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Yoga and Adolescent Psychological Health, Depressive Symptoms, and Flourishing

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A Dissertation Submitted to The Graduate School at the  
University of Missouri–St. Louis in partial fulfillment of the requirements  
for the degree Doctor of Philosophy in Education  
with an emphasis in Educational Psychology

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## Abstract

The purpose of this concurrent mixed methods study was to investigate the potential of yoga to increase positive psychological health, decrease depressive symptoms, and increase flourishing in nonclinical high school students. Yoga was incorporated as part of a physical education (PE) course at a suburban high school with high school students ( $n = 27$ ). Another section of the same course without yoga served as the control group ( $n = 38$ ).

Both groups completed the Center for Epidemiologic Studies Depression (CESD) Scale to measure depressive symptoms, the Flourishing Scale for Teens, and the Positive Emotion, Engagement, Positive Relationships, Meaning, and Accomplishment (PERMA) Profiler to measure flourishing rates to gather quantitative data. All three measures were given as a pretest, posttest, and delayed posttest. The qualitative data consisted of both groups answering open-ended questions about their wellness and experience in PE/yoga class at the same time that the students filled out quantitative questionnaires. In addition, five students from the yoga group were interviewed about their experiences three times throughout the semester separate from the other forms of data collection.

A multivariate analysis of variance and analyses of covariance were run on the quantitative data to determine differences between groups on the quantitative data. Qualitative content analysis was used to identify key themes in the interviews and written answers. Quantitative and qualitative data were analyzed separately first and then they were analyzed together.

No significant differences were found between groups on the quantitative measures, except that the yoga group was found to have significantly less depressive symptoms than the control group 5 months after the intervention.

Qualitative results show that it is feasible to implement yoga during the school day; student depressive symptoms have the potential to be decreased through yoga by increasing relaxation, decreasing anxiety, increasing energy, and increasing self-confidence. Yoga has the potential to increase student flourishing through increased positive emotion, increased positive relationships, and an increased sense of accomplishment. Qualitative results also show that students noticed physical elements of yoga, such as improved strength, balance, and flexibility.

Results are discussed separately and then together. Some of the quantitative and qualitative data on overall positive psychological health, depressive symptoms, and flourishing converged with the other form of data and some of it diverged from the other form of data. These aspects are discussed and potential reasons behind the convergent and divergent findings are noted.

These results suggest that yoga has the potential to be useful to schools to address the adolescent depressive symptoms and flourishing.

I dedicate this dissertation to my parents, Ray Schulte and Colleen-Curran Schulte. You have always taught me the value and importance of education. I can never repay you for loving me and supporting me even before I was born. I truly believe I hit the jackpot in the parent lottery! Thank you, thank you, thank you... from the bottom of my heart, thank you. I also dedicate this dissertation to my siblings, James Schulte and Caitlin Schulte. You are two of my best friends. I thank you for giving me someone to look up to my entire life. I have always wanted to be more like you.

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## **Chapter 1: Introduction and Review of Related Literature**

According to the National Institute of Mental Health (2010), approximately 11% of adolescents have a depressive disorder by the age of 18 years. The National Alliance on Mental Illness (2014) reported that about one in five persons will experience depression at some point in their teenage years. Experiencing depression at this time in life causes short-term negative effects (American Psychiatric Association, 2000). It also puts the adolescent at risk for long-term effects and increases the likelihood that the adolescent will experience depression again later in life (Thapar, Collishaw, Pine, & Thapar, 2012). Schools are being asked to help students deal with and attempt to prevent mental illness in students. Quality schools go one step further and aim to provide an environment that helps all students to understand their strengths and use them to make better lives for themselves and those around them. Yoga offers an alternative approach to the prevention and reduction of depressive symptoms and the encouragement of student flourishing that could fit well into the school environment.

The mental health of students in this study is examined on a continuum. Depression and depressive symptoms is one end of the continuum, and positive mental health and flourishing is the other end of the continuum. These two concepts are pulled apart and measured separately to test the potential of yoga to move students away from depressive symptoms and toward more positive mental health and flourishing. Can yoga be implemented in the high school setting? If so, what effect does it have on the flourishing and depression rates of the students who participate?

Treatments can be more complicated for adolescents than for adults (Thapar et al., 2012). Medication and psychotherapy are the most common treatments for depression

(Mayo Clinic, 2014). Although both show evidence of effectiveness, medication can have harmful side effects, and psychotherapy is time consuming (Wagner et al., 2003; Harrington, Whittaker, Shoebridge, & Campbell, 1998). Because of this, compliance with these treatments is not always high. Positive psychology offers a different framework that builds on a person's strengths in an attempt to move the person away from depression and toward flourishing, regardless of whether the person has a diagnosis of depression. The practice of yoga aligns well with positive psychology in that it encourages practitioners to focus on their strengths and what is going right in their lives. It has been investigated as a treatment for depression and life enhancement for people who do not have the diagnosis (Dittmann & Freedman, 2009; Sharma, Das, Mondal, Goswami, & Gandhi, 2006). It has been shown to improve the physical and mental health of people who practice it (Gard et al., 2012; Mehta & Sharma, 2010). If it is effective with high school students, it has the potential to give schools a method to help prevent depression, ease depressive symptoms, and increase flourishing in students.

In this chapter, data on adolescent depression and depressive symptoms are reviewed. The benefits, limitations, remission rates, and compliance rates of current common treatments for adolescent depression are discussed. Positive psychology is introduced as an alternate option for addressing adolescent depressive symptoms and encouragement of student flourishing. The benefits and limitations of positive psychology are highlighted. The practice of yoga is aligned with positive psychology and introduced as a construct with the potential to decrease depressive symptoms and increase flourishing. Prior studies addressing this topic are reviewed. Schools are highlighted as a reasonable place in which to deliver a yoga class to adolescent students.

It is important to note that many of the referenced studies addressed clinical populations of adolescents who were diagnosed with depression. The current study's population comprised nonclinical students, and the study only addresses depressive symptoms.

## **Depression**

Depression is a mental health diagnosis that is characterized by sadness, loss of interest/pleasure in activities that are normally enjoyed, weight changes, fatigue/loss of energy, feelings of guilt or worthlessness, diminished ability to concentrate, sleeping problems/oversleeping, and suicidal ideation (American Psychiatric Association, 2000; National Institutes of Health, 2010). There is not one specific cause for depression; however, genetics, chemical imbalance, hormonal factors, stress, and/or medical illness are all thought to be related to the disease (Mehta & Sharma, 2010).

This dissertation references three different types of depression: Mild depression indicates that a person exhibits five to six depressive symptoms (listed in the preceding definition) and is able to function normally with considerable effort (American Psychiatric Association, 2000). Severe or major depression indicates that a person exhibits most of the characteristics listed in the definition for depression and is severely disabled by these symptoms (American Psychiatric Association, 2000). The person cannot function normally even with considerable effort. For example, everyday activities like eating, sleeping, and studying may be affected. Moderate depression indicates that a person is in between mild and severe/major (American Psychiatric Association, 2000). The current study was conducted with a nonclinical population. Students did not have to

have a diagnosis of depression to be included in the study. In fact, most of the students who participated did not have this diagnosis.

Depression affects 1 in 10 Americans (Centers for Disease Control and Prevention, 2011). According to the World Health Organization (2012), depression is the leading cause of disability worldwide and is a major contributor to the global burden of disease. An estimated 350 million people of all ages worldwide suffer from depression. Unfortunately, the World Health Organization (2012) also predicts that this number is on the rise.

Although this is often thought of only as an ailment that affects adults, it is common to come across young adults with depressive symptoms (Imel, Malterer, McKay, & Wampold, 2008). Currently depression affects about 11% of adolescents by the time they turn 18 years of age (National Institute of Mental Health, 2010). It has been estimated that significant depressive symptoms can be observed in 30% of adolescents (Ryan, 2005). If a child experiences depression, he or she is much more likely to experience depression and/or other psychosocial difficulties into adulthood (Thapar et al., 2012). One in 10 children experience clinical depression before the age of 14 years (Garrison, Schluchter, Schoenbach, & Kaplan, 1989), and as many as 1 in 5 adolescents suffer from a major depressive episode before the end of their high school years (Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993).

**Treatment.** There are broad trends when looking at effective treatments for depression. According to the World Health Organization (2012), depression is the most costly disease in the world. The two most common treatments for depressive adolescents are medication and psychotherapy, or a combination of both (Mayo Clinic, 2014).

Treating a case of depression costs \$5,000 a year on average (Druss, Rosenheck, & Sledge, 2000). Treatment choices are more complicated for children and adolescents than for adults. According to Thapar et al. (2012), “best treatment practice is controversial because accepted practice and clinical guidelines vary in different countries, and because of concerns about the use of antidepressant drugs in patients younger than 18 years” (p. 1061). Developmental factors such as age and cognitive development are important to take into account. In addition, one must consider family psychiatric history, family and social environments, family and patient treatment preference and expectations, and ethnic and cultural issues (Maalouf & Brent, 2012).

***Medication.*** Antidepressant drugs are a multi-billion-dollar industry (Greenslit & Kaptchuk, 2012; IMS Health, 2008). For example, fluoxetine (brand name Prozac) can cost as much as \$535 per month if the brand name is purchased. The cheapest generic form costs roughly \$30 per month (“Consumer Reports,” 2013). Some studies claim that antidepressants are effective (Reinecke, Curry, & March, 2009), and others claim they are not (Hollon, Thase, Markowitz, 2002).

*Studies showing effectiveness.* The Treatment for Adolescents With Depression Study (TADS) found a combination of medication and psychotherapy to be the most effective treatment, with 71% of participants responding favorably after 12 weeks of treatment. The second most effective treatment was medication alone, with 61% of participants responding favorably after 12 weeks of treatment (Reinecke, Curry, & March, 2009). Keller et al. (2001) found that paroxetine was effective in treating adolescent major depression over a placebo. The Treatment of Resistant Depression in Adolescents (TORDIA) study included adolescents who had already been treated with

depression medication that did not work. TORDIA found that after switching the medication to either a different SSRI or an SSRI plus cognitive behavior therapy, 38.9% of adolescents with depression achieved remission by 24 weeks. In addition, remission was more likely in participants who reported a lower baseline depression rate, lower hopelessness, and lower anxiety (Emslie et al., 2010). The Adolescent Depression Antidepressant and Psychotherapy Trial (ADAPT) found a 41.3% remission rate in adolescents in a medication plus cognitive therapy group and a 43.6% remission rate in a medication-only group at 12 weeks (Walkup, 2010).

*Studies questioning effectiveness.* According to Hollon, Thase, and Markowitz (2002), “overall, the average drug-placebo difference in published reports of randomized controlled trials of major depression is about twenty percent” (p. 48). Jureidini, Tonkin, and Mansfield (2004) conducted a study reviewing six studies involving 477 patients who were treated with paroxetine, fluoxetine, sertraline, or venlafaxine and 464 treated with a placebo. Of 42 reported measures, only 14 showed a statistical advantage for the antidepressant. Kirsch, Moore, Scoboria, and Nicholls (as cited in Seligman, 2011) found that approximately 80% of drug effects were also found in placebo control effects. The authors stated,

The more realistic and elaborate the placebo, the higher the placebo percentage: so high is the placebo response that in half the studies on which the U.S. Food and Drug Administration (FDA) based its official approval of the antidepressant drugs, there was no difference between placebo and drug. (p. 47)

Although Keller et al. (2001) found paroxetine to be an effective medication, they also found that imipramine was not effective over the placebo in treating adolescent depression. In addition, the estimates of effectiveness may be higher due to “publication bias” (Hollon et al., 2002). When unpublished studies were included in an analysis of



studies submitted to the FDA for approval of medications, average response to medications dropped from 50% to 40% compared to a placebo effectiveness rate of 30%. This indicates that the true drug effect was 10% (Khan, Warner, & Brown, 2000).

The rates of effectiveness of these drugs are higher the worse the depression is. The majority of prescriptions written are for people with mild to moderate depression. In these cases, the effects of drugs were smaller, some almost nonexistent (Fournier et al., 2010; Hollon et al., 2002). Thomas Insel (2011), director of the National Institute of Mental Health, said that “mild depression tends to improve on placebo so that the difference between antidepressant use and placebo effect is very small, or at times, absent. In more severe forms of depression, antidepressants show greater efficacy” (para. 8).

*Safety of medications.* In addition, some studies have shown that antidepressants have an adverse effect on adolescents and children. In the TADS, patients treated with fluoxetine alone were more likely than patients treated with a combination therapy (psychodynamic and medication) or psychodynamic alone to show clinically significant suicidal ideation and treatment-emergent suicidal events (Treatment for Adolescents With Depression Study Team [TADS], 2007). In Keller et al. (2001), a statistically significant number of patients treated with paroxetine had serious adverse events when compared to the placebo group. Additionally, Wagner et al.’s (2003) trial had a statistically significant number of patients (almost twice that of the placebo group) being treated with sertraline drop out of the trial due to adverse effects. The data on these effects are so uncertain that the FDA now requires drug makers to put warnings on labels for all antidepressants. These warnings state that an increased risk of suicidal thinking

may occur in children, teenagers, and young adults taking an antidepressant—“this action took place after studies found that there was double the risk of suicidal thoughts in children and teenagers who took the drugs compared with those who took dummy pills” (“Consumer Reports,” 2013, p. 14).

Several studies have highlighted the effectiveness of medication in treating depression (Keller, et al., 2001). Some studies have argued that a combination of medication with therapy is the best method (Reinecke, Curry, & March, 2009). However, other studies have shown that these results could be biased or ineffective when compared to relief rates with a placebo (Jureidini, Tonkin, & Mansfield, 2004). In addition, the use of these drugs is a lucrative business that can make it hard for families to know if their best interests are being kept in mind (Greenslit, & Kaptchuk, 2012).

***Psychotherapy.*** The American Psychological Association (2014) defined psychotherapy as “any group of therapies, used to treat psychological disorders, that focus on changing faulty behaviors, thoughts, perceptions, and emotions, that may be associated with specific disorders” (para. 84). Several different forms of psychotherapy have been used to treat depression.

*Studies citing effectiveness.* Several studies have discussed the effectiveness of psychotherapy in treating depression. Erford et al.’s (2011) meta-analysis of 42 clinical trials found that counseling and psychotherapy were effective in treating depression in school-age adolescents. Effect sizes in this study ranged from small to medium. These effects were found at the end of the counseling sessions as well as at follow-up and when the therapy was done in school and outside of school. According to Erford et al., “meta-analyses on the effects of counseling treatments for depression in school-age youth are

consistently concluding that counseling is effective at termination, yielding at least a small to medium effect depending on the comparison groups under study” (p. 451).

Another systematic review was conducted to investigate the effectiveness of cognitive behavior therapy as a treatment for childhood and adolescent depression. Harrington et al. (1998) analyzed six randomized trials that looked at the effectiveness of cognitive behavior therapy for depression in young people. All six studies showed positive effects of cognitive behavior therapy as significant over “inactive intervention” groups. These groups mostly underwent interventions there were either inactive or were an attention placebo. One group included an active comparison intervention: family therapy (Goodyr, et al., 2008). Specifically, 62% of children treated with cognitive behavior therapy did not have the depressive disorder after treatment, whereas only 36.3% of the participants in the comparison condition did not have the depressive disorder after therapy.

A study focusing on treatment for adolescents (age 12–17 years) with depression was conducted by the National Institute of Mental Health in 2007. Study participants included 327 patients with a diagnosis of major depressive disorder. Study participants were randomly assigned to one of three conditions: cognitive behavior therapy, fluoxetine therapy, or combination (cognitive behavior and fluoxetine) therapy. The results showed a response rate of 73% for combination therapy, 62% for fluoxetine therapy, and 48% for cognitive behavior therapy at 12 weeks and 85% for combination therapy, 69% for fluoxetine therapy, and 81% for cognitive behavior therapy at 36 weeks.

In a systematic review of randomized clinical trials of the benefits and detriments of cognitive therapy versus no intervention in treating major depressive disorder,

Jakobsen, Hansen, Storebo, Simonsen, and Gluud (2011) found that cognitive therapy significantly reduced depression symptoms and increased the probability of remission when compared to no intervention.

Another meta-analysis that integrated direct and indirect evidence from 198 randomized controlled studies was conducted by Barth et al. (2013). This meta-analysis looked at seven psychotherapeutic interventions for depression in adults. Supportive counseling, social skills training, problem solving, cognitive-behavioral therapy, and behavioral activation were more effective than waitlist. They also found that the psychotherapeutic interventions were effective regardless of the population of depressed patients when provided in a face-to-face, individual setting. To adjust for small study effects, the authors ran an additional meta-analysis that included only larger population studies. This analysis showed that problem-solving therapy, cognitive-behavioral therapy, and interpersonal therapy showed moderate effects compared to the waitlist. They could not comment on the long-term effects of the treatments because their data were only collected on completion of treatment.

A multiple treatments meta-analysis of 18 studies compared cognitive-behavioral therapy for acute depression against a psychological placebo and no treatment (Honyashiki et al., 2014). The authors found that cognitive-behavioral therapy relieved symptoms significantly better than no treatment. However, there was no significant difference between cognitive-behavioral therapy and the psychological placebo. In addition, a meta-regression examined the association between the treatment effect and the number of therapy sessions. This analysis suggested that cognitive-behavioral therapy was only beneficial if there were 10 or more sessions.

*Potential limitations.* Several of these studies had limitations and discussed the potential for bias in favor of the treatment. They noted that all trials in the study had high risks of bias that could have led to the exaggeration of beneficial results of the interventions. Jakobsen et al. (2011) noted that all of the studies in their meta-analysis were highly susceptible to “selective outcome measure reporting bias” (p. 9). In addition, they pointed out that the results could be due to random error in response to thin data or repetitive testing (Jakobsen et al., 2011). Cuijpers, Van Straten, Warmerdam, and Andersson (2009) reported concern that it was not possible to conceal which study conditions the participants were in, and many of the studies in the meta-analysis did not use an independent person to assign conditions, nor did they blind the assessors. The authors noted that they used clinical ratings, which can lead to larger effects than self-report measures (Erford et al., 2011). The authors of this study also noted that cognitive therapy can be costly and time consuming; some of the studies in the meta-analysis took up to 16 sessions to see results (Harrington et al., 1998).

In TADS, concerns were raised about the fact that participants in the combination group and their doctors knew they were being treated with fluoxetine and not the placebo, and in addition, they had more face-to-face contact with their doctors, which could have exaggerated the benefit seen in this group (Jureidini et al., 2004).

Several studies have documented the effectiveness of psychotherapy for the treatment of depression. In fact, it is widely accepted that this is an effective form of treatment for adolescents who suffer from depression. It is also important to note that there are minimal health risks associated with this type of therapy (in contrast to medication). However, other studies note the high potential for bias in favor of the

treatment in these studies. In addition, though this treatment is effective, it can be both costly and time consuming, as it can take several weeks to see lasting results.

**Remission rates.** There is evidence on rates of remission for medication and psychotherapy for depression; some claim long-term benefits, but others do not claim benefits will remain if a person stops regularly going to therapy or taking medication. Evans et al. (as cited in Hollon et al., 2002) found cognitive therapy to have an enduring effect both when used as a stand-alone treatment for depression and when combined with medication to treat depression. TADS indicated that improvements in symptoms were maintained over time (36 weeks) for the combination, medicine, and psychotherapy groups. It is important to note that adolescents were still receiving the same dosage of medication they received during the first 12 weeks of the trial, but the psychotherapy sessions were less frequent (Reinecke et al., 2009; TADS, 2009). In addition, Evans et al. (as cited in Hollon et al., 2002) found benefits of longer treatment over 1 year. Erford et al. (2011) found evidence of lasting effects; however, they cited that many other meta-analyses did not reach that conclusion. They also noted that more studies need to include a longer follow-up of a year or more. Only nine studies in the meta-analysis included information from a year or more after the interventions.

In contrast, others say medications and psychotherapy do not produce lasting results. A person suffering from depression will see his or her symptoms return if the person is on medication and stop taking the drugs (Hollon et al., 2002). Elkin et al. (as cited in Sin, Della Porta, & Lyubomirsky, 2011) said, “Fewer than half of patients who receive cognitive-behavioral therapy (CBT)—arguably one of the most effective and widely researched depression treatments—will completely recover from depression” (p.

80). These therapies offer symptom relief but do not look beyond that to help a client to thrive. According to Thaper et al. (2012), “the evidence relates to the short-term effectiveness of psychological treatments and medication. Evidence for the long-term benefits of treatment to rates of recurrence and for the effectiveness of non-specialist interventions is scarce” (p. 1061). Shea et al. (1992) found that patients receiving psychotherapy, psychotherapy plus drugs, or clinical management plus placebo for 16 weeks did not maintain benefits at 6, 12, and 18 months after the treatments. Insel (2011) expressed uncertainty about relapse if a person who suffers from depression does not continue treatment with medication: “Relapse is a concern, especially if an antidepressant is not continued” (p. 13). Hollon et al. (2002) furthered this uncertainty by saying, “Exactly how long patients need to keep taking continuation medications remains unclear” (p. 50). If a person who suffers from depression has had three or more depressive episodes or chronic depression, maintenance of the pharmaceutical treatment is recommended. Someone who has depression usually continues therapy via monthly or quarterly visits. This can extend for years, if not indefinitely (Frank & Thase, 1999).

**Treatment compliance.** Symptom relief is contingent upon people taking their medications regularly and/or going to therapy regularly. This can be troublesome if the client does not find the therapy in itself reinforcing, meaning that it is not fun for the client, in addition to being expensive (Seligman, 2011). Sometimes it is difficult to do, and compliance rates are not very high. Castonguay et al. (2004) noted the importance of a good relationship between the therapist and client to produce improvement in the mental health of the client. They also noted that many cognitive therapists identified any of the client’s negative reactions to therapy as distorted thoughts by the client. The

therapist attempted to challenge the client on these thoughts when these events occurred. This method worsened the alliance between the client and counselor and so worsened outcomes for the client. Thus pointing out deficits in the way clients think may be counterproductive and actually worsen the clients' situation. It may make clients think more about their deficits than their strengths. Burns and Nolen-Hoeksema (1992) studied cognitive-behavioral therapy and found that the therapeutic relationship had a profound impact on client outcomes. If counselors are only pointing out and working on negative aspects of the client's thoughts, that relationship is likely to suffer and therefore worsen outcomes for the client. "For some depressed clients, pointing out deficits in their thinking, as an exclusive focus, may be counterproductive and may rupture the therapeutic alliance" (Seligman, Rashid, & Parks, 2006, p. 780). Sawada et al. (2009) found that only 44.3% of patients continued their antidepressant treatment for 6 months after they started. Among these patients, 63.1% quit without consulting their physicians. Compliance with medication directions is further complicated by the fact that the majority of people who take antidepressants (63%) experience at least one adverse side effect ("Consumer Reports," 2013).

In summary, depression can be extremely debilitating. It is currently affecting a large portion of the population. Onset of depression can be in adolescence, and if a person experiences it in adolescence, he or she is much more likely to deal with it in adult life as well. Currently the most common treatment options are medication, psychotherapy, or a combination of both. These treatments have shown effective results. However, given the severity and prevalence of depression, that adolescents and their families must think more carefully about treatment than adults, and that certain aspects of



the current treatments may not be a good match for everyone, it is important that practitioners think of all options to offer treatment to adolescents struggling with depression. In addition, it is important to think about moving adolescents past the point of not having depression and toward thriving. Positive psychology offers a view that could be helpful in treating and preventing mental illness. It can also be useful for the general population to live a more rich and full life.

### **Positive Psychology**

Martin Seligman is considered to be a founder of positive psychology. He explained that it has evolved over many years:

I used to think that the topic of positive psychology was happiness, that the gold standard for measuring happiness was life satisfaction, and that the goal of positive psychology was to increase life satisfaction. I now think the topic of positive psychology is well-being, that the gold standard for measuring well-being is flourishing, and that the goal of positive psychology is to increase flourishing. (Seligman, 2011, p. 13)

His theory evolved from *authentic happiness* to *flourishing*. In authentic happiness theory, the focus was happiness, measured by life satisfaction, and the goal of it was to increase life satisfaction. In the new well-being theory, the focus is well-being. The goal is to increase flourishing by increasing its constituent parts: positive emotion, engagement, meaning, positive relationships, and accomplishment (Seligman, 2011).

Others in the field agree that positive psychology should study more than just happiness; according to Peterson (2006), “pleasure and happiness are certainly of great interest to positive psychology but are more complex than whatever is conveyed by a smiley face” (p. 7). Peterson also noted that positive psychologists study traits, dispositions, values, and social situations that can encourage a more fulfilling life. The Centers for Disease Control and Prevention (2011) have furthered this thought by noting,

Many social indicators fail to measure what people think and feel about their lives—the quality of their relationships, their positive emotions, resilience, satisfaction with life domains, or the realization of their potential. Positive evaluations of life including the presence of positive emotions (e.g., happiness, serenity, interest), social ties, and perceptions of life satisfaction and meaning, are commonly referred to as “well-being.” (p. 1)

Though this theory started out with a “happiness” label, it has become much deeper than that.

The framework of positive psychology can be described in three related topics: positive subjective experiences, positive individual traits, and positive institutions. Positive institutions can facilitate the presence and growth of positive traits, which in turn can facilitate positive subjective experiences (Peterson, 2006). It is also important to note that one of these factors does not necessarily cause another. Rather, each supports the other two, and one can be present without the other two.

**Positive psychology and depression.** The study of psychology has traditionally used a disease model, looking at what is wrong rather than investigating what is right and how to enhance that. Peterson (2006) stated that “the underlying assumptions of psychology have shifted to embrace a disease model of human nature. People are seen as flawed and fragile, casualties of cruel environments or bad genetics, and if not in denial then at best in recovery” (p. 5). A specific example comes from the study of depression. Traditionally, psychologists who study depression have focused on what is wrong with people and what is making them depressed.

Positive psychology has a different perspective on mental health. Straying away from the disease model which says that being well mentally means that a person does not currently have a mental illness, positive psychology purports that psychologists should not only strive to treat mental illness, they should also attempt to help people flourish. An

important facet of positive psychology in regard to the treatment of depression is that it strives to increase the positive in the lives of people rather than merely decrease the negative. As previously stated, the current treatments for depression—psychotherapy and drugs—aim to rid patients of depression. They focus on what is wrong rather than going beyond this to helping to actually make a person happy. The World Health Organization (2012) said, “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (p. 1). Following this definition, it is logical to conclude that we must not only understand what causes diseases, we must study how to get human beings to a state of wellness. As Seligman (2011) said, “being in a state of mental health is not merely being disorder free; rather it is the presence of flourishing” (p. 183).

***Protection from depression.*** Not only does the theory suggest that positive emotion can alleviate suffering but the strengths and virtues component can also serve as a buffer against psychological disorders and hardship. Positive psychologists find it equally important to investigate what could protect people from depression (Abramson et al., 2000). Over the last 50 years, psychologists have learned that the disease model does not move us closer to prevention of serious problems. In contrast, systematically focusing on building competency, not correcting weakness, has brought about major steps toward prevention of problems (Keyes & Lopez, 2005; Seligman, 2003).

***Increasing flourishing.*** The ideas behind positive psychology are not meant to be used as just a therapeutic/clinical approach. Because of this, the framework can be used for everyone, whether or not he or she has a mental illness. This theory is used to help people experiencing problems in their lives and also people who are content but could

flourish even more. It is thought that this type of psychology could be helpful for each person who is interested in living a more fulfilling life regardless of his or her current state. Science and practice that rely on the approach of positive psychology could reorient psychology to its two neglected missions: making normal people stronger and more productive and maximizing human potential (Seligman & Peterson, 2003).

***Treatment.*** Positive psychotherapy differs from other treatments of depression in that the sessions place a strong emphasis on the positive qualities about a client, not the negative symptoms of depression (Seligman et al., 2006). The therapist begins treatment by asking the clients to introduce themselves by telling a true story that highlights their best qualities (Seligman et al., 2006). From there, the therapy is tailored to the client. Some examples of positive psychotherapy exercises are the following: clients complete the Values in Action inventory of strengths; then, clients are asked to describe how their strengths have helped them in the past. In addition, the therapist discusses becoming happier through pleasure, engagement, and meaning with the clients' strengths in mind. Clients learn how to come up with specific, concrete, and doable behaviors to help cultivate their strengths (Seligman et al., 2006). Clients are asked to start a "Blessings Journal" where they write three positive things that happen to them each week (Sin et al., 2011). After this, the therapist discusses good and bad memories with the client. The therapist discusses the role of bad memories and holding on to anger and bitterness and how this might affect current happiness and depression levels. The therapist might also introduce forgiveness as a tool for the client to let go of anger and bitterness and transform it into neutrality or even positivity. Clients may be asked to write forgiveness letters to the people who hurt them, but they may or may not deliver them. The therapist

may also discuss gratitude and assign the client to write a letter to thank someone and deliver the letter to that person (Seligman, 2011). Clients learn about “satisficing” (good enough) through authentic engagement rather than maximizing (needing to be the best in every situation). Clients are asked to devise a satisficing plan (Seligman et al., 2006). The therapist teaches about optimism and hope. The client is asked to recall times when something good came out of something he or she originally thought was bad. Further into therapy, the client may be asked to recognize strengths of his or her significant other and/or family members. Toward the end of therapy, the therapist discusses “savoring”—how to recognize pleasure and attempt to make it last. Therapists also discuss the “gift of time” that clients can give to others through service by using strengths. Finally, the therapist and client revisit the idea of a life containing pleasure, engagement, and meaning. The client takes both depression and positive psychology inventories, and progress in these areas is discussed (Seligman et al., 2006).

Though there are some problem-solving aspects of positive psychotherapy, the main task of the therapist is to continuously highlight positive aspects of the client’s life. The therapist attempts to teach the client to behave in a way that solicits positive feedback from other people. Rather than analyzing negative aspects and events of the client’s life, the positive psychologist strives to enhance and strengthen already positive parts of the client’s life (Seligman et al., 2006).

Some people believe that positive psychology is an irrelevant response to negative events—that focusing on positive things or strengths when tragedy occurs is not appropriate while a person is dealing with adversity. However, positive psychology purports that it is not only relevant but it is the best way to alleviate suffering because it

creates positive emotion. According to Seligman (2003), “people who are impoverished, depressed, or suicidal care about much more than just the relief of their suffering. These people care—sometimes desperately—about virtue, about purpose, about integrity, and about meaning” (p. xii). Furthermore, positivity can enhance resilience in people experiencing misfortune (Seligman, 2003).

*Client involvement.* A large portion of general optimism is due to heritability. Genetics determine about 50% of subjective well-being according to twin studies (Sheldon & Lyubomirsky, 2007). Though this is a large portion, it is not everything. It is also argued that 40% of this equation is determined by what people choose to do (Lyubomirsky, Sheldon, & Schkade, 2005). The remaining 10% is due to the circumstances currently present in one’s life (Sheldon & Lyubomirsky, 2007).

Though 40% is not the majority of the cause, it still allows for some control on the part of the individual. “Our intentional, effortful activities have a powerful effect on how happy we are, over and above the effects of our set points and the circumstances in which we find ourselves” (Lyubomirsky, 2007, p. 64). Seligman and Peterson (2003) noted that focusing on the positive prevents depression and other serious mental illnesses more so than focusing on what is wrong:

What we have learned over 50 years is that the disease model does not move us closer to the prevention of these serious problems. Indeed, the major strides in prevention have come largely from a perspective focused on systematically building competency, not correcting weakness. (p. 313)

If psychologists effectively identify, amplify, and concentrate on strengths in people, they can build optimism. Once the skill of focusing on strengths and positivity is learned, it is

self-reinforcing. Seligman and Peterson (2003) found that depression rates in children and adults were cut in half over the next 2 years after this skill was learned properly.

Using the principles of positive psychology in an intentional, systematic attempt to teach well-being and resiliency in a school environment, Seligman and colleagues (1993) created the Penn Resiliency Program. This program is delivered to school children and is meant to promote optimism by teaching students to think realistically and flexibly about their problems. It teaches students coping skills such as assertiveness, creative brainstorming, decision making, and relaxation. They found that this program reliably prevents depression, anxiety, and conduct problems in young people (Brunwasser & Gillham, 2008; Cutuli, Chaplin, Gillham, Reivich, & Seligman, 2006; Gillham, Hamilton, Freres, Patton, & Gallop, 2006; Gillham, Reivich, Jaycox, & Seligman, 1995). Another example is in the study of techniques for helping adolescents with behavior management. One insight from a positive, asset-building, strength-focused program provider was that “adolescents are more responsive to programs that meet their needs and address their goals than they are to programs that attempt to simply eliminate problem behaviors” (Moore & Keyes, 2003, p. 3).

*Treatment compliance.* Increasing the positive versus decreasing the negative is helpful in increasing patient treatment compliance. One reason positive psychology exercises may show better results is that they are in and of themselves reinforcing because they bring about positive feelings almost immediately. Therefore clients want to do them so they can feel better instantly. In contrast, dealing with a problem through problem-focused therapy (e.g., psychodynamic therapy or cognitive behavior therapy) or

medication is not immediately rewarding. It can bring about negative feelings or negative side effects; therefore compliance rates for these treatments are lower.

*Studies showing effectiveness.* Research supports using techniques from the field of positive psychology as a treatment for depression. Bolier et al. (2013) conducted a meta-analysis of 39 studies of positive psychology interventions. They found that these interventions show an effect size of .34 for subjective well-being, .20 for psychological well-being, and .23 for depression—in the small to moderate range. They found significant yet small effect sizes for a follow-up time of 3–6 months: Subjective well-being was .22, psychological well-being was .16, and depression was not significant at follow-up. They also found that positive psychological interventions were more effective if they lasted longer and if the delivery was on an individual basis rather than in a group.

Sin and Lyubomirsky (2009) conducted a meta-analysis of 51 positive psychology interventions and found that they significantly enhanced well-being (mean  $r = .29$ ). They also found that these interventions improved depressive symptoms (mean  $r = .31$ ).

Seligman, Steen, Park, and Peterson (2005) used the Internet to randomly assign 411 volunteers who were mildly depressed on average to complete 1 week of positive psychology activities or a placebo control activity. The positive psychology activities were to write and deliver a gratitude letter, write about three good things in life, write about a time when they were at their best, and identify their strengths and use these strengths in a new way. The placebo control activity was for participants to write about their early memories. All participants reported a heightened sense of happiness and decline of depressive symptoms just after the intervention, regardless of to which group they were assigned. However, people in the placebo group returned to their baseline state



just 1 week after the intervention and stayed there. Those assigned to the positive psychology activities retained higher levels of happiness for a longer period of time. The activities of writing about three good things and using strengths in a new way produced heightened happiness and lower depression rates for 6 months.

Seligman et al. (2006) used the Internet to deliver positive psychotherapy exercises to moderately depressed young adults. They found that the exercises lowered their depression rates into the nondepressed range, compared to randomly assigned depressed controls. They also found that depressive symptoms were relieved for at least 6 months for participants in the positive psychotherapy group, in comparison to placebo interventions that yielded remission rates for less than a week.

In a second study, Seligman et al. (2006) also tested the effects of positive psychotherapy on people who were severely depressed. Participants were randomly assigned to individual positive psychotherapy or treatment as usual groups. If they were on medication for their depression, they were not asked to go off of it, and no one who was not already taking medication was asked to take it for the study. They found 55% of patients in positive psychotherapy, 20% of patients in treatment as usual, and 8% of patients in treatment as usual plus drugs achieved remission. They measured depression rates using two measures: the Zung Self Rating Anxiety Scale (ZSRS) and the Hamilton Rating Scale for Depression (HRSD). They found significant differences between the positive psychotherapy group and the treatment as usual group on the ZSRS posttest scores ( $d = 1.12$ ) and between the positive psychotherapy group and the treatment as usual plus medication group ( $d = 1.22$ ). There was a significant difference between the positive psychotherapy group and the treatment as usual group on the HRSD ( $d = 1.14$ )

but no significant difference was found between the positive psychotherapy group and the treatment as usual plus medication group on this measure. Global improvement was measured by the Outcome Questionnaire (OQ) and the Global Assessment of Functioning (GAF). There was no significant difference found between the positive psychotherapy group and the treatment as usual group on the OQ. There was a significant difference found between the positive psychotherapy group and the treatment as usual plus meds group ( $d = 1.13$ ). A significant difference was found between the positive psychotherapy group and the treatment as usual group on the GAF ( $d = 1.16$ ). There was no significant difference found between the positive psychotherapy group and the treatment as usual plus meds group on the GAF. Happiness and well-being were measured using the Positive Psychotherapy Inventory (PPTI) and the Satisfaction With Life Scale (SWLS). Significant differences were found between the positive psychotherapy group and the treatment as usual group on the PPTI ( $d = 1.26$ ). Significant differences were also found between the positive psychotherapy group and the treatment as usual plus meds group on this measure ( $d = 1.03$ ). No significant differences were found between the three groups on the SWLS.

*Potential limitations.* The quality of studies in the meta-analysis of positive psychology interventions by Bolier et al. (2013) was low, as none of the studies met all of the quality criteria. As with some of the studies referenced in the counseling section, many of the studies in this meta-analysis included data only if the client completed therapy rather than if the client started and then dropped out of the study. This could have led to a bias in the results in the meta-analysis. There also was a limited number of studies about each specific intervention; therefore the meta-analysis put similar types of

interventions together. More studies on specific interventions are needed. One of the meta-analyses had strong correlations between wellness level and positive psychology interventions, however, causation cannot be assumed (Sin & Lyubomirsky, 2009). Also, many of the positive psychotherapy studies were conducted with small sample sizes, which could limit the generalizability of these techniques (Seligman et al., 2006). Finally, therapists using positive psychotherapy must be careful to look at specific client needs before using these techniques with clients. Sin et al. (2011) suggested that many of the findings of positive psychotherapy are based on interventions with already happy people and cannot necessarily be generalized to individuals who suffer from depression.

In sum, positive psychology seeks to understand what goes right in life. It does not deny that bad things happen; it merely suggests that the good things in life are as legitimate as things that are bad. Some studies have shown that helping clients to understand and use strengths rather than focusing on what is wrong might be an effective way to overcome depression. Other studies have suggested that positive psychology may not be enough to lessen depression and move clients toward flourishing. Some have suggested that more research in this area is needed. Positive experiences, positive traits, and institutions, such as schools, that facilitate positive psychology may help with prevention of hardship. They might also be useful as treatments or solutions for people suffering from chronic adversity.

It is important to note that other theories, such as salutogenesis and health psychology, also look at health on a continuum. Though these theories are related to positive psychology, they are not the same. This study is based on positive psychology because the theory explicitly states that anyone can benefit from the techniques

developed in this field, regardless of whether he or she has a diagnosis. Positive psychology is also much more explicit about its techniques to help people regardless of their mental health state. Finally, positive psychology was the best fit for this study because it focuses on what is right with people, not what is wrong with people. It promotes the enhancement of the well-being and flourishing of everyone, not just treatment of those who have a disease.

The practice of yoga offers a concrete activity that aligns well with positive psychology. Traditionally, yoga teaches people to live in the moment, to relax, and to think about what is right in their lives. It also offers a physical component that is good for both mind and body. It has been considered as a treatment for depression and other mental illnesses and as a tool to use to enhance the lives of healthy people.

## **Yoga**

The practice of yoga has been investigated as an alternative intervention for both physical and emotional problems. Though studies are not yet conclusive on the matter, researchers are optimistic about the effectiveness of yoga for healing ailments in both body and mind.

**Physical benefits.** Research has shown various physical benefits. In general, people who practice yoga show better overall physical health and have fewer physical complaints (Becker, 2000; Stueck & Gloeckner, 2005). As a form of physical exercise, yoga helps to increase muscular strength, flexibility, range of motion, energy, and quality of sleep (Mehta & Sharma, 2010; Pilkington, Kirkwood, Rampes, & Richardson, 2005; Ubelacker et al., 2010). It also improves cardiovascular health, hormone levels, immune response, metabolic efficiency, and respiratory functions (Becker, 2000; Mehta &

Sharma, 2010; Varambally & Gangadhar, 2012). Yoga harmonizes systems of the body and releases tension from the muscles (Mishra & Sinha, 2001; Woodyard, 2011). This release of tension produces an increase of both mental and physical energy in the individual (Woodyard, 2011). Using Anusara yoga—a type of yoga that is very focused on alignment of poses—Groessl, Weingart, Aschbacher, Pada, and Baxi (2008) found significant decreases in physical pain and fatigue.

Yoga has proven to be an effective treatment for varied physical ailments. In addition, it can serve as a preventative measure for cardiovascular and respiratory disease and other physical disorders.

**Psychological benefits.** In addition, research has suggested that this ancient tradition could be helpful in the treatment of depression and other mental illnesses. Yoga can be considered an alternate therapy and/or a complementary therapy in the treatment of stress, anxiety, depression, and other mood disorders (Woodyard, 2011). Physical activity is associated with improvements in anxiety and depression (Berger & Motl, 2000); as Csikszentmihalyi (1990) stated, “when we are unhappy, depressed, or bored we have an easy remedy at hand: to use the body for all it is worth” (p. 94). Thus the physical aspect of yoga could address the positive psychology measure of positive emotion in people who practice it.

Similar to exercise, yoga might be enjoyable, while the physical aspect may address the positive psychology measure of feelings of accomplishment. In addition, it breaks the cycle of inactivity that many people with mental illnesses experience. In contrast to some forms of exercise, competition is minimized, so participants feel more comfortable with their own abilities (Ubelacker et al., 2010). The noncompetitive aspect

may help students form more positive relationships with their peers while practicing yoga.

Csikszentmihalyi (1990) described “flow” as “joy, creativity, the process of total involvement with life” (p. xi). He later described strong similarities between yoga and flow, saying that “it makes sense to think of yoga as a very thoroughly planned flow activity” (p. 105). This part of yoga may address the positive psychology measure of engagement for the people who practice it.

Yoga is currently considered to be an alternative and complementary therapy for several psychological disorders. It addresses these issues by allowing participants some ownership and enjoyment of their treatment. They experience a sense of accomplishment in the absence of competition. It also addresses the problem of inactivity that many patients with these disorders experience.

**Yoga and depression.** A particular interest of this study is the impact of yoga on depression. It contains both mindfulness promotion and exercise, which are both thought to be “active ingredients” of other effective depression treatments (Gard et al., 2012; Ubelacker et al., 2010). Yoga has the potential to speak to the common feelings of helplessness that are associated with depression. A person who uses medicine to treat depression relies on that medication to feel better. In contrast, using yoga as treatment allows the client to be an active participant in his or her treatment. The person makes the decision; therefore, the person is not relying on anything else to treat depressive symptoms (Becker, 2000). On a physical level, yoga is a form of exercise, and exercise has been associated with decreased levels of depression. According to Jhansi Rani and Krishna Rao (2005), “there is now considerable evidence that regular exercise is a viable,

cost-effective, but underused treatment for mild to moderate depression that compares favorably to individual psychotherapy, group psychotherapy, and cognitive therapy” (p. 98). From a neurological standpoint, increased levels of gamma aminobutyric acid (GABA) in the brain have been associated with improvements in mood and anxiety. Yoga has been shown to increase GABA levels in adults, offering one possible explanation of how yoga can help treat depression (Streeter et al., 2010).

Yoga shows promise in addressing depression in many different ways. It allows the participant to feel that he or she is actively treating depression—it is something he or she is doing, not something someone else is doing to him or her. The participant puts in the work, therefore he or she can take responsibility for getting better. It also incorporates both mindfulness and exercise, both of which are already researched techniques for treating depression. In addition, it increases GABA levels, a hormone shown to be higher in nondepressed populations. Though the actual mechanism by which yoga improves depression is unknown, many studies have looked at this relationship. The effectiveness of yoga on depression has been tested in various populations.

**Special populations.** Research has shown the effectiveness of yoga in treating depression in several different specialized populations. For example, yogic breathing decreased depression up to 90% in tsunami survivors experiencing posttraumatic stress disorder (PTSD; Descilo et al., 2010). In addition, cancer patients who received two sessions of mindfulness therapy including yogic breathing, yoga movement (postures), and meditation showed significantly less depression and anxiety (Ando et al., 2009). Depression rates and quality of life were shown to improve in women with breast cancer and survivors of breast cancer (Culos-Reed, Carlson, Daroux, & Hatley-Aldous, 2006;

Danhauer et al., 2008). Yoga was also shown to decrease anxiety and depression in adults suffering from gastrointestinal problems (Mishra & Sinha, 2001). Depression rates were significantly lower in alcohol-dependent individuals after a week of detoxification and 2 weeks of a yoga intervention (Vedamurthachar et al., 2006).

In several different studies using several different types of yoga, people with various psychological and physical issues (e.g., PTSD, terminal illness, ongoing physical ailments) benefited psychologically from practicing yoga.

***Clinical adult populations.*** Most research on the effectiveness of yoga has been dedicated to clinical adult populations. Several studies have looked at adults who are diagnosed with major depressive disorder and severe depression. Significant improvements in depression rates in the yoga group as compared to the control group were found (Broota & Dhir, 1990; Butler et al., 2008; Khumar, Kaur, & Kaur, 1993; Sharma et al., 2006). In studies conducted with patients diagnosed with dysthymia and major depression, Sudarshan Kriya yogic breathing significantly improved depression rates on both the HRSD and the Beck Depression Inventory (Janakiramaiah et al., 1998; Naga Venkatesha Murthy, Janakiramaiah, Gangadhar, & Subbakrishna, 1998; Rohini, Pandey, Janakiramaiah, Gangahar, & Vedamurthachar, 2000). Another study tested the effects of yoga on mood in psychiatric inpatients. Yoga was found to significantly improve mood on all five of the negative emotion factors on the Profile of Mood States (Lavey et al., 2005). Other studies with clinically depressed populations showed significant differences in improved depression rates, however, they did not indicate significant differences between yoga and other treatments for depression, such as



electroconvulsive therapy, imipramine, psychoeducation, group therapy, and hypnosis (Butler et al., 2008; Janakiramaiah et al., 2000; Sharma et al., 2005).

In sum, different types of yoga produced improvements in depression rates for severely depressed adults. Some studies showed the same effectiveness as other, more common depression treatments.

***Nonclinical adult populations.*** The effects of yoga on adults without a clinical diagnosis have also been researched. Yoga has proven to be helpful for managing stress in this population (Gard et al., 2012; Rizzolo et al., 2009). In a study of adults aged 60 years and older, participants in the yoga group showed a significant decrease in depression and a significant increase in mental health perception (Chen et al., 2008; Krishnamurthy & Telles, 2007). In contrast, the benefits of yoga were compared with the benefits of walking in a different study of adults aged 50 years and older. Participants showed a preference for walking as compared to participating in yoga. Participants in the walking group also showed higher levels of quality of life and lower levels of depression as compared to the yoga participants (Kraemer & Marquez, 2009). In another study, body images of adult women already practicing yoga was assessed. Results showed that these women had higher scores on body awareness, body responsiveness, and body satisfaction after practicing yoga (Dittmann & Freedman, 2009). An additional study with both male and female adult participants showed a negative correlation between body image and depression. This study illustrated a significant reduction in depression in participants who completed a 2-week yoga training course. The study also showed better body image in the participants after the 2-week period; however, it was not significant (Jhansi Rani & Krishna Rao, 2005). Yoga has also shown to have beneficial effects on mood in

nonclinical adults (Berger & Owen, 1992; Streeter et al., 2010). Finally, Iyengar yoga was tested in this population and was found to significantly reduce depression and anxiety as compared to the control group. This type of yoga also showed significant changes in the mood of the participants before and after yoga class (Woolery, Myers, Sternlieb, & Zeltzer, 2004).

The results of research on nonclinical adults is somewhat mixed. Several different types of yoga were tested. Some showed yoga to be helpful for managing stress, depression, and mood. Results of other studies suggested that other forms of exercise, such as walking, were more effective for managing depression and quality of life for older adults. Still another study showed an inverse relationship between body image and depression (the better body image a person has, the lower his or her depression rate is). This study also showed that yoga improves the body image of women who practice it.

***Clinical child and adolescent populations.*** Less research has documented the potential benefits of yoga for children and adolescents. In addition, the studies that do exist have produced mixed results.

One study looked at using a massage and yoga program to help disadvantaged male adolescents with emotional and behavioral difficulties. The study was run at a school exclusively for young men with these issues. Results showed reduced hyperactivity in the participants. Though no significant effects were reported on emotional symptoms, conduct, and self- and social confidence, there were trends moving in the direction of improvement in those areas (Powell & Potter, 2010).

***Nonclinical child and adolescent populations.*** A few studies have looked at child and adolescent populations who do not have a diagnosis of any kind. Ashtanga yoga was

found to have inconclusive results on weight loss, anxiety, and depression of children ages 8–15 years. Though the data were not significant, a trend toward improvement was suggested in these areas (Benavides & Caballero, 2009). A yoga-inspired mindfulness program was tested with fifth grade students in Germany. Results were statistically significant to show lower aggression rates, lower helplessness in school, and lower anxiety. This study also showed that students were able to transfer breathing techniques and asanas outside of the program to improve well-being and concentration and to help in stressful situations (Stueck & Gloeckner, 2005).

Studies with nonclinical adolescents outside of the school day showed significantly lower aggression rates, lower helplessness in school, and reduced anxiety. Students who participated in yoga were able to transfer skills from yoga to other situations to relieve stress and improve overall well-being (Stueck & Gloeckner, 2005).. In another study, students showed nonsignificant improvements in anxiety and depression rates (Benavides & Caballero, 2009).

*Nonclinical populations during the school day.* Four studies have looked at the potential benefits of yoga as part of the school day for children and adolescents.

Two school-based studies looked directly at the effects of yoga on urban or inner-city youth (Berger, Silver, & Stein, 2009; Gould, Dariotis, Mendelson, & Greenberg, 2012). Berger et al. (2009) assessed global self-worth and perceptions of physical well-being in fourth and fifth grade students participating in an after school yoga program. No significant differences were found between the yoga group and control group on these two outcomes; however, students participating in the yoga program reported using fewer negative behaviors to deal with stress, and their sense of well-being was improved.

Gould et al. (2012) also tested fourth and fifth grade students using a yoga-inspired mindfulness program during school hours. Results showed that students who reported a low or medium baseline depression rate improved on impulsive action and involuntary engagement stress responses (rumination, intrusive thoughts, and emotional arousal) as a result of the yoga program. Students who reported a high baseline depression rate had no significant changes as a result of the program.

These two studies on urban youth showed that there were no significant differences on measures of global self-worth and perceptions of physical well-being between students who practiced yoga and those who did not. However, students who did participate in the practice of yoga used fewer negative coping mechanisms for stress, and they reported an overall improvement in their well-being. In addition, students who reported low or medium depression rates improved on impulsive action, rumination, intrusive thoughts, and emotional arousal. Students who reported a high baseline depression rate did not report these same improvements after the yoga program.

Two separate school-based studies looked at the benefits of yoga as part of the physical education (PE) classes at secondary schools. Khalsa, Hickey-Schultz, Cohen, Steiner, and Cope (2012) assigned students in Grades 11 and 12 to a yoga PE class, or the students could opt out for a “PE as usual” (control) group. In one study, students participated in 11 weeks of yoga two to three times a week over the course of one semester. Classes were 30–40 minutes in length. Classes consisted of simple yoga postures, breathing exercises, visualization, and games with an emphasis on fun and relaxation. Participants were asked to fill out the Self-Report of Personality to measure thoughts and feelings, the Profile of Mood States–Short Form to measure mood, the

Resilience Scale to measure resilience, the Perceived Stress Scale to measure their perception of their own stress, and the Inventory of Positive Psychological Attitudes to measure self-confidence during stress and life purpose and satisfaction. The yoga group showed significant improvements on measures of anger control and fatigue/inertia as compared to the control group. Nonsignificant improvements in emotional symptoms, school problems, anxiety, depression, and total mood were also noted in the yoga group, while the control group worsened in these areas.

The second school-based yoga study for eleventh and twelfth graders took a similar approach to the first. Noggle, Steiner, Minami, and Khalsa (2012) used the same type of yoga within the PE curriculum. Students in the yoga intervention attended yoga two to three times a week instead of a standard PE class. The yoga classes consisted of physical exercises and postures, breathing exercises, deep relaxation, and meditation techniques. Mood was measured and compared using the Profile of Mood States–Short Form. Both total mood disturbance and tension–anxiety were significantly lower in the yoga group compared with the PE as usual group. The results from the other subscales—Depression–Dejection, Anger–Hostility, Vigor–Activity, and Fatigue–Inertia—were not found to be statistically significant. Affect was measured using the Positive and Negative Affect Schedule–Child Form. Results showed a statistically significant lower negative affect in the yoga group compared to the PE as usual control group. Positive affect was not significantly different between the two groups. Stress was measured using the Perceived Stress Scale, however, no significant differences between the two groups were found. Finally, positive psychological attitudes were measured using the Inventory of

Positive Psychological Attitudes. No significant effects were found between groups on this measure.

Both of these studies showed that it is feasible to implement a yoga program for adolescents during the school day. They also showed varied results on the effectiveness of yoga. Significant differences were found in anger control, fatigue–inertia control, total mood disturbance, negative affect, and tension–anxiety between students who practiced yoga and those who did not. Nonsignificant improvements were found in emotional and school problems, anxiety, depression, and total mood in the yoga group; in contrast, the control group worsened in these areas. No significant differences in positive affect, stress, and positive psychological attitudes were found between students who participated in yoga classes and those who did not. However, both studies suggested improvements in student well-being even if the results were nonsignificant (Khalsa et al., 2012; Noggle et al., 2012).

**Yoga and positive psychology.** As more research is conducted to find that yoga can contribute to a better state of being, yoga aligns well with positive psychology. Both approaches seek to develop alternate strategies for healing and bettering the lives of individuals (Gable & Hault, 2005). If used as an adjunctive treatment with traditional treatment approaches to various mental illnesses, practitioners may view yoga as a way to promote good physical and mental health rather than as a treatment for a disease (Ubelacker et al., 2010).

Gard et al. (2012) studied 18- to 26-year-olds in a residential educational immersion program. They practiced yoga 3–5 hours daily (this included postures, breathing practices, and meditation). In addition, they participated in 3–5 hours daily of

course work discussing life skills and incorporating yoga into daily life activities. Participants were given questionnaires before and after the program. A control group was given the same questionnaires at the same time as the yoga group. They found that the yoga group had statistically significant increases in quality of life, mindfulness, self-compassion, and decreases in perceived stress. If practiced regularly, yoga also promotes friendliness, compassion, and greater self-control, while cultivating a sense of calmness and well-being (Woodyard, 2011). All of these aspects encourage better interpersonal relationships for practitioners and promote a more optimistic outlook on life. Changes in life perspective, self-awareness, and an improved sense of energy have also been noted as a result of the practice of yoga (Woodyard, 2011). On a more internal level, yoga can help increase self-acceptance and decrease perfectionism (Ubelacker et al., 2010). Also, female yoga practitioners attribute their positive feelings and overall sense of well-being to yoga practice (Woodyard, 2011).

In short, yoga is not a treatment for a disease; rather, it is a way to promote both mental and physical health. According to Becker (2000), “the practice of postures, breathing exercises, and concentrative meditation induce a sense of well-being that may support conventional psychiatric treatment” (p. 132).

As previously mentioned, positive psychology promotes treatments that are self-reinforcing or enjoyable for participants. Stueck and Gloeckner (2005) surveyed the children in their yoga training, and the students rated their sessions as “good” or “very good” in 98% of cases. They supplemented this information with interviews with the children’s parents and found that the majority of the parents and students appreciated yoga as a method for relaxation training. The enjoyment of this activity could help with

patient compliance issues prevalent in other treatments for mental illness. Ubelacker et al. (2010) has furthered this sentiment: “Similar to exercise, practicing yoga may be enjoyable or give one a sense of accomplishment” (p. 28).

In the same way as positive psychology, yoga has the potential to not only treat illness but also help healthy people flourish. Becker (2000) stated that “yoga’s greatest potential contribution lies in the area of improving a sense of well-being in a healthy person or in someone who has a specific illness” (p. 140). Several studies have been conducted to study the effects of yoga in healthy people. The consensus is that yoga has a positive effect on mood, life satisfaction, alertness, enthusiasm, high spirits, extraversion, and perception of mental and physical energy (Becker, 2000). Similarly, Bang (2001) found that the relaxation from yoga and meditation not only reduces depression but also enhances feelings of joy, love, and thankfulness compared with a control group.

Also parallel to positive psychology, yoga may serve as a method of protection against mental illness. Suldo and Huebner (2004) found that yoga increases life satisfaction, which in turn serves as a protective psychological buffer that can help individuals mitigate stressful life events without reacting negatively. Noggle et al. (2012) supported this thought: Results from their study “indicate a similar protective pattern of benefit in psychosocial well-being as seen in previous studies. Thus yoga may serve a preventative role adolescent mental health” (p. 200).

Given the promise of yoga to heal ailments, promote wellness, and prevent mental illness, it makes sense to investigate whether this practice could prevent and lower depression rates and/or promote flourishing in adolescents. Furthermore, the school



environment offers an appropriate and practical place where this service could be delivered to adolescent students.

### **Schools as Places to Promote Flourishing**

The first reason it makes sense to promote flourishing in schools is that the majority of adolescents in our country are attending school. This would be a way to reach many different children and adolescents because we know we can have contact with them in a positive way at school. Schools are responsible for developing students both academically and socially. Good schools have structured mechanisms in place to develop their students positively. The Association for Supervision and Curriculum Development (2013) said that “a whole child approach, which ensures that each student is healthy, safe, engaged, supported, and challenged, sets the standard for comprehensive, sustainable school improvement and provides for long-term student success” (p. 1). The second reason it makes sense is that flourishing enhances learning—the main goal of education. When students are in a positive state, they are able to think more creatively, think more holistically, and pay more attention (Fredrickson & Branigan, 2005; Isen, Daubman, & Nowicki, 1987; Isen, Rosenzweig, & Young, 1991). In contrast, negative mood generates narrowed attention (Bolte, Goschke, & Kuhl, 2003). For the well-being of the students, to promote their happiness, prevent depression, and allow them learn in the best environment possible, schools should promote flourishing to the greatest extent they are able.

### **Research Questions**

Given the evidence that traditional approaches to depression have a mixed impact on depression, the responsibility of schools to help all adolescent students flourish, and

the fact that it is not feasible for schools to manage student depression medication or to provide them with psychotherapy, it makes sense to consider an alternative way for schools to help with student positive psychological health. For the purposes of this study, positive psychological health is put forth as minimizing depressive symptoms and promoting flourishing to the greatest extent possible.

There is ample evidence to suggest that yoga is helpful for mental and physical health. It is also a practice that might fit well into the school environment. This led to the following research questions:

RQ 1: How do high school students experience yoga embedded in a PE class?

RQ 2: What does their experience reveal about adolescent positive psychological health?

RQ 3: What does their experience reveal about the impact of yoga on adolescent depressive symptoms?

RQ 4: What does their experience reveal about the impact of yoga on adolescent flourishing?

## **Hypotheses**

This study compared two different groups of students: a control group and a yoga group. The control group participated in a PE course that did not include the practice of yoga. The yoga group participated in a PE course that included yoga 1 day a week for 12 weeks. Differences between the two groups were explored with the prediction that students in the yoga group would have significantly lower rates of depressive symptoms than the control group and significantly higher rates of flourishing than the control group by the end of the intervention. This study also explored sustained differences between groups, where differences were examined 5 months after the intervention with the

prediction that the yoga group would have significantly lower depressive symptoms and significantly higher rates of flourishing than the control group at that time.

The quantitative hypotheses for the study are as follows:

H1: Students in the yoga group will demonstrate statistically significantly higher positive psychological health as measured by the CES-D Scale, PERMA Profiler, and Flourishing Scale for Teens mean scores immediately after the intervention (H1a) and 5 months after the intervention (H1b) after controlling for the mean scores on the scales at Time 1 compared to the students in regular PE.

H2: Students in the yoga group will show fewer depressive symptoms as indicated by statistically significantly lower mean scores on the CES-D Scale both immediately after the intervention (H2a) and at 5 months after the intervention (H2b) than students in regular PE after controlling for the mean CES-D scores at Time 1.

H3: Students in the yoga group will show more flourishing as indicated by statistically significantly higher scores on the Flourishing Scale for Teens both immediately after the intervention (H3a) and 5 months after the intervention (H3b) than students in regular PE after controlling for the mean Flourishing Scale for Teens scores at Time 1.

H4: Students in the yoga group will show more flourishing as indicated by statistically significantly higher scores on the Overall PERMA scale both immediately after the intervention (H4a) and 5 months after the intervention (H4b) than students in regular PE after controlling for the mean Overall PERMA scores at Time 1.

## **Chapter 2: Methods**

In this chapter the researcher presents the methods used to conduct this study. A mixed methods research design and rationale are discussed. Following that, the researcher describes the sample of students studied, the procedure for data collection, quantitative measures used, procedures used to analyze the quantitative data, the qualitative data collected and the procedures for analyzing them, the quality standards for the data, ethical considerations, and the perspective of the researcher.

### **Research Design**

This study used a mixed methods design. Mixed methods can be defined as “the collection or analysis of both quantitative and qualitative data in a single study in which the data are collected concurrently or sequentially, are given a priority, and involve the integration of the data at one or more stages in the process of research” (Creswell, Plano Clark, Gutmann, & Hanson, 2003, p. 212). The current study collected quantitative data in the form of questionnaires and qualitative data in the form of interviews and written answers to open-ended questions. Mixed methods research has four main characteristics: (a) focusing on research questions that call for real-life contextual understandings, multilevel perspectives, and cultural influences; (b) employing rigorous quantitative research to assess the magnitude and frequency of constructs and rigorous qualitative research to explore the meaning and understanding of constructs; (c) utilizing multiple methods; and (d) intentionally integrating or combining these methods to maximize the strengths of each (Klassen, Creswell, Plano Clark, Clegg Smith, & Meissner, 2012). More specifically, this study used concurrent mixed methods, where the two forms of data were collected simultaneously.

This type of research is used for several different purposes. Researchers might use it when a quantitative or qualitative approach alone is not enough to develop a complete understanding about research problems or questions (Klassen et al., 2012). Researchers can use this method to view problems from multiple perspectives to improve understanding gained from a single perspective. They might also want to contextualize information to see a bigger view of a system, while taking individual information into account. In addition, investigators use this type of research to combine qualitative and quantitative data to develop a more comprehensive understanding of a problem; to compare, validate, or triangulate results; to provide a context for trends; to investigate processes and experiences along with outcomes; or to have one type of data build on or supplement the other (Klassen et al., 2012).

This study employed a concurrent data collection design. Both quantitative and qualitative data were given equal priority in the information they provided. Data were collected at the same time and analyzed separately. The current study used questionnaires to collect quantitative data and interviews and written answers to open-ended questions to collect qualitative data. After the analysis, the data were compared and contrasted in the discussion section of this dissertation to converge findings. This was done so that results could be generalized from a sample to a population while also gaining a deeper understanding of the individual experiences of the students in the yoga and PE classes. In addition, two different forms of data allowed the researcher to use both sets of data to confirm, cross-validate, and corroborate study findings.

### **Sampling**

Sixty-five students from Grades 11 and 12 (ages 16–18 years) at a suburban high school in the Midwest participated in the study. Arrangements were made with the high school to use two already intact PE classes. These classes were chosen by the school principal, the Physical Education Department, and one of the PE teachers willing to have her classes participate. There were two different sections of a course named Lifetime and Recreational Sports. The curriculum of this course aligns well with the practice of yoga, so it could be easily incorporated. A coin was flipped to randomly assign one class to have the yoga intervention and one class to be the control group.

### **Sample**

Of the student sample, 40 were male, 25 were female, 30 were juniors, 35 were seniors, 40 were Caucasian, and 25 were non-White (African-American, Biracial, Asian, American Indian). Students had the option to change classes once the yoga intervention class was assigned. No one chose to do so. Only one student dropped out in the middle of the study because of a physical injury unrelated to yoga. This student was initially a part of the yoga intervention group.

**Intervention group.** The intervention group consisted of 27 students in Grades 11 and 12 who were already enrolled in a section of a course called Lifetime and Recreational Sports that was randomly assigned as the intervention class and who were willing to participate in the study. The yoga intervention group consisted of 17 male students and 10 female students, 14 of whom were Caucasian and 13 of whom were non-White; of these students, 9 were juniors and 18 were seniors.

**Comparison group.** The initial comparison group consisted of 12 students in Grades 11 and 12 who were enrolled in the “regular” Lifetime and Recreational Sports

class at the same high school. This group consisted of 10 male students and 2 female students, 9 of whom were Caucasian and 3 of whom were non-White; of these, 2 were juniors and 10 were seniors.

Because the comparison group was so small, the researcher and the PE instructor also chose a Walking Fitness class to take the measures as well. These students were already enrolled in the class and agreed to participate in the study. The Walking Fitness group consisted of 13 boys and 13 girls, 17 of whom were Caucasian and 9 of whom were non-White; of these, 19 were juniors and 7 were seniors.

These two groups were combined into one control group at the time of analysis. This was done after analysis of the similarity of race, gender, and grade of groups was run. It was also done because although they did not do exactly the same exercises during the semester, neither group was exposed to the practice of yoga. Hence, the final comparison group included 38 students total; 21 of the students were male and 17 of the students were female, of whom 26 were Caucasian and 12 were non-White.

## **Procedure**

The yoga intervention was delivered during PE classes at the high school. On days when the students in the intervention group were not practicing yoga, they participated in the Lifetime and Recreational Sports class activities. The control group participated in the Lifetime and Recreational Sports class and the Walking Fitness class as they were originally planned.

**Yoga intervention.** An initial meeting was held during class time to acquaint the students in the yoga group with the study procedures. The students were told that they would do yoga for one class period each week throughout the semester for a total of 12

weeks. They were also informed that they would be asked to complete three questionnaires that ask questions about their overall well-being and feelings and provide written responses to questions at the beginning of the intervention, at the end of the intervention, and 5 months after the intervention was complete. They were also told that five of them would be chosen at random to be interviewed about their experience three times throughout the intervention. Finally, they were informed about the procedure of the yoga class itself. More specifically, they were told that the actual yoga class would last 1 hour. It would start off as a basic class with common yoga poses for beginners. As the semester progressed and as they learned more, the class would be offered options to challenge students and still keep them safe. Students were informed of the risks involved with the practice of yoga, though they were minimal. They were encouraged to take a noncompetitive approach to the practice to keep themselves and those around them safe. In fact, this intervention was safer than many of the other activities, such as archery, in which they also participated during the course of this PE class. Students were allowed to ask any questions they had about the study and the materials that were to be used. They were also encouraged to ask questions as the study progressed.

The intervention ran for 12 weeks, once a week. It started in September and ended in early December. Yoga classes were held in the gymnasium at the high school. Each class lasted for 1 hour. The first class was a basic yoga class; time was spent getting students acquainted with the structure of the class. Each class consisted of a 5- to 7-minute meditation/centering aimed at helping students experience the positive psychology measure of meaning in their lives. Specific topics (listed later) were purposefully chosen and intentionally connected to the lives of high school students at the



time. Meditation was followed by 45 minutes of standard yoga poses used in beginning and intermediate classes. The physical aspect of yoga was meant to address the positive psychology measurement of positive emotion. As cited earlier, one of the psychological benefits of physical activity is that it can induce positive feelings to combat unhappiness or boredom (Csikszentmihalyi, 1990). This aspect was also intended to elicit the positive psychology measurement of engagement, to get students so engrossed in the flow of the poses that they lost track of time. Finally, the physical aspect was meant to increase feelings of the positive psychology measurement of accomplishment. Even though yoga poses can be difficult, everyone can do them to some degree. The instructor called special attention to every student doing each pose the best he or she could and stressed that they not try to do more. Because it was stressed that the physical aspect not be competitive (in contrast to other physical activities in this PE class), this part of the yoga was intended to increase the positive psychology measurement of positive relationships among the students. The class concluded with 5–7 minutes of savasana (final resting pose) and a 1- to 2-minute reflection at the end. Meditation topics included believing in oneself, the idea of community and working together, freedom and the power of our choices, igniting passion in life, remaining open to good things in life, and staying in the present moment. Yoga poses were done sitting, standing, kneeling, and/or lying down on a yoga mat. There was not a set pose sequence, in an attempt to keep the class interesting for the students. In addition, each class was completed while music played in the background. Three types of music were used: upbeat pop, traditional Indian music, and relaxation music. These types of music were intentionally chosen to elicit the positive psychology

measure of positive emotion. All 12 of the yoga sessions went as planned, with the exception of one class period that was shortened by half an hour because of a fire drill.

**Control group activities.** This group learned about several noncontact sports, such as golf, bowling, badminton, archery, pickle ball, and orienteering. The walking group walked several miles on different routes, sometimes inside and sometimes outside.

### **Data Collection**

Data were collected from both groups three times throughout the school year: Once in September before the yoga intervention began, once in December after the intervention was finished at 12 weeks, and once 5 months after the completion of the intervention in May. Both quantitative and qualitative methods were used with both groups. The first two sets of data were collected using paper and pencil during PE class with enough time left for a shortened yoga or PE class after the students were finished. In May students were asked to leave study hall or another class that was not PE to complete the surveys on the computer. Students completed them in one sitting and were sent back to class when they were finished.

**Quantitative measures.** This study sought to compare changes in overall psychological wellness in both groups of students. Three quantitative measures were used to assess this aspect of adolescent well-being. Two of the scales measured flourishing and one of the scales measured depressive symptoms.

***Flourishing.*** The PERMA Profiler (PERMA-P) is a brief measure of flourishing (Butler & Kern, 2013). The scale measures well-being by asking questions about positive emotions, engagement, relationships, meaning, and accomplishment, or PERMA (Butler & Kern, 2013). The scale consists of 20 questions. Sixteen of these questions ask the

respondents about the frequency of positive emotions/moods. For example, one question asks, “In general, to what extent do you feel excited and interested in things? (Not at all– Completely).” Four questions ask students about the frequency of negative emotions. For example, one of the questions asks, “In general, how often do you feel anxious? (Never– Always).” Each question is answered on an 11-point scale ranging from 0 (*never or not at all*) to 10 (*always or completely*).

Scale items were reliable both within each domain and across time and converged with other already existing measures of well-being (Butler & Kern, 2013). Factor loadings for the variable positive emotion ranged from .52 to .90, with each question being asked to five different samples. Factor loadings for the variable engagement ranged from .41 to .88 when each question was asked to five different samples. Factor loadings for the variable relationships ranged from .68 to .90 with each question being asked to five different samples. Factor loadings for the variable meaning ranged from .77 to .93 when each question was asked to five different samples. Factor loadings for the variable accomplishment ranged from .56 to .89 when each question was asked to five different samples (Butler & Kern, 2013). According to Butler and Kern’s (2013) criteria, “the measure demonstrates acceptable reliability and cross-time stability” (p. 2). Cronbach’s alpha was .83 for the P score, .77 for the E score, .83 for the R score, .91 for the M score, and .82 for the A score (Butler & Kern, 2013). The scale showed sufficiently high correlations with other well-being measures. Correlations between P scores, E scores, R scores, M scores, A scores, and CES-D Scale scores, Satisfaction With Life Scores, Flourishing Scores, Short Warwick–Edinburgh Mental Well-Being Scale scores, and Personal Action Constructs Scale scores ranged from .46 to .79 (Butler & Kern, 2013).

The Flourishing Scale for Teens (adapted from the Flourishing Scale; Diener et al., 2009) was also used. It measures the respondent's view of his or her own relationships, self-esteem, purpose, and optimism (Diener et al., 2010). The score on the measure indicates the overall psychological well-being of the respondent. This scale consists of eight statements. Teens are asked to indicate their agreement with the items using a 5-point Likert scale ranging from 5 (*strongly agree*) to 1 (*strongly disagree*). An example of an item is as follows: "When involved in something important to me, I'm motivated and do well." Higher scores on the scale indicate greater well-being.

The Flourishing Scale has shown good psychometric properties and is strongly associated with other psychological well-being scales (Diener et al., 2010). Specifically, internal consistency ranged from .81 to .89 and factor loadings ranged from .61 to .77. Correlations between the Flourishing Scale and the Basic Need Satisfaction survey were measured on competency (.67), relatedness (.64), and autonomy (.54). Correlations between the Flourishing Scale and Ryff scales were measured on autonomy (.43), mastery (.73), growth(.67), relationships (.65), purpose (.63), and self-acceptance (.70).

***Depressive symptoms.*** The Center for Epidemiologic Studies Depression Scale (CES-D Scale) is a self-report scale designed to measure depressive symptomatology in the general population (Radloff, 1977). It measures current levels of depressive symptoms and emphasizes the affective component depressed mood (Radloff, 1977). It is a 20-item self-report scale that asks participants about the frequency (rarely or none of the time to most or all of the time) of certain feelings and behaviors over the course of the last week. An item example is as follows: "I felt hopeful about the future." Scores range

from 0 to 60. Higher scores indicate more frequent depressive symptomatology (see Appendix A).

The scale has shown very high internal consistency with a coefficient alpha of .85 in the general population and .90 in the clinical sample. It has also shown acceptable test-retest correlations with a coefficient of .67 with 4 weeks between tests. This may be lower because the scale is designed to measure when individuals react to various life situations. Time between tests allows for more variability in life events and more variability in how individuals react to those events (Radloff, 1977). In addition, validity was established using other self-report measures. Other scales used included Lubin (.51), Bradburn Negative Affect (.60), Bradburn Balance (.61), Langner (.54), Cantril Ladder (.43), and interviewer rating on depression (.49). Clinical ratings of depression were also used to establish validity. Correlations of the CES-D Scale with the Hamilton Clinician's Rating Scale and the Raskin Rating Scale were moderate (.44-.54). After 4 weeks of treatment, the correlations were much higher (.69-.75), and these relationships with other variables support its construct validity (Radloff, 1977). Also, the scale has been shown to indicate improvement in symptoms during and after treatment: Mean score at the time of hospital admission was 39.11, after 1 week of treatment it was 29.29, and after 4 weeks of treatment it was 20.91 (Weissman et al., 1975). Various demographic characteristics in the original samples were also tested. The tests were repeated with three age groups: younger than 25 years, 25-64 years, and older than 64 years, with men and women, with two races, Black and White, and with three levels of education: less than high school, high school, and greater than high school. In all subgroups, coefficient alpha was .80 or higher. Test-retest correlations were moderate at .40 or above in all but Blacks and age

under 25 years (Radloff, 1977). Finally, the scale was also shown to be highly suitable for high school-aged populations: Internal consistency measures were similar to those of the Community Mental Health Assessment. The coefficient alpha for the high school-age group was .86 (Radloff, 1991).

**Qualitative measures.** Qualitative data were collected in the form of written responses to questions from both groups and interviews from a sample of the intervention group. Qualitative data were collected to get a more in-depth and specific perspective of students in the control and intervention groups. Specifically, the researcher wanted more information on student feelings about yoga class, how students might transfer what was learned in yoga outside of yoga class, how students think about wellness, and how students cope with adversity.

**Written responses.** Qualitative data were collected in the form of written responses to open-ended questions from both groups. Students were asked to journal before class in the first week of the intervention, before class at the conclusion of the intervention at 12 weeks, and again 5 months after the conclusion of the intervention. During Week 1, both groups were asked only three questions: (a) What are the three things that have the greatest impact on your wellness? (b) How do you cope when you are not feeling well emotionally? What works best? and (c) Please describe how you feel before PE class, during PE class and after PE class. If you feel different, please describe the difference? During Week 12 and after the intervention concluded, the control group was asked the same three questions. The yoga group was asked six questions: the same three that the control group was asked in addition to three more that the five students who were interviewed were asked during interviews: (a) What are the three things that have

the greatest impact on your wellness? (b) How do you cope when you are not feeling well emotionally? What works best? (c) Please describe how you felt before yoga class, during yoga class, and after yoga class. If you feel different please describe the difference; (d) Are there ways that yoga helps you even when you're not in class? (e) What do you tell your friends and family about yoga class? and (f) What is the most memorable thing you learned in yoga class?

*Interviews.* Additionally, five students from the intervention were chosen at random (names were drawn out of a hat) to participate in three 5- to 10-minute interviews. Though Marshall (1996) warned against choosing interview subjects randomly because people are not equally good at observing, understanding, and interpreting their own and others' behavior, the researcher felt it was necessary to choose students randomly because many of them knew her and she knew them (because she had previously worked as a counselor in the building). She did not want students to experience a heightened sense of social desirability: Students who knew her might be more likely to feel that they had to answer questions as they believed she wanted them to answer. However, the researcher still wanted students who knew her to have a chance to be interviewed. Even though interviewees were chosen at random, a diverse sample was achieved. The researcher interviewed one African American girl, one biracial girl, one African American boy, one Caucasian girl, and one Caucasian boy. Students could opt out of this part if they did not want to be interviewed (though all five students who were initially chosen agreed to be interviewed). Five students were chosen because this allowed the researcher to understand the experience of approximately one-fifth of the intervention sample. In addition to the interviews, all students in the intervention group

provided shorter written answers to several of the interview questions. Marshall (1996) said that “an appropriate sample size for a qualitative study is one that adequately answers the research question” (p. 523).

Interviews were administered by the researcher and recorded on a visible recorder placed between the interviewer and the student. The interviews were conducted during the school day, during either study hall or another class that was not PE. Each student did three interviews, one after the 4th yoga class, one after the 8th yoga class, and one after the 12th week of class. The students were asked five questions during each interview (see Appendix B). The interview format selected was structured on the “semistructured” model. Merriam (2009) denoted several characteristics of this type of interview. First, the interview guide includes a mix loosely structured interview questions. Second, all questions are used flexibly. Third, there are usually specific data required from all respondents. Fourth, the largest part of the interview is guided by a list of questions or issues to be explored. Last, there is not a predetermined wording or order.

Transcription was achieved by employing the “verbatim” principle (McLellan, MacQueen, & Neidig, 2003), producing “transcripts that read less like conversation and more like written text” (p. 66). To ensure accuracy, the audio recordings were sent to a professional company to be transcribed verbatim.

### **Data Analysis**

All quantitative data were analyzed using SPSS version 21 software. It was used to enter data, perform statistical analysis, and make graphs. The researcher analyzed all qualitative data.



**Quantitative data.** First, a chi-square test was run to establish that race, gender, and grade level were equally distributed across groups. Then, information gained from the Flourishing Scale for Teens, the PERMA Profiler, and the CES-D Scale was analyzed by running analyses of covariance (ANCOVAs) using mean scores at the start of the study, at the conclusion of the study (12 weeks), and again 5 months after the conclusion of the study. The independent variable was the student group (yoga group or regular PE group), the dependent variable was the mean score of the scale at Time 2 or Time 3, and the covariate was the mean score of the pretest (scale score at Time 1). The intervention and control group scores were compared for statistically significant differences between groups at each point in time.

In addition, a multivariate analysis of variance (MANCOVA) was run with the following dependent variables: depressive symptoms score, Overall PERMA score, and Flourishing Scale for Teens score at Time 2 and Time 3. The independent variable was the student group (yoga group or regular PE group) and the covariate was the mean score on the scales at the start of the study (Time 1/pretest).

***Quantitative quality standards.*** The researcher attempted to achieve validity and reliability with the quantitative data to the greatest extent possible.

***Internal validity.*** According to McMillan and Schumacher (2006), “the threat of selection exists when groups cannot be assigned randomly” (p. 136). In the case of this research, the groups were assigned randomly by flipping a coin. To ensure the similarity of groups, a chi-square test was run to assess the groups for similarity of race, gender, and grade. None of these variables were significant; therefore the groups were statistically similar enough to be compared. In addition to this, the researcher assigned

groups and then allowed students to drop out if they desired. No one chose to volunteer for either group, nor did anyone drop out of either group. Thus the researcher was confident that each group had similar motivations for completing the classes and/or the inventories. This study used a pretest–posttest design. It is possible that the tests in and of themselves did have an effect on the participants. Attitude questionnaires have the capability of causing participants to think about their attitudes and potentially change them just from reading the questionnaire (McMillan & Schumacher, 2006). This threat was mitigated by the fact that two groups took both the pretests and posttests and were compared to each other. Experimenter effects refer to the deliberate and unintentional effects the researcher has on the participants of the study (McMillan & Schumacher, 2006). The researcher conducted the majority of this study herself. In addition to that, she previously knew many of the participants because she was a counselor in their school until a few months before the study began. The researcher also spent more time with the yoga group because she delivered the intervention. This, combined with the fact that the students were aware they were part of a research study, may have caused that group to answer interview questions and assessments in a way that they thought the researcher wanted them to answer. According to McMillan and Schumacher (2006), “there may be positive self-presentation, social desirability, or a belief that certain responses are expected, which may effect the results” (p. 140). In addition, participants may react positively to something because it is new and different. Because yoga was something new and different from their other PE classes, this is a concern for the results of this study.

*External validity.* For the results to be applied to various populations accurately and accordingly, the researcher attempted to be clear about the particulars of this study.

She outlined where the study took place and what students were involved with in regard to their race, gender, and grade level.

*Reliability.* The researcher attempted to achieve adequate reliability by choosing instruments that achieved adequate reliability in and of themselves. Information about the reliability of the instruments was outlined previously in this section.

**Qualitative data.** Qualitative data were analyzed according to Mayring's (2000) concept of qualitative content analysis. This method is based on quantitative content analysis, which Kerlinger (as cited in Prasad, 2008) defined as "a method of studying and analyzing communication in a systematic, objective, and quantitative manner for the purpose of measuring variables" (p. 174). This method uses data such as word frequencies, space measurements, time counts, and keyword frequencies to convert observations of categories into statistical data (Binsbergen, 2013). In addition, it is generally useful for literal content, not implied meaning (Binsbergen, 2013).

The main idea of Mayring's (2000) approach is "to preserve the advantages of quantitative content analysis as developed within communication science and to transfer and further develop them to qualitative-interpretative steps of analysis" (para. 2).

Mayring defined qualitative content analysis as "an approach of empirical, methodological controlled analysis of texts within their context of communication, following content analytical rules and step by step models, without rash quantification" (para. 5). Berelson (1952) defined it in the following way: "Content analysis is a research technique for the objective, systematic, and quantitative description of the manifest content of communication" (p. 18). Content analysis requires that the researcher focus only on aspects of the data that relate to the research questions (Schreier, 2014). Strengths

of this approach include the following: (a) it is controlled methodologically, (b) the material is analyzed step by step, and (c) it is flexible (Kohlbacher, 2006; Schreier, 2014). A central characteristic is that it employs a category system. This system requires that all aspects that are derived from the material be defined and allocated to one or more categories (Kohlbacher, 2006).

Data were analyzed using Mayring's analytical procedure called *structuring* (Kohlbacher, 2006). The goal of this process is to filter out a structure from the content of the material. This means that each category has a direct match in the text because it was formulated directly from the text. The author of the current research study was transparent about which aspects of the text were taken into account based on theoretical background and the research question. First, categories were determined and definitions of the category and the level of abstraction were defined. Essentially, the researcher of the current study used the constant comparative method of data analysis, a method commonly associated with grounded theory (Merriam, 2009). This involves comparing one segment of the data with others to establish similarities and differences. Then, the data segments are grouped together to become a category. Patterns in the data are identified and then arranged in relationship to each other (Merriam, 2009). Categories were revised throughout this process. The author of the current study checked for reliability by connecting the category to the research question and revisiting the definition of criterion of selection. Inductive categories were to be created from the text until the material was worked through. The researcher also took quantitative steps of analysis (e.g., frequencies) into account. In contrast to grounded theory and other qualitative strategies, qualitative content analysis allows for deductive ways of category labeling.

This allowed the researcher to bring theory to the text. In the code book (Appendix C) the explicit definitions, examples, and coding rules for each category are given. The researcher attempted to be explicit about the ways in which the theory applies to the text and the text applies to the theory.

After categories were developed, dimensions of each category were determined. Following that, definitions of the dimensions were made explicit, examples were given, and rules for coding were made known (if necessary). All of the codes were recorded onto code sheets, which were then compiled into a codebook (see Appendix C).

*Qualitative quality standards.* There is much debate on the topic of reliability and validity in qualitative research. Though Miles, Huberman, and Saldaña (2014) noted that some researchers say that it is not possible to establish a set of standards or specify criteria for quality qualitative work, they argued that researchers should try to achieve the greatest amount of reliability and validity possible in their work:

Qualitative studies take place in a real social world and can have real consequences in people's lives; there is a reasonable view of what happened in any particular situation (including what was believed, interpreted, etc.); and that we who render accounts of it can do so well or poorly and should not consider our work unjudgable. (p. 311)

In an attempt to be held accountable and display as much transparency as possible, the researcher attempted to achieve validity and reliability to the greatest extent possible.

*Objectivity/confirmability/external reliability.* Objectivity is the degree to which the study is free from bias on the part of the researcher and/or that the researcher makes any bias explicit to the reader (Miles et al., 2014). The researcher attempted to remain neutral throughout the study. Where she could not remain neutral, she expressed biases that existed in the study. In addition, the methods of study and data collection were

described in detail, as Miles et al. (2014) suggested, to achieve objectivity. The researcher also links conclusions to direct quotations from students in interviews and written responses so they are explicit to the reader.

*Reliability/dependability/auditability.* Reliability is the degree to which the study and the findings are consistent over time and between researchers (Merriam, 2009; Miles et al., 2014). Because this study involved only one investigator, it was impossible to assign another person to code the interviews and responses to open-ended questions. In addition, the researcher was also the yoga instructor, so she could not observe the classes, and there were no other investigators to do this. However, special care was taken to define in detail the methods, the procedures, the features of the units of evaluation, and the properties of individual categories, so there is a clear audit trail. In addition, clear distinctions are made between categories so that accurate interpretation is straightforward and the reader could audit or replicate the study if desired. The researcher clearly stated the research questions and designed the study around them, as Miles et al. (2014) suggested. The researcher also explained her role at the school site prior to the intervention and while the intervention took place.

*Authenticity/credibility/internal validity.* Authenticity/credibility is the degree to which research findings actually match reality (Merriam, 2009). Credibility was established by investigating similar models and theories to compare methods and findings. Semantic validity was established by paying special attention to the reconstruction of the material, the definitions of the categories, the appropriateness of the key examples, and the rules for coding (Kohlbacher, 2006). The researcher of the current study was explicit about these aspects of the study so that the reader has a clear

understanding of what they are and the process used by the researcher to get there. Where possible, findings were triangulated with other forms of complementary data to confirm or question findings, as Merriam (2009) suggested. The researcher collected data through interviews, written responses, and quantitative surveys for this purpose. The data were also triangulated via several follow-up interviews with the same participants and by collecting written data at three different points in time. The researcher was not able to triangulate the data using another researcher because she was the only person working on this study. Though Miles et al. (2014) suggested confirming findings with the original participants, this was not possible in this case. Many of the students have graduated from high school, moved away, or were unable to be reached by the researcher after the results were finalized. This was, however, somewhat addressed during the interviews where the researcher summarized what a student said and asked them to confirm the accuracy of the researcher's interpretation of what was said. Merriam (2009) also suggested "adequate engagement in data collection" as another strategy for achieving authenticity. Though the researcher did feel that themes came out of the written responses, her questions did not elicit more than one- to two-sentence responses. She is not confident that she got all of the information possible in this form, from all of the students. It was not possible to continue to ask for more written responses because of the time constraints of the students and the school site.

*External validity/transferability/fittingness.* External validity discusses whether the study conclusions can apply to other situations (Merriam, 2009; Miles et al., 2014). The characteristics of the original sample of students in this study were described in detail so that the readers fully understand the race, gender, and grade level of the students

involved. In addition, the setting, type of high school, type of class, and process used were also made clear. Sampling was explained in detail so that the readers understand the process for choosing the students and the limitations on sampling that existed because of the structure of the study and the PE classes used. Miles et al. (2014) suggested using “thick description” (p. 227) in the findings. The researcher for this study described her qualitative findings in great detail, often using direct quotations from the students interviewed. Merriam (2009) suggested using “maximum variation” (p. 227) in the sample to achieve the greatest external validity. Though the samples were somewhat diverse, the researcher in this study was limited to the students who had already signed up for a PE class because of the structure of the school and the need to keep student voices in their own school schedule. Finally, the researcher attempted to connect the findings to prior theory that exists on this topic. Though Miles et al. (2014) suggested replicating the findings in other studies, the researcher did not do that at the point in time when this study was written. However, she does hope to do so in the near future.

### **Ethical Considerations**

All participants were treated in accordance with the ethical guidelines of the University of Missouri–Saint Louis Institutional Review Board. Approval was obtained from the board before any work was done with participants for this study.

**Informed consent.** Both students and parents from the yoga and the comparison groups were required to fill out a consent form that authorized the students to participate in the study (see Appendix D). Students were not allowed to participate until both they and their parents gave consent.



**Confidentiality.** Student confidentiality was maintained throughout the study. Individual information was not reported, nor was any identifying information for the group. Students were asked not to write their names on anything they completed. Instead, they were assigned a number and were asked to use this number when filling out surveys and journals to ensure their identity was kept completely confidential. The researcher kept a list of students and their random numbers on a password-protected computer that belonged to the researcher through her place of employment. All surveys and journals were given out in class by the researcher and collected by the researcher immediately after the students completed them. The surveys and journal response sheets had each student's number on them so there was no need for them to remember the number nor was there a reason to call the numbers of the students out loud. Once collected, these data were kept in a locked file in a locked office off campus. The interview recordings were kept on a password-protected computer so all information gained would be kept confidential. When recorded, the interviews were also coded only with the students' numbers, not their names. The researcher used the students' numbers as identifiers on the manuscript of the interviews, not the students' names. Once the interviews were transcribed, they were also kept in a locked office in a locked file cabinet off campus.

**Researcher perspective.** The researcher, who is also a certified yoga instructor, taught the yoga classes. She completed a 200-hour registered yoga alliance teacher training through MB Yoga and Southtown Yoga in 2012. She started teaching both basic-level yoga classes and intermediate/advanced-level classes at a community studio after the completion of her training and continues to do so presently. In addition to this, the researcher is an avid practitioner of yoga.

In the unlikely event that students experienced emotional stress from the yoga class, questionnaires, journaling activities, or interviews, the researcher was a licensed mental health professional who was a counselor in the building until recently. She was fully trained to support students who were struggling emotionally, even better than the PE instructor. None of the students expressed any emotional stress as a result of the yoga class nor from the questions they were asked to answer.

The biases on the part of the researcher are the following: First, the researcher practices yoga and believes that it enhances her life. Specifically, she thinks it both lowered her own rate of depressive symptoms and increases her ability to flourish in life. Second, she enjoys the practice of yoga and is passionate about sharing that enjoyment with other people. Finally, she is very passionate about helping young men and women to live fulfilled lives. She was hopeful that this intervention would make a difference in the lives of the students she taught.

## Chapter 3: Results

The mixed methods results are presented in this chapter. The results are separated into quantitative and qualitative sections. The quantitative section is organized by hypothesis. The qualitative section is organized into thematic categories that emerged when investigating answers to the research questions. Themes are based on the findings of qualitative content analysis.

The research questions are as follows:

RQ 1: How do high school students experience yoga embedded in a PE class?

RQ 2: What does their experience reveal about adolescent positive psychological health?

RQ 3: What does their experience reveal about the impact of yoga on adolescent depressive symptoms?

RQ 4: What does their experience reveal about the impact of yoga on adolescent flourishing?

The hypotheses are as follows:

H1: Students in the yoga group will demonstrate statistically significantly higher positive psychological health as measured by the CES-D Scale, PERMA Profiler, and Flourishing Scale for Teens mean scores immediately after the intervention (H1a) and 5 months after the intervention (H1b) after controlling for the mean scores on the scales at Time 1 compared to the students in regular PE.

H2: Students in the yoga group will show fewer depressive symptoms as indicated by statistically significantly lower mean scores on the CES-D Scale both immediately after the intervention (H2a) and at 5 months after the intervention (H2b) than students in regular PE after controlling for the mean CES-D scores at Time 1.

H3: Students in the yoga group will show more flourishing as indicated by statistically significantly higher scores on the Flourishing Scale for Teens both immediately after the intervention (H3a) and 5 months after the intervention (H3b) than students in regular PE after controlling for the mean Flourishing Scale for Teens scores at Time 1.

H4: Students in the yoga group will show more flourishing as indicated by statistically significantly higher scores on the Overall PERMA scale both immediately after the intervention (H4a) and 5 months after the intervention (H4b) than students in regular PE after controlling for the mean Overall PERMA scores at Time 1.

### **Quantitative Results**

Quantitative results were derived using the statistical software package SPSS version 21 to analyze results of intervention group (yoga group) and control group (regular PE group) mean scale scores on the CES-D Scale, the Flourishing Scale for Teens, and the PERMA Profiler. A MANCOVA was run to investigate overall differences between the yoga group and the control group and to investigate the following hypothesis: Students in the yoga group will demonstrate statistically significant overall positive psychological health as measured by the CES-D Scale, PERMA Profiler, and Flourishing Scale for Teens mean scores immediately after the intervention (H1a) and 5 months after the intervention (H1b) after controlling for the mean scores on the scales at Time 1 compared to the students in regular PE.

The dependent variables were mean score on the CES-D Scale at Time 2 and Time 3, mean overall score on the PERMA Profiler at Time 2 and Time 3, and mean score on the Flourishing Scale for Teens at Time 2 and Time 3. The independent variable was the student group (yoga group or regular PE group), and the covariates were the mean scores on the tests at Time 1.

Additionally, three ANCOVAs were run to indicate differences between the yoga group and the control group immediately after the intervention and again 5 months after the intervention concluded to investigate the following hypotheses: Students in the yoga group will show less depressive symptoms as indicated by statistically significantly lower mean scores on the CES-D Scale both immediately after the intervention (H2a) and at 5

months after the intervention (H2b) than students in regular PE after controlling for the mean CES-D scores at Time 1. Students in the yoga group will show more flourishing as indicated by statistically significantly higher scores on the Flourishing Scale for Teens both immediately after the intervention (H3a) and 5 months after the intervention (H3b) than students in regular PE after controlling for the mean Flourishing Scale for Teens scores at Time 1. Students in the yoga group will show more flourishing as indicated by statistically significantly higher scores on Overall PERMA scale scores both immediately after the intervention (H4a) and 5 months after the intervention (H4b) than students in regular PE after controlling for the mean Overall PERMA scores at Time 1.

For each of the three ANCOVAs, the mean score on the posttests (at Time 2 or Time 3) was the dependent variable, student group (in the yoga group or in the regular PE group) was the independent variable, and the mean score on the test at Time 1 was the covariate.

**Equivalency of groups.** Chi-square tests were run to determine if the two control groups (one was in a lifetime and recreational sports class and the other was a walking fitness class) were equivalent and could therefore be combined to form one control group. There was no statistically significant relationship between group and gender,  $\chi^2(1, N = 38) = 3.82, p = .08$ . No statistically significant relationship between group and race was found,  $\chi^2(1, N = 38) = .35, p = .71$ . However, a statistically significant relationship was found between grade and group,  $\chi^2(1, N = 38) = 10.57, p = .002$ . Because neither the walking fitness class nor the lifetime and recreational sports class had been exposed to the practice of yoga throughout the intervention and no significance was found for gender and race of students in the two groups, it was determined that the two control groups

could be combined (see Table 1). In addition, the only statistically significant difference was that there were more juniors in the walking class than in the lifetime and recreational sports class, but both juniors and seniors in high school are considered “adolescents.” However, the reader may choose to view the results with caution due to the decision to combine these two groups.

Table 1  
*Demographic Data*

	Overall, <i>n</i> (%)	Intervention, <sup>a</sup> <i>n</i> (%)	Control, <sup>b</sup> <i>n</i> (%)	$\chi^2$
Gender				$\chi^2 (1, N = 65) = 0.04$
Male	40 (61.5%)	17 (62.96%)	23 (60.53%)	
Female	25 (38.5%)	10 (37.04%)	15 (39.47%)	
Grade				$\chi^2 (2, N = 65) = 3.438$
11	30 (46.2%)	9 (33.3%)	21 (55.3%)	
12	35 (53.8%)	18 (66.7%)	17 (44.7%)	
Race				$\chi^2 (1, N = 65) = 1.83$
White	40 (61.5%)	14 (51.9%)	26 (68.4%)	
Non-White	25 (38.5%)	13 (48.1%)	12 (31.6%)	

*Note.*  $N = 65$ .

<sup>a</sup> $n = 27$ . <sup>b</sup> $n = 38$ .

Chi-square tests were also run to determine if the yoga group and the combined comparison groups were similar before the start of the intervention to determine if the two groups could be compared accurately. No statistically significant relationship was found between group and gender,  $\chi^2(1, N = 66) = .04, p = .82$ . No statistically significant relationship was found between group and grade,  $\chi^2(2, N = 66) = 3.438, p = .18$ . There

was no statistically significant relationship between group and race,  $\chi^2(1, N = 66) = 1.83$ ,  $p = .20$ . Table 1 shows the demographic data by group.

First, to determine if MANCOVA was appropriate, bivariate correlations were run to determine whether the CES-D Scale scores, the Flourishing Scale for Teens scores, and the Overall PERMA profiler scores were highly correlated. There was a negative correlation between the CES-D scores and the Flourishing Scale for Teens scores at Time 1,  $r = -.43$ ,  $p = .001$ . There was also a negative correlation between the CES-D Scale scores and the Overall PERMA scores at Time 1,  $r = -.73$ ,  $p = .00$ . There was a positive correlation between scores on the Flourishing Scale for Teens and the Overall PERMA score,  $r = .60$ ,  $p = .00$ , at Time 1. At Time 2, there was a negative correlation between the CES-D scores and the Flourishing Scale for Teens scores,  $r = -.65$ ,  $p = .00$ . There was a negative correlation between the CES-D scores and the Overall PERMA scores at Time 2,  $r = -.81$ ,  $p = .00$ . There was a positive correlation between the Flourishing Scale for Teens scores and the Overall PERMA scores at Time 2,  $r = .70$ ,  $p = .00$ . At Time 3, there was a negative correlation between the CES-D scores and the Flourishing Scale for Teens scores,  $r = -.67$ ,  $p = .00$ . There was also a negative correlation between the CES-D scores and the Overall PERMA scores,  $r = -.78$ ,  $p = .00$ . There was a positive correlation between Flourishing Scale for Teens scores and Overall PERMA scores at Time 3,  $r = .77$ ,  $p = .00$  (see Table 2). Tabachnick and Fidell (2007) said, “MANOVA works best with highly negatively correlated DVs and acceptably well with moderately correlated DVs in either direction (about .6)” (p. 268). Therefore these correlations led to the decision to run a MANCOVA, where the mean scores on the three scales at Time 2 and Time 3 were used as dependent variables. Thus the reader may choose to view the

Table 2  
*Correlations Between Scales*

Scale	1	2	3	4	5	6	7	8	9
1. FST									
T1	–								
2. CES-D									
T1	–.43*	–							
<i>N</i>	58								
3. Overall PERMA									
T1	.60*	–.81*	–						
<i>N</i>	59	58							
4. FST									
T2	.71*	–.53*	.68*	–					
<i>N</i>	58	57	58						
5. CES-D									
T2	–.58*	.75*	–.71*	–.65*	–				
<i>N</i>	58	57	58	62					
6. Overall PERMA									
T2	.66*	–.65*	.81*	.70*	–.81*	–			
<i>N</i>	58	57	58	62	62				
7. FST									
T3	.70*	–.64*	.73*	.79*	–.69*	.76*	–		
<i>N</i>	55	54	55	59	59	59			
8. CES-D									
T3	–.40*	.82*	–.69*	–.53*	.80*	–.68*	–.67*	–	
<i>N</i>	55	54	55	59	59	59	60		
9. Overall PERMA									
T3	.60*	–.62*	.72*	.67*	–.77*	.75*	.77*	–.78*	–
<i>N</i>	55	54	55	59	59	59	60	60	

\* $p < .01$ .



MANCOVA results with caution given  $r = .6$  for the Flourishing Scale for Teens and the Overall PERMA score at Time 1,  $r = .70$  between the scales at Time 2 and  $r = .77$  between the two scales at Time 3.

Field (2012) suggested including covariates in analyses to reduce within group error variance and remove confounding variables that may impact the results. In this case the covariates were the mean scores on the scales at Time 1. The correlation between the Flourishing Scale for Teens scores at Time 1 and Time 2 was  $r = .71$ ,  $p = .00$  and  $r = .70$ ,  $p = .00$  between Time 1 and Time 3. The correlation between the CES-D Scale scores at Time 1 and Time 2 was  $r = .75$ ,  $p = .00$  and  $r = .82$ ,  $p = .00$  between Time 1 and Time 3. The correlation between the Overall PERMA scores at Time 1 and Time 2 was  $r = .81$ ,  $p = .00$  and  $r = .72$ ,  $p = .00$  between Time 1 and Time 3 (see Table 2). Thus the covariates are similar to the dependent variables.

**Overall positive psychological health.** To answer Hypotheses 1a and 1b, a MANCOVA was run with the following dependent variables: mean score on the CES-D Scale at Time 2 and Time 3, mean overall score on the PERMA Profiler at Time 2 and Time 3, and mean score on the Flourishing Scale for Teens at Time 2 and Time 3. The independent variable was student group (the yoga group and the regular PE group). The covariate was the mean score at Time 1. The MANCOVA was not statistically significant at Time 2 (H1a), Hotelling's trace = .60,  $F(3, 50) = .99$ ,  $p = .41$ . Additionally, the MANCOVA was not statistically significant at Time 3 (H1b), Hotelling's trace = .15,  $F(3, 47) = 2.29$ ,  $p = .09$ . Thus there were no statistically significant differences between the two groups on the overall posttest means for depressive symptoms, flourishing, and Overall PERMA levels. Because statistically significant results were not found when

analyzing multiple dependent variables, ANCOVAs were run for each dependent variable.

**Depressive symptoms.** To answer Hypotheses 2a and 2b, an ANCOVA was run to determine if there was a statistically significant difference between the control group and the yoga group on the mean scores on the CES-D Scale. The mean score of the yoga group at Time 1 on the CES-D Scale decreased from Time 1 to Time 2, and again from Time 2 to Time 3 (see Table 3). The mean score of the control group increased from Time 1 to Time 2 and decreased from Time 2 to Time 3 (see Table 3).

Table 3  
*Depression Mean Scores*

Group	<i>n</i>	Mean ( <i>SD</i> )		
		Baseline	Time 2	Time 3
Control	30	14.36 (9.33)	15.00 (11.60)	14.48 (11.17)
Intervention	25	16.42 (11.00)	12.58 (8.40)	12.12 (7.78)
Overall	55	15.31 (10.09)	13.88 (10.22)	13.39 (9.74)

When running the ANCOVA, the mean score on the posttest (at Time 2 or Time 3) was the dependent variable, student group (in the yoga group or in the regular PE group) was the independent variable, and the mean score on the pretest (Time 1) was the covariate. Levene’s test was not statistically significant, indicating that the group variances were equal and the assumption of homogeneity of variance was not violated. The covariate, the score on the pretest, statistically significantly predicts future depressive symptoms score,  $F(1, 55) = 75.40, p = .00$ . However, there was not a statistically significant difference between the mean scores of the intervention group and the control group at Time 2 (H2a) on the level of depressive symptoms after controlling

for the effect of the pretest scores,  $F(1, 54) = 3.79, p = .057$ . Immediately after the intervention, the data suggest that we would accept the null hypothesis and say that yoga did not lower rates of depressive symptoms in students (see Table 4). There was a statistically significant difference between group mean score on the level of depressive symptoms at Time 3 (H2b) after controlling for the effect of the pretest scores,  $F(1, 51) = 7.50, p = .01$ . Five months after the intervention, the data suggest that we would reject the null hypothesis and say that yoga does have the potential (in the longer term) to lower rates of depressive symptoms in students (see Table 5).

Table 4  
*Depression ANCOVA at Time 2*

Effect	Sum of squares	<i>df</i>	Mean square	<i>F</i>	Partial $\eta^2$
Pretest	3,209.06	1	3,209.06	75.40*	.583
Group	161.20	1	161.20	3.79	.07
Error	2,298.30	54	42.56		

\* $p < .05$ .

Table 5  
*Depression ANCOVA at Time 3*

Effect	Sum of squares	<i>df</i>	Mean square	<i>F</i>	Partial $\eta^2$
Pretest	3,484.41	1	3,484.41	121.43*	.70
Group	215.23	1	215.23	7.50*	.13
Error	1,463.47	51	28.70		

\* $p < .05$ .

**Flourishing.** To answer Hypotheses 3a, 3b, 4a, and 4b, ANCOVAs were run to look at the differences in mean flourishing scores between the control and yoga groups on the Flourishing Scale for Teens and the Overall PERMA score on the PERMA Profiler.

The mean score of the yoga group on the Flourishing Scale for Teens decreased from Time 1 to Time 2 and increased from Time 2 to Time 3. The control group mean score decreased from Time 1 to Time 2 and increased from Time 2 to Time 3 (see Table 6). The mean score of the yoga group on the PERMA Profiler increased from Time 1 to Time 2 and increased again from Time 2 to Time 3. The mean score for the control group increased from Time 1 to Time 2 and again from Time 2 to Time 3 (see Table 7).

Table 6  
*Flourishing Mean Scores*

Group	<i>n</i>	Mean ( <i>SD</i> )		
		Baseline	Time 2	Time 3
Control	30	33.25 (4.10)	32.73 (5.01)	33.83 (4.35)
Intervention	25	33.46 (3.68)	33.40 (4.36)	33.60 (3.82)
Overall	55	33.35 (3.88)	33.04 (4.69)	33.73 (4.08)

Table 7  
*Overall PERMA Mean Scores*

Group	<i>n</i>	Mean ( <i>SD</i> )		
		Baseline	Time 2	Time 3
Control	30	7.15 (1.67)	7.23 (2.03)	7.34 (1.05)
Intervention	25	7.38 (1.20)	7.66 (1.16)	7.78 (1.05)
Overall	55	7.25 (1.47)	7.43 (1.69)	7.54 (1.42)

For the ANCOVAs on both the Flourishing Scale for Teens and the overall score on the PERMA Profiler, the pretest mean score was used as the covariate, the posttest mean score (Time 2 or Time 3 mean scores) was the dependent variable, and group (the yoga group or the regular PE group) was the independent variable. Levene's test was not

statistically significant on either analysis, indicating that the group variances were equal and the assumption of homogeneity of variance was not violated. The covariate, the score on the Flourishing Scale for Teens pretest, statistically significantly predicts future flourishing score,  $F(1,55) = 55.25, p = .00$ . However, no statistically significant differences were found between groups at Time 2 (H3a) on the Flourishing Scale for Teens,  $F(1, 55) = .45, p = .51$  (see Table 8), and at Time 3 (H3b),  $F(1, 52) = .24, p = .63$  (see Table 9). The covariate, the overall score on the PERMA Profiler pretest, statistically significantly predicts future overall flourishing score,  $F(1,55) = 99.74, p = .00$ . However, no significant differences were found between groups on the Overall PERMA scale score at Time 2 (H4a),  $F(1,55) = .66, p = .42$  (see Table 10), and at Time 3 (H4b),  $F(1,52) = 1.09, p = .30$  (see Table 11). In both cases we would accept the null hypothesis and reject the notion that yoga can help increase flourishing rates in students.

Table 8  
*Flourishing ANCOVA at Time 2*

Effect	Sum of squares	<i>df</i>	Mean square	<i>F</i>	Partial $\eta^2$
Pretest	604.56	1	604.56	55.25*	.50
Group	4.91	1	4.91	0.45	.01
Error	601.87	55	10.94		

\* $p < .05$ .

Table 9  
*Flourishing ANCOVA at Time 3*

Effect	Sum of squares	<i>df</i>	Mean square	<i>F</i>	Partial $\eta^2$
Pretest	446.10	1	446.10	55.25*	.50
Group	2.06	1	2.06	0.24	.01
Error	452.07	52	8.70		

\* $p < .05$ .

Table 10

*Overall PERMA ANCOVA at Time 2*

Effect	Sum of squares	<i>df</i>	Mean square	<i>F</i>	Partial $\eta^2$
Pretest	99.74	1	99.74	105.28*	.66
Group	0.62	1	0.62	0.66	.01
Error	52.10	55	0.95		

\**p* < .05.

Table 11

*Overall PERMA ANCOVA at Time 3*

Effect	Sum of squares	<i>df</i>	Mean square	<i>F</i>	Partial $\eta^2$
Pretest	55.29	1	55.29	56.80*	.52
Group	1.06	1	1.06	1.09	.02
Error	50.62	52	0.97		

\**p* < .05.

### Qualitative Results

Qualitative results were derived by analyzing the interviews of five students in the yoga group and open-ended questions answered in written form by all students in the yoga and control groups. Results from the interview data are summarized according to themes that emerged from the data. Codes from the qualitative content analysis are reported throughout this section (Table 12). Profiles of each student interviewed are presented according to themes. A summary according to PERMA themes is presented for each student interviewed. Then, all five students who were interviewed are compared according to themes. Finally, a summary of the written answers is given. The most common answers for both groups at all three data collection times are presented.

Table 12  
*Qualitative Coding Scores*

	Andrea	Jamie	James	Tom	Katie	Overall mean	Range
Effects/Physical/Sports	1.33	3.00	0.00	0.00	0.00	0.87	0.00– 3.00
Effects/Physical/Flexibility	1.40	2.00	2.00	0.33	2.00	1.62	0.33– 2.00
Effects/Physical/Strength	1.00	0.00	1.00	2.00	2.29	1.33	0.00– 2.29
Effects/Physical/Balance	0.00	1.74	0.00	1.50	0.00	0.77	0.00– 1.74
Effects/Physical/Exercise	1.00	1.00	2.33	2.63	1.70	1.88	1.00– 2.63
Effects/Physical/Physical Capabilities	1.80	1.00	2.20	1.83	1.00	1.68	1.00– 2.20
Effects/Physical/Physical Salient	1.40	2.30	2.64	2.00	2.00	2.17	1.40– 2.64
Average of Physical Effects	1.13	1.58	1.45	1.47	1.28	1.47	1.13– 1.58
Effects/Mental/Relaxing	2.69	2.00	1.83	2.00	1.57	2.13	1.57– 2.69
Effects/Mental/Self-Esteem/ Confidence	2.64	0.00	0.67	0.67	0.67	1.52	0.00– 2.64
Effects/Mental/Understand Self	2.20	0.00	0.33	2.00	0.00	1.16	0.00– 2.20
Effects/Mental/Elevated Mood	2.00	0.00	1.00	0.33	0.67	0.93	0.00– 2.00
Effects/Mental/ Accomplishment	2.80	0.00	1.25	2.29	1.00	1.70	0.00– 2.80
Effects/Mental/Extended Mental	2.73	0.00	1.60	2.00	2.33	2.15	0.00– 2.73
Average of Mental Effects	2.51	0.33	1.11	1.55	1.04	1.60	0.33– 2.51

Table 12 (continued)

	Andrea	Jamie	James	Tom	Katie	Overall mean	Range
Attitude/Direct Indicators	3.00	2.00	3.00	3.00	3.00	–	2.00– 3.00
Attitude/Comparison to PE	2.00	0.00	2.00	0.00	3.00	–	0.00– 3.00
Attitude/Feelings Around Class Time	3.00	3.00	3.00	3.00	3.00	–	3.00
Attitude/Encourages Others to Do Yoga	3.00	0.00	3.00	0.00	2.00	–	0.00– 3.00
Attitude/Advice for Future	3.00	1.00	3.00	3.00	0.00	–	0.00– 3.00
Attitude/Poses	2.00	1.00	2.00	0.00	0.00	–	0.00– 2.00
Attitude/Equipment	0.00	0.00	0.00	0.00	2.00	–	0.00– 2.00
Attitude/Novelty	0.00	0.00	2.00	2.00	0.00	–	0.00– 2.00
Attitude/Vague Answers	0.00	2.00	2.00	0.00	2.00	–	0.00– 2.00
Average of Attitude	2.67	1.80	2.50	2.75	2.50	2.44	1.80– 2.75
Transfer of Skills/Mental/ Relaxation	2.50	0.00	0.33	1.33	2.33	1.71	0.00– 2.50
Transfer of Skills/Mental/ Confidence/No comparisons	2.86	0.00	0.00	1.00	0.00	1.21	0.00– 2.86
Transfer of Skills/Mental/ Mental Preparation	1.67	0.00	0.00	1.25	0.00	0.63	0.00– 1.67
Transfer of Skills/Mental/ Openness to Experience	1.50	0.00	0.67	0.67	0.67	0.75	0.00– 1.50
Transfer of Skills/Mental/Focus	0.67	0.00	0.00	2.00	1.50	0.94	0.00– 2.00



Table 12 (continued)

	Andrea	Jamie	James	Tom	Katie	Overall mean	Range
Transfer of Skills/Mental/ Persistence	1.25	0.00	0.67	0.67	1.60	0.94	0.00– 1.60
Transfer of Skills/Mental Average	1.74	0.00	0.28	1.15	1.02	1.03	0.00– 1.74
Transfer of Skills/Physical/ Continue Yoga	2.50	0.00	0.67	0.75	1.25	1.39	0.00– 2.50
Transfer of Skills/Physical/Help With Sports	1.67	2.00	0.00	0.00	0.33	0.88	0.00– 2.00
Transfer of Skills/Physical/ Combat Stiffness	0.33	0.00	0.00	2.25	1.00	0.81	0.00– 2.25
Transfer of Skills/Physical/ Posture	1.00	0.00	0.67	0.00	0.00	0.33	0.00– 1.00
Transfer of Skills Physical/ Average	1.38	0.50	0.34	0.75	0.65	0.85	0.34– 1.38
Transfer of Skills/Absence of Transfer/Vague Answers	0.00	1.80	0.67	0.33	0.00	0.71	0.00– 1.80
Breathing/Physical Use/During Yoga	2.00	0.00	2.00	0.33	0.00	1.00	0.00– 2.00
Breathing/Physical Use/ Exercise	0.00	0.00	1.00	0.00	0.00	0.20	0.00– 1.00
Breathing/Physical Use/ Average	1.00	0.00	1.50	0.17	0.00	0.60	0.00– 1.50
Breathing/Mental Use/ Disagreements	1.00	0.00	1.00	0.00	0.00	0.40	0.00– 1.00
Breathing/Mental Use/Calm and Stress Relief	2.86	0.00	0.33	0.00	0.00	1.11	0.00– 2.86
Breathing/Mental Use/Average	1.93	0.00	0.67	0.00	0.00	0.76	0.00– 1.93

**Interviews.** Five students from the yoga group were interviewed about their experience in yoga class. Each student was interviewed three times throughout the semester. After all interviews were completed, a professional transcription company transcribed them. The researcher did an individual read-through of the first session of five interviews, the second session of five interviews, and the final session of five interviews. She conducted a second read-through while making initial mark-ups of the interviews. She noted the frequent presence of particular ideas, words, and references and the absence of ideas, words, and references. Handwritten memos were made on each line. Potential themes and categories were noted.

Initially, the researcher developed the following preliminary categories:

*Description of yoga.* Students described the experience of practicing yoga in their own terms. For many students, this was a new experience, and this description helped to understand the meaning they made of the experience they were having.

*Identity.* Students began to speak of themselves as a person who practices yoga on a regular basis, an athlete who uses yoga to enhance his or her other athletic endeavors, or a person who likely would not continue to do yoga beyond PE class. These descriptions helped describe the ways they saw yoga fitting into their lives.

*Attitude toward yoga.* Students described whether they were enjoying the class. This perspective helped to understand if yoga was something the students found to be fun and enjoyable in their lives.

*Transfer of skills.* Students described whether they transferred skills they learned in yoga class to their lives in other ways. This helped to understand how useful the students found the yoga class.

The codes under description of yoga were physical, mental, spiritual, and breathing. The codes under identity were yogi, athlete, neither, and both. The codes under attitude were enjoyment and displeasure. The codes under transfer of skills were transferred skills and did not transfer skills.

The researcher coded each of the interviews three separate times. During this process, the researcher decided to eliminate the identity code because she could not find evidence that students were identifying as either an athlete or a yogi. She dropped the code “spiritual” under yoga description because she determined that the students were not actually speaking of yoga in a spiritual manner. This made sense, as the researcher–yoga instructor was careful not to involve any religious aspects of yoga because the study took place at a public school. At this time the researcher also added breath/breathing as a code in transfer of skills. Then the researcher compared the three coding sessions to find overlap. She did a final coding session and included the instances where the coding was consistent across sessions. Following this, the researcher did her first write-up of the results with the following categories: effects of yoga, attitude toward yoga, and transfer of skills.

The researcher reviewed the results with an expert in qualitative research and decided to code the interviews again, this time applying an ordinal scale to each of the categories. The overall method of analysis used was qualitative content analysis. This method was developed to allow for analysis of a large amount of information. It is intended to allow for quantification of the categories and subcategories (Mayring, 2000). The researcher created a coding scale based on two elements: (a) the frequency of comments about a particular category or subcategory and (b) the strength of statements about a particular category or subcategory. Each comment that fit into a subcategory was rated on a 4-point scale ranging from 0 (indicating that the student was expressing that there was no effect, the topic was not salient, or the topic was not mentioned at all) to 3 (indicating that the student was expressing that the topic had a very strong effect, the

topic was extremely salient, or the topic was mentioned repeatedly). All codes are given the same scale, with the same anchors. This means that the numbers mean similar things across the categories. These numbers were analyzed to produce an average for each category and subcategory for each individual student and an overall average for all students combined (see Table 12).

The only exception to this is the “attitude” category. This category was coded according to the dimensions negative–positive, not by the salience of the statements. Averages did not take the 0 score (when it was not mentioned by a student either way) into account as not mentioning a topic does not say anything about negative or positive feelings.

It is important to note that this is ordinal scaling, not interval scaling. In this type of scale, the points on the scale are not equidistant. The figures are not exact. The purpose was to give a general summary about the frequency and strength of the subcategories for students to enhance the qualitative description. This portion of the qualitative analysis is not intended to replace the qualitative description of the categories and subcategories or to be viewed as exact quantitative data.

**Category 1: Effects of yoga.** The researcher continued to look at the ways in which the students described yoga from their own perspective. Their perception of what yoga is and does could have a profound impact on how they use it in their lives. Specifically, how they describe yoga and its effects (mainly physical or mainly mental) would relate to how they are able to use it in their lives.

*Physical effects of yoga.* Participants described the physical aspects of yoga and how these demands had an effect on their bodies. Specifically, students talked about the

physical aspects in terms of the following properties: sports, flexibility, strength, balance, exercise, physical capabilities, and the salience of physical aspects.

*Sports.* At times, participants referenced athletic endeavors different from yoga. Some students did not mention playing sports outside of PE class. The two girls that did play sports outside of PE class mentioned the benefits they received from yoga helping them with sports. Andrea, a junior female student, said, “And then I do soccer like on the weekends for CYC and if I’m like stretching a certain way, then like some of the muscles I’m using, they’re not as sore later. So I mean that helps sort of” (Transcript A1, lines 59–61). Andrea qualified her statement with “sort of,” indicating that this benefit was not the most pertinent to her.

In contrast, Jamie, a female senior student, mentioned the ways that yoga helped her with dance. This was the most salient benefit for her. She mentioned it in each interview, and it was also the most significant aspect she transferred to her life outside of class. When asked if she would use what she learned in yoga class after the intervention was finished, she said, “For like extra stretches before dance” (Transcript JS3, line 19).

In both of these cases we see the students alluding to the fact that yoga can help them physically by mentioning how it helps with sports that are not necessarily related to yoga. They mention yoga as a tool to help with these other sports but not necessarily as a sport itself.

In a different interview, Katie, a female senior student who did not play sports outside of PE class, described yoga in comparison to other sports, saying, “It probably makes you more flexible than most sports would” (Transcript K1, lines 10–11). Here the student is stating a physical benefit of yoga compared to outside sports and is indicating

that yoga is a sport itself, not just something to be used to train for other athletic endeavors.

Overall, the average coding score across students for talking about sports was .87. This score is low because three of the five students who were interviewed did not play sports outside of PE class and could not comment on the ways yoga might relate or help with sports. The range of coding scores on this property was 0.00–3.00.

*Flexibility.* Participants referenced the benefits and detriments of practicing yoga in physical terms without referencing sports. Several students noticed they were more flexible after practicing yoga.

At some point in the interviews, each student mentioned this property as a benefit in some capacity. James, an African American senior male, said the main benefit he felt he was getting from yoga was that he was becoming more flexible (Transcript JA2, lines 51–52). He described this as a “big benefit,” and it was also the first and only physical benefit he mentioned, indicating that it was a notable benefit for him.

In her second interview, Andrea said, “Well, physically I am realizing that I’m more flexible and I can reach certain limits, and I’m proud of that” (lines 62–65). Here we see her indicate that the practice made her realize she was more flexible, not necessarily that it made her more flexible. Yoga gave her an opportunity to discover this about her body.

While still a benefit, this distinguishes her response from the other students’ responses on this benefit. Katie recognized that yoga builds both flexibility and strength; she said, “I feel like it seems like if you do it more and more it makes you stronger in

spots that you wouldn't expect and more flexible overall" (Transcript K1, lines 71–73). Students could see and feel these changes in their bodies as a result of practicing yoga.

The overall average coding score for this property was 1.62. This indicates that students mentioned this benefit at times, but not in a way that indicated it was the most noticeable benefit for them. The range of scores on this property was 0.33–2.00.

*Strength.* Students noticed they were becoming physically stronger as they participated in yoga. Four out of the five students interviewed mentioned it at least once throughout all three interviews.

In interview 3, all students were asked the three biggest benefits of participating in yoga. Three out of five students named strength building or strength as one of the best benefits (Transcript A3, line 69; Transcript JA3, line 43; Transcript T3, line 48). Tom said, "If they wanna build up their strength, it's definitely a good strength technique" (Interview T3, lines 48–49). Katie responded that the biggest benefits of yoga were "obviously strength and flexibility" (Transcript K2, line 47). Katie reported the highest coding score for strength. Here her use of the word "obviously" shows that this was one of the most salient benefits for her. She seemed to think it would be clear to everyone, even though one student who was interviewed did not mention this as a benefit at all. In interview 3, Andrea said strength was "definitely" a benefit. Prior to this, she had not mentioned strength as a benefit at all. It is possible that it took longer for the students to see their strength build. This could be one reason that it was not mentioned as much or in as much description as other benefits. Supporting this thought is the fact that only one student mentioned strength as a benefit in the first interview. By the second interview, all

but two students mentioned it as a benefit. By the final interview, all but one student noted strength building as a benefit of yoga.

Though some students mentioned this benefit a number of times, it was usually mentioned along with other benefits and was not the benefit that students recognized the most. One student did not mention it at all throughout all three interviews. The overall coding mean of students mentioning strength was 1.33. This indicates that it was something students mentioned, but it was not among the most notable benefits for them. The range on this property was 0.00–2.29.

*Balance.* Two of five students commented that they felt yoga helped with their balance. It was somewhat salient to Jamie and Tom (the two students who commented on it).

Both students felt it was a good technique to build balance. When asked to describe yoga to someone who knew nothing about it, Jamie's third comment was, "It helps you build up like balance or agility" (Transcript JS1, line 10). She also related the use of balance to cheerleading; when asked how yoga helps her outside of class, she said she uses the balance part of yoga to help with stunts for cheerleading (Transcript JS1). Balance and relating this benefit to cheerleading and dance was one of the more notable aspects for Jamie.

Tom said yoga was a good exercise for building balance. When he commented on the three biggest benefits someone could get from doing yoga the second benefit he listed was balance (Transcript T3). He also distinguished yoga from just exercising by saying, "You have to focus less on stretching and more on balance" (Transcript T1, line 63). This



shows that while the physical aspect of yoga was one of the most salient for Tom, the element of balance separated yoga from other forms of physical activity.

The overall coding mean for this property was .77. The range of scores was 0.00–1.74. This indicates that it was not overly salient to all students but somewhat salient for the students who mentioned it.

*Exercise.* Each student who was interviewed mentioned the physical demand that yoga presented in some capacity.

Sometimes students expressed that they were surprised by this demand. Tom, a junior boy, said, “I enjoy it because it actually pushes you and it actually helps you. It’s an actual exercise thing” (lines 11–13). His use of the word “actually” indicates that he did not think yoga would be physically challenging for him and others in his class. At the end of the intervention, he described yoga as exercise directly when he said, “I’m glad that it’s over ‘cause I don’t really like being sore. Upset that it’s over because I like working out in general” (Transcript T3, lines 6–8). This comment shows that he viewed yoga mainly as a physical exercise and that the physical aspects of it were the most notable for him.

Katie described her first 4 weeks of yoga by saying, “What I’ve seen so far is we do a lot of stretches, and like they’re not just easy stretches. They’re getting harder, so it like builds up your strength” (lines 8–10). The fact that Katie described the “stretches” as hard indicates that she may have thought yoga would not be physically demanding before she tried it. This could also indicate that she felt others might not think it was difficult physically. In addition, she described yoga purely in physical terms, as in the movements done in class. She did not mention any of the mental aspects, such as the centering at the

beginning of class. This shows that the exercise aspect of yoga was the most memorable for her.

James explained that he felt the difference between yoga and just exercising is all in how the practitioner views it. He said, “It’s kind of different for different people because it can be looked at as a way of life, I guess you would say. Like yoga is like it’s something that you want to do almost every day. But then again, it could just be nothing to somebody. It could just be exercising” (Transcript JA1, lines 92–96). In his view, the difference of yoga being spiritual or just physical is based on the way each practitioner looks at it.

The overall coding mean for students talking about yoga as exercise was 1.88. This indicates that students found it to be somewhat salient, but not the most salient. The range of coding scores on this property was 1.00–2.63.

*Physical capabilities.* Other times students cited things they learned about their bodies physically. This could have been something specific about one part of their body or it could have been mentioned as their overall physical abilities and limits.

When asked how yoga helped her to learn about herself, Jamie responded, “Maybe like in a physical sense I’m a little bit more balanced on one side than the other” (Transcript JS2, lines 31–32). James responded to that question by saying, “I’m not all that flexible” and “I can touch my toes on the left but I can’t touch the ones on the right” (Transcript JA2, lines 41–44). These answers show that paying attention to specific things about their bodies was somewhat salient to students in yoga class.

Tom and Andrea answered the same question more generally by saying that they had found their limits. Tom said, “I definitely learned, in some of the poses, of my limits”

(Transcript T2, line 39). Andrea said, “I am pushing my own limits” (Transcript A2, line 57). Both of these students indicated that they had a better understanding of what their bodies could do. Andrea suggested that she was pushing that to try to improve and go further than she has been able to go in the past.

The coding score for this property was 1.68, indicating that it was mentioned by students but was not the most pertinent aspect of yoga. The range of this property was 1.00–2.20.

*Salience of physical aspects.* Students were asked open-ended questions about yoga. Many times they would default to answers only describing a physical aspect and not mentioning any of the mental aspects. For example, when asked to describe yoga to someone who knew nothing about it, James answered by describing the poses, mentioning downward facing dog, plank, chaturanga, push-ups, cobra, warrior, and triangle (Transcript JA1). He did not mention other aspects of yoga, such as the meditation at the beginning and the end of the class.

When asked how she had used what she learned in yoga class, Jamie answered, “I haven’t used it yet, but I’m sure when I try out for the dance team for college next—well in the spring, that it’ll come in handy” (Transcript JS2, lines 12–13). She did not mention using anything she learned immediately and indicated that when she did use it, she would use the physical aspects.

When asked about what she liked best about yoga class, Katie said, “The best would probably be like when you had us do different poses, and then maybe like in say two classes later you had us do the same pose, but you would extend it into something different” (Interview K3, lines 27–30). Her favorite part about the class was a physical

aspect, and she did not mention any of the mental aspects in this answer. This happened at least once each time a student was interviewed.

The overall mean of physical salience was 2.17. This indicated that students mentioned this a lot and it was fairly salient to them. The range of this property was 1.40–2.64.

*Mental effects of yoga.* In the subcategory of mental effects, students described the mental aspects of yoga and the ways in which it benefited them. Based on these descriptions of mental effects, the following properties were identified: ability to relax, having more self-esteem and confidence, understanding themselves more, experiencing an elevated mood, experiencing feelings of accomplishment, and that mental benefits stuck with them long after class ended.

*Relaxation.* The mental benefit that was mentioned the most was that the students felt yoga helped them to relax. All five of the students interviewed felt that the yoga class helped them to relax when they were feeling anxious. When asked to describe yoga, all five students used the word “relaxing” or “rejuvenated” to describe how they felt either during or after class (Transcripts A1, JS1, JA1, T1, K1).

Katie said, “It just kind of keeps you relaxed and makes me a little bit less stressed about everything” (Transcript K2, lines 56–57). Here Katie describes how yoga helped her to relax in general.

Tom was more specific when he said, “It kind of just gets me ready for the next classes, ‘cause I feel like so relaxed after it because I tried so hard” (Transcript T1, lines 8–9). In this statement we see that Tom benefits from the relaxation in his other classes.

By the third and final interview, Andrea described yoga by saying, “It’s a time when you’re one with yourself and you’re always calm and peaceful; that’s how I always feel” (Transcript A3, lines 4–6). Andrea had the highest relaxation coding score. She mentioned it the most and it appeared to help her across a variety of situations.

At other times students used words like “calm,” “peaceful,” “rejuvenated,” “ready,” “relaxed,” and “relief” to describe their feelings during and after yoga. The amount of times the relaxing benefits of yoga were mentioned and that it was usually the first benefit that came to mind showed how powerful this was for the students.

The average coding score across all students was 2.13 for relaxation. The range of this property was 1.57–2.69. This indicates that it was fairly significant for all students.

*Self-esteem and confidence.* Students described ways that yoga gave them more confidence and raised their self-esteem.

When asked how yoga helped her to learn about herself, Andrea responded, “I really appreciate myself more. . . . I’m pushing my limits and I’m improving myself all by my own. And yeah, I feel better about myself too” (Transcript A2, lines 55–59). She also said, “I’ve become like more at peace with myself, and I feel better about myself after each practice” (Transcript A3, lines 72–74). Andrea described this aspect many different times in many different ways. This was a very strong benefit for her.

Katie described this in more general terms; she felt that the meditations at the beginning of class helped with overall mental wellness: “People kind of mentally feel better about themselves” (Transcript K3, line 57). When saying this, she did not speak about herself but rather about “people” in general. This shows that this was not an overly notable element for her, but she could recognize that it was for others.

The overall average for this benefit was 1.52. This number could be deceptively high when looking at all students. Andrea had a very high score on this aspect, which increased the entire average significantly. All other students scored below a 1.00 on this measure. While it was highly beneficial for Andrea, it was only rarely salient to the other students. The total range of coding scores on this element was 0.00–2.64.

*Understanding self.* Students mentioned a benefit of yoga was getting to know themselves better. They referenced that they enjoyed the time to focus on themselves.

When asked about the biggest benefits someone could get from practicing yoga, Tom said, “Learning about yourself” and “focusing on you” (Transcript T3, lines 50–51). When asked to describe yoga, Andrea said that people would go into it “to better themselves or fully understand who they are” (Transcript A1, lines 10–11). Tom described the last pose and reflection at the end of each class by saying, “I just kind of soaked that in and really paid attention to myself” (Transcript T3, lines 24–25). In all of these comments the students used yoga as a time to learn more about their bodies and their minds. They appreciated having an hour to only focus on what they were doing, thinking, and feeling.

The overall coding mean for this aspect was 1.16. Tom and Andrea had the highest scores, while Jamie, James, and Katie were all below 1.00 on this element. The total range on this property was 0.00–2.20.

*Elevated mood.* Students also described feeling happier, more positive, or better during and after yoga. In the first interview, Andrea said, “During yoga I feel relaxed and kind of happy that I’m being a part of it” (line 35). Another student said that he feels “good” and “in a good mood” for the remainder of the day after yoga class (Transcript

JA1, lines 51–52). This aspect has been documented as beneficial in other forms of physical activity, so it is not surprising that students experienced this benefit.

The overall mean for this property was 0.93, indicating that this was something most students mentioned (everyone except Jamie) but that it was not salient to them. This could be because there is some overlap between students describing a happier mood and being relaxed, confident, and feeling accomplished. This aspect was the highest for Andrea at 2.00, and the lowest score was Jamie's at 0.00.

*Accomplishment.* The final theme that emerged in this category was that students expressed that they felt a sense of accomplishment from practicing yoga.

Andrea said, “With some of the stretches and poses we do and the ones that I can do I feel kind of accomplished like oh I succeeded in that one and then maybe I can succeed in something else later” (Transcript A1, lines 37–38). As she worked hard and experienced success in yoga class, she felt more capable and confident to try other things outside of class. When asked about the most memorable thing she learned in yoga class, Andrea responded, “I'm pushing to like my own limits, and achieving my own goals” (Transcript A3, lines 91–92). Andrea set physical goals for herself and was able to achieve them; this resulted in feelings of accomplishment that boosted her mood and confidence.

Tom described the physical difficulty of the class and how this aspect made him feel accomplished and want to do it again. When asked to describe how he felt during yoga, he said, “During [yoga class] I'm just trying to do my best so I can feel that feeling afterwards as in it being difficult and pushing myself to the different positions which I think is pretty fun cause you know I've never done it before” (Transcript T1, lines 22–

25). He also said that his favorite pose was savasana at the end of class because it gave him a chance to reflect on what he just did and how he pushed himself (Transcript T3, lines 17–18). For Tom, the fact that yoga class was physically challenging and he was able to make it through and keep growing made him feel accomplished. He also took the time at the end of each class to think about this aspect and reflect. The reflection time boosted this benefit for him.

After all classes were finished, and at the end of his last interview, James commented, “When I first started doing yoga it was amazing to me ‘cause I never thought it would happen. But now it’s finally done and everything, I learned so much from it, benefited from it physically and mentally. I don’t know, I’m glad I did it I guess you would say” (Transcript JA3, lines 73–77). James was able to do something that he never thought he would do. This aspect made him feel like he accomplished something and made him happy that he tried it.

The overall average on this element was 1.70, indicating that students sometimes mentioned this and that it was somewhat salient to them. This score had a wide range of coding averages, 0.00–2.80. This was the most salient for Tom and Andrea, as their average scores on this aspect were 2.29 and 2.80, respectively.

*Extended mental benefits.* Some students also said they experienced these mental benefits for extended periods of time after the yoga class had ended.

In her first interview, Andrea said, “After yoga, I just feel more like calm and collected, but then I have my AP government class after, and so that helps me kind of go into it because then I think oh man I have to do that for government. But then I’m still kind of calm and like okay I can do that and I can, I just got back so I’m fine. It just



makes me more relaxed” (Transcript A1, lines 45–49). Andrea indicated that yoga helped her to calm herself to go to and participate in her Advanced Placement government class. The confidence and relaxation she experienced helped her to transition to her most difficult class of the day.

James described how he felt after class: “I just feel good like for the rest of the day, be in a good mood and stuff” (Transcript JA, lines 51–52). As has been documented with other physical exercise, James experienced a boost in his mood after practicing yoga. According to him, this lasted the whole day.

Katie said, “I kind of like calm myself down and then I’m more like focused on what I need to get done for the next day . . . normally like after class and onto the next day” (Transcript K2, lines 38–39, 43). This shows that students saw these benefits more than just during class time. They felt yoga helped them in various ways after class, in their other classes, and outside of school.

According to the coding scheme, this was the strongest mental benefit for students. The overall average score was 2.15. The range was 0.00–2.73. This shows that Jamie’s score of 0.00 lowered the total average for all of the students.

**Category 2: Attitude toward yoga.** Students described their attitude toward yoga during the interviews. The dimensions of this category were negative to positive. At times, some participants indicated that they enjoyed their time in yoga class and had a positive view of it. At other times, students indicated they did not enjoy their time in yoga class and had a negative view of it. Sometimes they indicated indifference toward their time in yoga class.

**Direct indicators.** Students were very direct when saying that they enjoyed the class. This subcategory had fewer negative and indifferent ratings than others. This is possibly because of desirability bias—the students did not want to directly say they did not like the class because the instructor of the class also conducted the interviews.

Students directly indicated that they enjoyed class by saying things such as, “I’m so lucky to be a part of this” (Transcript A3) and “I really enjoy doing it” (Transcripts A1, A2, A3, T1). Three students described the class as “fun” (Transcripts A3, JS1, K2). At other times the students used the verb “like” to describe their feelings about class (Transcripts A2, JA2, JA3, K1, K3, T1). Katie said, “I just really like it. I’m not gonna lie. I like it a lot” (Transcript K1, line 92).

In the final interview, students reflected on their entire experience. Two students used the word “good” to describe their experience (Transcripts K3, T3). Some students used the word “enjoy” and “like” to describe their overall feelings in class (Transcripts K3, JA3). Andrea even said, “I love doing it [yoga]” (Transcript A3). Two students said they were sad that yoga class was over and said they did not want it to end (Transcripts A3, T3). James said, “I’m glad I did it” (Transcript JA3, line 76).

All of these comments indicate that the students had overall positive feelings about their entire experience of doing yoga during PE class. The overall average coding score was 2.74. Again, this should be viewed with caution, as the interviewer was also the yoga instructor in the class.

**Comparing yoga and “regular” PE.** Though they were not directly asked how they felt about yoga versus regular PE class, some students did compare the two, saying

they either liked yoga the same as they liked regular PE or that they enjoyed yoga more than regular PE.

Katie indicated a preference for yoga over regular PE class. She said, “I’m like oh I have PE, and then I’m like oh wait we’re doing yoga, and then I’m like okay it’s not so bad anymore” (Transcript K1, lines 95–97).

Andrea, who already enjoys PE, indicated she enjoyed yoga just as much as PE. She said, “And on Mondays and Tuesdays now, well, I always—gym class is one of my favorites. And I’m always excited about it but then it’s like oh yeah! We’re doing yoga today!” (Transcript A2, lines 105–107).

James said that he likes regular PE but that yoga was “still something to look forward to” (Transcript JA1, lines 62–63). This shows that these students enjoyed yoga as much or more than their “regular” PE classes.

Andrea, James, and Katie were the only three students to comment on this. Andrea and James were both coded as a 2 because they expressed that they enjoyed yoga and PE to the same degree. Katie was coded a 3 because she expressed that she had more positive feelings toward yoga than toward PE class.

***Feelings around class time.*** Some students commented on how they felt around class time. A positive attitude about yoga is likely to result from good feelings before, during, and after class time.

Some students said that they enjoyed class by describing how they felt before class, saying they were “excited” before class (Transcripts A1, A2, K1, T1). Two students said they looked forward to yoga each week (Transcripts JA1, T1).

Some students also indicated they had positive feelings about class by saying they did not feel good before class but did feel good during and after class, for example, Jamie said that she feels tense before class because it's in the morning. After yoga she said she felt relieved and less stressed. The fact that she felt better during and after yoga indicated that she enjoyed doing yoga so that she could feel better. All five students commented favorably on this, saying their feelings around yoga class time were positive. None of them expressed negative feelings toward yoga class via their feelings around class time. Therefore they were all coded as a 3 on this category.

***Encourages others to do yoga.*** Students were asked if they tell their friends and family anything about yoga class. Some of them responded that they try to encourage others to do yoga with them. Andrea indicated several times that she was trying to get her dad to do it. James said that he showed his girlfriend some things he learned in class and told his mom about them too. The fact that they told others to try it shows that they saw benefits from doing it and enjoyed it too. Andrea reported the highest mental benefits and was trying the hardest to encourage others to do yoga. This could show that she wanted others to experience the same benefits she was experiencing. Katie indicated that she mentions it at times, but not often and not in a negative or positive way (Transcript K2).

Andrea, James, and Katie were the only three who commented on this aspect. Andrea and James were coded as a 3 because they encouraged others to do yoga as they felt it was a positive thing. Katie was coded a 2 because she indicated indifference about the yoga class when telling others to try it.

*Advice for the future.* During the last interview, students expressed overall feelings about the class, expressed how they felt now that they were finished, and offered advice for the future.

When asked if they had advice for the instructor–researcher in continuing to teach yoga to high school students, Andrea responded, “I don’t think there’s anything different that you should do” (Transcript A3, line 100). James said, “I think you should continue doing it” (Transcript JA3, line 65). Tom said, “Keep doing what you’re doing ‘cause I think it’s good” (Transcript T3, line 67). All of these students indicated that they liked the class by encouraging the researcher to continue teaching yoga to high school students. They felt that she should do it in the same way she did with their class.

Jamie told the instructor she should not go so fast because sometimes it was hard to understand and keep up (Transcript JS3). This indicated negative feelings toward the pace of the class and the class overall.

Andrea, James, and Tom were coded as a 3 on this aspect. They expressed positive feelings toward the class in their advice for the future. Jamie was coded as a 1 because she expressed negative feelings toward class in her advice for the future. Katie did not comment on this element.

*Poses.* Students mentioned specific poses and indicated feelings about class while doing so. The researcher did not directly ask about poses that students liked or disliked, but students still mentioned them in the interviews.

James said that he did not like the mermaid pose—a posture that was only done four times in class (Transcript JA3, line 23). This was not significant because that pose

was only done a few times throughout the semester. It probably had little impact on whether or not he liked the class as a whole.

However, Jamie expressed that she did not like the pose downward facing dog (Transcript JS1, line 60; Transcript JS3, line 15). Because the class was asked to do this posture several times throughout each class, it is unlikely she enjoyed yoga if she did not like this pose.

Andrea mentioned poses that she did not like at first because she was not used to doing them. Once she had done yoga for about a month, her body became more flexible and the poses felt good to her (Transcript A2).

Andrea and James received a coding score of 2 on this because their comments did not indicate enjoyment or negativity toward the class as a whole. Jamie received a coding score of 1 because her comments about the poses did indicate that she likely did not enjoy the class overall. Tom and Katie did not mention specific poses in the interviews.

***Equipment.*** This aspect was only mentioned once throughout all of the interviews.

When asked the worst thing about yoga, Katie said she did not like when her hands would slip on her mat when she started to sweat (Transcript K3). She said, “So that’s the only thing I just didn’t like” (Transcript K3, line 43).

Though this was insignificant in the scheme of this class, it is important to note that the equipment used, especially the mats, can have an impact on the poses the students feel they are able to do and their enjoyment of the class as a whole. Katie

received a code of 2 on this element. Though the comment was negative, it did not suggest she had negative feelings toward the class as a whole.

*Novelty.* Students mentioned that yoga was new to them in the interviews. At times this indicated that the novelty was a source of enjoyment for the students. Sometimes it indicated the students were indifferent toward the class. Other times it indicated that the students had negative feelings toward the class.

When asked the worst thing about yoga class, Andrea said that she was sore and the poses did not always feel good when she first began practicing yoga in PE. However, she said this was not an issue once she had been practicing for about a month (Transcript A3).

James expressed that he enjoyed yoga class but then later in the interview said, “I’m not really head over heels for yoga. It’s just I really like it cause I never did it before” (Transcript JA1, lines 98–100). This suggests it was not the actual yoga that he enjoyed but the novelty of yoga that made him like class.

When Tom described the class, he ended the description by saying, “. . . which I think is pretty fun ‘cause you know I’ve never done it before” (Transcript T1, lines 24–25). This indicates that it was only fun because it was new to him.

Andrea, James, and Tom all received a coding score of 2 for their comments. Their statements about the class being new to them all indicated indifference about the class. Jamie and Katie did not comment on the novelty of the class.

*Vague answers.* Students occasionally responded with vague answers when asked about their feelings about yoga. This showed that the students were indifferent toward

class, because the vague answers expressed neither positive nor negative feelings about the class.

When James was asked about his overall impression of yoga, he responded by saying, “I don’t know, I like it. Like, I don’t have nothing I really don’t like about it ‘cause it’s all positive. Like it’s good for you. So I don’t really mind it” (Transcript JA3, lines 6–8). While he is saying he has a positive view of yoga, he also qualifies these statements by saying that he does not mind doing yoga, indicating that he has neither strong positive nor strong negative feelings toward yoga class.

Each student was asked the most memorable thing they learned in yoga class during each interview. Jamie had trouble thinking of anything to say about class to answer this question. Each time the question was asked, she said, “I don’t know. I can’t remember” (Transcript JS1, line 48; Transcript JS2, line 55; Transcript JS3, line 34). She did not say anything bad about the class, but nothing was positively or negatively noteworthy enough for her to answer this question. She also used the words “I don’t know” when describing her overall impression of yoga class during the last interview. She said, “I think it’s good. I think it’s helpful. Yeah, I don’t know” (Transcript JS3, line 6). She used general terms to describe her impression of it and then indicated indifference by showing uncertainty in what she had said about the class.

Jamie, James, and Katie all used vague terms to describe indifference toward the class. They received a code of 2 on this aspect of their interviews. Andrea and Tom did not use vague terms throughout their interviews.

**Category 3: Transfer of skills to life.** During the interviews, students described transferring skills learned in yoga class to their lives outside of PE class. This category



was broken down into three subcategories: mental transfer, physical transfer, and absence of transfer. At times they described using mental aspects of the class in their lives. Other times they described how they would use physical aspects of the class in their lives. A few times students described that they would not use anything they learned outside of yoga class in their lives.

***Mental transfer.*** Students mentioned the mental health skills they gained and the ways in which they were using them and planning to use them outside of yoga class. Specifically, students transferred skills in terms of the following properties: relaxation, confidence, mental preparation, openness to new experiences, focus, and persistence.

*Relaxation.* Every student interviewed, except Jamie, said that they were using and would continue to use yoga to help them relax, relieve stress, or calm themselves outside of class (Transcripts JA1, K1, A2, K2, A3, T3).

Katie said, “And I mean I just try to keep myself calm so I don’t always stress out about everything” (Transcript K2, lines 22–23). When asked if she thinks about yoga class outside of class, Andrea responded, “Sometimes I do. Like if I’m trying to overthink something, I’ll be like a little stressed out about it and I’ll just like okay calm down a little, and then I’m like oh well yoga taught me to like just take a breath and to breathe” (Transcript A1, lines 64–67). Students used lessons they learned in yoga to help them relax and deal with everyday stress.

The overall mean for this transfer of skill was 1.71, indicating that students were sometimes using this skill outside of class and it was somewhat significant to them. The range of scores on this element was 0.00–2.50. This shows that this transfer was very strong for some students and nothing at all to other students.

*Confidence/no comparison.* Students showed that they were able to transfer self-confidence from class into other aspects of their lives. This element was most strongly transferred by Andrea. Andrea used a lesson from yoga about body posture and confidence in her life. In class the poses that build confidence were called “power poses.” Andrea said, “It’s like the power pose or something, like it makes me feel that way too” (Transcript A1, lines 41–42). This showed that she experienced feeling powerful through the poses and then was able to translate that to her life, specifically to her advanced history class that made her feel nervous. She also expressed that yoga helped her to gain confidence in answering questions in her advanced history class; she said, “It can encourage me like oh I did that pose, then maybe I can answer that question later” (Transcript A1, lines 38–40). This transfer was very strong for her; it was her overall highest coding score at 2.86 (tied with her coding score on using the breath to calm herself).

Tom also expressed that he transferred confidence from class to his life, in that he now doesn’t feel the need to compare himself to others; he said, “Really focusing on you and you on your mat, and don’t worry about anyone else. So just really, yeah, focusing on yourself” (Transcript T3, lines 50–53). This shows that he learned to be his own person in yoga class. It helped him to focus on himself and not worry about what others were doing.

Andrea also learned not to compare herself to others in yoga class; during the last interview, when asked the most memorable thing about yoga class, Andrea said, “I don’t compare myself to others and like I am me and everyone’s unique” (Transcript A3, lines

90–91). This shows that she was able to do this while in class and also translate it outside of class.

The overall average score for transferring confidence was 1.21. This is most likely a little bit high as only two of the five students commented on transferring confidence to their lives outside of yoga class. The total range of coding scores for this element was 0.00–2.86. This indicates that this was transferred strongly by one student and not at all by other students.

*Mental preparation.* Two students expressed that yoga helped them to prepare for and be successful in subsequent classes.

Both students mentioned it enough to be significant to them, but not so much that it was the most salient benefit they felt they received. Andrea said, “And I’m ready to take on government and then by that time I’m ready to participate in class” (Transcript A3, lines 30–31). It is especially notable that Andrea’s class after yoga was an Advanced Placement class. This class caused her anxiety because it is more difficult than a normal class and the students in it are smarter than in other classes. She used yoga to help her prepare for and participate in this course. Tom said, “It kind of just gets me ready for the next classes, cause I feel like so relaxed after it because I tried so hard” (Transcript T1, lines 8–9). Tom described using yoga to help him get ready for his subsequent classes because it relaxed him and also helped him become more focused. In their view, this helped them to prepare for and ultimately do better in their classes.

The overall mean for this property was 0.63 because only Tom and Andrea mentioned it as significant. The total range of coding scores was 0.00–1.67.

*Openness to new experience.* Some students expressed that they were more likely to try new things as a result of doing yoga.

When asked the most memorable thing she learned in yoga class, Katie answered, “Just actually trying to do the poses instead of just saying ‘oh I can’t do it.’ . . . So just kind of actually trying to do it” (Transcript K2, lines 64–65 and 67–68). Tom said, “I guess you could say it’s kind of like a life thing . . . how you said you don’t know if it’s impossible if you haven’t tried it kind of thing” (Transcript T2, lines 50–53).

Throughout the intervention, students were encouraged to at least try a pose even if they did not think they could actually do it. They were told that they got the same benefits from trying the pose as someone who was fully in the pose. This aspect of class helped students not only to try the poses but to try things outside of yoga. In Andrea’s second interview, she indicated that she was now open to participating in an advanced history class (before yoga, this was something that was scary to her). Andrea indicated she would not be as scared of new opportunities that arise as a result of the meditation topic of fear in yoga class (Transcript A2).

The overall average on this property was 0.75, indicating that students rarely mentioned this, and when they did, it was only somewhat salient to them. The total range of coding scores on this property was 0.00–1.50.

*Focus.* Two students expressed that yoga helps them to focus in general, which was helpful in their classes. Tom said, “Then after yoga I feel like more ready for the next two classes because I feel so relaxed but also focused at the same time” (Transcript T1, lines 36–38). Katie said yoga keeps her more focused on what she needs to get done, especially on Mondays when she feels “slumped” (Transcript K1, lines 36–37). They

were able to use this to help with other classes in school and transfer this skill to help them accomplish more things.

Andrea spoke about this benefit in more general terms; she said, “And it helps me sort of just feel that collected state where I feel like more organized a little and just a little more with everything” (Transcript A1, lines 55–57). In this statement, she is saying that yoga helped her to organize her life and stay on top of all of the things she has to do. She can organize and focus on what she needs to accomplish.

The overall average for transferring the ability to focus was 0.94, indicating that students sometimes mentioned this and that it was not overly salient in their lives. The total range of scores was 0.00–2.00. This indicates that some students significantly transferred the ability to focus to their lives and that others did not transfer it at all.

*Persistence.* Andrea compared trying a pose to a life situation. She said, “If I’m motivated to do a pose I will try it and try it until I get it. . . . And if I’m really scared of an opportunity that will come up and I’ll decline it, then I’ll have to think about it. But like I said, I can turn around and another opportunity will open up and I won’t be as scared. So I’ll keep trying it” (Transcript A2, lines 91–99). Here we see her talking about this in terms of opportunities that will arise outside of class. She will continue to try even if she doesn’t initially want to do it.

Katie said the most memorable thing she learned in yoga class was “just to keep trying at something, and don’t get frustrated and quit” (Transcript K3, line 65). She said this during her final interview, indicating that it was the overall most memorable lesson she took from class. She spoke about it in general terms (not in pose terms), indicating that she will use it for anything she wants to try to do.

James said, “Sometimes I just feel like hey, I’m not gonna be able to get the position or whatever in there. Sometimes I get it, sometimes I don’t, but I always try my hardest” (Transcript JA1, lines 47–49). In class, James continuously tried the poses even if they were hard. This comment shows his mind-set toward class and also in life: to always try his hardest, no matter what. The yoga poses gave him a physical representation of that mind-set. This also fits with James’s attitude toward yoga class. Overall he seemed to have a positive attitude toward class; he enjoyed trying things that were new to him and stated that he had positive feelings about yoga class.

Students commented on their levels of persistence as a result of practicing yoga. The overall mean on this property was 0.94. This indicates that students talked about it at some points during the interviews but that it was not highly notable for them. The range of scores on this property was 0.00–1.60.

***Physical transfer.*** Students described the different ways they would continue to use yoga in their lives to benefit themselves in a physical way. Specifically, they mentioned it in the following ways: They planned to continue practicing yoga after the intervention was finished, they would continue to use it to gain the benefits it provided for other sports they played, they would use it to reduce the stiffness they felt, and they would use it to help with their posture.

***Continue practicing.*** Four out of the five students interviewed said they planned to keep practicing after the intervention was complete.

Andrea asked about classes at the local YMCA and also asked the instructor if she could join her classes at a local studio (Transcripts A1, A2). Katie had already started a yoga practice at home and said she would continue to do that. In addition, she stated that

she was looking into signing up for a yoga class when the class at school was finished (Transcripts K2, K3).

Andrea and Katie were more serious about continuing; they asked about going to formal classes in the community to continue. James said that he would like to continue doing yoga but that it would probably be at home, by himself (Transcript J3). Tom said that he would continue to do a few stretches when he had time, usually when he woke up in the morning (Transcript T3). He also indicated this would be difficult because of time constraints, “And I don’t really have the time to do that at home since I’m always working” (Transcript T3, lines 10–11). This indicated that even though he wanted to continue practicing yoga, the elements that he transferred to his life may or may not continue because he did not plan to continue the practice of yoga. Jamie said that she would use some yoga poses to stretch before dance (Transcript JS3). However, she did not indicate that she would continue to do yoga other than a few stretches she learned that would help with dancing. This is different from the other students, who indicated they would continue to do yoga for the sake of doing yoga, not just to stretch to help with a different activity.

James and Tom were likely to do less than they were doing in the yoga class since they did not plan to find an instructor to continue teaching them. However, the fact that all of these students wanted to continue practicing shows that they enjoyed it, saw benefits from it, and wanted to keep learning about it. Jamie was the only student interviewed who did not plan to continue practicing yoga for the sake of doing yoga.

The overall average coding score on this aspect was 1.39, indicating that students sometimes mentioned it and that it was somewhat pertinent in their interviews. The range

of scores on this property was 0.00–2.50. This indicates that some students indicated that they highly intended to continue doing yoga and some did not even mention it.

*Sports.* Students also said they would continue to use yoga outside of class because of the benefits it provided while they were participating in different sports.

Andrea and Jamie were the only two who described using yoga for sports; they mentioned using the stretches they learned to help with soccer and dance (Transcripts A1, A2, JS1, JS2, JS3). When asked if she would use anything she learned in yoga now that it was finished in PE class, Jamie responded, “Yeah, just for like extra stretches before like dance” (Transcript JS3, line 19). This was one of the few ways that Jamie said she would transfer yoga to her life outside of class. She could see a strong connection between yoga and dance. This aspect made her the most interested in yoga. Andrea said, “I just do stretching with my legs; basically like some stretches that can help me with soccer season too that I just keep doing” (Transcript A2, lines 31–33). Andrea transferred many different skills and experiences from yoga to her life, and this one was not the strongest. However, she could still see the connection and the physical benefits yoga provided to help her with soccer.

The average overall score on this result was 0.88, indicating that students only mentioned this once in a while and that when they did, it was not overly salient to them. The range on this property was 0.00–2.00, indicating that some students did not plan to use it to help with other sports and that some mentioned it several times throughout the interviews.

*Combat stiffness.* Students said they would continue using yoga on an everyday basis to help combat feeling stiff in their bodies.



Andrea said she uses the poses before she goes to bed to help her sleep better and not be so stiff (Transcript A2). Tom used the poses right when he woke up in the morning also to help with general stiffness (Transcript T2). The consistency of practicing each week helped Katie with feeling less stiff outside of class: “I used to be very flexible when I was younger but now I’m like I feel always so stiff. So sometimes that really helps just being able to . . . doing it every single week instead of like oh, like every couple of months I would stretch or something” (Transcript K2, lines 48–51). Here we see these students showing that they recognized that a consistent yoga practice was helpful in making their bodies less tight.

The overall average coding score on this property was 0.81. This indicates that students talked about this sometimes, but it was not overly significant to them. The range of coding scores on this aspect was 0.00–2.25. This indicates that this was very salient to some students and not salient to other students.

*Posture.* Two students noticed that they now had better posture and were sitting up straight as a result of yoga class.

They described having better posture as something that unconsciously happened because of the poses done in class (Transcripts A2, JA2, T3). Andrea said, “So I’ll be finding myself in one of my classes and then I’ll be like oh I have pretty good posture. Or I’m sitting up straight” (Transcript A2, lines 39–41). When asked how he used what he learned in yoga class outside of class, James said, “Probably sitting” (Transcript JA, line 32). This was after he listed several other physical benefits and said, “I don’t know.” The interviewer had to clarify with him that he meant posture when he just said “sitting.” This shows this was likely not a very significant benefit for him.

Three of the five students did not mention this as a benefit at all, indicating that though it was somewhat notable for two of the students, it was not very significant for the other students or overall. The overall coding average for this element was 0.33. This indicates that students rarely mentioned this, and when they did, it was not among the most notable benefits. The range of coding scores on this property was 0.00–1.00. This indicates that it was not overly salient for any of the students.

*Absence of transfer.* Though less common, a few students indicated that they did not or would not use yoga outside of the time they spent practicing while in PE class. Students made this known by offering vague answers to questions about what they learned when they were in yoga class.

*Vague answers.* Occasionally, students would not answer a question very specifically, indicating that they did not learn something or they were not able to transfer it to their lives. In the category of attitude, vague answers were indicative of indifference toward the yoga class. Here it indicates lack of transfer; if the students had transferred yoga skills to their lives, they would have been able to discuss them more clearly, specifically, and in depth.

When asked what she thought of yoga overall during interview 3, Jamie said, “I think it’s good. I think it’s helpful. I don’t know” (Transcript JS3, line 6). When she did give descriptors, they were vague, and then she followed with “I don’t know,” indicating that she really did not take much away from the class. In her first interview, after four yoga classes, she was asked to describe yoga to someone who knew nothing about it. She responded, “The structure runs pretty good” and “it’s really easy to understand”

(Transcript JS1, lines 14–15). Her vague answers indicate that she did not really transfer much from class to life.

The overall coding average on this property was 0.71, indicating that, for the most part, students transferred what they learned in class to their lives outside of class in some way. The range of coding scores on this aspect was 0.00–1.80. This indicates that some students were never indifferent about their responses, and some students used vague answers often.

**Category 4: Breathing techniques.** Focusing on the breath and being intentional with the breath were taught during each class during the beginning meditation and while the students were doing poses. Students described using deep inhalations and exhalations to help with various situations that arose outside of yoga class. This category was broken down into two subcategories: physical aspects and mental aspects. Students described using their breath to help physically during yoga and exercise, and using their breath mentally to help during disagreements with friends and family members and to calm themselves and relieve stress.

*Physical aspects.* Students described how they used breathing to help with physical endeavors. They felt that thinking about and focusing on their breath helped them during yoga class and during exercise in general.

*During yoga.* Using breath during yoga was salient for Andrea and James, Tom mentioned it but it was not extremely salient, and Jamie and Katie did not mention it at all.

In interview 1, Andrea said the most memorable thing she learned in yoga class was that she can breath through hard poses, and that also meant she could breath through

other hard situations (Transcript A1, lines 118–119). Here she indicates that she used her breath to help her stay in poses that were harder for her to do.

James said that, after he learned how to inhale and exhale deeply, “I can actually get into the positions a little bit better” (Transcript JA1, lines 35–36). In the second interview, he said, “When I focus my breathing while I’m stretching it helps me to do the position to a greater extent, I guess you would say” (Transcript JA2, lines 57–59). This shows he recognized the breath as a tool to use to help him do the poses.

This aspect was sometimes mentioned by Andrea and James and was coded as somewhat salient to them. The other students barely mentioned it at all. This shows that students may or may not see using their breath to help with yoga poses as a benefit. The overall average on this aspect was 1.00. This indicates that students overall rarely mentioned it, and when they did, it was not very salient to them. The range of this property was 0.00–2.00. This indicates that some students suggested breathing helped them a lot during yoga class whereas others did not mention it at all.

*Exercise.* James was the only student who said he used the breathing techniques learned in yoga class to help him with exercise outside of class.

James described how he used breathing to help him with workouts and stretching outside of class. He said that controlling his breathing helped him to flex more if he controlled his inhalations and exhalations. He expressed that he stretched more now that he knew this technique (Transcript JA1).

This shows that he translated this technique to other physical activities outside of class. However, the other students did not mention using the breathing techniques during

exercise outside of class time. This benefit was not very salient to James and was not at all notable for the other four students.

The overall average on this property was low because of this—it was 0.2. The range of this coding score was 0.00–1.00. James was the only student who mentioned it, and it was not overly significant to him.

*Mental aspects.* Students described using breathing techniques outside of class to help them mentally. Specifically, they described using their breath to control their responses to disagreements with others and to calm themselves in general.

*Disagreements.* During the first interview, James described using the breath to calm himself during a dispute with his brother. He said, “I got into an argument with my brother [laughter], and then just—I don’t know, I went to my room. I was really heated about it, but I was just listening to music and tried to calm myself down you know breathing, like controlled like inhale, exhale you know. And I was okay after a while. It didn’t bother me. I got over it” (Transcript JA1, lines 77–82).

By the second interview Andrea used this technique to diffuse fights with her mother. She said, “So if I’m having a really bad day and then if we have yoga that day or something and you say like breathe deeply it’s like, okay, I’ll be alright. And then if I’m having a fight with my mom it’s like, okay, breathe. It’ll be alright” (Transcript A2, lines 47–50).

Both of these students used their breath to calm themselves in the middle of disagreements with family members. While it was not the most notable for them, the researcher was hopeful that this could grow, as it is a useful skill to have in dealing with other people.

This aspect was not very salient. The overall average coding score was 0.4. This indicates that it was rarely mentioned and was not very significant to the students. The range of coding scores was 0.00–1.00, showing that it was not overly significant to any of the students.

*Calming.* Andrea described using breathing techniques outside of class to calm herself and relieve stress. She said she started to take deep breaths when she would get stressed and start to overthink something (Transcript A1). She also said, “I’m breathing better and deeper to calm down” (Transcript A2, lines 41–42). In her final interview, Andrea said, “Deep inhales and exhales and breathing in this way, and you’re breathing through the situations in life. And that also helped me get through a whole bunch of situations that later came in the week” (Transcript A3, lines 6–10). This shows that Andrea had learned to use her breath as a tool to calm herself and destress when difficult situations arose.

James mentioned it when he said the biggest mental benefit someone could get from practicing yoga was “just breathe, I guess” (Transcript JA2, line 53). Here we see that he mentions the breath but is not very strong about how he uses it as a benefit.

Students described using breathing techniques when difficult situations came up in their lives. The overall average code for this element was 1.11. However, this could be deceptively high. Three students did not mention it, but Andrea’s comments were coded at 2.86. This was the significant benefit for her (her coding score tied with her score on transfer of confidence mentioned earlier). James also mentioned this one time, but it was not a very significant comment. The other three did not comment on it. The range for coding scores was 0.00–2.86.

## **Student Profiles**

This section presents a more comprehensive picture of individual students. Each of the five students was interviewed, their comments analyzed, and were given a profile according to the themes that emerged overall. Each theme is commented on for all five students. Students are analyzed according to the PERMA categories to understand the meaning of the results for their flourishing levels. Finally, students are compared to one another to highlight the differences and similarities in how they experienced the yoga class.

**Andrea.** Andrea is a Caucasian girl. She is a junior in high school who was already physically active at the start of the yoga intervention. In addition, she is enrolled in Advanced Placement and honors courses at the school.

*Physical effects.* Andrea described the physical effects in terms of sports she played outside of school, her flexibility, understanding her physical capabilities, and describing yoga as exercise. Andrea's average code on physical effects was a 1.13. This means that she mentioned the physical aspects of yoga but they were only somewhat salient to her.

She talked about using the stretches from yoga to help her not feel quite as sore from soccer. She said, "And then I do soccer like on the weekends for CYC and if I'm like stretching a certain way, then like some of the muscles I'm using they're not as sore later. So I mean that helps sort of" (Transcript A1, lines 59–61). Here she qualifies her statement about the benefits by saying "sort of." These comments were made after she had described relaxation and other benefits she received from doing yoga. This implies that though yoga helped her to play soccer, it was not the most notable benefit to her.

Andrea mentioned that she played soccer outside of school. Her overall sports coding score was 1.33, indicating that this aspect was talked about but was not mentioned frequently or in a way that indicated it was a prominent benefit for Andrea.

Andrea mentioned flexibility as a benefit as well. In her first interview, she said, “And then what also helps is like you build on your flexibility, I know you said” (Transcript A1, lines 58–59). This indicated that she heard the instructor say flexibility was a benefit but may or may not have noticed that benefit herself. Generally, when she did list this as a benefit, it was listed among others and was not the most pertinent to her. Andrea’s average flexibility coding score was 1.40, indicating that she mentioned flexibility as a benefit but that it was not the most notable benefit to her.

Andrea mentioned “reaching my limits” or “pushing my limits” several times in the interviews. This was something she noticed and was somewhat salient to her. This benefit could have led into the fact that accomplishment was one of the most pertinent aspects for her. Her physical capability benefit average was 1.80, showing that it was somewhat salient to her.

Andrea sometimes mentioned yoga as a form of exercise. The mental benefits seemed to overshadow most of the physical benefits she mentioned. In the first interview she had trouble articulating the difference between yoga and exercising. She was certain there was a difference but could not specifically state what that difference was. She said, “I think—like stretching out, maybe you could think of it that way, but it’s more than that. It’s more like you and the mat and like you’re one, and so then the poses that you do you are stretching but at the same time you’re kind of like—I don’t know, it’s hard to explain” (Transcript A1, lines 82–85). It seemed that the mental aspect of yoga made it



different from exercise, but she could not articulate that. Her average coding score on mentioning yoga as exercise was 1.00.

*Mental effects.* Overall, the mental aspect of yoga was the most notable for Andrea. Not only did she mention aspects in this area more than any other, she got excited when she described them, used them consistently outside of class time, and talked about them the most in depth. Her overall average coding score for the mental effects was 2.51. This was her overall highest average category score and by far the highest among all five students who were interviewed.

She described feelings of accomplishment in a variety of different ways. For example, she spoke in general terms; when asked the biggest benefits someone could get from doing yoga, she said, “Pushing to your limits and like accomplishing what you can achieve and stuff. That’s what I’ve learned” (Transcript A3, lines 70–72). There were several times she talked about pushing limits with regard to accomplishment. Because she had never tried yoga before this class, she did not know what she was capable of doing. She tried new things each class and found some success. This made her feel accomplished.

Other times Andrea spoke about this in terms of how she used the feelings of accomplishment in her life. In the first interview, she said, “With some of the stretches and poses we do and the ones that I can do I feel kind of accomplished, like oh I succeeded in that one, maybe I can succeed in something else later” (Transcript A1, lines 37–38). This aspect of mental health fed into other aspects like her confidence, openness to new experience, and extended mental benefits.

She frequently described feelings of accomplishment from yoga, and she talked about them in depth. Accomplishment was Andrea's highest score in this subcategory. She scored a 2.80 on this section.

Andrea described feeling the mental benefits of yoga outside of yoga class often and in depth. She said this helped with her Advanced Placement government class. She was able to gain confidence and courage through yoga and felt more able to participate in class (Transcript A1, lines 38–42). She felt that yoga helped her to feel calm, organized, and focused. This helped her not just in her honors courses but also in all of her courses. It is important to note that she felt this way after just 1 month of taking yoga, as she reported it in her first interview. She also felt that yoga was helping her to stay calmer; she said, "I'm just with me and I'm calm and this is going to be a better day" (Transcript A2, lines 71–72).

In addition, she felt that yoga helped her feel better about herself both in class and after class. In the final interview she said the most memorable thing she had learned in class was that she does not compare herself to others and that everyone is unique (Transcript A3).

The next highest coding score on mental health benefits for Andrea was relaxation. Her score on this was 2.69, indicating that she talked about it often and it was salient to her. She mentioned this several times throughout each interview.

This may have been salient to her because of the fact that some of her other classes were stressful and caused anxiety for her. She left yoga and went straight to one of the most difficult classes that juniors at the school choose to take. She said, "I feel like it's a break between like Spanish and then AP gov and so I'm calm during it, and then

I'm just all peaceful. And I'm ready to take on government, and then by that time I'm ready to participate in class, and I'm not as stressed as I used to be . . . and it like gets me ready" (Transcript A3, lines 28–33). Having 1 hour in the middle of the day to focus on herself was very helpful for her to destress and relax. The second highest coding score for Andrea on the mental health section was extended mental benefits at 2.73.

All of these properties connect to each other in that if one is high, it is likely that the others will be high too. For example, if Andrea felt more prepared, it is likely that she felt more confident, and if she felt more confident, it is likely that she would feel more open to try new things. If she was persistent, then it is likely that she experienced more success and was likely to feel more confident and happy. If she felt relaxed, it is likely that she felt overall mentally better.

*Attitude toward yoga.* Andrea expressed a very positive attitude toward yoga class. She did this most frequently through direct indicators. She said things like, "I'm so lucky [to be a part of the class], and I really enjoy doing it and I want to like do it more" (Transcript A1, lines 24–25), "I really enjoy it and I think it's really fun" (Transcript A2, lines 10–11), and "I love doing it" (Transcript A3, line 45). Direct indicators of enjoyment like these were coded 17 times throughout all three interviews.

She expressed these positive feelings by describing herself as "excited" before yoga class (Transcript A1, line 29; Transcript A2, line 107). In addition, she encouraged others to do yoga with her. In all three interviews she reported asking her dad to do yoga with her. She wanted to share her enjoyment with him and thought it could be beneficial for him. In the last interview, when given the opportunity to share advice for the instructor in the future, she said, "I mean I don't think there's anything different that you

should do. I mean my experience went really well. I really enjoyed it and I'm glad that I was lucky enough that you picked my class to do it" (Transcript A3, lines 100–102).

Overall, Andrea had a very positive view toward the class and the instructor who ran the class.

Andrea did not say very many negative things about class. The only negative thing she said was when she was reflecting back on the first few classes after being asked the worst thing about yoga class: "Mmmm I don't really have a worst thing anymore, but the first two classes just because I haven't like stretched that way before, I would be sore in my lower back or in my pelvis" (Transcript A3, lines 35–37). This comment shows that it was physically difficult for her at first, but she kept practicing and eventually felt better. The comment was specific to poses and the physical aspect of the class, not the class as a whole. This indicates that she did not have negative feelings toward the class overall.

The only comment she made indicating indifference toward yoga was when she compared it to PE, saying she liked them equally. This indicated that she may have liked yoga because it was a physical activity, which she enjoyed in general.

Her average attitude coding score was 2.68. This indicates that she talked about it in a mostly positive manner during the interviews.

***Transfer of skills.*** There were no instances of Andrea using language that indicated that she would not use yoga either mentally or physically outside of class. She had the highest transfer score among all five students for both the physical and mental transfer subcategories. Her average mental score was 1.74, indicating that she described

translating mental skills for use in her life sometimes and that it was somewhat salient to her.

Her highest score within this category was on confidence. As was previously mentioned, Andrea was able to transfer confidence and feelings of accomplishment to her difficult classes. She felt empowered by her success in yoga and translated that to other situations. As a result of practicing yoga and feeling a sense of accomplishment, she started to feel better about herself altogether; she said, “I’m pushing my limits and I’m improving myself all on my own. And yeah, I feel better about myself too” (transcript A2, lines 58–59).

Andrea also had the highest transfer of relaxation coding score of 2.50. This means that she talked about being able to relax outside of class as a result of practicing yoga often and that it was very salient to her. Andrea mentioned this several times in each interview.

As mentioned before, she went straight from yoga class to her advanced history class. When talking about this transition, she said, “After yoga I just feel more calm and collected, but then I have my AP government class after, and so that helps me kind of go into it because then I think oh man I have to do that for government. But then I’m still kind of calm and like okay I can do that and I can, I just got back so I’m fine. It just makes me more relaxed” (Transcript A1, lines 45–49). It is evident here that she was more easily able to transition to a class that caused her anxiety because she felt relaxed, calm, and collected going into it.

She also described feeling more relaxed overall; she said, “It’s a time when you’re one with yourself, and you’re always calm and peaceful; that’s how I always feel”

(Transcript A3, lines 4–5). Here she shows that yoga allowed her to feel calm and relaxed and that she now feels that way more often as a result of her practice.

Andrea’s lowest coding score on this area was in the focus category. Her coding score was 0.67. This means that she rarely described having more focus, and when she did it was not the most salient to her. She did describe feeling more “organized and collected” in general but did not describe how she translated that to her life outside of feeling that way after yoga.

Overall, her scores were higher than those of the other students. This is likely because if she was able to transfer one mental skill to her life, it helped her to transfer the others. If she was more confident, prepared, and relaxed, she felt better about herself overall, was more open to experience, felt more able to persist through difficulty, and more able to accomplish goals she set for herself.

Andrea’s physical transfer of skills was also the highest among all the students interviewed. Her overall average in this subcategory was 1.38.

Her score was higher mainly because she expressed a strong interest in continuing the physical practice of yoga. In each interview, she asked about ways to practice yoga more outside of the PE class. She asked her parents to buy her a yoga mat for her birthday so that she could do yoga at home. She asked about yoga classes at the YMCA and at the instructor’s studio in the community. She wanted to make yoga a part of her physical routine.

In addition, she transferred yoga physically to her life by using it to help her play soccer. She mentioned that yoga helped her feel less sore after playing soccer (Transcript

A1) and that it loosened her legs to help her play (Transcript A2). This shows that she found ways to use yoga physically outside of class.

***Breathing.*** Andrea described the ways she would use breathing techniques learned in class outside of class time. Her overall coding score on this aspect was 1.47, indicating that she mentioned this rarely to sometimes and that it was somewhat salient to her.

Though she did not mention using the breathing techniques during exercise, she did state this in terms of how she used it during yoga class. She described breathing to get through hard poses several times throughout the interviews. This aspect also translated to the different ways she would use her breath outside of yoga class. She said, “Breathing through hard poses, then I can breathe through other hard situations” (Transcript A1, lines 118–119). When students were in poses that were more difficult the instructor encouraged them to stay where they were and take a deep breath to help them hold it longer and release tension. Andrea took this lesson and applied it to other situations in her life, as the instructor suggested. She spoke about this as a benefit in general terms, saying, “I am breathing better and deeper to calm down” (Transcript A2, lines 41–42), and also in more specific terms when she described using her breath to control her emotions during a fight with her mom (Transcript A2).

***PERMA summary.*** Overall, Andrea appeared to enjoy yoga the most out of the five students interviewed. She seemed to take away the most from it and was able to use it in her life. Specifically, she applied a lot of the mental benefits to her life. Much of what she described can be connected to the PERMA Profiler. She attributed a more positive attitude in general and during class to her yoga practice (P). This fit with her P

score on the PERMA Profiler; at Time 1 measurement, her P score was 6.33, and this rose 2 points to 8.33 at Time 2 (after the yoga intervention). She reported feeling engaged in yoga via a high enjoyment level (E). But this engagement may not have been enough to show a difference on the PERMA Profiler. Her Time 1 score on engagement was 8.33. This dropped slightly to 7.67 at Time 2. She reported improved relationships with her family members because of ideas brought up during yoga class (R). She started out reporting good relationships in her life at Time 1 on the PERMA Profiler; her initial R score was 9.33. This rose all the way up to 10.00 at Time 2 of measurement. She did not express that yoga increased a sense of meaning in her life. This is the only aspect of the PERMA that was not addressed in interviews with Andrea (M). This score started at 9.33 on the PERMA Profiler and dropped 1 point to 8.33 at Time 2. She did experience more feelings of accomplishment as described in achieving poses and being able to “take on” her government class (A). This growth did not show on the PERMA Profiler; she scored 8.33 at Time 1 and 7.00 at Time 2. Her overall score on the PERMA Profiler was 8.38 at Time 1 and rose slightly to 8.91 at Time 2. Because all of these elements are present, it can be concluded that the yoga class enhanced Andrea’s ability to flourish.

*Summary of Andrea’s profile.* The mental effects seemed to have the biggest effect for Andrea. Throughout the interviews, she frequently referenced the mental benefits she saw as a result of yoga. She also referenced the ways that she transferred these benefits to improve her life. This was evident by the way she described using breathing to calm herself and help her relax when she felt anxious. This applied to several different situations for her: transitioning from yoga to a difficult history class, arguments with her mom, and experiencing more relaxation in general.



She also transferred many useful mental skills to help with school and daily life. Various times she expressed that she was more confident and did not feel the need to compare herself to others in yoga and now also in her daily life. This led to further feelings of confidence that allowed her to be herself. Also adding to feelings of confidence were the feelings of accomplishment that she said she felt from practicing yoga. It seemed to be beneficial to her to be in a noncompetitive environment where students were encouraged to keep trying even if they could not do the pose the first time. Andrea expressed transferring lessons of persistence to other areas of her life.

Because she used the techniques in class and saw many different benefits from them, she had a very positive attitude about yoga class. She expressed how much she enjoyed the class several times throughout the interviews. Of all five students interviewed, she expressed the most positivity about the class.

Perhaps because of all of these mental benefits, Andrea said that she planned to continue the physical practice of yoga. She also noted that it helped her to understand what she might be capable of physically and helped with different physical activities she was engaging in before she started yoga.

**Jamie.** Jamie is an African American girl. She is a senior who was somewhat physically active at the start of the intervention. She was not enrolled in any honors or Advanced Placement courses but was on track to graduate just months after the intervention concluded.

*Physical effects.* Jamie's average coding score on physical effects was 1.58. This indicates that she talked about the physical aspects at some points and they were somewhat salient to her. This was the largest average effect score for Jamie, showing that

this aspect of yoga class was the most significant for Jamie. Her physical score was also the highest of all the students interviewed.

Jamie connected the physical practice of yoga to dance and cheerleading, activities that she wanted to participate in outside of class time. This was the only way she reported that she connected yoga to her life. More specifically, she connected the benefits balance and flexibility from yoga to dance and cheerleading. When asked if yoga ever helped her when she was not in class, she said, “I’m not sure. Well I guess like with the whole balance thing, like for cheerleading, I know like when you have to do like stunts and stuff you have to balance” (Transcript JS1, lines 29–31). She also felt that yoga made her more flexible and connected, which benefited dance. When asked if she would use what she learned in yoga in her life, she said, “Yeah, just for like extra stretches before dance” (Transcript JS3, line 19).

When given the opportunity to express how she might use yoga in her life or how it might connect to her life, she only referenced the ways it would help her with dance.

She did somewhat connect yoga to exercise. When asked if she thought yoga and exercise were different, she said they were different because in yoga you stretch further but you do not really sweat. She added that yoga was “kind of like exercise” (Transcript JA1, lines 38–41). This was another opportunity to add in the mental aspects that yoga offers that many sports do not offer. She did not mention them, indicating that she was focused mostly on the physical aspects of yoga. This shows that the physical aspects of yoga were extremely salient to her.

***Mental effects.*** The mental effects of yoga were not very notable for Jamie. Her overall coding score on this aspect was 0.33. This means that she did not mention the

mental effects very often, and if she did they were not very significant to her. Her mental effects score was also the lowest of all the students interviewed.

The only mental effect that she mentioned that was significant to her was relaxation. Her coding score on this element was 2.00, indicating that she talked about this sometimes and that when she did, it was somewhat significant to her. She mentioned that she thought yoga was relaxing in every single interview.

When asked how she would describe yoga to someone who knew nothing about it, she said, “It’s fun. It’s relaxing” (Transcript JS1, line 10). She listed relaxing almost immediately, showing that aspect was on the forefront of her mind. When asked the three biggest benefits of yoga, she said, “Okay like relaxation, flexibility, and I don’t know peace” (Transcript JS3, line 25). She answered this question almost as if there were right and wrong answers. This indicated that she might have been trying to say what she thought the instructor wanted her to say. However, relaxation was the first benefit that came out, showing that she may have really thought that yoga helped her to relax.

*Attitude toward yoga.* For the most part, Jamie expressed indifference toward yoga class. She expressed this indifference mainly through the use of general terms and vague language to describe her experience. She used vague terms often throughout the interviews. For example, in each interview she was asked the most memorable thing about yoga class. In each interview her response began with, “I don’t know. I can’t remember” (Transcript JS1, line 48; Transcript JS2, line 55; Transcript JS3, line 34). This indicated that not much was notable to her about yoga class, whether good or bad.

She also described a few things she did not like about the class. During two interviews she stated that she did not like the pose downward facing dog (Transcripts

JS1, JS3). The class was asked to do this pose several times throughout each class at the start of the class and as a transition pose. If she truly did not like this pose, it would have been difficult for her to enjoy the class. It was by far the most common pose students were asked to do throughout the semester.

She did say she had some positive feelings about class when she described it as “fun” (Transcript JS1, line 10) and “pretty fun” (Transcript JS2, line 8). However, the researcher viewed these statements with caution because her tone of voice did not change as she said this. She did not show any kind of excitement at all. In addition, the researcher wondered if the fact that she was teaching the classes and conducting the interviews had an effect on what Jamie said. With so many indicators of indifference and even dislike of the class, it is difficult to conclude that Jamie actually viewed the class as fun.

Jamie’s average attitude score was 1.80. This indicates that she was mildly positive about the class.

***Transfer of skills.*** Perhaps because she was disengaged or not enjoying the class, Jamie did not report transferring many skills from yoga to her life. She did not report or indicate that she used any mental skills outside of yoga class. Several of the vague answers she offered indicated that she did not transfer much from yoga to her life at all.

In the last interview, when the intervention was complete, she was asked what she thought of yoga overall; she said, “I think it’s good. I think it’s helpful. Yeah, I don’t know” (Transcript JA3, line). This vague and short answer shows that she did not have strong feelings about yoga either way. It also shows that she did not have much to say about the class even though she had had 12 weeks of classes to describe. She was likely

not using yoga outside of class time or she would have had something to say about how yoga was helpful to her. She also would not have followed this up with, “I don’t know.”

In a physical sense, she did indicate that she would continue to use yoga to help with dance and cheerleading. She said, “I haven’t used it yet, but I’m sure when I try out for the dance team for college next—well in the spring, that it will come in handy” (Transcript JS2, lines 12–13). Because this statement starts with “I haven’t used it yet,” it did not appear that she practiced or planned to practice yoga outside of PE, but that having the experience in PE class would be helpful to her when she does need it later in the spring.

Her overall coding score on physical transfer was 0.50, showing that she did not talk about this very often, and when she did, it was not extremely significant to her.

***Breathing techniques.*** Jamie did not mention the breathing techniques or how she used them during yoga or in her life during the interviews. The fact that she did not even mention them shows that they were very insignificant to her.

***PERMA summary.*** Overall, Jamie seemed to take away the least from yoga class. She seemed indifferent toward it and did not translate very much to her life outside of class. The only thing that she indicated that she might use were some of the physical benefits that yoga offered: flexibility and balance for her extracurricular activities of dance and cheerleading. Because of this, she may have received the most benefit around sports of all the students. Because she did not say very much in the interviews, not much of what she described can be tied to positive emotion, engagement, relationships, meaning, and accomplishment. From the information gained in the interviews, it seemed unlikely that yoga class helped her to flourish. However, when looking at her PERMA

Profiler scores, it does appear that she may have gained something from the yoga class. Her Overall PERMA score went from 6.50 at Time 1 to 7.55 at Time 2. Her positive emotion score was 7.00 at Time 1 and 8.33 at Time 2. Her engagement score was 6.33 at Time 1 and 7.00 at Time 2. Her relationship score was the only one that declined from Time 1 to Time 2: Her score was 7.00 at Time 1 and slightly declined to 6.67 at Time 2. Her meaning score was 6.67 at Time 1 and 7.33 at Time 2. Finally, her accomplishment score was 6.00 at Time 1 and 7.00 at Time 2.

This could indicate that the researcher mistook her lack of responses as indifference during the interviews. It could mean that she is just not a very verbal student, perhaps shy and not talkative and does not necessarily indicate that she did not get anything out of the yoga class. Perhaps she preferred to write rather than speak. She also may have needed help articulating her feelings about the class. Perhaps the PERMA Profiler helped her to do that.

*Summary of Jamie's profile.* In contrast to Andrea, the physical effects seemed much more salient to Jamie than the mental effects. She mostly mentioned using yoga in her life to help with cheerleading and dance. The physical aspects of yoga were very salient to her. She also expressed that she did not like the pose downward facing dog. The class was asked to do this several times throughout each class. This pose likely contributed heavily toward the feelings of negativity she had toward the class.

The mental aspects were not very salient to Jamie. She did not describe using any of the mental lessons learned in her life outside of class. In fact, she barely recognized that she used them in class. The one thing she did recognize in this area was that yoga helped her to relax while in class. However, she did not express that she transferred this

to her life outside of class. She did not use breathing techniques learned in class outside of class at all, in contrast to other students who said these techniques helped them relax when they were not in class.

Overall, Jamie seemed indifferent toward the yoga class. She used many vague answers to express this indifference. She did not express any overly positive or overly negative feelings toward class, showing that she did not mind being in the class but that she did not necessarily plan to continue yoga when the intervention was over.

**James.** James is an African American boy who was in his fifth year of high school. He was set to graduate one semester after his peers. The yoga class was held during his extra semester in high school. He was physically active at the start of the yoga intervention.

*Physical effects.* James's overall average coding score on physical effects was 1.45. This indicates that he sometimes talked about the physical effects of yoga. His overall score on the salience of physical effects was 2.64; this indicates that the physical aspect was very significant to him.

James often compared yoga to exercise. When asked the best thing about yoga, he said, "The best thing is that you're getting your stretch in, it's a good exercise throughout the day" (Transcript JA3, lines 16–17). This shows that the physical part of yoga was what he liked best. He also described himself as someone who likes to exercise. During the second interview, he said he enjoyed yoga because it made him work physically and he enjoyed doing physical activity (Transcript JA2). Because he considered himself a physically active person, it made sense that he would enjoy and focus on the physical aspects of yoga and consider it exercise.

He mentioned the ways that yoga taught him about his physical capabilities throughout the interviews. He mentioned this in general by saying things like, “I’m not all that flexible” (Transcript JA2, line 41) and “I’m getting flexible” (Transcript JA2, line 51). Here he describes both his physical limitations and his ability to improve on those limitations. He also mentioned this aspect in more specific terms, for example, when he was asked about the most memorable thing he learned in yoga class, he responded, “When I’m in downward dog, my heels cannot touch the ground” (Transcript JA1, lines 114–115). This response shows both a physical limitation that he noticed and the salience of the physical aspects of yoga for this student.

*Mental effects.* James’s overall mental effects coding score was 1.11. This indicates that he rarely talked about the mental effects of yoga, and when he did, they were not the most significant aspect of yoga for him.

The most salient of these effects was relaxation. James’s coding score on relaxation was 1.83, showing that he did talk about this benefit occasionally and that it was somewhat salient to him. James described himself as “relaxed” (Transcript JA1, line 45) during yoga and “rejuvenated” (Transcript JA1, line 50) after yoga. He also said he liked doing yoga because he could “finally sit down and get some quiet” (Transcript JA2, line 89). All of these things show that he found yoga to be relaxing during and after class.

James described his feelings of accomplishment in his last interview. He said that the yoga class made high school different for him because he never saw himself doing yoga. He expressed that he did not think he would actually like doing yoga. He said, “But now that it’s finally done and everything, I learned so much from it, benefited from it physically and mentally. I don’t know, I’m glad I did it I guess you would say”



(Transcript JA3, lines 74–77). On reflection at the end, James expressed that he could see the benefits of doing yoga and that he was happy he participated. He worked very hard in the class, felt that he accomplished something, and learned something new.

*Attitude.* James expressed both positive feelings and feelings of indifference toward yoga class. He occasionally mentioned both enjoyment and indifference about yoga class.

He expressed positive feelings through direct indicators. Many of the direct indicators had qualifying statements before or after the direct indicator. For example, when asked if he told his friends and family anything about yoga class, he said, “It’s really not that bad. I actually enjoy it or whatever, so that’s about it” (Transcript JA2, lines 10–11). This statement has a qualifier on the front end and the back end. “It’s really not that bad” indicates indifference, whereas “I actually enjoy it” indicates that he likes the class, and “so that’s about it” indicates that he does not want to explain it. He seemed conflicted about liking the class but not wanting to appear that he really enjoyed it.

He expressed positive feelings when describing his feelings before class. He said, “The first day I wasn’t really looking forward to it, but now I’m looking forward to yoga every week once a week or whatever” (Transcript JA1, lines 42–44). He was not expecting to like class and was surprised that he did.

He also expressed that his friends and family were surprised to hear that he liked yoga. He said, “I guess you could say like they wouldn’t expect me to do it. It’s like—I don’t know, the person I am, they would be just like you can do it and actually like it I guess” (Transcript JA2, lines 18–20).

He went back and forth throughout the interviews between expressing that he enjoyed the class and indifference toward it. It seemed that he actually did like it but was surprised that he enjoyed it, so he tried to downplay how much he actually enjoyed the class. He did not express many negative thoughts about class. The only time he did was to say that he did not like one pose that was only done occasionally in class. It is unlikely that this changed his view of the class as a whole.

His overall average coding score on this element was 2.50. This indicates that he was overall positive about the class. Most of the time he expressed positive feelings about the class, but occasionally he expressed indifference.

*Transfer of skills.* Overall, James did not talk about transferring many mental or physical skills to his life outside of class. His overall coding score on mental transfer of skills was 0.28, and his overall coding score on physical transfer was 0.34. This indicates that he did not mention transferring these skills very often, and it was not significant to him.

On a few occasions he mentioned that he would use lessons of persistence from yoga class in his life, saying that he always tried as hard as he could and kept trying in yoga class whether or not he knew he would be able to get the full form of the pose (Transcript JA1). He mentioned this because the instructor encouraged the class to try no matter what they thought they might be capable of doing. In this interview, he was reiterating to the instructor that he listened to her.

He also recognized that he was open to a new experience in trying yoga. He said, “I used to always think of yoga like—ah, I’ll never do yoga” (Transcript JA2, lines 68–

69). Though he did not mention anything about transferring this experience to his life, he did recognize that he was able to try something new and enjoy it.

Physically he mentioned that he would like to continue to practice yoga but would prefer to do it at home by himself. While this is somewhat of a transfer to his life, it is unlikely that he would continue to practice without an instructor to show him how to do it. He also mentioned that yoga helped him to have better posture. When asked if he used yoga outside of class, he answered, “Probably sitting” (Transcript JA2, line 33). The researcher had to clarify that this meant that he sat taller and had better posture. Though this transferred to his life while he was engaging in a regular yoga practice, that transition is not likely to remain unless he continues to practice yoga after the end of the intervention.

***Breathing techniques.*** James described how he used breathing techniques in class and outside of class. He mentioned using them for both physical activity and to help him mentally. His overall coding score was 1.08. This implies that he rarely mentioned it and it was not that salient to him. This score is somewhat deceiving as he did describe using breathing techniques while doing yoga and exercising more frequently.

He described how the breath helped him to do yoga poses; he said, “When I focus my breathing while I’m stretching it helps me do the position to a greater extent I guess you would say” (Transcript JA2, lines 57–58). He extended this benefit to exercise, saying that controlled breathing helped him to “flex” more (Transcript JA1, line 31). He found this technique to be useful both in yoga poses and exercise in general.

In the first interview he described a situation where he got into an argument with his brother and used the deep inhalations and exhalations he learned in class to calm

himself. He said, “I got into an argument with my brother, and then just—I don’t know, I went to my room. I was really heated about it, but I was just listening to music and tried to calm myself down you know breathing, like controlled like inhale, exhale, you know. And I was okay after a while. I got over it” (Transcript JA1, lines 77–82). This shows that he used the breathing techniques learned in class to calm himself outside of class. Since he was able to reflect on this situation and the fact that the breathing helped him through this, the hope is that he will be able to apply this technique the next time he feels angry.

*PERMA summary.* Overall James seemed to take mostly physical lessons away from yoga class. Beyond that, he did not express that he used much of what he learned outside of class. He did express that he experienced some positive emotion from participating in class, though not to the same extent as other students (P). He showed a slight growth on the PERMA Profiler on positive emotion. His Time 1 score was 6.00 and his Time 2 score was 6.33. He did seem engaged in the class when he was in it, and he also told friends and family members about his experience in class (E). According to the PERMA Profiler, his overall engagement level stayed exactly the same at 8.33 both on Time 1 and Time 2 measurements. His relationships were improved by his ability to calm himself during disagreements (R). Though he seemed to improve in the interviews, his score on the PERMA Profiler for relationships stayed the same at 7.67 at both times of measurement. He did not seem to derive much meaning from the class as a whole since he did not talk about transferring much to his life outside of class (M). His score on meaning on the PERMA Profiler decreased from 7.00 at Time 1 to 6.00 at Time 2. He experienced a sense of accomplishment by trying something new and doing things physically that he had not done before (A). This score also dropped from 7.00 at Time 1

to 6.33 at Time 2. His overall score on this measure was 7.19 at Time 1 and 7.18 at Time 2.

*Summary of James's profile.* The physical aspects of yoga were very salient to James. He mentioned this in terms of flexibility and yoga as a physical workout, and when asked about yoga in general, he usually responded by describing the physical parts of it. Even when describing how he used breathing techniques learned in class, he talked about the ways he used breathing to help him physically, saying that his breathing helped him get into the positions better and to flex when exercising. He did not describe the breathing as helping him to relax, as other students described.

Mentally he felt that yoga helped him to relax during and after class. He also expressed that he felt some feelings of accomplishment and open to new experiences as a result of yoga. He said he never thought that he would actually do yoga, but when he finished he realized he had tried something new and enjoyed it.

Though he did not express experiencing as many mental effects as others, he did seem to enjoy yoga. Sometimes he expressed feelings of indifference toward it as well. He seemed conflicted about it because he did not expect to like it and he said other people would not expect him to like it. However, overall, he indicated that he at least somewhat enjoyed the class.

He did not indicate that he transferred much of yoga, the physical or mental aspects, to his life outside of class. It appeared as though he would use the skills during class and then experience relaxation right after class, but that was the extent of it. He indicated that he wanted to continue yoga but only at home by himself. Without an

instructor to help, it is unlikely that he will grow much more in this area and be able to apply it to his life.

James did say that he used the breathing techniques outside of class time both in physical and mental ways. He used breathing to help him physically when exercising, to hold poses longer and get into positions to a greater extent. He also said that he used the breathing to help him flex more. In addition, he noted one time where he used his breath to help him calm down during an argument with his brother. Though this was the only time it was mentioned, the researcher is hopeful that because he used it successfully in this instance, he will use it again in the future.

**Tom.** Tom is a Caucasian boy. He is a junior who was somewhat active at the start of the yoga intervention. He was enrolled in regular classes at the high school where the intervention took place.

*Physical effects.* Overall, the physical effects were somewhat salient to Tom. His overall physical effects coding average was 1.47, the second highest of all the students interviewed. His physical salience score was 2.00. This indicates that he mentioned the physical part of yoga often, but not constantly.

Tom described yoga as exercise throughout his interviews. Many of his comments implied that he was surprised by and excited about the physical challenge that yoga offered. In the second interview, he said, “I enjoy it because it actually pushes you and actually helps you. It’s an actual exercise thing” (Transcript T2, lines 11–12). His use of the word “actually” indicates that he did not think it would be physically challenging prior to the yoga intervention. Since he was talking about how he describes yoga to other people, it also demonstrates that he did not think other people would view it as a physical

exercise. Later, he said, “They wouldn’t think of yoga as being a real workout thing, so yeah. . . . It actually is a workout and it helps you” (Transcript T2, lines 18–21). This shows that he was surprised to find out that yoga can be a strenuous physical activity.

Along with it being a workout, Tom said he believed yoga built physical strength. When describing the three biggest benefits someone could get out of yoga, he said, “Well if they wanna build up their strength it’s definitely a strength technique” (Transcript T2, lines 48–49). Strength was the first of three benefits he listed, showing that it was one of the first things that came to mind as a benefit. He also used the word “definitely,” indicating that he felt strongly about this.

Tom described yoga as a workout and a technique for building physical strength by telling the researcher that his muscles were sore after yoga class. For example, when asked if he thought about yoga class at all on days he was not practicing yoga, he said, “I feel a little sore after it, I’m not gonna lie” (Transcript T1, line 45). His first response was to talk about the fact that he thinks about it in a physical way. This shows that the physical element was the most salient to him.

Tom also described yoga in terms of helping him to understand his physical capabilities. Several times he mentioned yoga pushing his limits and stretching him in ways he had never stretched before this experience. As he spoke in terms of setting new boundaries for himself and stretching his limits, yoga had taught him more about what he was capable of physically.

***Mental effects.*** Tom’s overall mental effects coding score was 1.55, the second highest of all the students, but still very far from the highest score of 2.51. This shows

that the mental aspects were somewhat significant to him but not the most significant benefit of yoga that he mentioned.

Tom spoke in terms of yoga helping him to feel that he accomplished something. When describing how he felt after yoga, he said, “I feel like so relaxed because I tried so hard” (Transcript T1, lines 8–9). Here he describes working hard in class and feeling good about that immediately after. He expressed that his favorite part of class was the end where the students did savasana, or final resting pose. When describing why he enjoyed it, he said, “Because it kinda just makes me think of what I just did and how I pushed myself” (Transcript T3, lines 17–18). Each class, students had 7–10 minutes at the end of class to rest and reflect. Tom used this time to think about how he worked hard and how good that felt. He felt accomplished during and after yoga class.

Along with this, Tom described the mental benefit of relaxation during his interviews. As seen in his preceding quotations, the hard work he put into the class made him feel relaxed at the end of class. He used the word “relieved” (Transcript T1, line 18) to describe how he felt after yoga class. This indicates that the large amount of effort he put into the yoga class led to both feelings of accomplishment and relaxation when the class was over.

Tom appreciated the opportunity to focus on himself and to get to know himself better. When describing why he liked the final resting pose as much as he did, he said it gave him time to focus on himself and “soak” it in (Transcript T3, line 24). Other times he mentioned that it allowed him to pay attention to himself (Transcript T2). It is apparent that he appreciated the opportunity to work hard physically and time to reflect on what that meant about who he was and what he could do.



*Attitude.* Overall, Tom’s attitude toward the class appeared positive. Throughout the interviews, direct indicators showed that he enjoyed practicing yoga and enjoyed the class as a whole. He spoke about enjoying the class often, and this was salient in the interviews. He also expressed that he had positive feelings before yoga class and offered positive advice for the future.

He stated that he tells his friends and family that he really likes yoga. This appeared authentic, as he was more animated when telling the story and in the inflection of his voice (Transcript T2, line 8). He said this to the researcher almost as if he were actually talking to his friends and family. He used the words, “enjoy,” “fun,” and “good” to describe what he thought about the class. He said that he looks forward to yoga each week (Transcript T1). He described himself as “excited” for each class (Transcript T1, line 78), and the feelings that he felt at the end of yoga made him want to do it again (Transcript T1).

In some ways he seemed surprised that he enjoyed yoga and found it useful. This was apparent when he said, “It actually helps you” (Transcript T2, line 12). In addition, when asked the worst thing about yoga class, he replied, “When we would be laying there, and then you’d say, ‘roll over to your side.’ Because then I knew it was over” (Transcript T2, lines 27–28). This shows that he was engaged in the class and enjoying it because the worst part for him was when it ended.

He indicated positive feelings about the class through his advice for the researcher throughout the intervention and in the future. When the researcher asked him if there was anything he wanted her to know about the way things were going in class, he said, “Keep doing what you’re doing” (Transcript T2, line 106). At the end of the last interview, the

researcher asked him if there was anything she should think about when running the intervention again; he said, “Keep doing what you’re doing ‘cause I think it’s good” (Transcript T3, line 67). Perhaps because the researcher who conducted the interviews was also the instructor, he did not have any negative things to say about the class during any of the interviews.

His overall coding average on attitude was 2.75, indicating that he had a positive attitude about class. This was the highest attitude average, showing that he expressed his enjoyment the most of all students interviewed.

***Transfer of skills.*** Tom appeared to transfer more mental skills to his life than physical skills. His overall mental transfer coding score was 1.15. His overall physical transfer coding score was 0.75. He expressed transferring mental skills of focus and relaxation. He expressed that he would transfer physical yoga skills with the goal of making his body feel less stiff.

Tom felt focused in his classes for the remainder of the day after yoga. He said, “After yoga I feel like more ready for the next two classes because I feel so relaxed but also focused at the same time” (Transcript T1, lines 37–38). He expressed that both the relaxation and the ability to focus were helpful to him over the remainder of the day after yoga. When asked to describe his feelings after yoga class in more depth, he said, “It’s just I just feel so like relaxed after it. I don’t know how to describe it” (Transcript T1, lines 29–30). This suggests that he may have been feeling more than relaxation but that he had trouble articulating all of what he felt. It does suggest that the things he was feeling were positive and that he carried them with him throughout the rest of the day.

Tom said that he would transfer the physical part of yoga to combat the stiffness he felt in his body. When asked how he uses yoga outside of class, he explained that he does yoga poses when he gets out of bed to help him wake up. He expanded on how this made him feel each morning: “Then I feel a little relaxed but yet, I don’t know how to explain it. Like stretched out I guess you could say from being like stiff from sleeping or whatever” (Transcript T2, lines 29–31). During the last interview, he was asked how he would use yoga now that he would not be doing it in PE. The second answer he gave was, “And then pose wise, maybe when I get up in the morning and stretch out a little bit” (Transcript T3, lines 40–41). He found the poses useful on a daily basis to help combat normal stiffness after sleep.

***Breathing techniques.*** Tom very rarely mentioned breath or breathing techniques in yoga class. His overall coding score on breathing was 0.08. This means that he hardly mentioned it at all across the interviews. In fact, he only mentioned it one time. He said, “Sitting up straight and then inhaling and exhaling. It gets me ready for building my strength and building my balance, and learning about myself” (Transcript T3, lines 58–60). Tom described how the breathing at the beginning of class prepared him for the class.

In his description of class, he said breathing helped him with both physical aspects (building strength and balance) and mental aspects (learning about himself). However, it implies that he did not use breathing beyond this time in class.

***PERMA summary.*** Overall, yoga seemed to have a moderate impact on Tom. He mentioned physical and mental effects. He also indicated that he enjoyed taking the class. Though he noted many mental and physical effects, he did not translate all of these to his

life outside of class. Tom expressed experiencing positive emotion from the class and throughout the day after the class finished (P). This fits with his score on positive emotion on the PERMA Profiler. His score at Time 1 of measurement was 5.33; by Time 2, he reported a score 2 points higher, at 7.33. He expressed that he was engaged in the class, looking forward to it each week, and wishing that it would not end (E). His score on the PERMA Profiler on engagement also went up, from 8.00 at Time 1 to 9.33 at Time 2. His relationships did not seem to be affected by the yoga class from the information received in the interviews. However, his score on the PERMA Profiler indicates that he did have improved relationships between Time 1 and Time 2 measurements. His score at Time 1 was 4.67, whereas his score at Time 2 was 7.67, showing a gain of 3 points. He also did not indicate that he derived any meaning from the yoga class. His score on meaning on the PERMA Profiler went from a 10.00 at Time 1 to a 9.00 at Time 2. He did express a sense of accomplishment from working hard in the class and experiencing good feelings after it. There was a slight increase in accomplishment on the PERMA Profiler between Time 1 and Time 2: His score at Time 1 was 7.33, and his score at Time 2 was 7.67.

***Summary of Tom's profile.*** Tom saw the physical benefits of yoga and seemed surprised by the physical challenge that yoga offered. He recognized it as a physical exercise almost immediately. He seemed to appreciate this aspect of yoga, saying that it ended up making him feel more accomplished and relaxed when it was finished. When asked about yoga in general, his first response was usually about the physical aspects of it. This showed that this aspect was very salient to him.

Though not quite as salient, Tom did recognize that he gained mental benefits from practicing yoga. He connected the physical aspect to the mental aspect, saying that because of how hard yoga was physically, it helped him to relax more mentally. This physical aspect also helped him to feel more accomplished when the class was finished.

He expressed mostly positive feelings about the class. He directly stated that he enjoyed class and had positive feelings around class time, and he offered positive comments when giving advice for the future. He did not make any negative suggestions or comments about class and rarely seemed indifferent about it.

He was able to transfer both mental and physical skills to his life. Mentally he described the ability to focus, relax, and feel prepared outside of class as a result of yoga class. Physically he described that yoga helped with stiffness in his body, especially when he would do poses in the morning after getting out of bed.

He did not transfer breathing techniques to his life outside of class. If he had, this would have likely added to the mental benefits he had already transferred. Tom did not plan to continue the practice of yoga after the intervention, despite the benefits he saw. He stated that he did not have the time. This is an example of one benefit of offering this during the school day: Students do not have to add to their already busy schedules.

**Katie.** Katie is a biracial senior girl. She was somewhat active at the start of the yoga intervention. She was on track to graduate one semester ahead of her peer group. She was enrolled in regular classes at the high school where the intervention took place.

*Physical effects.* Katie's average coding score on the physical effects was 1.28, showing that she talked about this at times but it was not the most salient. This was her highest average score overall, indicating that it was the most prominent effect for her.

However, it is the second lowest average score for physical effects, showing that she did not see as many physical effects as other students.

Katie talked about this element in terms of strength and flexibility the most. When asked to describe yoga to someone who knew nothing about it, her first response was, “What I’ve seen so far is we do a lot of stretches, and they’re not just easy stretches. They’re getting harder so it like builds up your strength is what I want to say about that and probably makes you more flexible than most sports would” (Transcript K1, lines 8–11). She describes the action of doing yoga in general physical terms (a lot of stretches) and then describes the more specific effects it has on the students physically (stronger and more flexible). This shows that the physical aspects were the most striking to her. She did not describe any of the mental elements in her initial description of yoga as a whole.

Later, when comparing yoga to exercise, she said, “I feel like it seems like if you do it [yoga] more and more it makes you stronger in spots that you wouldn’t expect and more flexible overall” (Transcript K1, lines 71–73). Strength and flexibility were the two most significant physical effects for her. She reaffirmed this in her second interview when she was asked the biggest benefits that yoga offers. She said, “Well like in a physical sense obviously strength and flexibility” (Transcript K2, line 47). This was her first response, and she used the word “obviously” as if everyone who knew anything about yoga would recognize these benefits.

***Mental effects.*** Katie’s overall mental effects coding average was 1.04. This demonstrates that she mentioned these topics rarely, and when she did, they were not very notable for her. She did mention the mental benefits of relaxation and accomplishment. In addition, she scored a 2.33 on extended mental benefits, showing that

the mental benefits she did receive lasted beyond class time. However, her total average on mental benefits was the second to lowest score among all five students. This shows that she did not see as many mental benefits as other students interviewed.

When prompted to add to her physical description of yoga to someone who knew nothing about it, she said, “It’s kind of relaxing. You know, after you’re done with the stretches, it’s very relaxing” (Transcript K1, line 20). This line shows that the mental benefit of relaxation was less notable for her than the physical benefits she received. In addition, she first said, “kind of relaxing” and then “very relaxing,” implying that she was only somewhat relaxed after each class in contrast to her physical description. Later in the interview, she said, “And then like afterwards I feel pretty relaxed” (Transcript K1, lines 31–32).

The strength of her statements about the mental benefits waivered throughout the interview, showing that she did not feel this benefit as strongly as she felt others. When describing the mental benefits in the last interview, she said, “And then mental, like I said it just kind of keeps you relaxed and makes me a little bit less stressed about everything” (Transcript K3, lines 56–57). Here she used the qualifiers “kind of” and “a little bit” each time she mentioned a mental benefit.

When talking about accomplishment, she explained it in terms of “pushing limits.” In the first interview, she said, “And I feel like yoga is kind of like pushing you to like the point that you can go and not further than that. . . . I feel like you kind of push yourself to the limit that you can go to” (Transcript K1, lines 58–63). She noticed that she was hitting her peaks in class physically. She even mentioned putting extra challenges on herself when in class. When describing one particular pose, she said, “I try to challenge

myself to not have my stomach like resting on my thigh, so I kind of like that” (Transcript K1, lines 82–84). She enjoyed herself when working at her physical peak and challenging herself to make the poses even more difficult. This shows that she felt accomplished and enjoyed feeling that way.

She said that the mental benefits she received lasted outside of class time. She described being able to focus better after class and the day after class (Transcript K1). In the second interview, she mentioned that the meditation and discussion at the beginning of class was helpful to her. She said, “And then I just kind of think about that and take it with me as I go” (Transcript K2, lines 35–36). As mentioned earlier, she said, “It just kind of keeps you relaxed and makes me a little less stressed about everything” (Transcript K2, lines 56–57). The words “keeps” and “everything” indicate that the benefits extended beyond class time.

**Attitude.** Overall, Katie had a positive attitude toward yoga. She expressed this positivity mostly using direct indicators. She also expressed that she preferred yoga to regular PE class and said she had positive feelings before yoga class.

She seemed to really enjoy the class. An example is when she said, “I just really like it, I’m not gonna lie. I like it a lot” (Transcript K1, line 92). In the second interview she said, “It’s actually really fun” (Transcript K2, line 7). Her use of the word “actually” indicated that she did not expect to like it and/or that she did not expect the people she told about the class to think it would be fun. She showed enjoyment by describing her feelings before class, saying, “I mean usually if we like have it on Mondays and Tuesdays, I’m already like stressed out because it’s Monday or Tuesday, so like going into it I’m pretty excited” (Transcript K1, lines 28–30). This line shows that she



appreciated the stress relief that yoga offered and that that mental benefit made her happy to have class.

She expressed that she enjoyed yoga more than regular PE class by saying, “I’m like oh I have PE, and then I’m like oh wait we’re doing yoga, and then I’m like okay it’s not so bad anymore” (Transcript K1, lines 95–97). Though she enjoyed the class more than regular PE, she used the words “not so bad,” implying that she may have been somewhat indifferent toward yoga. It could indicate that even though she liked it better than PE, she still may not have fully enjoyed the class.

Sometimes she expressed indifference toward the yoga class through the use of vague answers. For example, during the second interview, she expressed something she did not particularly like about the class and then said, “Other than that it was fine” (Transcript K3, line 45). She used the word “fine,” implying that she neither enjoyed nor disliked the class but that everything was just okay. In addition, when the interviewer asked if there was anything she wanted to tell her about the class, she said, “No, not really” (Transcript K2, line 73). This indicates that she did not have strong feelings of enjoyment or aversion toward the class.

When asked about the worst thing about yoga class, Katie said she did not like the mats that were provided because her hands would slip on them when they were sweaty (Transcript K3). This was a minor criticism of one aspect of the class that could easily be fixed. This does not indicate that she had negative feelings toward the class as a whole. She did not express any other negative thoughts.

Her overall coding average was 2.50. This indicates that she enjoyed the class for the most part. She rarely expressed negative feelings about class.

*Transfer of skills.* Katie's overall coding score on transfer of skill was 1.02 for mental elements and 0.65 for physical elements. This shows that she did mention some skill transfer, but not very often, and that it was not significant to her.

Though her overall score was not high, she did seem to transfer skills to help her relax. Her coding score on this aspect was 2.33, implying that there was significant transfer. In the second interview, she said that she does poses at home to keep herself calm and stress free (Transcript K2). She said that yoga helps her calm down and focus "after class and then kind of onto the next day" (Transcript K1, line 43). For her, the effects were strong right after class and somewhat strong into the next day.

She also transferred lessons of persistence to her life. In class the students were encouraged to try the poses even if they did not think they would be able to do them. They were asked to pay attention to their physical progress in achieving the poses. During the last interview, Katie explained that this lesson stuck with her in and outside of class. When asked the most memorable thing she learned in class overall, she said, "Just to keep trying at something, and don't get frustrated and quit. Or like not being able to get it, just keep trying it" (Transcript K3, lines 65–67). The fact that she generalized this in the statement to "trying at something," not just yoga poses, shows that she used it in her life beyond yoga class.

Her physical transfer was mainly that she expressed a desire to continue the physical practice of yoga. In the second interview, she said that she had already started a home practice (Transcript K2). In the third interview, she said, "I might look into signing up for a yoga class. So maybe" (Transcript K3, lines 48–49). This indicates that she was

interested in but not extremely enthused about continuing to practice yoga after the intervention.

She also transferred the idea that yoga could help combat some of the stiffness she felt (Interview K2). This was only mentioned in the second interview, but she was able to apply it to her life on the practical level of how she felt each day. Because she said she felt different on a daily basis, this was somewhat significant to her.

***Breathing techniques.*** Katie's overall coding score on breathing techniques was 0.00 because she did not mention these techniques in any of the interviews. The fact that she did not even bring them up one time in all three interviews shows that breathing techniques were not notable for her and that she did not use them in her life.

***PERMA summary.*** Overall, the yoga intervention seemed to have an average effect on Katie. She did not make strong statements either way. If she did make strong statements, they were usually qualified by phrases before or after her statement. Because of her use of direct indicators, overall Katie enjoyed the class more than she disliked it. Therefore she experienced some positive emotion from the experience (P). This did not show up on her scores on the PERMA Profiler. At Time 1, she scored a 7.33 on positive emotion, and at Time 2 she scored a 6.33. She appeared minimally engaged in the class, many times explaining it as part of her day, and then she just moved on to the next thing she had to do (E). She also dropped 1 point on the PERMA Profiler between Time 1 (8.00) and Time 2 (7.00). She did not describe any benefits to her relationships as a result of practicing yoga (R). Her score on relationships on the PERMA Profiler dropped slightly from 7.33 at Time 1 to 7.00 at Time 2. The mental component of meaning was not very strong, as this she did not describe this in her interviews (M). Her score on

meaning on the PERMA Profiler also dropped slightly from 8.67 at Time 1 to 8.33 at Time 2. She did derive a sense of accomplishment from her participation in the yoga class (A). She challenged herself and worked hard to gain these feelings. There was a slight increase in her scores on the PERMA Profiler on accomplishment, from 8.00 at Time 1 to 8.33 at Time 2.

*Summary of Katie's profile.* Overall, the physical aspects of yoga appeared more salient to Katie. Strength and flexibility were two notable physical results she saw from practicing yoga. When asked about yoga in general, a response about physical aspects came up more often than a response about mental aspects.

The physical aspects of yoga led her to experience the mental benefits of accomplishment and relaxation. She noted that these benefits lasted outside of class time.

Because she was able to identify benefits, she had a mostly positive attitude toward yoga. She expressed these feelings directly throughout the interviews when describing yoga in comparison to regular PE class and when describing her feelings around yoga class time. There were a few times when she expressed indifference about class using vague descriptions, however, the positive attitude was more apparent throughout the interviews.

She transferred mental aspects of relaxation and persistence to her life beyond class. Physically, she hoped that she would continue practicing yoga when the intervention was over. She also used the poses to help with feeling stiff.

She did not express that she transferred the breathing techniques learned in yoga class in her life. If she had, it likely would have enhanced the mental benefits she was already seeing.

**Comparison of all five students.** All five students interviewed had different perspectives on the benefits of yoga. Different aspects were stronger for some than for others. This means that the yoga class meant different things to different students. The elements of yoga that were important to each student differed based on the students' individual experiences in the class.

Of all the students, Jamie expressed the most physical salience. James and Tom also recognized the physical aspect as salient to them. Andrea and Katie expressed that the physical aspect was somewhat salient to them but not quite as strongly as the other students.

Andrea expressed experiencing the most mental benefits of all five students. Tom expressed enough to show that they were salient to him. James and Katie expressed experiencing a moderate amount of mental benefit, enough to be somewhat notable to them. Jamie hardly expressed experiencing any mental benefits at all, showing a stark contrast between what she thought about the physical and mental aspects of yoga.

Andrea expressed the most positive attitude toward yoga. The other students did not necessarily express negative attitudes but did express indifference at times. Tom expressed a fairly high amount of positive feelings toward yoga class. These two students also expressed the most mental health benefits. It appears that there is a relationship between mental health benefits and attitude toward the class. Jamie did not experience the mental health benefits and also expressed the least positive attitude toward the class. Perhaps there is something about the mental benefits as opposed to the physical benefits that correlates to more favorable ratings from the students.

Andrea also expressed the greatest transfer of skills outside of class. Tom and Katie expressed a moderate transfer of skills outside of class, and James and Jamie expressed a low transfer of skills outside of class. It is likely that this transfer helped Andrea, Tom, and Katie to see greater benefits of the class overall than Jamie and James. If they experienced benefits outside of just class time, then they could see how the lessons in yoga truly applied to their lives and were able to use them in everyday life as well.

Andrea and James used the breath outside of class more than the other students. This specific technique helped them to relax and calm themselves. James also used it during exercise outside of class. For Andrea, it seemed that this technique aided in boosting the mental benefits she reported. James used breathing techniques but did not necessarily recognize them as helpful for mental health. The other three students did not report using the breath, but it would be interesting to see how this technique could have enhanced both the physical and mental benefits they reported.

### **Written Responses**

Each student who was involved in the study as part of the control group and the yoga group was asked to write responses to three questions before the yoga intervention. Students in the control group were asked the same three questions after the intervention was over and again 5 months after that. The yoga group was asked the same three questions in addition to three more that asked about their specific experience in the yoga class one time before the intervention, one time after the intervention, and a third time 5 months after the intervention.

These questions did not generate as much of a response as the researcher hoped they would. Although she anticipated receiving paragraph answers, the students provided anywhere from a few words to two sentences as answers. Because of this, the results were grouped according the same or similar answers. The most common answers are reported for each group on each question. Within group changes and between group changes are reported. The researcher suggests the meaning and importance of student answers.

**Wellness.** Students in the yoga group and the control group were asked “What are the three things that have the greatest impact on your wellness?” Before the yoga intervention, most students in the yoga group reported that they believed exercise, eating, and the quality of their relationships with family and friends had the greatest impact on their wellness. Sixty-seven percent of the yoga group said exercise; 59% said eating was also a big factor in overall wellness (see Table 13).

Table 13

*Wellness Contributions*

	Base	T2	T3
Yoga	Exercise (67)	Relationships (59)	Relationships (71)
	Eating (59)	Exercise (41)	Exercise (58)
	Relationships (26)	Eating (26)	Eating (29) Sleep (25)
Control	Relationships (89)	Relationships (48)	Relationships (69)
	Eating (50)	Eating (39)	Exercise/Sports (34)
	Exercise (39)	Mental Health (35) Exercise (33)	School (31)

*Note.* Percentages are in parentheses.

The control group differed slightly from these answers. The first time they were surveyed, 89% of students in the control group mentioned relationships as having a big impact on their wellness. Fifty percent of students responded that eating had an impact on their wellness. Forty-four percent said that exercise had an impact on their wellness, whereas 39% of students said that their mental health had a big impact on their wellness.

Eating, exercise, and relationships were common answers among both groups. The most popular answer in the control group was relationships, while it was the third most common answer in the intervention group. Eating was the second most common answer in both groups, and exercise was the third most common answer in both groups. The control group also answered that their wellness was affected by their mental health; this was not a significant answer in the intervention group. The groups may have been similar in answers because they had all been through the same health class at the school the year before, where all of these topics were discussed as they relate to wellness.

After the yoga intervention, students in the yoga group reported relationships, exercise, and eating to be the most important factors in their well-being. Fifty-nine percent of yoga students indicated that relationships have a great impact on their wellness. Forty-one percent of students said exercise has a big impact on wellness. Finally, 26% of students indicated that eating has a great impact on their wellness. Though these were the same three aspects they reported before the intervention, relationships became the most common answer, followed by exercise and then eating. This changed from the first time, when exercise was the most common answer, followed by eating and then relationships.



The answers of the control group stayed consistent, with the respondents reporting the same four factors contributing to their well-being during the second round of questions: relationships, eating, mental health, and exercise were again the most common answers. The only difference between Time 1 and Time 2 was slightly more students said their emotional state had a big impact on well-being than students who said exercise had a big impact on well-being. Forty-eight percent of students mentioned relationships as having a great impact on their wellness. Thirty-nine percent indicated that eating has a large impact on their wellness; 35% said their emotions/mental health had an impact on their wellness; and 33% said exercise and various sports impact their wellness.

Five months after the yoga intervention, students reported the same top three characteristics as contributing to their wellness and also added sleep as something that is important to their well-being. Sleep had not been mentioned prior to this round of questions, and the control group did not mention it. Relationships again were the most common answer, with 71% of students saying that their relationships contributed to their well-being.

Five months after the PE class ended, the most common answer from the control group for this question was still relationships. Students still felt that exercise had a great impact on their wellness. School was also a common answer to this question on the third round of questioning; however, it was not a common answer prior to this, nor did the intervention group mention it. Eating and mental health/emotions were not common answers during this round of questioning. Sixty-nine percent of students in the control group responded that relationships had a great impact on their well-being; 34% said

exercise or sports had a great impact on their well-being; and 31% said that school had a great impact on their well-being.

The most consistent answers among both groups on this question were eating, exercise, and relationships. Though yoga in a PE class is not likely to impact how students eat, it could have a significant effect on the way students exercise and the relationships that they have at school. Many students reported that yoga was a new experience for them. Many of them also expressed that they enjoyed the yoga class. In giving students a new way to exercise, one that they enjoy, yoga may contribute to their overall wellness. If they enjoy it they will likely do it more and feel better about themselves. Yoga has the potential to impact their relationships at school in that it is a noncompetitive activity. By introducing that in PE class, students may be more likely to become friends with other people in class because they are not competing against them in the sports or games that they usually play. In this particular intervention, the instructor could have made a more conscious effort to encourage kids to build relationships with one another in the class.

**Coping techniques.** Students were asked, “How do you cope when you are not feeling well emotionally? What works best?” When the yoga group was asked this prior to the yoga intervention, 42% of the group said that they listen to music, whereas 31% said they talk to friends or family.

Similar to the yoga group, the comparison group said they listen to music when they are not feeling well emotionally. They also said they talk to friends to help them cope. In addition, they said they sleep or like to be alone when they are not feeling well emotionally. Fifty-six percent of the control group said that they listen to music when

they are not feeling well emotionally, 50% said they talk to a friend/family, 50% said they sleep, and 44% said they go somewhere to be alone (see Table 14).

Table 14  
*Coping Mechanisms*

	Base	T2	T3
Yoga	Listen to music (42)	Listen to music (40)	Talk to friend/family
	Talk to friend/family (31)	Talk to friend/family (32)	(46)
	Be alone (24)	Work out (28)	Listen to music (42)
	Work out (23)	Sleep (24)	Work out/sports (25)
		Alone/distract self (20)	Sleep (21)
Control	Listen to music (56)	Listen to music (56)	Talk to friends/family
	Talk to friend/family (50)	Talk to friend/family (50)	(38)
	Sleep (50)	Sleep (50)	Listen to music (31)
	Be alone (44)	Be alone (44)	Sleep (28)

*Note.* Percentages are in parentheses.

The two groups had similar answers to this question. Listening to music was the most common answer in both groups. Both groups also listed talking to friends and family as the second most common answer. Students in the yoga group said they work out, whereas this was not a common answer in the control group. Both groups said they go somewhere to be alone; however, more students in the control group said they cope in this way. Both groups listed sleep as a common coping mechanism, but more students in the control group said they cope in this way.

After the yoga intervention, listening to music to cope was still the most common answer for the yoga group. Students reported the same coping skills—talking to friends and family members, working out, and sleeping—as helping them the most when they

were not well emotionally. Forty percent of students said they listen to music, whereas 32% said they talk to friends or family members.

The second time the comparison group was asked this question, the most common answer was talking with friends or family members. Listening to music was still a common coping mechanism of this group of students. Students reported that they used sleeping as a coping mechanism as well. Fifty-two percent of students in the control group said that they talk to a friend or family member to cope when they are not feeling well emotionally, 43% of students said they listen to music, and 30% of students said they sleep. This time talking to friends and family members became the most common answer for the control group and going somewhere to be alone was not a common answer.

Five months after the intervention, the most common coping strategy used by the yoga group was talking to a friend or family member. Many students still reported listening to music. Exercising/playing sports was also a common answer during this round of questioning. Sleeping was still a common answer, but going somewhere to be alone was not. Forty-six percent of yoga students said they talk to a friend or family member to cope when they are not feeling well emotionally; 42% said they listen to music to cope when they are not feeling well emotionally.

During the last round of questioning, the students in the comparison group reported the same answers as they did 5 months prior. The most common coping mechanisms of this group of students remained talking to friends or family members, listening to music, and sleeping to cope with emotional problems in their lives. Thirty-eight percent of students in the control group said they talk to family and friends when

they are not feeling well emotionally; 31% of students said they listen to music to cope when they are not feeling well emotionally.

Yoga could be a helpful coping mechanism in a variety of ways. It is a physical workout and could be effective for students who feel that exercising is a good way to deal with stress. Many students did find that it relaxed them and reduced their anxiety. Depending on what the student is coping with, these aspects may be beneficial. In addition, the final resting pose at the end offers students a time to rest and just be with themselves. This could be helpful for the students who expressed that they like to sleep or be alone when they need to cope with adversity. Loosely tied to yoga is the fact that many students listened to music to cope. Relaxing and upbeat music was also played in the yoga class; this could have had an impact on the feelings of relaxation and relief that students reported after the yoga class.

**Feelings around yoga/PE class.** Students were asked to respond to the following: “Please describe how you felt before yoga/PE class, during yoga/PE class, and after yoga/PE class. Do you feel different than before you had yoga/PE class? If so, what is the difference?” Students in the yoga group were asked to respond to how they felt about yoga class, and students in the PE group were asked to respond to how they felt about PE class.

When asked prior to the yoga intervention how they felt after PE class when compared to how they felt before PE class (they could not respond to how they felt about yoga because it had not started yet), 32% of the yoga group said they felt more tired after class. Twenty-eight percent said they have more energy after class, and 16% said they felt more relaxed when compared to how they felt before PE (see Table 15).

Table 15  
*Feelings Around Yoga/PE Class*

	Base	T2	T3
<b>Yoga</b>			
Before class		Tired (40) Stressed/anxious/worried (20)	Tired (58) Stressed (17)
During class		Relaxed/calm/peaceful (24) Tired (12)	Relaxed (29) Better (13) Good (13) Tired (13)
After class	Tired (32) More energy (28) Relaxed (16)	Relaxed (44) Less stressed/anxious (16) Tired (16)	Relaxed (38) Awake (25) Ready/prepared (17) Stretched out (17) Wanted to continue (17)
Control (after class)	Same (87) Tired (33) More energy (33)	Same (35) Tired (22) Awake/energy (22)	Same (31) Tired (22) Energetic (22)

*Note.* Percentages are in parentheses.

The control group was asked to answer this question pertaining to their experience in PE class. The answers of the control group differed from those of the intervention group. In contrast to the yoga group, most students in the PE class said they felt the same before, during, and after PE class. Some felt more tired when it was over, and some felt more awake and had more energy when PE ended. Eighty-seven percent of students in the control group said they felt the same before and after PE, 33% said sometimes they felt more tired after PE, and 33% said sometimes they had more energy when PE was over.

After the yoga intervention was over, students described how they felt before, during, and after yoga class only (not PE class). Forty percent of students said they were tired before class, and 20% said they were stressed, anxious, or worried prior to class. Twenty-four percent said they felt more relaxed/calm/peaceful during yoga, and 12% of students said they still felt tired during class. Forty-four percent said they felt relaxed after yoga class, 16% said they felt less stressed/anxious after class, and 16% said they still felt tired after yoga class was over.

Even though some students still said they felt tired after yoga class, fewer students felt tired after yoga as opposed to how many felt tired after a regular PE class. After practicing yoga for 12 weeks, more students felt relaxed after yoga class as opposed to feeling more tired after a regular PE class. Students did not report having more energy after the yoga class as they did after the first round of questioning when asked about how they felt after PE class.

After a semester of PE, the most common response was that students in the comparison group still felt the same when PE class ended. And some students felt more tired, while others reported having more energy and being more awake at the end of class. At the end of the semester, 35% said they felt the same when class was over, 22% said they felt more tired when class was over, and 22% said they felt more awake/had more energy when class was over.

Five months after the yoga intervention ended, students were asked to recall how they felt before, during, and after yoga class only (not their experience in PE class). Students recalled feeling tired and/or stressed before yoga class. Students reported positive feelings during class like feeling “relaxed,” “good,” and “better.” Some students

did report they remembered feeling tired during yoga class. The most common feeling after class was relaxation. Many students said they felt more awake, and some said they felt more ready/prepared for the day. Physically, students remembered their muscles feeling more loose/flexible than before class. And some students said they were not ready for yoga to be over when class ended. Fifty-eight percent of yoga students said they felt tired before class, 17% said they felt stressed before yoga class, 29% said they felt relaxed during yoga class, 13% said they felt better during yoga class, 13% said they felt good during yoga class, and 13% said they felt tired during yoga class. Thirty-eight percent of yoga students said they felt relaxed after class, 25% of students said they felt awake after yoga class, 17% said they felt ready/prepared for their day after yoga class, 17% said they felt loose/stretched out after class, and 17% said they felt that they wanted to continue doing yoga after class was over.

Five months after the class ended for the semester, PE students still reported that they felt the same when PE class was over. The same number of kids said they felt more tired and more energetic as in previous questionnaires. Thirty-one percent of students in the control group said they felt the same after each PE class, 22% said they felt tired after each PE class, and 22% said they felt energetic after each PE class.

The most consistent and common response from students in the yoga group is that yoga helped them to relax and feel more awake when they were otherwise stressed, tired, or anxious. Most of the PE students reported no change after their regular class. This indicates that yoga could be helpful for students to calm anxiety, relax, or wake up more so than other physical activities. The mental component of yoga and the meditation likely helped students to feel this way.



**Transfer of yoga techniques.** Students in the yoga class were asked to respond to the following question after the yoga intervention was over and again 5 months after the intervention ended: “Are there ways that yoga helps you even when you’re not in class?” At the end of the yoga intervention, the most common ways students transferred yoga to their lives were physical. Students reported feeling more stretched out and flexible physically. They also reported paying more attention to their posture and actually having better posture. Additionally, students reported feeling more relaxed and less anxious overall after practicing yoga for the semester. Thirty-two percent of students responded that they felt more stretched out and more flexible, and 28% said they were less stressed/less anxious overall after they had been doing yoga.

Five months after the yoga intervention, students reported using yoga for relaxation and stress relief and for physical improvements that helped with other sports they played. Thirty-eight percent said yoga was helpful for relaxation/stress relief; 38% also said yoga was helpful to them in physical ways while they were participating in sports (e.g., it made them more flexible, stronger; see Table 16).

Table 16  
*Transfer of Yoga Techniques Among Yoga Students*

	Answer
T2	Flexibility (32) Stress relief (28) Improved posture (16)
T3	Relaxation/stress relief (38) Physical (38)

*Note.* Parentheses contain percentage of yoga students with answer.

The students in the yoga group reported feeling more flexible and overall more relaxed after yoga. Students could use yoga as a tool to relieve anxiety and/or to help them feel better about their bodies and enhance their experiences while playing sports. All of these themes were seen in the interviews when students were asked about how they transferred yoga to their lives. All five students who were interviewed said they felt more flexible as a result of yoga at one point in the interviews. All five students also said that they felt more relaxed as a result of doing yoga. Four out of five students who were interviewed said that yoga made them feel stronger, and two out of the five directly said that it helped them with other physical activities (e.g., sports).

**Telling others about class.** Yoga students were asked, “What do you tell your friends and family about yoga class?” The most common things students told their friends and family about yoga class were that yoga is relaxing, it is a physical workout, and they would recommend friends and family try it. Some students also told their friends and family that they enjoyed class. However, some did not tell their friends and family anything about yoga class. Twenty percent of students told their friends and family it is relaxing, they enjoyed the class, it is physically challenging (more than people might think), and that they should try it.

When looking back on the class 5 months later, the majority of students in the yoga group reported telling friends and family that yoga class was enjoyable. Some also mentioned that yoga was helpful to their mental wellness. Fifty-four percent of students said they told their family and friends how much they enjoyed doing yoga; 29% of the yoga group told their friends and family they should try yoga, and 21% told their friends and family that yoga helped them mentally (see Table 17). This question was also asked

during the interviews. All five students said they told their friends and family they enjoyed doing yoga, three out of five students interviewed encouraged friends and family to try yoga, and one student said he told his friends and family it was a good exercise that he found difficult.

Table 17  
*Telling Friends and Family About Class Among Yoga Students*

	Answer
T2	Relaxing (20) Enjoyed it (20) They should try it (20) Physically challenging (20) Fun (16) Did not talk about it (16)
T3	Enjoyed (54) They should try it (29) Mental health help (21)

*Note.* Parentheses contain percentage of yoga students with answer.

This shows that the majority of high school students in this class appreciated the opportunity to try yoga. It indicates that they saw benefits from it and wanted to share their experience with friends and family. It also shows that some students were indifferent toward the class. They did not have bad things to say, but they did not feel the need to tell friends and family about it. This indicates that for some, it can be a really positive experience that gives them new tools for exercising their body and increasing mental wellness; at the same time, for others in the class, it can mean very little.

**Meaningful parts of class.** Finally, yoga students were asked to respond to the question, “What is the most memorable thing you learned in yoga class?” The most common thing the students reported learning directly after the yoga intervention was a physical pose. The movements and physical shapes were new to many of the students. In class, the instructor often stressed the power of persistence in the practice of yoga. She encouraged the students to keep trying the poses even if they felt they would never actually do the pose in its full form. Students reported remembering this lesson and applied it to their own yoga practice and the things they tried to accomplish in life. Several students also reported a different mental lesson that stuck with them. These lessons were discussed in the meditation/beginning part of class. Twenty-four percent responded with a specific pose that they found most memorable. Twenty percent said they learned the value and importance of persistence, both in the practice of yoga and in life; 20% also mentioned a “mental” lesson they learned, for example, “internal power can equal external power” (see Table 18).

Table 18  
*Meaningful Parts of Class Among Yoga Students*

	Answer
T2	Poses (24) Persistence (20) Mental lessons (20)
T3	Mental wellness (46) Poses (38) Relieve stress/relax (29) Positivity (25)

*Note.* Parentheses contain percentage of yoga students with answer.

When asked this question 5 months after the intervention, the most common aspect of yoga that students reported as memorable was a lesson they learned to help their mental wellness. Similar to their responses just after the intervention, many students reported a physical pose to be the most memorable thing they learned. Some students said that learning stress relief and relaxation techniques was the most memorable thing they learned. Finally, some said they learned about being more positive and optimistic. Forty-six percent of students said that the most memorable thing they learned in yoga class was techniques for keeping themselves mentally well, 38% of students mentioned a specific pose as the most memorable thing they learned in yoga class, 29% said they would most remember how to relieve stress and relax, and 25% of students said they learned how to be more positive in any situation.

This shows that yoga might be useful in teaching students the “life lessons” and values that can help them in everyday life. Showing them these values (e.g., persistence) and allowing them to experience the lessons and their benefits in their body may have a bigger impact than just telling them or trying to show them using traditional school work.

## **Chapter 4: Discussion**

This chapter provides a brief overview of the study. The majority of this chapter summarizes and offers an interpretation of the findings of this mixed methods study based on the hypotheses and research questions. Implications of the findings, limitations of the study, and directions for future research in this area are discussed.

### **Study Summary**

The intent of this study was to investigate a new approach to the prevention and reduction of adolescent depressive symptoms. It also sought to find a way to allow schools to help increase in flourishing in all students. This way, schools could serve students who have depressive symptoms and students who do not suffer from these symptoms at the same time. As yoga aligns with positive psychology in that it promotes positive feelings and, in doing so, decreases negative feelings, yoga was used to both increase flourishing and decrease depressive symptoms in students. This study sought to understand whether it was feasible to include yoga as part of the school day for high school-aged adolescents. An additional aim was to understand whether yoga could be useful in lowering rates of depressive symptoms in high school students who exhibited them and in raising flourishing rates of all students in the yoga intervention compared to students who were not practicing yoga. Yoga classes were held in a high school PE course at a suburban high school in the Midwest. Flourishing measures, a measure of depressive symptoms, interviews, and questionnaires were administered to gain insight into this problem and potential solutions.

## **Findings**

In this section, the main results of this mixed methods study are discussed in terms of research questions and hypotheses, quantitative findings, and qualitative findings. Four hypotheses and four research questions were developed at the beginning of the study.

**Feasibility.** The first practical question to ask was whether it is feasible to conduct a yoga class in a high school setting during the school day. The results of this study show that yoga can be integrated into a high school PE class, that high school students are capable of practicing yoga, and that some are even interested in learning a form of exercise that is new to them. Students reported enjoyment of the class in their written answers and interviews. Many students reported telling their friends and family that they enjoyed it and encouraged them to try it too. In addition, at the end of the study, all five students who were interviewed advised the instructor to keep doing the class for other students.

*Explanation of findings.* Overall, conducting a yoga class as part of the school day for high school students worked. Though there was much planning and preparation to deliver the class over the course of the semester, it worked for the PE teacher, the yoga instructor, and the students. Overall, the students enjoyed it as part of their PE class. Most parties involved seemed pleased during and after the intervention. This shows that yoga can work during the school day for high school students and can connect to curricula at the high school level.

**Research Question 2 and Hypothesis 1: Impact of yoga on positive psychological health.** The second research question asked about the experience of yoga

and adolescent positive psychological health. The first hypothesis predicted that students in the yoga group would show improvement by reporting statistically significantly lower rates of depressive symptoms and statistically significantly higher flourishing rates than the control group.

The quantitative data did not support this hypothesis. The qualitative data gave insight into different ways that experience of the yoga class may relate to adolescent positive psychological health. The qualitative data supported this hypothesis both in the interviews and written answers. Students who were interviewed reported feeling more relaxed, calm, and peaceful as a result of yoga (Transcripts A1, JS 1, JA2, T2, K1). One student directly identified yoga as being good for her mental wellness (Transcript A3). Another student said that it was good for him overall (Transcript T2). The written answers added to these sentiments as students reported feeling less stress and stated that yoga was helpful to their overall mental wellness.

*Explanation of findings.* The quantitative data did not support a significant overall difference between the students who were practicing yoga as part of their PE class and those who were not practicing yoga. These results could be due to the small sample size, as statistical significance is harder to attain with smaller sample sizes. This could also be due to the fact that the quantitative measures asked questions in a different manner. The depression scale asked students to report how they felt over the week prior to completing the scale. The flourishing scale asked students to report how they felt about their lives in general. This discrepancy could have caused students to report conflicting data and caused results that were not statistically significant. This discrepancy could also be due to the fact that the researcher could have better aligned the



qualitative questions with the quantitative questions. This may be a reason the two types of data produced different results.

Students in the yoga group expressed improvement in their overall mental wellness in the qualitative data, both the interviews and written answers. They expressed that yoga helped them to lower depressive symptoms and increase aspects of flourishing. Andrea said that yoga helped her to feel overall calm, peaceful, relaxed, and better about herself in general. This could address the feelings about anxiety and worthlessness that are associated with depression. Tom expressed that yoga enabled him to learn more about himself. James recognized that yoga was good for him both mentally and physically. It helped him to achieve “a calm state of mind” (Interview JA3, lines 43–44). Katie identified “mental wellness” (Interview K3, line 55) as the biggest benefit someone could get from doing yoga. These students also saw benefits with certain aspects of flourishing. Andrea, James, Tom, and Katie all mentioned that yoga helped to elevate their mood and create positive emotion for them (Transcripts A1, A2, A3, JA1, T3, K3). Andrea and James felt their ability to deal with relationships and make them more positive was addressed through yoga class (Transcripts A2, J1). Finally, flourishing was addressed by helping the students to feel an increased sense of accomplishment. Andrea, James, Tom, and Katie all mentioned that they felt more accomplished as a result of participating in yoga class (Transcripts A1, A2, A3, Ja2, JA3, T1, T2, T3, K1). These thoughts were reinforced by the written answers of the yoga group. Five months after the intervention, 38% of students in the yoga group reported feeling less stress as a result of yoga. In addition, 46% of students in the yoga group identified a lesson about mental health as the most meaningful part of yoga.

According to the qualitative data, students saw a difference in their overall mental wellness due to yoga. They recognized that yoga was helping to improve their mental health, and they could see how it would have that same effect on others. They expressed that yoga helped to lower their depressive symptoms and increase their levels of several aspects of flourishing. Though the quantitative data failed to show a significant difference on overall mental wellness between students practicing yoga and those who were not practicing yoga, it would be interesting to see if there could be a significant difference with a larger sample size.

**Research Question 3 and Hypothesis 2: Impact of yoga on depressive symptoms.** Research Question 3 asked what could be understood about the impact of yoga class on adolescent depressive symptoms. Hypothesis 2 predicted that students who were in the yoga group would report feeling fewer depressive symptoms than students who were not practicing yoga. Despite the fact that students in the yoga group started the intervention with higher rates of depressive symptoms than the control group, students who practiced yoga during PE class reported feeling significantly fewer depressive symptoms than students who were not practicing yoga 5 months after the intervention.

Though questions about depressive symptoms were not directly asked in the qualitative portion of the study, students did report that yoga helped them to relax, feel less anxious, have more energy, focus better, and gain confidence. They also reported different physical aspects of yoga that seemingly helped them to gain self-confidence. Many expressed that they enjoyed the practice of yoga and tried to convince others to do it.

*Explanation of findings.* Anxiety is a common symptom of depression (American Psychiatric Association, 2000; National Institutes of Health, 2010). As shown in the interviews and written answers, yoga students identified that yoga helped them to relax, sometimes even when they were feeling anxious. All five of the students interviewed mentioned that yoga helped them to relax (Transcripts A1, A2, A3, JS1, JS2, JS3, JA1, JA2, JA3, T1, T2, T3, K1, K2, K3). During the 12th week of the yoga intervention, 44% of students reported feeling relaxed immediately after yoga class and the rest of the day after yoga class. This is in contrast to 20% of students saying they were stressed, anxious, or worried before class began. This is also contrasted by 0% of students in the control group expressing that they felt relaxed immediately after regular PE class.

Fatigue and loss of energy is another characteristic of depression (American Psychiatric Association, 2000; National Institutes of Health, 2010). Yoga students reported that yoga gave them more energy when they were feeling tired. Forty percent of yoga students reported that they felt tired before class began. Only 16% said they were tired immediately after class. When looking back on the class 5 months after it ended, 25% of students in the yoga group said they felt more awake immediately after yoga class. This aspect of yoga may address the feelings of fatigue or decreased energy that can accompany depression.

One common aspect of positive mental health is a high level of self-worth. A common symptom of depression is feelings of worthlessness (American Psychiatric Association, 2000; National Institutes of Health, 2010). This aspect of increasing positive mental health may have been addressed by the ability of yoga to help students gain

confidence. As seen in the interview data, Andrea attributed a significant increase in her confidence to yoga class (Transcripts A1, A2, A3). Andrea and Tom also showed significant feelings of accomplishment from yoga class (Transcripts A1, A2, A3, T1, T2, T3). Both of these factors may have offered a buffer from feelings of worthlessness that accompany depression.

Yoga may also address depressive symptoms through physical aspects. The interview data showed that some students experienced yoga in primarily a physical way. In the interviews, all students commented on physical aspects of yoga such as helping them to gain strength, flexibility, and balance (Transcripts A3, JA2, T2, K1). They also noted that yoga was a physical exercise and helped them in other sports that were not yoga (Transcripts A1, A2, JS1, JS2, JS3). These physical aspects could have contributed to their self-confidence as they saw their physical capabilities expand and potentially felt better about their bodies. This also could have offered a buffer against feelings of low self-esteem that can accompany depression.

Some students reported a greater ability to focus after yoga class. Diminished ability to concentrate is a common symptom of depression (American Psychiatric Association, 2000; National Institutes of Health, 2010). Seventeen percent of students in the yoga group reported feeling “ready” and “prepared” after yoga class. The interview data showed that Andrea, Tom, and Katie reported a greater ability to focus due to yoga class (Transcripts A1, T1, T3, K1). This aspect helped them to participate in subsequent classes. This aspect of yoga may have directly addressed loss of interest and inability to concentrate that are often symptoms of depression.

Finally, most students indicated that they enjoyed the class, so it created positive emotion and exposed the students to a form of exercise they liked. Positive emotion is an aspect of flourishing (Seligman, 2011). This increased aspect of flourishing was most evident in the written answers when students described what they told friends and family about yoga. When looking back on yoga, 54% of students said they told friends and family they enjoyed the class when they were not directly asked about this. In addition to that, 29% said they told friends and family to try it. All five students interviewed expressed that they enjoyed the yoga class at some point during the interviews (Transcripts A1, A2, A3, JS1, JA2, JA3, T1, T2, T3, K1, K2, K3). Direct indicators of enjoyment were especially evident in the interviews with Andrea, James, Tom, and Katie. Depression is characterized by sadness (American Psychiatric Association, 2000; National Institutes of Health, 2010). It is possible that creating positive emotion through yoga could counteract those feelings of sadness.

According to the qualitative data gathered, yoga has the potential to address several factors that are associated with depression and also the potential to increase aspects of flourishing (which may move students away from depressive symptoms). Through these particular aspects, yoga may have the potential to lower depressive symptoms and offer a prevention method for people who are not experiencing these symptoms. This is backed by the quantitative data that show students who practiced yoga once a week had statistically significantly fewer depressive symptoms than their peers according to the CES-D Scale 5 months after the intervention.

**Research Question 4 and Hypotheses 3 and 4: Flourishing.** The fourth research question asked what could be understood about the impact of yoga class on adolescent

flourishing. The third and fourth hypotheses contended that students in the yoga group would show significantly higher flourishing rates than students in the PE group as indicated by scores on the Flourishing Scale for Teens and the PERMA Profiler. These hypotheses were not supported by the quantitative data of this study. Students in the yoga group did not report higher levels of flourishing than students in the control group. There was no statistically significant difference between the two groups on either measure at any point in time during the study.

Students in the yoga group did show increased levels of positive emotion, engagement, positive relationships, and accomplishment after yoga in the qualitative data (this is reported in more detail in the following subsections). This was in contrast to students in the PE class, who mostly reported feeling the same before and after regular PE class. This shows that yoga may have been helpful for some students in the yoga group to flourish.

*Explanation of findings.* Student scores on the Flourishing Scale for Teens and the Overall PERMA score started out relatively high and remained high throughout the study for both groups. Social desirability may have contributed to high student flourishing rates throughout the study. Perhaps because the students were already at a high flourishing level, the ability of yoga to maximize this aspect was minimized. In addition, the small sample size may be the reason that no quantitative findings were detected in this area. Perhaps significant results would have been found if the sample size had been larger. Finally, the scales asked the students to report about their lives in general, more specific results may have been attained by asking them how they felt within a shorter more specific amount of time.

**Positive emotion.** The researcher expected that she would find that students would experience increased positive emotion during the yoga class and immediately after. Throughout the semester, as students experienced more positive emotion during and after the yoga class, she expected that they would report experiencing more positive emotion in their lives overall. The qualitative results showed that some students in the yoga class experienced positive emotion during the yoga class itself. Twenty-six percent of the students in the class reported feeling “good” and “better” during the yoga class. All five of the students interviewed expressed positive emotions either before or after class time (Transcripts A1, A2, A3, JS1, JS2, JA1, T3, K3). They stated that they were either “excited” before class and/or happy or “in a good mood” after class. This showed that the class generated some positive emotion in the lives of some of the yoga students. Fifty-four percent of yoga students reported they told their friends and family they enjoyed yoga class even though they were not solicited to respond this way. Twenty-nine percent said they enjoyed it so much they recommended their friends and family try it. At the very least, these results show that some students experienced positive emotions during class and that some experienced it before, during, and after class.

In contrast, most of the control group reported feeling the same way before and after PE when asked about how they felt 5 months after the intervention. Thirty-one percent of students in the control group said they felt the same after PE. Twenty-two percent of students in the control group said they felt tired after PE class, and 22% said they had more energy after PE, but none described feeling more happy or described increased enjoyment of the class.

Neither group expressed feeling more positive emotion in their lives in general as a result of yoga or PE class. The quantitative data also did not show that either group was experiencing significantly more positive emotion due to their time in yoga or PE.

*Explanation of findings.* Students in the yoga group reported feeling positive emotions before, during, and after class. This could have been due to the fact that they were engaged in a physical exercise that was new to many of them. It also could be due to the nature of the physical activity. Yoga incorporates a mental element that causes the students to focus on what they are doing in the present moment. They did not need to be in communication with or think about anyone else while they were practicing yoga. This aspect made yoga different from any other activity they did in PE class. The combination of the mental and physical aspects and the novelty could have all contributed to the positive emotion reported by the students in the yoga group.

In addition, regular athletic exercise has been shown to increase positive emotion in participants (Berger & Motl, 2000). Perhaps the students in the PE group experienced some positive emotion from the sports they played. This could help explain why we did not see a statistically significant difference between groups on the quantitative measures.

The researcher did not ask students directly whether they were experiencing more positive emotion in their lives in general. She only targeted her questions toward the emotions they felt around and during class time. Perhaps because they did not have a chance to comment on this aspect in general, they did not comment on it at all. This lack of direct questioning about how they felt in their daily lives could be why we did not see significant changes through the qualitative data.



**Engagement.** The researcher expected that she would find that students experienced an increased sense of engagement during yoga class. She thought that this might lead to students feeling more engaged in other things and in general in their lives. The qualitative results show that some students might have felt engaged during class via a high enjoyment level. This was particularly evident for Andrea. She said she enjoyed the class more than any other student (Transcripts A1, A2, A3). She described being on her mat and not paying attention to others around her, suggesting that she was intensely focusing on the present moment and experiencing engagement (Transcripts A1, A2). However, this element was not directly reported for any students outside of class time. It is unclear, and there is no evidence to support students feeling more engaged in general as a result of yoga class.

*Explanation of findings.* This element was measured using the PERMA Profiler, which only asks if students are feeling more engaged in general. The researcher did not ask students qualitative questions that elicited responses about their engagement level in class. One hour one time a week of yoga may not be enough to help the students lead more engaged lives in general. Yoga may need to be integrated into their lives more than just once a week to make that kind of an impact.

Students may have been engaged in class, but the researcher did not ask direct questions about this aspect. Some students may have been feeling this way but did not indicate it because they were not given the chance in the written responses. In addition, this term can be difficult to define and describe. The researcher needed to ask more in-depth questions to probe deeper about the general levels of engagement of the students.

Finally, the classroom environment was not conducive to students feeling engaged during class time. It was somewhat distracting, in a big gym, with many students at different levels of physical ability. The setting may have impeded students from becoming engaged while in class if they were unable to concentrate on what they were doing in the moment.

There is no qualitative or quantitative evidence that the students felt more engaged outside of class time, in their lives in general, due to their time in yoga class. The researcher did not ask students direct questions about this aspect in the qualitative data. The PERMA Profiler does ask students how engaged they are feeling in their lives; however, we did not see a difference between groups in the quantitative data. Again, the researcher would need to add more pointed questions on this topic to get better qualitative data about engagement.

**Positive relationships.** The researcher expected that students would form more positive relationships within the yoga class through a noncompetitive and encouraging environment. She also expected that students would use calming skills and lessons not to compare themselves to others from yoga to form more positive relationships with peers and family outside of class. The qualitative data indicated that some students used tools learned in yoga class to help their relationships in their personal lives. Specifically, in their interviews, James and Andrea described the use of breathing techniques learned in class during arguments with family members (Transcripts A2, JA1). They described that the discussions ended more peacefully than at times when they did not use these techniques. This allowed them to maintain more positive relationships with their family

members. This shows the potential of the meditation topics and breathing techniques to help students translate this aspect to their lives.

In the written answers, students in the yoga group came to see talking with friends or family members as an important coping mechanism when they did not feel well emotionally. On the baseline data, 31% of students said they talk to a friend or family member as a coping mechanism. By the end of the yoga intervention, 32% of students said they talk to friends or family members as a way to cope with difficulty. Five months after the intervention, talking to a friend or family member was the most common answer to this question, with 46% of students saying they cope with adversity that way. This shows that they may have come to perceive relationships as more important when coping with hardship.

There is no evidence that the yoga class improved relationships among students within the yoga class.

*Explanation of findings.* The interview data showed that lessons learned in yoga helped two students to maintain more positive relationships outside of class. However, no qualitative questions directly addressed this. It is difficult to tell whether relationships were significantly improved overall. Two students who did have the opportunity in the interviews expressed that relationships with family members improved due to the translation of something they learned in yoga class to their lives.

Overall, students did not express that their relationships with others in class improved or worsened. This could be because they did not have the opportunity to express this. It could also mean that yoga does not have an impact one way or another on students' relationships in class. Katie did mention that they noticed yoga was

noncompetitive so they could focus on themselves while practicing yoga (Transcript K3). This could have been beneficial for their relationships with their peers in class, in that students were not asked to compete or win at someone else's expense. However, it also could have hindered their ability to make relationships with their peers in class because they were not asked to cooperate with each other or display teamwork. The instructor was not intentional about creating relationships among the students during class time. For gains to be made in this area, she may need to make a conscious effort to have students interact and help them support and encourage each other.

**Meaning.** The researcher did not have expectations that the students would find more meaning in their lives through yoga class. Because the class was held at a public school, she did not include a spiritual component of the class that she would normally include in other settings. A significant difference was not found in the data. This suggests that the yoga class likely did not have any impact on the meaning in students' lives or during the class.

**Explanation of findings.** The spiritual component of yoga was intentionally left out of this yoga class because it took place at a public school. The researcher was careful not to incorporate any religious teachings because this aspect of yoga has made teaching yoga in schools controversial in the past. This could be the reason there were no significant gains in meaning in the students' lives.

**Accomplishment.** The researcher expected that students would feel more accomplished during yoga class through the physical aspects of yoga. Throughout the semester, they were asked to take note of how their bodies felt and poses they could do to a greater extent as the semester progressed. She also hoped that students would apply

lessons of persistence and progress to other parts of their lives to feel more of a sense of accomplishment outside of class. The qualitative data did show evidence that students in the yoga class felt more accomplished as a result of participating in yoga. This was seen in the interviews of Andrea and Tom (Transcripts A1, A2, A3, T1, T2, T3). Andrea described this mostly in physical terms, saying that she could not achieve a pose but then kept trying and eventually achieved it in the full form. Tom also discussed this in physical terms, saying that the class was difficult. He described feeling good after class because he had to work hard during class. He also described changes in his body physically, showing that he felt he saw the results of the hard work during yoga class.

The written data showed that students may have felt a sense of accomplishment, as 24% of students reported physical poses as memorable and 20% of students reported persistence as memorable lessons learned in yoga. Though there was no direct evidence that students felt more of a sense of accomplishment in their lives in general, they were using lessons of persistence as an approach to achieving the physical poses (or other things in their lives), then they were more likely to experience and feel a sense of accomplishment outside of class.

*Explanation of findings.* Students who reported feeling an increased sense of accomplishment likely took note of the physical progress they were making in class. It was a tangible element they could see and feel in their own bodies. This aspect highlighted accomplishment for the students who experienced it. It also seemed to highlight lessons of persistence as they saw their own progress week to week. The yoga instructor could have been more intentional about helping students to set goals and to understand and notice their physical progress in class to increase these feelings among

students in the yoga class. Also, the researcher would need to ask more direct questions about this aspect of yoga in the students' lives to get more data about it.

The current study is not the first study to look at yoga and depressive symptoms or yoga and adolescent students. The following section illustrates how the current study fits in with what has already been found in this area of research.

### **Integration of Findings With Literature**

Multiple studies have already been conducted to investigate a link between yoga and symptoms of depression (Gard et al., 2012; Woodyard, 2011; Woolery et al, 2004). These studies were sometimes different in population characteristics, type of yoga used, variables measured, amount of yoga per week, and amount of time in class. For different reasons, some of the findings of this study converged with the findings of previous studies, and some of the findings differed from those of previous studies. This study was also able to build on and add to the findings of previous studies.

**Convergent findings.** Previous studies have shown that it is feasible to implement yoga programs with older adults, adults with or without significant mental illness, students outside of the school day, and students during the school day (Benavides & Caballero, 2009; Butler et al., 2008; Chen et al., 2008; Khalsa, Hickey-Schultz, Cohen, Steiner, & Cope, 2012). This study found that it was beneficial to implement yoga during the school day as part of the PE curriculum. This shows that yoga can be delivered to students as part of an already existing curriculum in the high school setting. Fifty-four percent of the yoga students reported telling friends and family they enjoyed the class, even though they were not directly asked about this. Because it fit so well, and most

students enjoyed it, it is something to think about replicating. It was beneficial for the students in the class, the teacher, and the school as a whole.

Previous studies have shown that yoga can help significantly decrease anxiety, stress, and tension (Woodyard, 2011). The qualitative data in the current study show that yoga decreased these three things as well. Previous studies and this study show that yoga has the potential to significantly decrease depressive symptoms (Woolery et al., 2004). This makes sense, as yoga incorporates physical activity and mindfulness, both thought to be helpful in the treatment of depression and depressive symptoms (Gard et al., 2012). This could mean that yoga is able to decrease depressive symptoms by lowering rates of anxiety, stress, and tension that contribute to it and increasing feelings of self-worth, positive emotion, ability to form relationships, and accomplishment. In other words, lowering anxiety, stress, and tension and increasing positive emotion, positive relationships, self-worth, and feelings of accomplishment may be the mechanism by which yoga lowers depressive symptoms.

Previous studies have shown that yoga offers practitioners coping mechanisms for stress and anger (Rizzolo, Zipp, Stiskal, & Simpkins, 2009; Stueck & Gloeckner, 2005). Students in this study reported using various techniques learned in yoga for these purposes. Specifically, students transferred breathing techniques to their lives to help them manage these feelings. Previous studies also found that it was helpful for students to transfer breathing techniques to their daily lives (Stueck & Gloeckner, 2005). This implies that this portion of yoga should not be removed from the class. It also implies that breathing skills are something that people understand and can apply to their daily lives intentionally or unintentionally.

Finally, this study found that some students had a more positive mood after doing yoga. This fits with several studies done previously that found yoga and other physical activities raise levels of positive emotion (Lavey et al., 2005). This may be an indicator that there is something about the physical aspect of yoga that can be used to enhance mood. It might also be a short-term solution for mood and depressive symptoms.

**Divergent findings.** Previous studies have found that older adults prefer alternate exercise (walking, swimming, etc.) to yoga (Kraemer & Marquez, 2009). In this study, the participants were adolescents, and they reported either a preference for yoga or enjoyed yoga equally as much as they enjoyed PE class (alternate physical activities). This may suggest that the enjoyment and preference of yoga may be specific to younger populations. At the very least, it should be noted that this finding cannot be generalized to all populations.

Though some previous studies have found a significant improvement in depressive symptoms, some studies did not find a significant difference. Many of the studies that did not find a difference had participants who were considered severely or majorly depressed (Butler et al., 2008; Sharma et al., 2005). The current study found a significant difference in rates of depressive symptoms favoring the yoga group compared with the regular PE group as the intervention went on throughout the semester. The students in these groups did not have major depression diagnoses. This difference could suggest that the severity of depression of the yoga practitioners at the start of the yoga intervention could impact whether yoga is able to significantly lower rates of depression (i.e., it may only work for people who are mildly depressed or not diagnosed with depression; it may not work for people who are severely or majorly depressed).



Finally, Csikszentmihalyi (1990), considered to be on the forefront of research on “flow” or engagement, said that yoga is a systematic technique to produce an experience that induces engagement. In contrast, the current study did not find that the yoga students were significantly more engaged in class or in life than the students in the regular PE class. The students did not write about feeling more engaged, and only one of the students interviewed discussed being engaged in the class. None of the interview students discussed being more engaged in their lives in general. This could indicate that the “dosage” of yoga was not right to produce the kind of flow or engagement Csikszentmihalyi described. It could also indicate that the conditions of the yoga class were not right to produce better engagement for the students (i.e., the gym was large, there were many different students with many different physical abilities, etc.).

**Contributions of findings to the field.** The current study found that yoga easily fit into the PE curriculum at the high school level and thus was easily incorporated into the school day. As far as the researcher could tell, this was the first study to try doing yoga with students just once a week for an extended period of time (as opposed to more times a week but for a shorter duration). This study also showed that it was not necessary to include “games” in the yoga class, as had been done in prior studies. This “dose” of yoga worked well in this setting, and from student accounts, it was apparent that most students enjoyed it.

The method of incorporating yoga into PE once a week showed a significant difference in the rates of depressive symptoms in students who participated in yoga, in contrast to their peers in a “regular” PE class who did not experience yoga. The interviews and written qualitative data show that students in the yoga group felt more

relaxed and less anxious after yoga. This shows that yoga has potential to be used as an effective prevention tactic for adolescents who are at risk of developing depression and for students who exhibit depressive symptoms. Other studies have pointed out that yoga is effective for the treatment and prevention of adult depression, but this study found that it could also be effective for 16- to 18-year-old high school students. This strengthens the case to think about using yoga to reduce symptoms of depression and perhaps prevent them from forming in the first place. This study extends the effectiveness of this method of prevention and reduction of symptoms to high school students.

This study went one step further than investigating whether yoga can reduce depressive symptoms to see if it can also increase flourishing in high school students. Though significant effects were not found in the quantitative data, effects were found in the qualitative data. Students reported increased positive emotion, some reported improved relationships in the interviews, and several reported an increased sense of accomplishment. This contributes to the literature, as this study added the connection of yoga to flourishing. While it is beneficial to investigate whether yoga can lessen depressive symptoms, it is also beneficial to investigate the power of yoga to help people live more fulfilled lives. The power of yoga to increase flourishing and overall wellness is still debatable, as the sample size of this study may have been too small to reveal a significant difference in the quantitative data. The qualitative data revealed the potential for yoga to increase at least some aspects of flourishing. Future research is warranted to further investigate the same idea, perhaps with a larger sample or longer dosage of yoga, or with more sensitive measures.

Finally, this study used qualitative methods, whereas prior studies have only reported using quantitative surveys to investigate these topics. This helped to understand the class from individual student perspectives and which variables they felt were the same or different after doing yoga. Understanding the individual perspectives of students was helpful in understanding what the students were feeling and mechanisms by which yoga may reduce depressive symptoms and increase flourishing.

### **Implications of Findings**

The findings of the current study have implications for the way we currently think about using yoga to reduce symptoms of adolescent depression and/or help students to flourish. There are also implications for the design and measurements used in future studies on this topic. Finally, there are implications for school personnel who are concerned about the mental health of students.

**Theoretical implications.** The current study supports the claim that mindful physical activity can help lower depressive symptoms and anxiety. The quantitative data showed that students in the yoga group had significantly lower rates of depressive symptoms than students in the “regular” PE classes 5 months after the intervention. The qualitative data revealed that yoga helped students to relax and feel less anxious. This study supports the idea that in lowering anxiety and increasing relaxation, depressive symptoms may lower overall.

This study also supports the idea that yoga can help increase some aspects of flourishing in high school students. Though not supported by the quantitative data, the qualitative data show that students felt their positive emotion increased. They reported enjoyment of the class, sometimes feeling happy for extended periods of time after class.

They reported improvements in their relationships. Two students who were interviewed said they used techniques learned in yoga class to help them calm down during disagreements with family members. Their sense of accomplishment was improved by practicing yoga. Students reported that the class was difficult but that they enjoyed being able to try the poses and work up to the full form of the poses. They also described feeling better about their bodies through increased strength and balance.

In contrast to this, the current study failed to support the idea that yoga increases “flow” or engagement. Csikszentmihalyi (1990) argued that it was reasonable to think of yoga as one of the most systematic techniques for producing flow/engagement. However, this study did not produce findings that confirm that idea. The quantitative data do not show a difference between groups, and this topic was not addressed in the qualitative data, other than one student describing feeling engaged during class only.

**Research implications.** The interviews in this study reveal that the strongest effects were reported by the student that was both Caucasian and female—the same as the instructor–researcher. Future researchers may want to control for race and gender when designing their studies to further investigate the relationship between the race and gender of the instructor and the race and gender of the participants. In addition, it would be interesting to note how the stereotypes of who practices yoga (Caucasian women) affects whom it can benefit and how it is approached by students who do not fit these stereotypes.

This study implemented a new design with regard to how often the students were participating in yoga class. It was incorporated once a week, via hour-long classes, for 12 weeks. Previous studies had students do yoga more than once a week for less time each

class. They also incorporated “games” into the yoga classes. This study showed that students enjoyed having yoga once a week for an hour. It also showed that this correlated with significantly lower rates of depressive symptoms and increased some aspects of flourishing. This design is something to consider for future studies. It was manageable for both the instructor and the PE teacher, the students enjoyed it, and it showed significant results. Finally, it worked well to have someone who was already involved at the school as the instructor–researcher. If possible, that is something to consider when designing future studies.

This study used concurrent mixed methods to gather and interpret data. Without the use of qualitative methods, it would have been difficult to determine whether the students enjoyed the class and saw benefits from it. Though this study did not use observations, it might be helpful to include an independent person to conduct observations before, during, and after yoga classes to confirm student reports of enjoyment and relaxation during the class.

**Applied implications.** As mental health issues are on the rise and the demands on schools expand to include helping students deal with mental health issues, schools may consider yoga as an intervention for students who are depressed or anxious. This may be complementary to treatment plans that include psychotherapy or medications or as an intervention to try before those therapies are applied. Yoga may also be tried if the other therapies are not feasible due to inconvenience or cost, as yoga would take place during school time, something students are expected to do anyway. The limitations to conducting the yoga class as it was conducted in this study are that the yoga instructor would have to be someone who is proficient with high school students and trained to teach them. The

instructor would need to be willing to teach during school hours. In addition, the PE instructor would have to cooperate with the yoga instructor to make this a valuable portion of the PE class. Another suggestion or solution is that yoga instruction could be included in all preservice training for PE teachers.

### **Limitations**

As with any research project, certain limitations applied to this research study. Decisions that were made at the start of the study and issues that came up during the study contributed to the limitations. When possible, the researcher attempted to address the limitations. If limitations could not be addressed, the researcher aimed to be transparent about them for the benefit of the reader and future researchers of this topic.

**Internal validity.** To the greatest extent possible, measures were taken to ensure internal validity. However, several limitations arose in this area. The first is that the two PE classes were already intact when the researcher was able to do the study. Thus random assignment was only possible at the classroom level. The researcher could not assign individual students to groups. Though the chi-square tests resulted in insignificant differences for race and gender, the researcher could not control for the number of students in each class, their beginning motivation to be in PE class, their previous athletic ability and enjoyment of athletics at the start of the class, and their baseline scores on the depression and flourishing measures. The second limitation is that the researcher could not control the number of students in each group. Because of this, she was forced to choose another PE class, walking fitness, to supplement the numbers in the control group. It is unknown whether the difference in these two courses accounted for the differences seen in the yoga group versus the control group. It also cannot be said with certainty that

the motivation of the group chosen to do yoga was not higher at the start of the intervention. In addition, the enjoyment of the course may have been a result of things that were not measured, such as the athletic ability of the students at the start of the semester.

In addition to this, as has been mentioned previously, the instructor of the yoga course was also the researcher. A bias on the part of the experimenter is that she is passionate about yoga and wanted this intervention to work. Though she attempted to remain neutral in everything she did with the students, it is possible that they picked up on her bias and reacted to it.

**External validity.** This study was conducted at a suburban high school in the Midwest. Though the population is somewhat diverse, the majority of the students are Caucasian. The majority of the students in the study were also Caucasian. It is unclear whether yoga would be beneficial in an urban setting or if the majority of students were non-White. In addition, the majority of the students in this study were either not depressed or displayed depressive symptoms. Whether these results could be generalized to adolescents with major or severe depression is uncertain.

**Measurement issues.** As previously mentioned, the students took note that the yoga instructor was also the researcher. This group also spent more time with her than the control group did. Being in the class once a week for 12 weeks allowed the researcher to develop relationships with many of the students in the yoga group. Because of this, students who knew her may have wanted her to view them favorably. They may have answered in a way that they felt made them look the best or in the way they believed she wanted them to answer. Though she attempted to encourage them to be as honest as

possible, this still may have been a factor in their responses and at the same time not an issue to the control group, as they did not have the same relationship with the researcher–instructor.

Overall, the PERMA Profiler was an appropriate measure to use with high school students, however, students did get confused on one question. The question read, “In general, to what extent do you feel contented?” The researcher and the PE instructor received several questions from students about the meaning of the word “contented.” Though they attempted to clarify, some students may have answered without understanding the question if they felt embarrassed or did not care enough to ask.

Finally, both the written answers and the interviews could have produced more quality information if structured differently. First, the written answers did not elicit as much of a response as the researcher had originally intended. The way the questions were written allowed for one-word to one-sentence answers when the researcher had hoped for paragraph answers. Second, the students in the classes seemed to be more comfortable typing than writing answers by hand. Because of resources and time, the researcher had them complete the first two sets of questions by handwriting the answers on a sheet of paper. Access to computers may have elicited more thorough responses. Third, the interviews were conducted with five students in three shorter sessions. It may have been more beneficial to conduct one long interview with each student to go more in depth about their experiences in the yoga class. Finally, the researcher could have done more to align the written questions and the interview questions with the variables in the quantitative measures.



**Statistical problems.** Because of the nature of a yoga class and the nature of the PE classes where the school was run, the overall sample size was relatively small. The power of the statistics may have been limited to identifying only the strongest outcomes, and the results should be viewed in light of that. In addition, the small sample and the location of the study (in a suburban high school) may limit generalizability of the findings.

Additionally, the researcher of the current study could have done a better job of aligning the qualitative questions with the quantitative questions. This could have been helpful in data convergence.

Finally, the qualitative questions did not elicit as much of a response as the researcher would have liked. In the future it might be helpful to have students respond using a computer or tablet. The interviews may need to be structured to be longer interviews with less interview sessions.

### **Future Directions**

As the occurrence of adolescent depression is on the rise, the potential of yoga to be helpful in preventing depressive symptomatology and promoting flourishing, and the fact that most schools currently do not have options to support students in this way, yoga in schools should continue to be investigated. Studies should look at the mechanisms by which yoga could help prevent depressive symptoms from occurring. This includes mindfulness, increases in confidence, improvements in body image, feelings of accomplishment and capability, and physical aspects. This could help identify more prevention and treatment options for adolescents.

In addition, the impact of race and gender of students should be investigated. Specifically, does the stereotype of yoga as a practice for Caucasian women have an effect on the ability of yoga to help all students with rates of depressive symptoms and flourishing levels? Another area of interest could be whether the starting level of depressive symptoms has an impact on the results. Is yoga as an intervention better suited to adolescents who are mildly depressed? Can it be used as a treatment option for students who are more severely depressed? Does the starting level of depressive symptoms make a difference?

Along with this, do the physical capabilities of the students at the start of the intervention have an effect on the results? Finally, an area of interest particularly strong for this researcher is whether these findings would be replicated with a larger sample. Can yoga aid in the treatment and prevention of depression? Can it increase the flourishing of already mentally well high school students? What aspects of yoga need to be present to make this happen?

## **Conclusion**

Schools are being called on to play a larger role in the lives of students, extending their services beyond academics to the overall well-being of the students. It makes sense to investigate feasible ways for schools to help prevent and improve adolescent depressive symptoms and help students flourish. This study aligned yoga with positive psychology and sought to understand whether yoga could be used in a school setting to decrease depressive symptoms and increase flourishing in students. This study found strong evidence that yoga can work in a school setting, can help with depressive symptoms, and can help students increase positive emotion, positive relationships, and

feelings of accomplishment. These findings highlight the promise of another prevention and symptom reduction option for parents, students, and schools. Given the nature of the problem and the onus on schools to help, yoga should continue to be a part of the conversation concerning these matters.

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## Appendix A: CES-D Scale

### Center for Epidemiologic Studies Depression Scale (CES-D), NIMH

Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the past week.

Week	During the Past			
	Rarely or none of the time (less than 1 day )	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)
1. I was bothered by things that usually don't bother me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. I did not feel like eating; my appetite was poor.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I felt that I could not shake off the blues even with help from my family or friends.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I felt I was just as good as other people.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. I had trouble keeping my mind on what I was doing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. I felt depressed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. I felt that everything I did was an effort.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. I felt hopeful about the future.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. I thought my life had been a failure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. I felt fearful.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. My sleep was restless.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. I was happy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. I talked less than usual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. I felt lonely.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. People were unfriendly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. I enjoyed life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. I had crying spells.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. I felt sad.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. I felt that people dislike me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. I could not get "going."	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SCORING: zero for answers in the first column, 1 for answers in the second column, 2 for answers in the third column, 3 for answers in the fourth column. The scoring of positive items is reversed. Possible range of scores is zero to 60, with the higher scores indicating the presence of more symptomatology.

## Appendix B: Interview Questions

### Interview 1:

1. Let's pretend I know nothing about yoga. How would you describe it to me from your experience in class so far?
2. Please describe how you feel before yoga class, during yoga class, and after yoga class.
3. Are there ways that yoga helps you even when you're not in yoga class?
4. Do you think yoga is different than stretching and exercise? If so, how?
5. What is the most memorable thing you have learned in yoga class so far?

### Interview 2:

1. What do you tell your friends and family about yoga class?
2. How have you used what you learned in yoga class outside of yoga class?
3. How has yoga class helped you to learn about yourself?
4. What are the biggest benefits of doing yoga?
5. What is the most memorable thing you have learned in yoga class so far?

### Interview 3:

1. Now that yoga is finished for the semester, what is your overall impression of yoga?
2. What would you say is the best thing about yoga?
3. What would you say is the worst thing about yoga?
4. How will you use what we learned in yoga class now that it's finished for the semester?
5. What are the three biggest benefits someone could get from doing yoga?
6. What was the most memorable thing you learned in yoga class?

## Appendix C: Code Book

### Category 1: Effects of Yoga

Subcategory	Properties	Definitions	Dimensions	Examples	Occurrences (lines)
Effects of Yoga/Physical Effects	Sports	Students describe yoga in terms of helping them with other sports	<p>No effect – Strong effect (Codes 0-3)</p> <p>Code 0 = The student does not discuss using yoga to help with sports</p> <p>Code 1 = the student rarely discusses using yoga to help with sports</p> <p>Code 2 = The student discusses using yoga to help with sports but it is not the most salient use of yoga</p> <p>Code 3 = The student discusses using yoga to help with sports often and it is the most salient use for him/her</p>	<p>And then I do soccer like on the weekends for CYC and if I'm like stretching a certain way, then like some of the muscles I'm using, they're not as sore later (Transcript A1, lines 59-61).</p>	<p><b>A1:</b> 59-61 (2) <b>A2:</b> 31-33 (2) <b>A3:</b> none (1)</p> <p><b>JS1:</b> 29-31 (3) <b>JS2:</b> 12-13 (3) <b>JS3:</b> 19 (3) <b>JA1:</b> none (0) <b>JA2:</b> none (0) <b>JA3:</b> none (0) <b>T1:</b> none (0) <b>T2:</b> none (0) <b>T3:</b> none (0) <b>K1:</b> none (0) <b>K2:</b> none (0) <b>K3:</b> none (0)</p>
	Flexibility	Students describe yoga in terms of making them more flexible	<p>No effect – Strong effect (Codes 0-3)</p> <p>0 = The student does not mention flexibility</p> <p>1 = The student rarely mentions flexibility and it is not salient to them</p> <p>2 = The student sometimes mentions flexibility but it is not the most salient benefit of yoga in their view</p> <p>3 = The student frequently</p>	<p>I feel like it seems like if you do it more and more it makes you stronger in spots that you wouldn't expect and more flexible overall" (Transcript K1, lines 71-73).</p>	<p><b>A1:</b> 18, (1) 58, (1) <b>A2:</b> 64 (2), 104-105 (2) <b>A3:</b> 69-70 (1) <b>JS1:</b> 10 (2) <b>JS2:</b> 45 (2) <b>JS3:</b> 25 (2) <b>JA1:</b> none (0) <b>JA2:</b> 41 (3) 51 (3) <b>JA3:</b> 43 (2) <b>T1:</b> none (0) <b>T2:</b> 30 (1) <b>T3:</b> none (0) <b>K1:</b> 10-11 (2) 14 (3) 60 (2) 72 (2) <b>K2:</b> 47 (3) <b>K3:</b> none (0)</p>



Strength	Students describe yoga in terms of making them physically stronger	<p>mentions flexibility and it is one of the most salient benefits for him/her</p> <p>No effect – Strong effect (Codes 0-3)</p> <p>0 = The student does not mention strength</p> <p>1 = The student rarely mentions strength and it is not salient to them</p> <p>2 = The student sometimes mentions strength but it is not the most salient benefit of yoga in their view</p> <p>3 = The student frequently mentions strength and it is one of the most salient benefits for him/her</p>	“I feel like it seems like if you do it more and more it makes you stronger in spots that you wouldn’t expect and more flexible overall” (Transcript K1, lines 71-73).	<p><b>A1:</b> none (0) <b>A2:</b> none (0)</p> <p><b>A3:</b> 69 (3) <b>JS1:</b> none (0)</p> <p><b>JS2:</b> none (0) <b>JS3:</b> none (0)</p> <p><b>JA1:</b> none (0) <b>JA2:</b> 27-29 (1) <b>JA3:</b> 43 (2) <b>T1:</b> none (0) <b>T2:</b> 66 (1) 74 (1)</p> <p><b>T3:</b> 48-49 (2) 59 (2) <b>K1:</b> 9-10 (3) 14 (3) 72 (2) 84 (3)</p> <p><b>K2:</b> 15 (2) 47 (3), <b>K3:</b> none (0)</p>
Physical Capabilities	Students describe yoga in terms of learning more about their physical limitations and capabilities	<p>(Codes 0-3)</p> <p>0 = The student does not mention limits/capabilities</p> <p>1 = The student rarely mentions limits/capabilities and it is not salient to them</p> <p>2 = The student sometimes mentions limits/capabilities but it is not the most salient aspect of yoga in their view</p> <p>3 = The student frequently mentions limits/capabilities and it is one of the most salient aspects for him/her</p>	“Maybe like in a physical sense I’m a little bit more balanced on one side than the other” (Transcript JS2, lines 31-32).	<p><b>A1:</b> none <b>A2:</b> 57(2), 64-65(3), <b>A3:</b> 70(2), 91-92(2)</p> <p><b>JS1:</b> none <b>JS2:</b> 31-32(3) <b>JS3:</b> none <b>JA1:</b> 114-115(2), <b>JA2:</b> 41(3), 43-44(3), 51(3) <b>JA3:</b> none <b>T1:</b> 24(1), 56-57(2), 70-72(2), <b>T2:</b> 39(2), 63-65(2) <b>T3:</b> 50-51(2), <b>K1:</b> 58-63 (2) <b>K2:</b> none <b>K3:</b> 33(1)</p>
Balance	Students describe yoga as helping with their physical	<p>No effect – Strong effect</p> <p>0 = The student does not mention balance</p>	It’s fun. It’s relaxing. It helps you build up like balance or agility	<p><b>A1:</b> none (0) <b>A2:</b> none (0)</p> <p><b>A3:</b> none (0) <b>JS1:</b> 10 (2) 29 (3) <b>JS2:</b> 31 (2) <b>JS3:</b></p>

	balance	<p>1 = The student rarely mentions balance and it is not salient to them</p> <p>2 = The student sometimes mentions balance but it is not the most salient benefit of yoga in their view</p> <p>3 = The student frequently mentions balance and it is one of the most salient benefits for him/her</p>	(Interview JS 1, line 10)	<p>none (0) <b>JA1:</b> none (0) <b>JA2:</b> none (0) <b>JA3:</b> none (0) <b>T1:</b> 63 (2) <b>T2:</b> none (0) <b>T3:</b> 49 (2) 59 (2) <b>K1:</b> none (0) <b>K2:</b> none (0) <b>K3:</b> none (0)</p>
Exercise	Students describe yoga as a physical exercise	<p>No description – Strong/frequent description (Codes 0-3)</p> <p>0 = The student does not describe yoga as exercise</p> <p>1 = The student rarely describes yoga as exercise and it is not salient to them</p> <p>2 = The student sometimes describes yoga se exercise but it is not the most salient description of yoga in their view</p> <p>3 = The student frequently describes yoga as exercise and it is one of the most salient descriptions for him/her</p>	<p>I enjoy it because it actually pushes you and it actually helps you. It's an actual exercise thing (Transcript T2, lines 11-13)</p>	<p><b>A1:</b> 19 (2) 94 (2) <b>A2:</b> none (0) <b>A3:</b> none (0) <b>JS1:</b> 40 (2) <b>JS2:</b> none (0) <b>JS3:</b> 47 (1) <b>JA1:</b> 96 (2) <b>JA2:</b> 98 (2) <b>JA3:</b> 16-17 (3) <b>T1:</b> 23-24 (3) 45 (2) 78 (3) <b>T2:</b> 11-13(3) 18-19 (2) 21 (3) <b>T3:</b> 7-8 (3)18 (2) <b>K1:</b> 8-9 (2) 58-63 (3) 72-73 (1) 84 (2), 88-89(2) <b>K2:</b> 15 (2) <b>K3:</b> none (0)</p>
Physical Aspect = Saliency	Students describe yoga in terms of physical effects (not mental)	<p>No salient – very salient (Code 0-3)</p> <p>0 = The student does not mention physical aspects</p> <p>1 = The student rarely mentions physical aspects and it is not salient to them</p> <p>2 = The student sometimes</p>	<p>“When you start off, basically you start in a comfortable position, and then you’ll probably move down to you’ll probably go to downward dog first and that’s basically just</p>	<p><b>A1:</b> none (0) <b>A2:</b> 104 (2) <b>A3:</b> 35-37(1) 44 (2) 69 (2) <b>JS1:</b> 29 (2) 38-41 (2) 48-50 (1) 60 (2) <b>JS2:</b> 12-13 (3) 31-32 (3) <b>JS3:</b> 15 (3) 19 (3) 32(2) 47 (2) <b>JA1:</b> 7-15 (3) 17-21 (3) 35-36(2) 114-115 (3) <b>JA2:</b> 41 (3) 58-</p>

<p>mentions physical aspects but it is not the most salient part of yoga in their view 3 = The student frequently mentions physical aspects and it is one of the most salient parts for him/her</p>	<p>when you put your hands on the ground and your feet behind you about shoulders width. And your hips are up and your chest is down... (Interview JA1 lines 7-15)</p>	<p>59(2) 65 (3) 98 (2) <b>JA3:</b> 16-17 (3) 23 (2) 48(3) <b>T1:</b> 25-26(2), 54-59(2), 70-75 (3) <b>T2:</b> 11-13 (2) 21 (2) 25-26 (2) 28 (2) <b>T3:</b> 5-8 (2), 35(1) <b>K1:</b> 8-11 (3) 14-17(3) 77 (3) <b>K2:</b> 15 (2) <b>K3:</b> 27-30 (3), 62(1)</p>
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### Category 1: Effects of Yoga

Subcategory	Properties	Definition	Dimensions	Examples	Lines
Mental Effects	Relaxing	Students describe feeling more relaxed because of yoga	<p>No effect – Strong effect Code 0-3</p> <p>0 = The student does not mention relaxation 1 = The student rarely mentions relaxation and it is not salient to them 2 = The student sometimes mentions relaxation but it is not the most salient benefit of yoga in their view 3 = The student frequently mentions relaxation and it is one of the most salient benefits for him/her</p>	<p>“it just kind of keeps you relaxed and makes me a little bit less stressed about everything” (Transcript K2, lines 56-57).</p>	<p><b>A1:</b> 8 (3), 11-13 (3), 31 (3), 35 (2), 45 (3), 48-49 (3), 55 (3), 65-68 (2) <b>A2:</b> 41-42 (2), 71-72 (3) <b>A3:</b> 5 (3), 29-31 (3), 72-73 (2) <b>JS1:</b> 10(2), 24 (2) <b>JS2:</b> 44(2), 46 (2), 61(2) <b>JS3:</b> 10 (2), 25 (2) <b>JA1:</b> 45 (2), 50 (2) <b>JA2:</b> 89 (2), <b>JA3:</b> 43(2) <b>T1:</b> 7-9 (2), 18-19 (3), 29(3), 37-38 (2) <b>T2:</b> 29 (2), <b>T3:</b> none (0) <b>K1:</b> 20-21 (1), 31-32 (2), 38(1) <b>K2:</b> 22-23 (2), 28-29 (2), 56-57 (3) <b>K3:</b> none (0)</p>
	Extended mental benefits	Students describe experiencing mental benefits long after the yoga class has finished	<p>No effect- Strong Effect</p> <p>0 = The student does not mention mental benefits after class and</p>	<p>After yoga, I just feel more like calm and collected, but then I have my AP</p>	<p><b>A1:</b> 45-49 (3), 54-58 (3), 116-119 (3), <b>A2:</b> 41-42 (3), 47-50 (3), 55-59 (2), 72 (2), 81-86</p>

	(next day/week/in general etc.)	beyond 1 = The student rarely mentions mental benefits after class and beyond and it is not salient to them 2 = The student sometimes mentions mental benefits after class and beyond but it is not the most salient benefit of yoga in their view 3 = The student frequently mentions mental benefits after class and beyond and it is one of the most salient benefits for him/her	government class after, and so that helps me kind of go into it because then I think oh man I have to do that for government. But then I'm still kind of calm and like okay I can do that and I can, I just got back so I'm fine. It just makes me more relaxed" (Transcript A1, lines 45-49).	(3), 91-97 (2), 104 (2), <b>A3:</b> 9-10 (3), 17 (3), 29-21 (3), 73-76 (3), 91-93 (3), <b>JS1:</b> none (0) <b>JS2:</b> none (0) <b>JS3:</b> none (0) <b>JA1:</b> 51-52 (3), 54(3) 72-73 (2), 77-82(3), <b>JA2:</b> none (0), <b>JA3:</b> none (0) <b>T1:</b> 37-38 (3), 47-49 (3), <b>T2:</b> 29 (2), <b>T3:</b> none (0) <b>K1:</b> 36-39 (3), 43 (3), <b>K2:</b> 22-23 (2), 36 (2), 56 (2), <b>K3:</b> 57 (2)
Self-Esteem/ Confidence	Students describe having more self-esteem	No effect – Strong effect Code 0-3 0 = The student does not mention self-esteem/confidence 1 = The student rarely mentions self-esteem/confidence and it is not salient to them 2 = The student sometimes mentions self-esteem/confidence but it is not the most salient benefit of yoga in their view 3 = The student	"I really appreciate myself more... I'm pushing my limits and I'm improving myself all by my own. And yeah, I feel better about myself too" (Transcript A2, lines 55-59).	<b>A1:</b> 39-40 (2), 48-49 (2), <b>A2:</b> 55-59 (3), 66-68 (2), 71 (3), 96-97 (2), 104 (3), <b>A3:</b> 3-5 (3), 30-31 (3), 73 (3), 92-93(3) <b>JS1:</b> none (0), <b>JS2:</b> none (0), <b>JS3:</b> none (0) <b>JA1:</b> none (0), <b>JA2:</b> 90 (2), <b>JA3:</b> none (0) <b>T1:</b> none (0), <b>T2:</b> none (0), <b>T3:</b> 24-25 (2) <b>K1:</b> none (0), <b>K2:</b> none (0), <b>K3:</b> 57(2)

Understand Self	Students describe effects of yoga as knowing themselves better	<p>frequently mentions self-esteem/confidence and it is one of the most salient benefits for him/her</p> <p>No effect – Strong effect Code 0-3 0 = The student does not mention a better understanding of self 1 = The student rarely mentions a better understanding of self and it is not salient to them 2 = The student sometimes mentions a better understanding of self but it is not the most salient benefit of yoga in their view 3 = The student frequently mentions a better understanding of self and it is one of the most salient benefits for him/her</p>	<p>“And just really learning about yourself, ‘cause going back to the limits thing, really focusing on you and you on your mat and don’t worry about anyone else.” Interview T3 lines 50-53</p>	<p><b>A1:</b> 10-11(3), 83(2) <b>A2:</b> 66-67 (2), 71(2), <b>A3:</b> 3-4(2), <b>JS1:</b> none (0), <b>JS2:</b> none (0), <b>JS3:</b> none (0) <b>JA1:</b> none(0) <b>JA2:</b> 89(1) <b>JA3:</b> none (0) <b>T1:</b> none (0), <b>T2:</b> 86-87 (2), <b>T3:</b> 24(2), 50-53 (3), 60 (3) <b>K1:</b> none (0), <b>K2:</b> none (0), <b>K3:</b> none (0)</p>
Elevated Mood	Students describe feeling happier/positive/better after yoga	<p>No effect – Strong effect Code 0-3 0 = The student does not mention an elevated mood 1 = The student rarely mentions experiencing an elevated mood and it</p>	<p>“I just feel good like for the rest of the day, be in a good mood and stuff” (Transcript JA, lines 51-52).</p>	<p><b>A1:</b> 35 (2), <b>A2:</b> 104(2) <b>A3:</b> 73(2), 92-93(2) <b>JS1:</b> none (0), none (0), <b>JS3:</b> none (0) <b>JA1:</b> 51-52 (3), <b>JA2:</b> none (0) <b>JA3:</b> none (0) <b>T1:</b> none (0) <b>T2:</b> none (0), <b>T3:</b> 25(1), <b>K1:</b> none (0), <b>K2:</b> none <b>K3:</b> 57(2)</p>

Accomplishment	Students describe a sense of accomplishment after yoga class	<p>is not salient to them  2 = The student sometimes mentions an elevated mood but it is not the most salient benefit of yoga in their view  3 = The student frequently mentions an elevated mood and it is one of the most salient benefits for him/her</p>	<p>No effect – Strong effect  Code 0-3  0 = The student does not mention a sense of accomplishment  1 = The student rarely mentions experiencing a sense of accomplishment and it is not salient to them  2 = The student sometimes mentions a sense of accomplishment but it is not the most salient benefit of yoga in their view  3 = The student frequently mentions a sense of accomplishment and it is one of the most salient benefits for him/her</p>	<p>“With some of the stretches and poses we do and the ones that I can do I feel kind of accomplished like oh I succeeded in that one and then maybe I can succeed in something else later” (Transcript A1, lines 37-38).</p>	<p><b>A1:</b> 37-38 (3), <b>A2:</b> 58-59 (3), 65(2), <b>A3:</b> 71(3), 92(3) <b>JS1:</b> none (0), none (0), <b>JS3:</b> none (0) <b>JA1:</b> none (0), <b>JA2:</b> 90(1), <b>JA3:</b> 68-69(2), 73-77(2) <b>T1:</b> 8-9 (3), 57(2) <b>T2:</b> 64(2), 84(2), 105(2) <b>T3:</b> 17-18(2), 21(3), <b>K1:</b> 60-63(2), 82(2) <b>K2:</b> none (0) <b>K3:</b> none(0)</p>
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## Category 2: Attitude

Subcategory	Properties	Definitions	Dimensions	Examples	Lines
Attitude	Direct Indicators	Students directly state their feelings about class	Negative - Positive Code 0-3 0 = The student does not mention how they feel about class directly 1 = The student directly expresses negative feelings about class 2 = The student directly expresses indifference about class 3 = The student directly expresses enjoyment of class	“I really enjoy doing it” (Transcript A1, Transcript A2, Transcript A3, Transcript T1).	<b>A1:</b> 24-25(3), 30-31(3), 35(3), 124-125(3), 126-130 (3), 131(3) <b>A2:</b> 10-11(3), 16(3), 17-18(3), 81(3), 103(3), 117(3) <b>A3:</b> 23(3), 43(3), 45(3), 101(3) 102(3), 111(3), 115(3) <b>JS1:</b> 10(3), <b>JS2:</b> 8(2) <b>JS3:</b> none(0) <b>JA1:</b> none (0) <b>JA2:</b> 14(3) 18-20(3) <b>JA3:</b> 6-7(2), 18-19(3), 63(3), 67(3), 76(3) <b>T1:</b> 11(3), 24-25(2), 30-31(2), <b>T2:</b> 8(3), 11(3), 105(3) <b>T3:</b> 25(3), 27-28(3), <b>K1:</b> 92(3), <b>K2:</b> 7(3) <b>K3:</b> 5(3), 9(3), 59-60(3)
	Compares yoga to regular PE	Students compare yoga and PE	Negative - Positive Code 0-3 0 = The student does not compare yoga to PE 1 = The student negatively compares yoga to PE 2 = The student sometimes compares yoga to PE and is indifferent 3 = The student frequently compares yoga to PE and yoga is positively represented	“I’m like oh I have PE, and then I’m like oh wait we’re doing yoga, and then I’m like okay it’s not so bad anymore” (Transcript K1, lines 95-97).	<b>A1:</b> none <b>A2:</b> 105-107(2) none <b>A3:</b> none <b>JS1:</b> none <b>JS2:</b> none <b>JS3:</b> none <b>JA1:</b> 62-63(2) <b>JA2:</b> none <b>JA3:</b> none <b>T1:</b> none <b>T2:</b> none <b>T3:</b> none <b>K1:</b> 44-45(3), 95-97(3), <b>K2:</b> none <b>K3:</b> 5-7(3)
	Feelings around class	Students express their	Negative - Positive	Some indicated that	<b>A1:</b> 29(3) <b>A2:</b> 107(3)

time	feelings about class and before and after class.	Code 0-3 0 = The student does not mention feelings before or after class (about class) 1 = The student mentions negative feelings about class and before class 2 = The student mentions indifferent feelings about class and before class of yoga in their view 3 = The student mentions positive feelings about class and before class	they enjoyed class by describing how they felt before class saying they were “excited” before class (Transcript A1, Transcript A2, Transcript K1, Transcript T1).	<b>A3:</b> none <b>JS1:</b> 22-24(3) <b>JS2:</b> none <b>JS3:</b> none <b>JA1:</b> 43-44(3), 58(3), 62-63(3) <b>JA2:</b> none <b>JA3:</b> none <b>T1:</b> 34-38(3), 47-48(3), 78-79(3) <b>T2:</b> none <b>T3:</b> none <b>K1:</b> 29-30(3), <b>K2:</b> none <b>K3:</b> none
Encourages others to do yoga	Students report telling friends and family members that they should try practicing yoga	Negative - Positive 0 = The student does not mention telling others to try yoga 1 = The student rarely mentions telling others to try yoga and it is not salient to him/her 2 = The student sometimes mentions telling others to try yoga but it is not significant to him/her 3 = The student frequently mentions encouraging others to try yoga because they believe it is a positive thing to do.	“But I always wanted to go into it and I try to get my dad to go into it with me, ‘cause we live right next to the Y... I’m talking my dad into it still” (Interview A1 lines 22-26)	<b>A1:</b> 22-23(3), 26(3) <b>A2:</b> 10(3) <b>A3:</b> 59-60(3) <b>JS1:</b> none <b>JS2:</b> none <b>JS3:</b> none <b>JA1:</b> 135(3) 139(2), <b>JA2:</b> none <b>JA3:</b> none <b>T1:</b> none <b>T2:</b> none <b>T3:</b> none <b>K1:</b> none <b>K2:</b> 6(2) <b>K3:</b> none



Advice for the future

Students offer advice for the instructor for future yoga classes with high school students.

Negative - Positive  
Code 0-3  
0 = The student does not offer advice for the future  
1 = The student offers advice for the future indicating that they had negative feelings about the current class.  
2 = The student offers advice for the future indicating that they had indifferent feelings about the current class  
3 = The student offers advice for the future indicating that they had positive feelings about the current class.

“Keep doing what you’re doing ‘cause I think it’s good”  
(Transcript T3, line 67).

**A1:** none **A2:** none **A3:** 101-102 (3) **JS1:** none **JS2:** none **JS3:** 47-49(1) **JA1:** none **JA2:** none **JA3:** 63-65(3), **T1:** none **T2:** 104(3) **T3:** 67(3) **K1:** none **K2:** none **K3:** none

## Category 2: Attitude

**Subcategory**  
Attitude

**Properties**  
Poses

**Definitions**  
Students describe poses used in yoga class

**Dimensions**  
Negative description – positive description  
Code 0-3  
0 = The student does not mention specific poses  
1 = The student mentions poses they did not like  
2 = The student mentions poses that they feel indifferent about  
3 = The students

**Examples**  
“I have a request. I mean I don’t like doing downward dog.”  
(Interview JA1, line 60).

**Lines**  
**A1:** none **A2:** none **A3:** 35-41(2) **JS1:** 60(1), 63-64(1) **JS2:** none **JS3:** 15(1) **JA1:** none **JA2:** none **JA3:** 23(1) **T1:** none **T2:** none **T3:** none **K1:** none **K2:** none **K3:** none

Equipment	Students mention the equipment used in class	<p>mention poses they enjoyed</p> <p>Negative feelings – positive feelings</p> <p>Code 0-3</p> <p>0 = The student does not mention equipment used in class</p> <p>1 = The student mentions dissatisfaction with the equipment used in class</p> <p>2 = The student mentions indifference toward with the equipment</p> <p>3 = The student mentions positive feelings about the equipment used in class</p>	<p>“The only thing I didn’t like was when I was doing down dog and like my hands would get kinda slippery, and then I felt like I was slipping a lot. So that’s the only thing I just didn’t like” (Interview K3, lines 41-43)</p>	<p><b>A1:</b> none <b>A2:</b> none <b>A3:</b> none <b>JS1:</b> none <b>JS2:</b> none <b>JS3:</b> none <b>JA1:</b> none <b>JA2:</b> none <b>JA3:</b> none <b>T1:</b> none <b>T2:</b> none <b>T3:</b> none <b>K1:</b> none <b>K2:</b> none <b>K3:</b> 41-43(2)</p>
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**Category 2: Attitude**  
**Subcategory**  
Attitude

**Properties**  
Novelty

**Definition**

Students mention positive or negative feelings because the practice of yoga is new to them.

**Dimensions**

Negative – Positive

0-3

0 = The student does not mention novelty of yoga

1 = The student rarely mentions novelty and expresses negative feelings toward the class because of this

2 = The student sometimes mentions novelty of the class and expresses indifference

**Examples**

“I’m not really head over heels for yoga. It’s just I really like it cause I never did it before” (Transcript JA1, lines 98-100).

**Lines**

**A1:** none **A2:** none **A3:** 35-37(2) **JS1:** none **JS2:** none **JS3:** none **JA1:** 99-100(2) **JA2:** 7-8(2) **JA3:** none **T1:** 24-25(2), **T2:** none **T3:** none **K1:** none **K2:** none **K3:** none

Vague Answers	Students describe the class in general terms and/or qualify statements with “I don’t know”	<p>because of this</p> <p>3 = The student mentions novelty and expresses enjoyment because of it</p> <p>Negative – Positive</p> <p>Code 0-3</p> <p>0 = The student does not use general terms to describe yoga</p> <p>1 = The student rarely uses general terms to describe negativity toward yoga</p> <p>2 = The student sometimes uses general terms to describe indifference toward yoga</p> <p>3 = The student uses general terms to describe positivity toward yoga</p>	“I don’t know. I can’t remember” (Transcript JS1, line 48; Transcript JS2, line 55; Transcript JS3, line 34).	<p><b>A1:</b> none <b>A2:</b> none <b>A3:</b> none <b>JS1:</b> 14-15(2), 17(2), 48(2), 58(2), 66(2) <b>JS2:</b> 55(2), 71(2) <b>JS3:</b> 6(2), 34-35(2), 48-49(2) <b>JA1:</b> none <b>JA2:</b> 10-11(2), 85(2), 90-91(2) <b>JA3:</b> 7-8(2) <b>T1:</b> none <b>T2:</b> none <b>T3:</b> none <b>K1:</b> none <b>K2:</b> 73(2), <b>K3:</b> 45(2)</p>
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**Category 3: Transfer of Skills**

<b>Subcategory</b>	<b>Properties</b>	<b>Definitions</b>	<b>Dimensions</b>	<b>Examples</b>	<b>Lines</b>
Mental	Relaxation/Calm/Stress Relief	Students transfer skills from yoga to help them relax outside of yoga class	<p>Not Present – Repeated</p> <p>Code 0-3</p> <p>0 = The student does not mention transferring relaxation strategies outside of class.</p> <p>1 = The student rarely mentions transferring relaxation strategies outside of class and it is</p>	“And I mean I just try to keep myself calm so I don’t always stress out about everything” (Transcript K2, lines 22-23).	<p><b>A1:</b> 31-33(2), 45-49(3), 64-68(2) <b>A2:</b> 41-42(2), 44-46(2), 47-50(2), 71-72(3), <b>A3:</b> 6-10(3), 17(3), 30-33(3), <b>JS1:</b> none <b>JS2:</b> none <b>JS3:</b> none <b>JA1:</b> 50(1), <b>JA2:</b> none <b>JA3:</b> none <b>T1:</b> 8-9(2), 18-19(2) 29(2), 36-38(2) <b>T2:</b> none <b>T3:</b></p>

		not salient to them 2 = The student sometimes mentions transferring relaxation skills outside of class but it is not the most salient aspect of yoga in their view 3 = The student frequently mentions transferring relaxation strategies and it is one of the most salient aspects for him/her		none <b>K1:</b> 31-32(2), 38-39(3), 43(3) <b>K2:</b> 22-23(3), 27-29(3) <b>K3:</b> none
Confidence/no comparisons	Students transfer skills from yoga to gain confidence and stop comparing self to others	Not Present – Repeated Code 0-3 0 = The student does not mention transferring confidence to situations outside of class 1 = The student rarely mentions transferring confidence to situations outside of class and it is not salient to them 2 = The student sometimes mentions transferring confidence to situations outside of class but it is not the most salient aspect of yoga in their view 3 = The student frequently mentions transferring confidence to situations outside of class and it is one of the	“It can encourage me like oh I did that pose, then maybe I can answer that question later...” (Transcript A1, lines 38-40).	<b>A1:</b> 39-42(3), 48-49(3) <b>A2:</b> 58-59(2), 104(3) <b>A3:</b> 30-31(3), 90(3), 93(3) <b>JS1:</b> none <b>JS2:</b> none <b>JS3:</b> none <b>JA1:</b> none <b>JA2:</b> none <b>JA3:</b> none <b>T1:</b> none <b>T2:</b> none <b>T3:</b> 50-53(3) <b>K1:</b> none <b>K2:</b> none <b>K3:</b> none

Mental Preparation	Students transfer skills from yoga to help them prepare for other situations	<p>most salient aspects for him/her</p> <p>Not Present – Repeated Code 0-3</p> <p>0 = The student does not mention feeling more prepared for situations outside of class</p> <p>1 = The student rarely mentions feeling more prepared for situations outside of class and it is not salient to them</p> <p>2 = The student sometimes mentions feeling more prepared for situations outside of class but it is not the most salient aspect of yoga in their view</p> <p>3 = The student frequently mentions feeling more prepared for situations outside of class and it is one of the most salient aspects for him/her</p>	“And I’m ready to take on government and then by that time I’m ready to participate in class” (Transcript A3, lines 30-31).	<p><b>A1:</b> 56-57(2), <b>A2:</b> none</p> <p><b>A3:</b> 30-31(3), <b>JS1:</b> none</p> <p><b>JS2:</b> none <b>JS3:</b> none</p> <p><b>JA1:</b> none <b>JA2:</b> none</p> <p><b>JA3:</b> none <b>T1:</b> 8(2), 37-38(3)</p> <p><b>T2:</b> none <b>T3:</b> none</p> <p><b>K1:</b> none <b>K2:</b> none</p> <p><b>K3:</b> none</p>
Openness to experience	Students use yoga skills to help them open up to new experiences	<p>Not Present – Repeated Code 0-3</p> <p>0 = The student does not mention being more open to experiences outside of class</p> <p>1 = The student rarely mentions being more open to experiences</p>	“I guess you could say it’s kind of like a life thing... how you said you don’t know if it’s impossible if you haven’t tried it kind of thing” (Transcript T2, lines 50-53).	<p><b>A1:</b> none <b>A2:</b> 91-97(2)</p> <p><b>A3:</b> 74-76(2), 50-55(2), <b>JS1:</b> none</p> <p><b>JS2:</b> none <b>JS3:</b> none</p> <p><b>JA1:</b> none <b>JA2:</b> 67-71(2)</p> <p><b>JA3:</b> none <b>T1:</b> none</p> <p><b>T2:</b> 50-56(2) <b>T3:</b> none</p> <p><b>K1:</b> none <b>K2:</b> 64-68(2)</p> <p><b>K3:</b> none</p>

Focus	Students use yoga skills to help them focus	<p>outside of class and it is not salient to them  2 = The student sometimes mentions being more open to experiences outside of class but it is not the most salient aspect of yoga in their view  3 = The student frequently mentions being more open to experiences outside of class and it is one of the most salient aspects for him/her</p> <p>Not Present – Repeated Code 0-3  0 = The student does not mention being more focused during situations outside of class  1 = The student rarely mentions being more focused in situations outside of class and it is not salient to them  2 = The student sometimes mentions being more focused in situations outside of class but it is not the most salient aspect of yoga in their view  3 = The student frequently mentions</p>	<p>“Then after yoga I feel like more ready for the next two classes because I feel so relaxed but also focused at the same time” (Transcript T1, lines 36-38).</p>	<p><b>A1:</b> 55-57(2), <b>A2:</b> none  <b>A3:</b> none <b>JS1:</b> none  <b>JS2:</b> none <b>JS3:</b> none  <b>JA1:</b> none <b>JA2:</b> none  <b>JA3:</b> none <b>T1:</b> 18-19(3), 37-38(3) <b>T2:</b> none  <b>T3:</b> 57(2) <b>K1:</b> 36(3), 38-39(3), <b>K2:</b> none  <b>K3:</b> none</p>
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Persistence	Students use yoga skills to help them persist when difficulty arises	<p>being more focused in situations outside of class and it is one of the most salient aspects for him/her</p> <p>Not Present – Repeated Code 0-3</p> <p>0 = The student does not mention being more persistent in situations outside of class</p> <p>1 = The student rarely mentions being more persistent in situations outside of class and it is not salient to them</p> <p>2 = The student sometimes mentions being more persistent in situations outside of class but it is not the most salient aspect of yoga in their view</p> <p>3 = The student frequently mentions being more persistent in situations outside of class and it is one of the most salient aspects for him/her</p>	<p>“If I’m motivated to do a pose I will try it and try it until I get it... And if I’m really scared of an opportunity that will come up and I’ll decline it, then I’ll have to think about it. But like I said, I can turn around and another opportunity will open up and I won’t be as scared. So I’ll keep trying it” (Transcript A2, lines 91-99).</p>	<p><b>A1:</b> none <b>A2:</b> 80-86(3), 91-99(2) <b>A3:</b> none <b>JS1:</b> none <b>JS2:</b> none <b>JS3:</b> none <b>JA1:</b> 48-49(2), <b>JA2:</b> none <b>JA3:</b> none <b>T1:</b> none <b>T2:</b> none <b>T3:</b> 37-38(2) <b>K1:</b> none <b>K2:</b> none <b>K3:</b> 35(2), 65(3), 67(3)</p>
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**Category 3: Transfer of Skills**

Subcategory	Properties	Definition	Dimensions	Examples	Lines
Physical	Continue Yoga	Students want to continue to practice yoga after the intervention	<p>Not Present – Repeated Code 0-3</p> <p>0 = The student does not mention he/she would like to continue</p>	<p>One student asked about classes at the local YMCA and also asked the instructor if she could join her</p>	<p><b>A1:</b> 25(3), 11-13(3) <b>A2:</b> 11-13(3), 20(2) <b>A3:</b> 63-64(2), 106-107(2) <b>JS1:</b> none <b>JS2:</b> none <b>JS3:</b> none <b>JA1:</b></p>

		<p>practicing yoga  1 = The student rarely mentions he/she would like to continue practicing yoga and it is not salient to them  2 = The student sometimes mentions he/she would like to continue practicing yoga but it is not the most salient aspect of yoga in their view  3 = The student frequently mentions he/she would like to continue practicing yoga and it is one of the most salient aspects for him/her</p>	<p>classes at a local studio (Transcript A1, Transcript A2).</p>	<p>none <b>JA2:</b> none <b>JA3:</b> 30 (2) <b>T1:</b> none <b>T2:</b> 24(1), <b>T3:</b> 41(1), 43(1), <b>K1:</b> none <b>K2:</b> 21(1), <b>K3:</b> 48(2), 52(2)</p>
Help with other sports	Students transfer skills from yoga to help with other sports	<p>Not Present – Repeated Code 0-3  0 = The student does not mention yoga helping with other sports activities  1 = The student rarely mentions yoga helping with other sports activities and it is not salient to them  2 = The student sometimes mentions yoga helping with other sports activities but it is not the most salient aspect of yoga in their</p>	<p>“I just do stretching with my legs; basically like some stretches that can help me with soccer season too that I just keep doing” (Transcript A2, lines 31-33).</p>	<p><b>A1:</b> 59-61(2) <b>A2:</b> 31-33(3) <b>A3:</b> none <b>JS1:</b> 29-31(2), <b>JS2:</b> 12-13(2), 22-23(2) <b>JS3:</b> 19(2) <b>JA1:</b> none <b>JA2:</b> none <b>JA3:</b> none <b>T1:</b> none <b>T2:</b> none <b>T3:</b> none <b>K1:</b> 14-15(1), <b>K2:</b> none <b>K3:</b> none</p>



Combat Stiffness	Students transfer skills from yoga to help with feeling stiff	<p>view  3 = The student frequently mentions yoga helping with other sports activities and it is one of the most salient aspects for him/her</p> <p>Not Present – Repeated Code 0-3  0 = The student does not mention yoga helps with stiffness  1 = The student rarely mentions yoga helps with stiffness and it is not salient to them  2 = The student sometimes mentions yoga helps with stiffness but it is not the most salient aspect of yoga in their view  3 = The student frequently mentions yoga helps with stiffness and it is one of the most salient aspects for him/her</p>	<p>“I used to be very flexible when I was younger but now I’m like I feel always so stiff. So sometimes that really helps just being able to- doing it every single week instead of like oh, like every couple of months I would stretch or something” (Transcript K2, lines 48-51).</p>	<p><b>A1:</b> none <b>A2:</b> 24-26(1)  <b>A3:</b> none <b>JS1:</b> none  <b>JS2:</b> none <b>JS3:</b> none  <b>JA1:</b> none <b>JA2:</b> none  <b>JA3:</b> none <b>T1:</b> none  <b>T2:</b> 24-26(3), 34(3) <b>T3:</b> 41(3) <b>K1:</b> none <b>K2:</b> 48-51(3), <b>K3:</b> none</p>
Posture	Students transfer skills from yoga to help with posture	<p>Not Present – Repeated Code 0-3  0 = The student does not mention yoga helps with posture  1 = The student rarely mentions yoga helps with posture and it is not salient to them</p>	<p>“So I’ll be finding myself in one of my classes and then I’ll be like oh I have pretty good posture. Or I’m sitting up straight...” (Transcript A2, lines 39-41).</p>	<p><b>A1:</b> none <b>A2:</b> 39-41(3),  <b>A3:</b> none <b>JS1:</b> none  <b>JS2:</b> none <b>JS3:</b> none  <b>JA1:</b> none <b>JA2:</b> 32(2)  <b>J3:</b> none <b>T1:</b> none <b>T2:</b> none  <b>T3:</b> none <b>K1:</b> none  <b>K2:</b> none <b>K3:</b> none</p>

2 = The student sometimes mentions yoga helps with posture but it is not the most salient aspect of yoga in their view  
 3 = The student frequently mentions yoga helps with posture and it is one of the most salient aspects for him/her

**Category 3: Transfer of Skills**

**Category/Subcategory**    **Properties**  
 Absence of Transfer    Vague answers

**Definitions**  
 Students use vague language to describe how they use yoga outside of class

**Dimensions**  
 Not present – repeated Code 0-3  
 0 = The student does not give vague answers to describe using skills outside of yoga class  
 1 = The student rarely gives vague answers to describe using skills outside of yoga class and it is apparent that he/she has transferred several skills  
 2 = The student sometimes offers vague answers to describe using skills outside of yoga class and it is apparent he/she has

**Examples**  
 “I think it’s good. I think it’s helpful. I don’t know” (Transcript JS3, line 6).

**Lines**  
**A1:** none **A2:** none **A3:** none **JS1:** 14-15(2), 48-50 (2) **JS2:** 55-57(2) **JS3:** 19(1), 25(2), **JA1:** none **JA2:** 25(2), **JA3:** none **T1:** none **T2:** none **T3:** 10-11(1) **K1:** none **K2:** none **K3:** none

transferred some skills  
 3 = The student frequently offers vague answers to describe using skills outside of yoga class. It is not apparent that he/she has transferred any skills

**Category 4: Breathing**

**Subcategory**

Physical Use

**Properties**

Breathing during yoga poses

**Definitions**

Student describes use of breath while doing yoga poses

**Dimensions**

Not present – repeated Code 0-3  
 0 = The student does not mention breath as helpful during yoga practice  
 1 = The student rarely mentions breath as helpful during yoga practice  
 2 = The student sometimes mentions breath as helpful during yoga practice but it is not the most salient aspect of yoga in their view  
 3 = The student frequently mentions breath during yoga practice and it is one of the most salient aspects for him/her

**Examples**

“Close our eyes and just breathe. And then breathing through those hard poses will also – like I can recall that...” (Interview A1, lines 116-117).

**Lines**

**A1:** 116-117(3) **A2:** 45(2), 70-71(3) **A3:** none **JS1:** none **JS2:** none **JS3:** none **JA1:** 29-30(2), 31-36(3) **JA2:** 55-59(3) **JA3:** none **T1:** none **T2:** none **T3:** 58(1) **K1:** none **K2:** none **K3:** none

Breathing while exercising

Student describes use of breath while exercising outside of class

Not present – repeated Code 0-3  
0 = The student does not mention breath as helpful while doing physical activity  
1 = The student rarely mentions breath as helpful to physical activity and it is not salient to him/her  
2 = The student sometimes mentions breath as helpful in physical activity but it is not the most salient aspect in their view  
3 = The student frequently mentions breath as helpful for physical activity and it is one of the most salient aspects for him/her

“Like if you’re doing a position and you inhale and then you exhale you know real smoothly, it’ll help you flex more I guess is what I’m saying” (Interview JA 1, lines 29-31)

**A1:** none **A2:** none **A3:** none **JS1:** none **JS2:** none **JS3:** none **JA1:** 30-31(3), **JA2:** none **JA3:** none **T1:** none **T2:** none **T3:** none **K1:** none **K2:** none **K3:** none

#### Category 4: Breathing

##### Subcategory

Mental Use

##### Properties

Disagreements

##### Definitions

Student uses breath to calm themselves during with disagreements with others

##### Dimensions

Not present – repeated Code 0-3  
0 = The student does not mention use of breath to help with disagreements  
1 = The student rarely

##### Examples

“So if I’m having a really bad day and then if we have yoga that day or something and you say like breathe deeply it’s like, okay, I’ll be alright. And then if I’m

##### Lines

**A1:** none **A2:** 49-50(3) **A3:** none **JS1:** none **JS2:** none **JS3:** none **JA1:** 77-82(3) **JA2:** none **JA3:** none **T1:** none **T2:** none **T3:** none **K1:** none

		mentions use of breath to help in disagreements and it is not salient to them 2 = The student sometimes mentions use of breath in disagreements but it is not salient in their view 3 = The student frequently mentions use of breath during disagreements and it is one of the most salient aspects for him/her	having a fight with my mom it's like, okay, breathe. It'll be alright" (Transcript A2, lines 47-50).	none <b>K2:</b> none <b>K3:</b> none
Calm/Stress Relief	Students use breath to help calm themselves and relieve stress	Not present – repeated Code 0-3 0 = The student does not mention use of breath to calm self 1 = The student rarely mentions use of breath to calm self and it is not salient to him/her 2 = The student sometimes mentions use of breath to calm self but it is not the most salient aspect of yoga in their view 3 = The student frequently mentions use of breath to calm self and it is one of the most salient aspects for him/her	"I'm breathing better and deeper to calm down" (Transcript A2, lines 41-42).	<b>A1:</b> 65-67(3), 116-119(3), <b>A2:</b> 41-42(3), 44-46(3), 47-49(3), 70(2) <b>A3:</b> 6-10(3) <b>JS1:</b> none <b>JS2:</b> none <b>JS3:</b> none <b>JA1:</b> none <b>JA2:</b> 53(1), <b>JA3:</b> none <b>T1:</b> none <b>T2:</b> none <b>T3:</b> none <b>K1:</b> none <b>K2:</b> none <b>K3:</b> none

## Appendix D: Consent Form



### Division of Educational Psychology

One University Blvd.  
St. Louis, Missouri 63121-4499  
Telephone: 314-516-5483  
E-mail: gradeduc@umsl.edu

#### Informed Consent for Child Participation in Research Activities The Effect of Yoga on Psychological Well-Being of High School Students

Participant \_\_\_\_\_ HSC Approval Number \_\_\_\_\_  
Principal Investigator \_\_\_\_\_ PI's Phone Number \_\_\_\_\_

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1. Your child is invited to participate in a research study as part of a PE program conducted by Erin Schulte and Dr. Marvin Berkowitz. The purpose of this research is to investigate the potential benefits of yoga for high school students.

2. a) Participation in this study will involve

Your child will be randomly assigned to a yoga group or comparison group. Both groups will be asked to complete three questionnaires, at the beginning of the study, at the end of the study, and 5 months after the conclusion of the study. Your child will also be asked to write about his/her experience in a journal where he/she will remain confidential.

If he/she is randomly assigned to the yoga group, your child will also participate in a 30-minute introductory meeting to explain the class procedures and equipment that will be used. Each yoga class will include approximately 5-7 minutes of a centering or guided meditation. Approximately 45 minutes will be spent in asana flow (traditional yoga poses). Approximately 5-7 minutes will be spent in savasana (final resting pose). Each session will close with 1-2 minutes of reflection on the centering from the beginning of class. 5 students from this group will be randomly chosen to participate in 3 voice recorded interviews about their experience in class.

If he/she is randomly assigned to the comparison group he/she will complete the questionnaires and journal responses as well as the Lifetime and Recreational Sports Class as it is usually conducted.

The yoga class will be led by Erin Schulte, a certified yoga instructor and administrator in the Parkway School District. Erin earned her Registered Yoga Teacher Certification in 2012 and teaches in the community in addition to working for Parkway.

b) The amount of time involved in your child's participation will be 14 weeks long, 1 one hour yoga class per week or for the comparison group, filling out 3 questionnaires at three different points in time (September and December of 2013, and May of 2014) and class time to write responses to questions about his/her experience in PE class this semester.

Approximately 60 students may be involved in this research.

3. There may be certain risks or discomforts associated with this research. As with any physical exercise, there is a minimal risk of physical injury. Participants are encouraged to minimize any comparisons or competition between classmates in order to avoid over extending the body. The instructor will also offer options of poses to minimize the risk of physical injury. In addition, questionnaires will ask questions regarding your child's current mental disposition. Some

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participants may find sharing their personal information to be uncomfortable. The counseling staff at the high school will be on hand if any issues arise. In addition, the researcher is also a school counselor with extensive knowledge in this area. Students are encouraged to talk to the researcher, the teacher, or the school counseling staff should any discomfort occur.

4. The possible benefits to your child from participating in this research are feedback regarding your child's current status of well-being and exposure to the practice of yoga. The practice of yoga has been described as a healthy form of exercise with minimal risk of injury. There are also multiple physical and mental health benefits associated with the practice of yoga.
5. Your child's participation is voluntary and you may choose not to let your child participate in this research study or to withdraw your consent for your child's participation at any time. Your child may choose not to answer any questions that he or she does not want to answer. You and your child will NOT be penalized in any way should you choose not to let your child participate or to withdraw your child. If you and your child choose not to participate other activities will be provided by the physical education staff at the school. You or your child can notify the researcher if you decide to opt out of the study.
6. We will do everything we can to protect your child's privacy. By agreeing to let your child participate, you understand and agree that your child's data may be shared with other researchers and educators in the form of presentations and/or publications. In all cases, your child's identity will not be revealed. In rare instances, a researcher's study must undergo an audit or program evaluation by an oversight agency (such as the Office for Human Research Protection). That agency would be required to maintain the confidentiality of your child's data.
7. If you have any questions or concerns regarding this study, or if any problems arise, you may call the Investigator, Erin Schulte at 314-415-7055 or the Faculty Advisor, Marvin Berkowitz at 314-516-7521. You may also ask questions or state concerns regarding your child's rights as a research participant to the Office of Research Administration, at 516-5897.

**I have read this consent form and have been given the opportunity to ask questions. I will also be given a copy of this consent form for my records. I consent to my child's participation in the research described above.**

\_\_\_\_\_  
Parent's/Guardian's Signature      Date

\_\_\_\_\_  
Parent's/Guardian's Printed Name

\_\_\_\_\_  
Child's Printed Name

\_\_\_\_\_  
Signature of Investigator or Designee      Date

\_\_\_\_\_  
Investigator/Designee Printed Name