to trauma-related symptoms	Mindfulness
	Acceptance
	Physical awareness and regulation
Integration of the whole self in mind-body practice	Integration of body and mind
	Self-awareness
Corrective experiences through yoga and mindfulness	Reclaiming and healing the body and mind
	Empowerment and sense of control through choice-making
	Self-worth
	Compassion for self and others
Healing beyond talk therapy	Beyond the narrative
	Benefits of adjunctive yoga and psychotherapy

***Main theme 1. Counteraction of yoga and mindfulness to trauma-related symptoms***

In the interviews, all of the participants contextualized how yoga has impacted them by describing a wide range of significant physical, mental, and socio-emotional challenges in their lives that they associated with having been caused by their historical experiences of ACEs, including sexual, physical, and emotional abuse, family, domestic, and community violence, and family dysfunction. The majority of them emphasized the ways in which yoga has played a part in counteracting trauma-related symptoms that they developed as a result of these adversities, including avoidance, dissociation, rumination, negative affect, and hyperarousal. Namely, three

counteracting elements of yoga and mindfulness emerged as salient: *mindfulness, acceptance, and physical awareness and regulation.*

### *Sub-theme 1.1. Mindfulness*

The element of mindfulness in yoga, or the practice of attending nonjudgmentally to the present moment experience, all of the participants in multiple ways. This state of awareness allowed them to notice their automatic feelings, thoughts, and behaviors that became triggered, or hyper-aroused, in situations that reminded them of their past traumatic and adverse experiences. The participants described how being mindful of such reactions created opportunities to reflect on and respond in more constructive ways that supported their mental health. Notably, all of the participants also described the benefits of being in the present moment through yoga practice. For example, 36-year old Emma with 11 ACEs, who had been practicing and teaching yoga for 10 years, explained how the practice of mindfulness through yoga trained her to become aware of her trauma triggers as they appeared, through her body. Her practice afforded her an opportunity, and a reminder to pause and acknowledge the trigger without habitual reaction. She explained,

*The mindful piece is everything. It's like, um, you know, I've been taught to, like, not be in my body. So then to have someone say, like, 'If you want, you could recognize, like, that you are here right now and, like, what's happening right now... and it can also be like a safety point to be, like, 'Oh, right here, right now, like, I am safe...which can of course be tremendously healing... like that can be helpful with triggers. Because... you're like, 'Oh my god, the trauma is happening,' but then you can draw from that yoga, like, present moment awareness, and be like, 'No, no, wait, actually, it feels like it's*

*happening,' but you can remind your body that it's not. Which can be, like, a very powerful tool. (Emma, age 36)*

Moreover, she was able to integrate a new skill by first increasing her awareness of her physical state, and then responding to it in a trauma-informed way, which aligns with therapeutic approaches. She described,

*If I didn't have awareness of those body cues, I would probably just be reacting in my feelings, like, just taking it to be, like, that I'm not triggered. Um, and to be, like, 'No, like, this is how it is \*laughs,\* I'm so mad right now,' ... and then just react... Um, so because I can now, like, draw awareness... to the body cue... I can, like, slow down and be, like, 'Wait a second. This might be a trigger. What are we doing when we're triggered?' -- which is probably a combination with recognizing that feeling in the body but also, like, talking, um, myself through a trigger. Like, uh, using the tools that my trauma therapist has taught me in regards to, like, being triggered. (Emma, age 36)*

Similarly, Juan, who was 28-years old and had experienced 14 ACEs, stated that yoga's component of mindfulness had provided him with the ability to pause and process input before reacting to a stimulus. That "moment in time" is just the pause he needed to shift to a more adaptive response. Juan recounted:

*Like there's a moment in time where I actually think before my body responds. Um, I think because I'm more -- I'm more sort of in tune with my body as opposed to just being in my mind where, like... I see something and I respond... Now I'm just, like, I see something, I think about what I'm seeing, and then I- I process you know, like, it's a different process. It's like an added step there. (Juan, age 28)*

In addition, Juan had been diagnosed with Schizophrenia and Schizoaffective Disorder, and he described how yoga's practice of mindfulness had helped him relate more effectively, through awareness, acceptance, and compassion, to his intrusive thoughts, decreasing the negative impact of his symptoms:

*There's sometimes where I breathe, I start to breathe and, like, I might not be practicing actual yoga, I just might be doing some breathing exercises that I've learned through yoga. Um, and I see like the same faces in my head when I close my eyes, over and over again... and then I think the psychosis part of me would be like, 'There's something going on. Why am I seeing this? I must go there. Something's happening there. I have to go there because I always see it. There's something they've decided to reveal to me if I go there \*laughs\*.' And then, you know, what I've learned through yoga is to say, 'Hi, image of this place. Nice to see you. You know, I hope... I hope that you're okay.' And like, it goes away... and I'm not obsessing over it. And I think that's, like, really helpful, you know?' (Juan, age 28)*

#### *Sub-theme 1.2. Acceptance*

Many of the participants described how, prior to practicing yoga, they would engage in experiential avoidance, or the attempt to avoid thoughts, feelings, memories, and physical sensations, as a way of avoiding reminders of their traumatic and adverse experiences. These forms of avoidance were reflected in denial of emotional experiences, as well as avoidant-coping behaviors, such as substance use and unhealthy eating behaviors, for the participants, which negatively impacted their mental and physical health. Yoga functioned as a counterbalance of avoidance by cultivating acceptance for one's experience, just as it is:

Mia was 21-years old and experienced chronic back pain as a result of prolonged physical abuse involving her back. She described how she used to avoid and invalidate her negative emotions related to the suffering that she had experienced in her life, and that this emotional avoidance exacerbated her physical symptoms in her back. Through yoga, she reported that she had cultivated acceptance towards her emotional experience, which subsequently released her physical pain. She reported,

*Yeah, I think just kind of like the acknowledgment of, 'This is...' Because I wouldn't- I couldn't, name things for a while... like I couldn't name, 'This is pain, this is discomfort, this is anger, this is whatever.' Um, I would just be like, 'No, I'm fine, I'm okay.' But just really acknowledging like, 'No, this sucks, and is painful, and it brings up bad memories, and it's not great.' Um, but just like, accepting it, because a lot of it was just like a rejection of it... and I think that made me, like, clench my body more. So, it, like, exacerbated if I was having a muscle spasm, whereas, like, really sitting with it let me relax so it would help release it quicker. (Mia, age 21)*

20-year-old Kim with 10 ACEs also reported that she had repressed many of her trauma-related thoughts, feelings, and memories, but since practicing yoga, she had become able to allow them into her awareness through a sense of acceptance. Kim detailed,

*It definitely helps me accept, um, like, the negative thoughts and memories that come back, and I think it affects me less when I'm practicing yoga or meditation... I think a lot of my experiences were, like, repressed due to, like, the depression. So, it'll like come back to me sometimes and it's easier to deal with when that comes up... If it's like too uncomfortable or triggering, or like too much, um, redirecting my thoughts helps, or my*

*focus, but otherwise, now, like, some- a lot of the times, most of the times, I don't have to redirect my focus, um, like, I don't let it bother me as much I guess. (Kim, age 20)*

Furthermore, Kim explained that she benefitted from recognizing the impermanence of her thoughts and feelings through yoga and mindfulness, which reduced her rumination, and the negative impact of experiencing them over time:

*I think acceptance really helps, like, um, it kind of comes up and then like goes away, like I don't linger on that thought for a really long time... I don't try to not think about it as much, or I feel like I'm not having, like, as much of a bodily reaction to it I guess. Like, if I'm having really strong feelings about it, I just... I let myself, like, think about it and then just focus on, like, the next thing... I think it naturally passes. (Kim, age 20)*

### *Sub-theme 1.3. Physical awareness and regulation*

Due to experiencing significant adversities, the majority of the participants in the study felt detached from their bodies, unable to recognize what their body needs to be healthy.

Additionally, the body exhibited physical reactions to trauma-related triggers. The participants explained that yoga helped them become aware of their physical body, and subsequently, take care of, or regulate, it when it became triggered:

Frances, a 13-year yoga practitioner and teacher, explained that yoga had ignited physical awareness in her body, which then enabled her to recognize what her body is in need of to function better:

*There was definitely hints that I was kind of numb in certain areas of my body. Um, but now, it's like a lot of that stuff has been reconnected and I can say, 'What do you need?' ...it's now almost a trigger for self-care... I can understand when, you know, when my*

*stomach's upset -- what to do for that, like, so it's- it's- it's almost giving you a... \*long pause\* a prescription for where you're not taking care of yourself. (Frances, age 50)*

Physical awareness allowed Frances the ability to nurture her body, while it also enabled her to recognize where in her body she is impacted by her traumatic and adverse experiences, in order to tend to those areas. She told:

*So, with my particular trauma, you know, having my face covered and having myself drugged-- that's stealing my breath. So, the biggest part is the pranayama for me, like, even- even now it's just, like, my yoga teacher is, like, 'You're not breathing.' You know, and bringing the breath all the way down to where the harm was done, I mean, that is, still to this day, something I mentally have to make connections with, like, I still am very, very high in the chest breathing. If not, not breathing at all, and that's just- I know that that's still like, uh, a body thing, like if I really breathe fully what does that mean? ...The practice of yoga is where the body still needs more care, you know? (Frances, age 50)*

Emma described how physical awareness provided her with insight about when she is feeling triggered by her trauma :

*Like, I think with a lot of trauma, I think...your body reacts first. Um, so, like, sometimes I can notice... if I'm getting triggered faster now. Because... I'm, like, more in tune with my body. Like I'll be like, 'Whoa, wait.' Like, obviously my mind is racing, but then I'll be like, 'Woah, wait,' like, 'Something's not right,' like, 'Maybe I'm getting triggered.' So, I can, like, feel it in my stomach and, like, in my chest, versus not having that ability to notice those body sensations before. (Emma, age 36)*

Jack was 49-years old with 14 years of yoga experience, and he explored how yoga movements affected his well-being:



*When I move, twist, fold, bend, do a whole balancing sequence, I just don't feel as stuck in ways of being, you know? I'm more open to receiving, um, input or, um, sensation.*

(Jack, age 49)

Additionally, he explained that he had been able to become an observer of his body through yoga and mindfulness, noticing his physical sensations related to his negative affect. He described how his ability to observe, as opposed to react, afforded him emotional ease, as well as the recognition that the source of his emotional pain was not actually a threat to the present moment.

He said:

*I think, through the practice of yoga and meditation, I'm able to be more an observer of my physical body versus, um, the mental state... I'm just not as bound up by rigid ways of being, um, if that makes sense... I am not the sensations that come up. I'm able to separate myself from my mind... from the physical body that feels stuff, you know... Take a strong adversity that could be, like, my personal trauma... holding onto that anger was stressing me out in the present, um, whereas I can see that that hurt is – it's not present here. (Jack, age 49)*

## **Main theme 2. Integration of the whole self in mind-body practice**

Most of the participants in the study reported that yoga helped them feel more connected with themselves as a whole, particularly with the parts of themselves that had previously felt dissociated from each other, such as the mind and body, as a result of adversities, like physical and sexual abuse. They also described how cultivating union of the mind and body through yoga practice offered insights into their trauma and their sense of self. Yoga's impact on integrating the self as a whole included: *integration of mind and body* and *self-awareness*.

### *Sub-theme 2.1. Integration of mind and body*

Yoga provided a majority of the participants with the opportunity to engage with their mind and body simultaneously, linking mental experiences with physical experiences. The ability to recognize such experiences in relation to one another prompted the understanding of how they had been affected mentally and physically from their trauma and adversities. Many of the participants described how these insights ultimately integrated the previously “fragmented” pieces of themselves, and created a sense of “wholeness”:

Mia is biracial, bicultural, and bisexual, and she described how she felt that, through physical awareness and physical acceptance, she felt that her body was able to connect with her mental state, making her feel “integrated” – an experience that she often did not feel as a person with intersectional identities:

*Um, I think, um, the asana definitely helped me with like the body awareness and the body acceptance and... feeling connected to my body because I definitely felt, um, a disconnection, um, between like my mind and my body. And that really helped integrate it, and helped me think of myself as a whole being rather than a person with all these different parts, um, which is something I already struggled with, like, different identities of like being a transracial adoptee and like all these other things. I just felt like everything was so separate, so it was really a time where I could feel, um, integrated and whole. Like, I think that's the thing I've been like searching for my whole life, is like, to feel a sense of wholeness, um and I never felt that before, like, I discovered yoga. (Mia, age 21)*

61-year-old Angie, with 14 years of yoga experience and 13 ACEs, explained how her complex trauma caused her memories, physical and emotional experiences, as well as her sense of self to feel fragmented. Furthermore, she stated how the lack of cohesion impacted her mental health so

negatively that she had considered suicide. She reported that yoga synthesized her memories, physical and emotional experiences, and sense of self into a whole by providing an understanding of how these were all related to one another, particularly in the context of her childhood abuse:

*The body triggers sometimes shake loose some of the memory... so I guess I just allow having those experiences to express themselves, uh, and for me to make sense of them and be able to not be afraid of them, or not be afraid of my whole experience, or to feel that I'm whole. Does that make any sense? I'm not broken, I'm whole. I'm not missing whole aspects of myself 'cause... when those feelings are clamped down like they were before the practice of yoga and therapy, um- uh, everything was so closed off. I didn't feel a thing, ... If I didn't have this physical practice, I wouldn't have this profound understanding of my experience, and also myself, and also humanity. (Angie, age 61)*

Angie participated in a number of rigorous physical activities, including running and martial arts, which she reported released trauma-related physical triggers, causing her body to shake. She stated that she would conclude these physical activities with yoga, which would stop the shaking and create a sense of integration. She described:

*The yoga is the one that synthesizes it all -- that puts me together... so fragmenting -- complex trauma is really fragmenting. (Angie, age 61)*

Violet (49) with 20 years of yoga experience, and 6 ACEs, explained that her experiences of yoga helping her integrate her trauma history made her feel as though her personality had changed:

*I think if my brain and my young brain met \*laughing\* on, like, a, you know, an MRI or something, um, it would be two different brains. Like I really fundamentally think I'm a*

*different person... I guess, part of it has to be that I sort of integrated my trauma history. Like, I guess if I didn't, it would be different -- if I was constantly reliving it. It doesn't mean it isn't triggered, it doesn't mean it doesn't come up, you know, anything like that, but- but, for the most part, you know, I'm, I'm just, you know, living my day to day.*

(Violet, age 49)

She added that her ability to integrate her trauma history was a function of yoga's facilitation of mental and physical, conscious and unconscious, "processing." Violet stated,

*And I think that's incredibly connected to my ability to move and feel what it feels like to move... I know that my mind's changed, and I know that I'm consciously feeling something or consciously present-moment processing... But I think most of our system is unconscious, so I think my unconscious has reacted to the movement in my body... That's what I think... So, people say mind-body connection--, I'm always like, 'Probably mine is body-mind' \*laughing\*. (Violet, age 49)*

Some participants, like Mia, described cathartic moments in yoga when the union of their mind and body made them feel connected to themselves:

*Um, and by the end of that class, I was, like, almost in tears. Um, I had like a really good experience and it was a really good kind of release. We were just lying in savasana at the end. And I just felt, um, like really connected to myself and, um, just this different state of being that I felt like I hadn't been in before. (Mia, age 21)*

While Frances did not have mental recollection of her past traumatic and adverse experiences, practicing yoga revealed to her that her "body had something to remember":

*I started yoga, and then I was doing that for about five years. A lot of stuff came out, like a lot of crying... it wasn't until sort of then that I started having, like, intrusive thoughts. I*

*started having dreams. I started just having these things that- I mean, I've always known there was abuse in my family I just didn't know that it was me also... there was things that I kind of knew in the back of my head but it really, through the yoga, just started-- my body started waking up, and I just started getting these little floods of, you know, 'What about this? And what about this?' And, like, I just started putting stuff together and then from there, um, I went into therapy... and so I- through yoga I- I actually figured out that my body had something to remember. (Frances, age 50)*

As such, Frances realized how her body, rather than her mind, was a more effective system to access and process her trauma and adversity:

*I'm a very, like, cognitive person... I've always been very interested in the psychological and the mind and all that kinda stuff and so, when I was even in therapy, I was like, I'm going to figure this out. I'm gonna mentally, like, remember- I'm gonna- 'cause I was so stuck on, like, remembering and having a visual, and once I let that all go, once I was, like, 'Alright body, you do what you have to do.' So, yeah, I mean talk therapy just- I would always get in my way, um... [Yoga has] brought me back to myself. It's brought me back to my heart. It's- it's- it's allowed me to be in my own body... and express myself in safety, you know? (Frances, age 50)*

### *Sub-theme 2.2. Self-awareness*

Making sense of their psychological experiences through yoga, many of the participants explained how they became more aware of who they are as a person, developing a sense of self which had been lacking historically as a result of adverse childhood experiences:

Angie described how her yoga practice had not only recovered enough memories for her to make sense of the experiences and the impacts that they had on her life, but it also recovered memories

of who she was as a young girl. She expressed joy in reconnecting to her authentic self through yoga:

*Sometimes after yoga... memories will come, so sometimes the, uh, traumatic memories, I still get new pieces... but around them, uh- uh, the memories of some of the happy stuff comes back, too... little chunks of my memory come back...and the yoga, I would say, has been restorative to my memory in general, 'cause the memory of my childhood has been very, very fragmented... and I get to know who I am 'cause I- that- that was fragmented as well...but with the yoga practice, uh, I think that I have been able to recover enough of my memory, and those little pieces of who I was when I was a little girl -- those are really important to knowing who you are. Um, I know that I'm- I'm really kind -- that I would've been really kind no matter what happened to me, so I'm not sort of that hero story where somebody's nice because through adversity they learned kindness. No, I would've been pretty nice no matter what... and resilience -- I would've been really resilient no matter what. And then, I found pieces of a funny-me, like a little practical joker-me. I just feel little-me quite clearly... and that's actually me. (Angie, age 61)*

Frances described an example in yoga where she experienced her “little [self],” hypervigilant and mischievous, by choosing not to follow the teacher’s instruction on opening eyes after savasana, or resting pose. She further explained the impact that yoga has had on her making sense of her feelings, and being connected to her authentic self:

*[Yoga] helped me, uh, make sense of the- all the stuff that had no words....The, uh, ability to put the feelings and the therapy together, and have a more complete perspective of both my experience but also the feelings being so connected to who I really am-- the*

*embodied feelings. Uh, so that's, I think, critical-- like who [I am] was quite a mystery to me for quite a while. (Angie, age 61)*

Frances explained that yoga helped her develop a relationship with herself through trusting and knowing herself:

*You can't trust outside of yourself until you trust yourself. So, it's just, like, when you start having that contact with your own body and your own breath and your relationship with, you know, who you are, and start trusting, you know? Like, so I- I remember when the harmed part of me, the little girl in me, started understanding that I was starting to take care of myself, you know? Then she became more known to me as who- what she had to tell me and, you know, what I needed to do... So, I think yoga has helped me, you know, start to un-layer my own untrusting of my own self, like, 'What did I do wrong? Why did I end in this situation- where I got, you know, hurt,' and- and I started unpeeling that. And then, I think the trust happens when you start to breathe and start to go internally. (Frances, age 50)*

Moreover, Frances described how her own self-awareness and self-trust allowed her to become more aware and trusting in relation with others. She shared:

*...and now I trust my husband \*laughs\*. You know, and- and literally, like, now I'm at this practice where any time I get triggered by- about anything I'm, like, 'Okay how does this relate back to me? Not as a- as a blame thing but it was just, like, some things- something about that is bothering me and I need to kind of figure out where I am, and where am I in this situation. (Frances, age 50)*

### **Main theme 3. Corrective experiences**

Notably, all of the participants described how their adverse childhood experiences negatively impacted their physiological and psychological health. Some of them explained how their ACEs made them feel as though their body was not theirs, and that they did not have control over their body, due to the violation and abuse inflicted upon their body by people who had power over them. Additionally, feelings of worthlessness, shame, self-doubt, insecurity or self-consciousness, criticism, distrust, and loneliness, stemming from childhood adversity, negatively impacted their relationship with themselves and others. Most of the participants in the study described the ways in which yoga provided corrective experiences on a physical, mental, social, and emotional level.: *reclaiming and healing the body, empowerment and sense of control through choice-making, self-worth, and compassion for self and others.*

### *Sub-theme 3.1. Reclaiming and healing the body*

Many of the participants reported that they had experienced significant physical health problems, including tension, pains, and aches, some of which they attributed to their adverse childhood experiences. Yoga exercises provided physical relief and support, as well as the ability to return to their body and relate to and function with it in a new, healthy way:

Jack explained that yoga helped him combat numerous physical ailments and engagement of behavioral risk habits. He stated:

*...the immediate thing was [yoga] improved my health. Um, like within 30 days I had cut my pain medication down. Um, within 90 days I was completely off pain medications. When I started yoga, I weighed 276 pounds, um. In about the first 90 days I lost about 30 pounds. I went from pre-diabetic to normal, you know, like normal blood sugar. So, basically, it completely reversed all of the problems that I had, um, from my endocrine function to, you know, I mean at 276 pounds, abusing narcotics, and um, and, you know,*



*I was also drinking a lot at the time. So, um, it kind of gently nudged me towards healthier choices. (Jack, age 49)*

Moreover, Jack reported that he became more physically active and healthy as a result of practicing yoga:

*I've been able to, like, um, get physically active, physically fit. Um, I would say pretty much optimal health... yoga helps me cope physically in that I don't feel a lot of stress in my body. Um, I sleep pretty well, my nutrition choices are generally better from practicing yoga, you know? I don't eat to over-fullness too often, and I think it keeps my elimination system working good, you know? ...and then, physically, like, um, I don't suffer from back pain anymore. Um, my shoulders haven't been hurting, I haven't experienced carpal tunnel, neck pain, or any other tension related pain to my knowledge. I don't think I've got any arthritis issues going on, I'm just confident in my health, my physical health for sure. (Jack, age 49)*

Teagan (63) with 14 years of yoga experience and 6 ACEs shared how she used yoga as a way of healing her body from physical pain and dysfunction:

*If my stomach is hurting, it's, like, 'Why is this hurting? Did I eat something? Is something stressing me out?' But, I'll just go from the couch and do some yoga forms that I know will stretch the, uh, front of your body... like an up-dog. You know, and it will feel better. Or, even if I do some twisting exercise, twisting forms, you know, legs on one side, arms out. Even that, it's like, 'Oh, yeah, this- this is feeling good. Oh, that feeling in my stomach is going away.' So, yoga definitely helps that- I've had that stomach- that- that's part of the outcome of my childhood to having this digestive thing going on. (Teagan, age 63)*

Teagan also described how choosing supportive yoga movements and postures provided her with a sense of control over feelings:

*I want to get away from thinking of [my trauma] and going back to it. I want to be in the present moment. And I don't want it to crowd my head, and what I shoulda-coulda done. So, the yoga journey is enabling me to move away from that, and feel what's going on in my body at the time... so when I'm doing yoga, it's like, 'Oh, okay, wow, I can choose to not do that anymore and change my form.' You know, so that I can change that sensation that I don't like... (Teagan, age 63)*

Furthermore, Teagan explained how she used yoga movements to physically release negative feelings and sensations related to her trauma:

*I tighten up with things someone starts talking to me about. I now notice that I have my hands start to cross my shoulders, get tight, and my hands get closer, and it's just like, 'Oh, wow, this particular conversation is really not good.' And then I implement a yoga form, like rolling my shoulders back. So that's how yoga helps me when I start to feel that fear, tightness or whatever I experienced... It starts to dissolve when I say, 'Oh, I'm going to do this with my shoulders.' Something you do in yoga- it's like, roll your shoulders or your- maybe roll your head a few times, and that releases something in me so that I go back \*laughs\* to feeling not attacked and not fearful, and not feeling like I have to protect myself from something that's not existing anymore \*laughs\*. (Teagan, age 63)*

Frances described how her yoga practice built physical strength, and thus her self-confidence:

*Um, so I know that the practice of yoga has allowed me to like my own body, like my own breath, you know, like the thoughts that I have in my head. And I can kind of walk into a room now going, 'I like myself,' you know?... I mean, it gives you- I mean, just even the*

*asana gives you strength and it gives you poise, and it gives you, um, confidence, you know? Because you know the way your body works.* (Frances, age 50)

Feeling confident and strong in her body, Frances felt less insecure about herself:

*Just as much as me being unconscious and having- having anger and- and, you know, wondering how to protect myself all the time, I was getting that feedback. You know, of people not liking me or me not being, you know, datable. I was getting that feedback with having \*clears throat\* not a lot of friends and no boyfriends, you know? ...And now it's just, like, I have joy in myself, and that's coming back to me... So, the friends I see around me are very loving and caring and nurturing... So, you almost get to see, like, 'Okay, the vibe that I'm putting out there now must be healthier, right?'* (Frances, age 50)

Nora was 35-years old with 8 ACEs and 3 years of yoga-teaching and -practicing. They explained how yoga had helped them feel connected to their body – an experience that was described as particularly difficult for them, due to their dissociative symptoms of Dissociative Identity Disorder (DID):

*As someone with DID, just- it's so hard for me to connect with my body in any amount... I mean, I'm still not where I want to be. I mean, just- I mean, I still can't look in the mirror consistently and see my body... We're getting there, it's more than it was. But, [yoga] at least provides some connection of, 'Okay, there are glimpses where I can at least see that I'm moving my hand even if I can't feel it.'* (Nora, age 35)

Frances also reported that yoga helped her “[feel what it was] like to be in [her] own body,” after living a life of feeling outside of her body. This reclamation with her body was described as a rebirthing process:

*So, yoga does that. I mean, 'cause you're constantly going back to yourself... And as you keep opening that space, then you allow joy, or you allow peace in your general vibration. You understand that that feels better than that protection stuff... I kept talking about how I felt like I was in my feet. And then- and then I was, like, "Now I feel like I've got toddler legs." ...Like I'm starting to learn to stand on these wobbly legs and how to- how to walk again. It was really- it was quite interesting... Like I really feel like... I made room for me to come back. (Frances, age 50)*

Additionally, Frances shared that she had benefitted not only from the renewed relationship and appreciation for her body through yoga, but also from the ways that yoga helped her body stay resilient:

*I think, in general, just, uh, a love of the vehicle of my body... I don't know that I would have without it, you know?... I'm not looking for it to look a certain way. I'm just happy to be fluid and moving and- in- in- in a relationship with my body. I think that's just- that's a beautiful thing, you know?... Um, but I think, also, uh- um- it also helps on a practical level. Like, I- I was told I've got, um, arthritis in my knees and I don't feel any pain, you know what I mean? Like so- even just practical things- things like that, like just keeping your body fluid and, you know, um, helps with just your general health. (Frances, age 50)*

### *Sub-theme 3.2. Empowerment and sense of control through choice-making*

Trauma-sensitive yoga, in particular, was described by participants who practiced or taught it, as a resource for developing a sense of agency over their own body and experience. They articulated how this was cultivated through making choices about what they wanted to do with their body during their yoga sessions. These participants explained how the model of trauma-

sensitive yoga includes suggestive language, offering unlimited options regarding choices to be made in yoga. The ability to make choices was described as feeling empowering and transformative by participants, specifically because many of their adverse childhood experiences involved forces put upon them by authorities without their consent:

Nora explained, that for them, the most psychologically transformative aspect of trauma-sensitive yoga is the emphasis that it has on practitioners making choices for themselves regarding their body. Nora, as well as other participants who practiced making their own choices with their bodies through yoga, felt that they developed a sense of freedom and empowerment – feelings that were taken from them in their childhood due to adversities like sexual and physical abuse:

*It's, just, a history of shitty, childhood crap taught me that I can't ever trust my own choices. So, this practice has been this reminder that, in this context, it's always okay. And it gets explicitly said over and over again... within the practice, 'You might do this,' ... 'Feel free to say what you want to do.' ... I think it's more that choice, that I can choose to stay with the discomfort, or I can choose to make a change. Because, at least for me, trauma was just the profound lack of choice over and over again... So, I think, I guess, emotionally, in that sense of just the freedom to show up however it is, but not have words around it or not be asked to justify it or explain it... I think that's so much of the power of [trauma-sensitive yoga]... 'Here are explicit choices,' instead of covert ones, or lack of... and I think realizing that there really are more choices outside of yoga, too.*

(Nora, age 35)

*Sub-theme 3.3. Self-worth*

As a result of various adversities in the participants' lives since childhood, including challenging family dynamics and abuse, a majority of the participants felt a lack of self-worth, which impacted their relationships with others and themselves, as well as their functioning in social environments, such as school and work, in negative ways. Through the practice of yoga, participants developed a sense of worthiness, which had positively influenced multiple aspects of their lives:

Frances reported that she used to dislike herself because she internalized an assumption that she must have been abused because she was disliked as a child. However, by practicing yoga, she was able to develop self-worth by liking her body, her breath, and eventually herself:

*So if you go into a social situation- it's like, "Okay, I'm- I'm moving my physical body with my breath into this room." And then just allow the room to unfold instead of me figuring out how to protect myself in case somebody- you know- it was always kinda like I walk into a party situation and be, like, "Who doesn't like me? What am I gonna say?" It was just all this and anxiety and, like, you know, 'What do I have to do to get liked?' You know what I mean? Like, for me, being liked was very important. 'Cause I figured what happened to me happened to me because I wasn't liked in some way... Um, but you have to make sense of it in some way, and you have to kind of figure out a way forward. Um, so I know that the practice of yoga has allowed me to like my own body, like my own breath, you know, like the thoughts that I have in my head. And I can kind of walk into a room now going, 'I like myself,' you know? (Frances, age 50)*

Lorenzo (61) from Italy, who had been practicing and teaching yoga for 7 years, explained that he developed a sense of worth within himself through yoga by way of cultivating of self-acceptance, self-compassion, self-respect, and self-trust:

*I would say, loving myself again, again... I think that accep- how do you say, acceptance of yourself, is something like self-compassion, because you can take time for yourself, for your body, and listen to it, and give it credit, and so you are in a more, deep connection with yourself... It's so easy to- to say and it's not so easy to practice, because the first step is, 'I have to trust myself,' so if I trust myself, I can give me permission to feel my sensation and to trust my sensation, so I can regain some power, some agency of myself... I have the respect of my body and the feelings... It's a deep connection, so you- I don't know how to explain, but it's, I will not to think too much new age, but, is the deep love that we all have inside that's come out... which you can really feel in that moment, so, but, it's- I feel in harmony with my body, myself, and with all the world outside, so my days start very different. (Lorenzo, age 61)*

Jack expressed how his yoga practice inspired him to live his life with more vitality, breaking past, self-limiting patterns of thinking:

*I think the biggest shift is accepting that things are going to be messy in yoga practice and in life, but that shouldn't scare us away from, um, embracing the practice and life... before practicing yoga... I just wasn't embracing the whole part of being human. So, now after a few years, I'm remarried, having a baby, doing all kinds of like, you know, things that I didn't think were possible. Um, so whereas before, I was like, 'Oh, this world is kinda sucky. Why would I want to bring another into it?' And now it's like, 'Okay well, they're miracles and let's see what it has to offer.' ... I mean yoga got me unstuck. It got me to not only, well, release addictions, vices, body fat, health conditions, to become more optimal, to become more fully expressed, to being more free... Um, so when I said fully expressed -- to make an analogy with a yoga pose -- is to take it to the full limit that*

*you're capable, or beyond a limit that you think that you're capable of. And to express fully means not to hold back, not to- not to, um, not to play small. And to do that in life means also to look more completely to give more fully, and I think that's probably what's gonna happen when we have a kid. (Jack, age 49)*

#### *Sub-theme 3.4. Compassion for self and others*

Notably, a valued aspect of yoga for all of the participants was compassion. Having experienced significant suffering, most of the participants described living most of their lives against themselves, in anger, shame, and criticism. They explained how this way of relating to themselves also impacted the ways in which they related to others. The practice of yoga enabled the participants to access a sense of compassion for themselves, which then translated into compassion for others:

Juan described how his experience of his mind and body being attuned through yoga led to a feeling of wholeness within himself, and subsequently, compassion for himself and others:

*It was like my physical body was in tune with my mental body... everything was so in tune that I, like, had to cry for joy... I think it brought me to a place where, like, \*pause\* I just felt complete. I felt whole. I didn't feel like there was anything missing. I didn't feel like there was anything I had to get done. I didn't feel like there's anyone I had to try to impress... I felt like- and- I- and I felt- and it was also, I felt compassionate. I felt like- I felt a deep sense of compassion towards like, all living things. It was, um- and- but the compassion- I was mostly compassionate with myself. I think because I think I can be compassionate towards others, but it was compassion towards myself, and then others.*

(Juan, age 28)



Teagan explained how yoga facilitated open-mindedness for her, which helped her become more understanding and empathetic towards others:

*Yoga has helped me open my mind -- to allow new things to come in, and understand things a little more deeply and empathetically, or sympathetically... and understand those struggles and privilege, a lot of White privilege, and try to get away from, 'Oh, poor me, or, 'Oh my God, what do I do?' to just listening to these stories, and incorporating what I can, and I'm just educating myself right now. (Teagan, age 63)*

For Jack, yoga had him reflect on the possibility of releasing the anger and rage that he had been holding onto since his childhood, as a result of his exposure to community violence which led to the loss of his mother. He stated:

*I grew up a very angry kid because I had a- not great childhood, you know, parents divorced and mom was an alcoholic, and some other stuff. Um, but there was a point, um, when I was like 12 or 13, um, that my mom was at a bar with her boyfriend, got in a fight, she decides to storm off and walk home at 2 'o clock in the morning from the bad side of town, and she was abducted, gang raped, beaten and left for dead outside of town. So, I got really angry, you know, like I was mad at her boyfriend, I was mad at the cops for not doing anything, I was mad at whoever perpetrated this crime and all this stuff, you know? I mean, like typical kid, I was putting holes in the walls... and that is what put me in the military... I had a realization that there were bad people in the world and they should be killed, and why not just be a person that's able to do that? \*laughs\* ... and then that led to my injury, and then, um, that led to yoga. (Jack, age 49)*

Moreover, Jack explained how his yoga practice helped him access a sense of forgiveness, which liberated him from his long-lasting anger and rage:

*I was doing some inquiry work during yoga, you know, during training, and one of the questions that my teacher had asked me was, like, 'Well, are you willing to let it go?' And I'm, like, well, specifically, I think it was around anger, 'cause I was in like an angry funk for some reason, and she asked, 'Are you really ready to let it go?' And I said 'No,' 'cause it's like part of me -- I'm a tough guy, you know? This is part of me, and how could I let it go? ... I'm not Gandhi. I'm not like, like, I'm not Jesus Christ-level of forgiveness and compassion who I would have to be in order to, you know- like I'd need to up-level some, find some level of compassion that- that I am currently not capable of. Um, and then, like over the next day, I just started to reflect on that, and it was like, 'Who are you not to be?' And I was, like, 'Whoa, there. I'm free. I'm liberated.' And it came to me that- that, like, if you if you go deep into the practice of yoga, it's a practice of liberation. Um, and like, if you can't be liberated from your stuff, then you're a prisoner. And like, I just wanted to be liberated from anger and rage, and it's, like, 'Well, who am I to forgive this asshole for doing this, or these assholes for doing that?' And I'm like 'Who am I not to?' And that forgiveness was like the- the biggest gift. (Jack, age 49)*

#### **Main theme 4. Healing beyond talk therapy**

Strikingly, all of the participants explained yoga as a unique source of healing from traumatic and adverse experiences, due to its multi-faceted ability of accessing both the physical and mental aspects of the self that have been affected by trauma and adversity. Many of the participants reported the limitations they had experienced of traditional talk therapy, as well as the unnecessary goal of developing a coherent narrative of one's past, difficult experiences, and the benefits of linking yoga and psychotherapy to promote comprehensive health and well-being.

##### *Sub-theme 4.1. Beyond the narrative*

Due to the non-verbal state of consciousness that adverse or traumatic experiences often occurred during for the participants, almost all of the participants described their adversities as not having a language. Thus, they described how cognitively processing their trauma in traditional talk therapy alone was not helpful to them in understanding their feelings. Conversely, yoga was emphasized as an optimal avenue for understanding their feelings, as the trauma was described as being stored in the body, and therefore accessed through the practice of yoga: Violet explained that she did not find that analyzing and rationalizing her trauma in talk therapy was helpful to her. She believed that her body stored her non-verbal, traumatic memories, and she found that moving her body in yoga helped to integrate her past memories with her present experience:

*There were so many years of my life, I guess in traditional therapy where we were trying to talk about the trauma or how it's affected my life and how to cope and move on. Um, and then there's yoga where it's sort of, like... there's shifts in my body and I move my body. And it just didn't feel like it was held in my body that much more. And, so, it has to integrate somewhere, you know, like if I wasn't just denying it, if I was really just sort of moving in my body and feeling my body. It was integrating in my body. And I don't think there's language for that, right? So, I mean, and I'm still in therapy, um, so it's not like talk therapy is not helpful, um, but it wasn't as helpful as yoga. (Violet, age 49)*

More specifically, Violet explained how traditional talk therapy was not useful to her:

*Yeah, and now it's like, all my memories are like inside my body... Right, this is- this is my- this is my container here and I'm in it... You know, for so, so many years and I wasn't, and- and- and you know, I think that's all for a product of talk therapy... I was so-, sort of intellectually baked, so I would analyze and rationalize and think it through*

*and be like, 'Oh, here's the cause of this, and it makes sense why I'm like this.' And, I don't know, it was just an intellectual word game, really. It didn't really do anything. I mean it must've done something, I take it back. Um, but moving around on my mat and figuring it out, how it feels and just trying different moves has more of an effect. (Violet, age 49)*

In a similar way, Angie described how her understanding of her trauma and adversities were also more obvious in her body than in her mind:

*There are understandings, uh, in- of my experience that are in my body much more clearly than they are in my mind, uh, if that makes any sense. Um, it does perfectly to me but I don't know if you can understand it unless you've been through the experience. But there's my- my- so when I say to you, um, that some of the forms in yoga that have been, you know, that cause panic attacks or- or- right, um, there is no story attached to that feeling. There is no story, there's no memory attached to those feelings. Uh, I can draw lines to it, you know, knowing the things that I do have memory of, but those are understandings that are in my body. (Angie, age 61)*

Therefore, Angie found that yoga helped to confront and process feelings associated with her trauma:

*So, yoga, much as it is very challenging, maybe sometimes challenge isn't terrible. Uh, it helps me move those feelings through so that they're not coming up nearly as often in day-to-day stuff, you know? 'Cause those feelings will come and they're so powerful. Uh, it just- if the layers of stress at work, the economy, whatever, you know, they pile up then you just get this- these, you know, somebody will- the postman will knock at the door, a delivery person, and I'll be jumping out of my skin and having a panic attack before*

*yoga, or sitting, not able to answer a door, not able to answer the phone, you know, for-  
for days. Uh, and so yoga means I have to kind of confront those feelings... the only way  
out is true through, right? And, so it's allowed some really powerful, scary feelings to  
come through. (Angie, age 61)*

She added that yoga allowed her to have a tolerable level of contact with her feelings, which enabled her to recognize the impermanent, passing nature of the feelings:

*...and they just pass through over time, you know? ...the feeling is there like lightning  
speed, takes over, mind is gone and you have to figure it out if that makes any sense.*

*There's stuff you can't figure out through talking... I don't know how else to say it -- you  
have to acknowledge it and you have to be able to feel it. (Angie, age 61)*

Angie further alluded to the limitations of talk therapy because she did not have recollection of her repeated sexual abuse, since it occurred when she was barely in a state of consciousness:

*Dad didn't sexually abuse me but my grandfather did when I was quite small. Um, and so  
I don't have a lot of recollection of the sexual abuse, but he used to, um, uh, choke me so  
that I would, uh, pass out, and so I just learned how to hold my breath and pass out so I  
that wouldn't have to be- so a lot of what happened to me was, uh, sort of in that zone  
where I wasn't really conscious, if that makes any sense. And, so, uh, so my memories are  
all fragmented...I have not clear memory of things. Um, uh, and then, uh, feelings. So, my  
explanation of why or what I think, and who the hell knows if it's true, is that so much of  
my experience was felt, uh, while I was becoming, or ready to become, unconscious.*

*(Angie, age 61)*

*Sub-theme 3.3. Benefits of adjunctive yoga and psychotherapy*

Some participants reported that integrating yoga with psychotherapy had been optimal in understanding their psychological experience:

Nora reported, that for their self and for their clients, they had observed that traditional trauma therapy interventions were not as effective as an initial approach to psychological healing.

Instead, they believed that healing through the body first had a greater effect:

*I guess I just found, as a trauma clinician, that I get you can only go so far with talk therapy. You can only go so far with the EMDR [Eye Movement Desensitization and Reprocessing]. And I love these approaches, but um, I think there's something really deeply healing about starting with the body before we go into the other stuff. (Nora, age 35)*

Angie reported that she found that the combination of Cognitive-Behavioral Therapy (CBT) and yoga to be a “transformative,” “helpful,” and “safe” form of healing. She explained how the combination allowed her to psychologically understand her physical experiences in yoga, which provided useful insight:

*I found the combination of the two- like CBT [Cognitive-behavioral Therapy] would not have been enough- so I found the combination of the two, yoga and that, to be really safe and transformative, really helpful. It gave me the underpinning understanding I needed... I think that and the combination of CBT is how come I know, ‘Okay, this is...a perfectly normal response to a pretty extraordinary experience.’ So, now I can understand why the feeling, right? But I don’t have to tell the story of the feeling, and I don’t need to chase down the story of the feeling, ‘cause who the f\*\*\* wants to do that? Like once you get the picture, you’re like, ‘Good, enough!’ Just deal with all these feelings. I’m fine with the whole not-putting-the-story-to-the-feeling thing. (Angie, age 61)*

## CHAPTER IV: DISCUSSION

### Summary of Findings

This qualitative study explored the experience of yoga on multiple aspects of health for twelve adults with more than four adverse childhood experiences (ACEs). Given the high prevalence of ACEs and its associated long-term, chronic health consequences (e.g., Hughes et al., 2017; Bellis et al., 2019; Kessler et al., 2010), and the lack of effective interventions that target physical, mental, and socio-emotional health affected by ACEs simultaneously, there was a need for research to better understand an integrative approach that promotes the whole health of adults with significant ACEs. Previous research had focused on the impact of ACEs (e.g., Felitti et al., 1998; Gomis-Pomares & Villanueva, 2020), as well as interventions to treat PTSD specifically, with a focus on cognitive-based treatments (Cusack et al., 2015). Less attention has been given to integrated treatments for ACEs, particularly those that address not only the psychological but physiological health outcomes (Korotona et al., 2016). The intent of this study was to move toward closing the gap in the literature by focusing on adults with significant ACEs who are engaged in a long-term, ongoing yoga and mindfulness practice. This knowledge may offer new perspectives on and advance the development of trauma-informed interventions that comprehensively treat health outcomes associated with ACEs.

The participants in the current study endorsed a significant number of ACEs (four or more) (Gomis-Pomares & Villanueva, 2020), including physical, sexual, and emotional abuse, family dysfunction, and community violence, which correlated with multiple mental, physical, and socio-emotional problems they experienced throughout their lives. As such, the relationship between ACEs and negative health outcomes examined in prior research was supported by the findings in the current study (e.g., Felitti et al., 1998; Gomis-Pomares & Villanueva, 2020).

Notably, all of the participants of this research study indicated that yoga played a significant role in healing from their adverse childhood experiences in physical, mental, and socio-emotional ways, concurrently. These multiple facets of their health increased through the practice of yoga. Additionally, from their personal experiences, they discovered that treating ACEs effectively requires an integrative approach – one that addresses the full spectrum of negative health problems impacted by ACEs. Yoga was identified as an effective and holistic approach that they had been able to use to address the negative sequelae from their ACEs. Specifically, the “essence” of the phenomenon, namely, the meaning that participants made of their lived experiences, included: integrating their sense of self, making sense of the impact of their trauma and adversities, developing resilience and safety within, and transforming psychologically and physiologically. This was achieved through experiences in yoga that counteracted the participants’ trauma-related symptoms, facilitated the integration of their whole selves through mind-body practice, provided corrective experiences, and offered an approach to healing that moved beyond the limits of talk therapy.

### **Alleviating trauma-related symptoms and building resilience**

The majority of the participants described how elements of their yoga practice, particularly mindfulness, acceptance, and physical awareness and regulation, counteracted negative symptoms related to their ACEs. Mindfulness, which involves attending to the present moment nonjudgmentally, created space between trauma-related triggers and the participants’ automatic reactions to them, allowing for the participants to pause and process their current experience when activated, and thus, become able to intervene with self-regulation skills. Additionally, keeping their awareness on their present-moment experience, participants were able to disrupt their tendencies of rumination and anticipation of future harm. The role of



mindfulness in counteracting the post-traumatic stress symptom of rumination is found in prior literature, where mindfulness has been shown to be significantly and negatively associated with PTSD through negatively predicting rumination (Wen et al., 2021).

When previously most of the participants attempted to avoid difficult emotions, thoughts, memories, and bodily sensations related to their ACEs, which exacerbated both their mental and physical trauma-related symptoms, yoga helped the participants engage with their internal experiences with more acceptance, subsequently releasing themselves from mental and physical tensions that were tied to their efforts of avoidance. Relating to one's own experiences with acceptance has been evidenced to support psychological health in past research as well by predicting less PTSD, while experiential avoidance has been identified as a greater predictor of PTSD (Thompson & Waltz, 2010).

Furthermore, early childhood trauma has been linked with disturbances of body experiences, including body awareness and dissociation, often due to the violation of physical integrity that is associated with some traumatic experiences, and the rejection of and withdrawal from the body to avoid body-related memories, as well as disturbances in self-regulatory capacities (Scheffers et al., 2017). In the current study, yoga helped many of the participants develop awareness of their body and their physical reactions to trauma-related triggers. This physical awareness then offered them with opportunities to regulate their bodies effectively when needed.

### **Developing a sense of the whole self**

The majority of the participants in this study described how they had felt disconnected with parts of themselves as a result of their ACEs. This disconnection extended from a confused sense of self to a distinct sense of separation between their mind and bodies. These are not

uncommon experiences amongst individuals with histories of chronic adversity and trauma. From a biological standpoint, individuals with trauma histories have been shown to have decreased activity in brain regions associated with self-awareness (i.e., the medial prefrontal cortex), which governs the cultivation of a sense of self and the understanding of what sensations in the body mean emotionally (van der Kolk, 2014). Conversely, through practicing yoga, the participants felt as though they were integrating various aspects of themselves, including their feelings, behaviors, actions, and personality, in the context of their life events, as well as connecting their mental and physical experiences. Prior research suggests that the key constructs in mind-body approaches, including dispositional mindfulness and interoceptive awareness, are associated with enhanced psychological well-being (Hanley, Mehling, & Garland, 2017). Similarly, self-awareness is related to a variety of positive mental health outcomes that aid in the recovery of trauma and adversity, such as resilience and well-being (Ardelt & Grunwald, 2018).

### **Transforming negative experiences to positive**

Yoga provided corrective experiences that counterbalanced the negative effects of ACEs. Physical health and behavioral risk problems were relieved through physically healing exercises offered in yoga, which is supported by prior literature on the positive effects of yoga in improving physical health (e.g., Vinay, Venkatesh, & Ambarish, 2016). The lack of control that was felt by many of the participants throughout their lives, as a result of childhood abuse, was replaced by a sense of control through making choices about what they wanted to do with their body in trauma-sensitive yoga classes. Sciarrino and colleagues (2017) capture this phenomenon by describing how choice is often inherently absent in individuals exposed to traumatic experiences. They state that when yoga classes offer options to choose modifications and

variations of poses in which a person feels most comfortable, yoga can be a potential effective alternative treatment for PTSD-related symptomology (Sciarrino, et al., 2017).

Similarly, the adversities that participants faced in their childhood contributed to a lack of self-worth that most of the participants identified with. This was corrected for many of the participants through yoga, as the practice promoted self-acceptance, self-knowledge, self-trust, and self-compassion. These findings are supported by prior research that suggests that self-acceptance, by way of self-compassion and self-worth, are improved significantly through yoga (Casey et al., 2018). Compassion for the self and others, recognized in past literature for improving through the practice of yoga (West et al., 2017), was also emphasized as a transformation from feelings of anger, shame, and criticism that had developed as a result of their ACEs among the participants in this study.

### **Mind-body healing**

While the study did not systematically assess or analyze the participants' experiences of traditional talk therapy, many of the participants expressed about such experiences, and argued that their experiences of traditional talk therapy came with a number of limitations, preventing them from effectively healing from their traumatic and adverse experiences. They believed that these difficult life experiences were often stored in their body rather than in their minds – experiences they were challenged by making sense of cognitively. Thus, they pointed to yoga for helping them access their emotional pain in a physical way. The participants' recognition of their traumatic and adverse experiences as feeling less connected to their cognition and more connected to their physical body is validated in prior literature. van der Kolk (2015) indicates that during traumatic experiences, the prefrontal cortex that governs cognitive processing is inactive, leaving traumatic experiences in the physical and emotional arenas where survival

responses are generated. With this understanding, some trauma experts advocate for trauma treatments to include physical methods for healing (e.g., van der Kolk, 2015). Finally, some of the participants who engaged in both yoga and psychotherapy found that the combination was optimal for psychological healing. While yoga brought to surface mental and physical experiences related to ACEs, and allowed opportunities to correct the negative experiences, psychotherapy helped participants understand why they were having certain feelings. Benefits of the combination of trauma-focused counseling and yoga has been observed in past literature among individuals who have experienced sexual violence (Stevens & McLeod, 2019).

### **Clinical Implications**

The findings from the present study offer clinical implications. First, based on the benefits of physical, mental, social, and emotional health that yoga can provide, yoga may be an effective treatment for individuals with adverse childhood experiences. Kamradt (2017) discusses how psychotherapists can expand their care by integrating yoga into their interventions ethically. They explain that psychotherapists who have received training in yoga can teach clients yoga skills that they can use inside and outside of therapy sessions. To ethically implement yoga into psychotherapy, the psychotherapist providing yoga should have sufficient competence in this area, or else the psychotherapist should be adequately informed to make appropriate referrals to their clients to receive this form of treatment (Kamradt, 2017). It is essential that professionals who implement yoga as an intervention are trauma-informed and aware of the vulnerabilities in individuals who have experienced adversity and trauma. Relatedly, yoga studios should adopt a trauma-sensitive yoga approach in their delivery of yoga, since a large portion of the population experiences ACEs. Education about trauma should be integrated into yoga teacher trainings, and classes should offer options and modifications to

students so that they do not feel that they need to engage in postures, movements, breathing exercises, and meditation if they are triggering or uncomfortable for them. Disseminating research and educational resources to yoga teachers and studios on the risks and benefits of yoga, and the positive effects that trauma-sensitive yoga models have in promoting a sense of safety and empowerment, would be useful to the health and well-being of yoga practitioners with ACEs. Finally, it is important for clinicians who provide primarily cognitive-based psychotherapy to understand that ACEs are associated with not just psychological symptoms, but physiological symptoms. This knowledge may improve treatment outcomes as clinicians recognize that cognitively processing traumatic and adverse experiences is not always sufficient, and that psychological transformation may involve accessing emotions and memories through the body. Thus, receiving training in the integration of yoga into psychotherapy would be of value to their clients'/patients' treatment.

### **Strengths and Limitations of Study**

This study contributed to the literature because it utilized a qualitative method to examine how yoga impacts adults with significant adverse childhood experiences physically, mentally, socially, and emotionally. There is a lack of both quantitative and qualitative research that investigates the impact of yoga on individuals with ACEs, and the ways in which yoga impacts multiple facets of health simultaneously. Furthermore, because this study targeted a sample of individuals with a significant number of ACEs, the impact of yoga on individuals with ACEs was observed clearly. Another strength of the study was that there was diversity among the participants regarding age, racial/ethnic background, gender identity and sexual orientation, and years of yoga practice, which allowed for voices from diverse individuals to develop the themes of this study. In addition, due to the COVID-19 pandemic that was occurring during the time of

the study, interviews were conducted virtually, which created a sample from diverse geographic locations. The diversity in the sample is an important distinction because prior literature on yoga has included primarily white and female-identifying participants in the U.S., with less research on individuals of color, and with a lack of attention to variations in gender identity and sexual orientation among participants.

Using Interpretative Psychological Analysis (IPA) was also a strength as it assisted in gathering and analyzing in-depth, rich data. Due to the length in time of the interviews, the emphasis in building rapport with participants, so that they felt comfortable about expressing their lived experiences, and the active role of the researcher in paying close attention to the meanings that participants made of their experience, the interviews produced robust information related to the phenomenon in examination.

Both a strength and weakness for this study was the researcher's position as an insider of both teaching and practicing yoga. As an insider, the researcher was able to understand the nuances in some of the physiological and psychological experiences that participants described in the interviews. At the same time, it is known that an insider can overlook or assume critical information due to their familiarity with a phenomenon described from their participants. To prevent this potential problem as much as possible, the researcher often asked for clarification from the participants when they were describing their experiences with yoga, including definitions for jargon. Additionally, IPA prizes the reciprocal interpretation process that occurs between the researcher and their participants, making the researcher's interpretation of the data a valid and necessary part of data analysis, rather than an interference.

### **Future Directions**

It was the intent of this study to take an initial step in developing awareness of the impact that yoga has on addressing physical, mental, and socio-emotional health in adults with significant adverse childhood experiences. Future research might examine the relevance of the themes presented in this investigation with various sub-groups of individuals with ACEs. It could also be useful for a study to implement a yoga intervention to participants with ACEs, utilizing symptom measures as well as qualitative reports to examine the effects of a yoga intervention more specifically. Quantitative analyses on the relationship between yoga and ACEs may further explain the effect that yoga has on reducing the negative health symptoms related to ACEs. Such analyses could also reveal the elements of yoga that target specific health-related symptoms. Randomized-controlled trials (RCTs) can also be conducted to test the efficacy of yoga as a treatment for ACEs, and to compare the effects of yoga with psychotherapy, and the combination of yoga and psychotherapy. Additionally, it would be valuable to explore the effectiveness of different ways in which clinicians might incorporate yoga into their psychotherapeutic treatment with their clients/patients. Further research examining the effects of adjunctive yoga and psychotherapy would be important, to better understand the outcomes of this form of treatment, as well as the factors that facilitate and impede its effectiveness. Finally, it will be important to further examine the effects of yoga on culturally-diverse populations with ACEs, in order to capture their lived experiences, and implement culturally-responsive approaches.

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## APPENDIX

- A. Flyer for Participant Recruitment
- B. Consent Form
- C. Demographic Questionnaire
- D. ACEs Questionnaire
- E. Semi-structured Interview Protocol

## Appendix A

### Flyer for Participant Recruitment

# ADVERSITY & YOGA

## DO YOU PRACTICE YOGA? HOW DOES IT IMPACT YOU WITH CHALLENGES AND ADVERSITIES?

If you are a regular practitioner (practice yoga at least 1x/week for at least 6 months), you might be eligible to participate in a UCSB research study that seeks to understand the mental, physical, and socio-emotional impacts of yoga on individuals who have been exposed to adverse childhood experiences (ACEs).

Participation will include completing a 20-item ACEs questionnaire to determine eligibility. If eligible, a 60- to 90-minute individual interview will be conducted on Zoom. You will receive a \$30 Amazon Gift Card!

If interested, contact: [itaghavi@ucsb.edu](mailto:itaghavi@ucsb.edu)

UCSB IRB 29-20-0334



## Appendix B

### Consent Form

#### **ACES AND YOGA STUDY**

##### **PURPOSE:**

You are being asked to participate in a research study that involves first completing a questionnaire that will be used as a screening tool to determine eligibility, and an interview following that if determined eligible. The 20-item questionnaire measures the total number of adverse childhood experiences (ACEs) that you have experienced during your first 18 years of life. The questions ask whether or not you have experienced various forms of abuse, neglect, household dysfunction, community violence, and discrimination. Only the ACEs score (total score) will be collected, not the individual items.

The purpose of the interview is to learn about the mental, physical, and socio-emotional impacts of yoga on individuals who have been exposed to adverse childhood experiences.

##### **PROCEDURES:**

If you decide to participate, we will schedule a day and time for the interview. The researcher will interview you by asking you a series of questions about your experiences with yoga. The interview will be audio-recorded so that responses can be transcribed for analysis. The interview will take 60-90 minutes.

##### **RISKS:**

The risks for participating are minimal. Some people may feel uncomfortable answering questions.

##### **BENEFITS:**

A \$30 Amazon Gift Card will be incentivized for your participation in this study.

##### **CONFIDENTIALITY**

Transcripts of the interview will be kept on a secure server. I will use a pseudonym in the transcripts so that your responses during the interview are de-identified. Your name will not be associated with the research or published at any point. Audio-files will be deleted once data is transcribed and checked.

##### **RIGHT TO REFUSE OR WITHDRAW:**

You may refuse to participate and still receive any benefits you would receive if you were not in the study. You may change your mind about being in the study and quit after the study has started. If you no longer want to participate, just let the researcher know.

##### **QUESTIONS:**

If you have any questions about this research project or if you think you may have been injured as a result of your participation, please contact: Maryam Kia-Keating Department of Counseling, Clinical, and School Psychology Gevirtz Graduate School of Education University of California Santa Barbara, CA 93106-9490 [maryamkk@ucsb.edu](mailto:maryamkk@ucsb.edu) If you have any questions regarding your rights and participation as a research subject, please contact the Human Subjects Committee at (805) 893-3807 or [hsc@research.ucsb.edu](mailto:hsc@research.ucsb.edu). Or write to the University of California, Human Subjects Committee, Office of Research, Santa Barbara, CA 93106-2050

##### **CONSENT**

**YOUR SIGNATURE BELOW WILL INDICATE THAT YOU HAVE DECIDED TO PARTICIPATE IN THE STUDY DESCRIBED ABOVE.**

**BY SIGNING BELOW, YOU ARE ALSO GIVING CONSENT TO BE AUDIO-RECORDED DURING THE INTERVIEW.**

Sign here: \_\_\_\_\_

Date: \_\_\_\_\_

Name of Participant: \_\_\_\_\_

## Appendix C

### Demographic Questionnaire

1. What is your age?
2. What is your gender?
  - a. Woman (cis woman)
  - b. Man (cis man)
  - c. Trans woman
  - d. Trans man
  - e. Non-binary
  - f. Other (please specify):
3. What is your sexual orientation?
  - a. Heterosexual or straight
  - b. Gay
  - c. Lesbian
  - d. Bisexual/queer
  - e. Other (please specify):
4. What is your race/ethnicity? Please select all that apply:
  - a. Black/African American
  - b. Latinx/Hispanic
  - c. White/Caucasian
  - d. Asian/American/Pacific Islander
  - e. Native American/Alaskan-Native
  - f. Middle Eastern

g. Other (please specify):

## Appendix D

### Adverse Childhood Experiences (ACEs) Questionnaire

At any time during your childhood (from birth to age 18):

1. Your parents or guardians were separated or divorced
2. You lived with a household member who served time in jail or prison
3. You lived with a household member who was depressed, mentally ill or attempted suicide
4. You saw or heard household members hurt or threaten to hurt each other
5. A household member swore at, insulted, humiliated, or put you down in a way that scared you OR a household member acted in a way that made you afraid that you might be physically hurt
6. Someone touched your private parts or asked you to touch their private parts in a sexual way that was unwanted, against your will, or made you feel uncomfortable
7. More than once, you went without food, clothing, a place to live, or had no one to protect you
8. Someone pushed, grabbed, slapped or threw something at you OR you were hit so hard that you were injured or had marks
9. You lived with someone who had a problem with drinking or using drugs
10. You often felt unsupported, unloved and/or unprotected
11. You were in foster care
12. You experienced harassment or bullying at school
13. You lived with a parent or guardian who died

14. You were separated from your primary caregiver through deportation or immigration
15. You had a serious medical procedure or life-threatening illness
16. You often saw or heard violence in the neighborhood or in your school neighborhood
17. You were detained, arrested or incarcerated
18. You were often treated badly because of race, sexual orientation, place of birth, disability or religion
19. You experienced verbal or physical abuse or threats from a romantic partner (i.e. boyfriend or girlfriend)
20. You were in a situation when you or someone you love was seriously injured, or you feared injury or death, due to a natural disaster or other frightening situation.



## Appendix E

### Semi-structured Interview Protocol

1. When and why did you start practicing yoga?
2. What has been beneficial about your yoga practice?
3. What has been challenging about your yoga practice?
4. How have you been impacted by your past difficult, challenging, or adverse experiences?
  - a. Probe: How about physically?
  - b. Probe: How about mentally?
  - c. Probe: How about socially and emotionally?
5. What role has yoga played in helping you cope with your past experiences, especially those that were difficult, challenging, or adverse?
  - a. Probe: How about physically?
  - b. Probe: How about mentally?
  - c. Probe: How about socially and emotionally?
  - d. Probe: Can you tell me about a time when yoga helped you cope with these experiences?
6. What parts of yoga have impacted you and how?
  - a. Probe: How has mindfulness meditation impacted you?
  - b. Probe: How has breathing impacted you?
  - c. Probe: How have the physical postures impacted you?
  - d. Probe: Can you give me an example of when one of these parts of yoga impacted you?
  - e. Probe: How have group- or class-based experiences of yoga impacted you?

- f. Probe: How has online yoga impacted you?
7. Have you noticed any other shifts in your life since you started practicing yoga that we have not already covered?
  8. What would you say to someone starting out a yoga practice, especially someone who has experienced challenges or adversities in their lives, about how it will play a part in their lives?
  9. Is there anything else I have not asked you that you think I should know?