

**DOES YOGA REDUCE ANXIETY AND INCREASE A SENSE OF
PURPOSE IN LIFE?**

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DOES YOGA REDUCE ANXIETY AND INCREASE A SENSE OF PURPOSE IN LIFE?

ABSTRACT

BY

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The practice of Yoga is a vast tradition of mind-body practices dating back several thousands of years, that have been shown to have a moderate level of efficacy in reducing symptoms of stress and anxiety. Traditional yoga texts mention anxiety only briefly, as the stated purpose of yoga is not simply to reduce stress and anxiety, but to remove suffering and give one a deep experience of transcendent consciousness, whereby the deeper meanings and purpose in life are understood. So, while there are associations that can be inferred from the yoga texts and available research that yoga impacts anxiety and that a feeling of meaning in life promotes psychological wellbeing, there is very little research that examines if there is a direct association between anxiety, yoga, and meaning. This study seeks to examine if there is such an association, and if yoga is a mediating factor in that relationship.

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CHAPTER 1

INTRODUCTION

The search for meaning and purpose in life has been at the forefront of philosophical, religious, and spiritual investigation for thousands of years. Inclusive of all cultures, countries, and time periods, human beings have been questioning why we are here, what we are doing here, and even where we are located. Recognizing one's meaning and purpose have fundamental benefits beyond the realms of philosophy and religion and have been associated with increased levels of life-satisfaction, social engagement, psychological wellbeing, physical health, and longevity. Lower levels of meaning and purpose have been linked to depression, anxiety, and impaired physical health. Some of the symptoms of anxiety, a prevalent condition in Western society, are a constant sense of dread, worry, or fear of the future, and the practice of Yoga, a vast tradition of mind-body practices dating back several thousands of years, has been shown to have a moderate level of efficacy in reducing some of these symptoms. Traditional yoga mentions anxiety in only the briefest of ways, as the stated purpose of yoga is not simply to reduce stress, but to remove suffering and give one a deep experience of a transcendent consciousness, whereby meaning and purpose in life are understood. So, while there are associations that can be inferred from the yoga texts—and available research—that yoga impacts anxiety, and that meaning in life promotes psychological wellbeing, there is very little research that examines the direct association between anxiety, yoga, and meaning. This study seeks to examine the association between levels of anxiety and the presence of meaning in life, and if yoga is a mediating factor in relationship. The questions of this study do not address the transcendent principle or experience of unity consciousness sometimes attributed to yoga, and instead focus on the levels of yoga that are beneficial to the common experiences of the everyday person in modern society, who wishes to be healthy and happy, and live a meaningful life.

1.1 Anxiety, Yoga, and Purpose

Yoga has become an increasingly popular adjunctive treatment for stress and anxiety (Park et al, 2016) as well as back pain, diabetes, cardiovascular disease, symptoms associated with cancer, and digestive disorders (Cramer, 2013; 2014; 2017; Schumann, 2016; Kavuri, 2015) making it a tremendously flexible adjunctive treatment. Though yoga spreads wide wings, the mechanisms that make it effective are still not fully known. Some of the hypotheses that are being considered, such as the top-down and bottom-up mechanisms of self-regulation, exert an effect on both physiological and psychological health (Gard, et al, 2014), and make for compelling arguments about why yoga has a generally positive effect systemically. While disease and the improvement of health are discussed in several of the ancient yoga texts (*Yoga Sutra*, 1.31; *Hatha Yoga Pradipika*, 2.1), the primary project of yoga is not the treatment of disease, but the quest for truth, knowledge, and transcendent states of being (*Yoga Sutra* 1.3, *Hatha Yoga Pradipika* 1.1). Interestingly, a significant number of yoga practitioners and teachers report that though they had started yoga to manage stress and learn how to relax, overtime their primary motivation shifted towards spirituality (Park et al, 2016; Park et al 2019). This paper will examine possible associations that can be made between the practice of yoga, levels of anxiety, and what bearing that may have on spirituality, specifically the feeling of having meaning in one's life.

Conceptually, spirituality is a complex, multidimensional internal state that includes the experience of transcendent awareness beyond individuality, a higher sense of morality, expanded consciousness, a deeper sense of meaning, and profound levels of connection, whether it be personal, interpersonal, or with the natural world (MacDonald et al, 2015). Spirituality can be theistic, connected to a sense of God and religion, or it can be beyond religion and wholly concerned with non-theistic experiences of the sacred (Koenig, 2010). The processes by which yoga can accomplish a shift from physical concerns (relief from

stress, anxiety, back pain, or a fitness routine) to an interest in the transcendent principles of life is to date an unknown mechanism, and one that is currently the subject of little research. Yoga itself is a practical system of spirituality that is founded on a philosophical doctrine called Sankhya, which states unambiguously that its purpose is to address suffering (*Samkhya Karika*, 1.1). Through reducing suffering, one comes to a deeper understanding of oneself, which is predicated on a clarity of intellect. The intellect has four, primary qualities, which are listed as dharma (purpose), jnana (knowledge), aisvarya (self-sovereignty), and vairagya (equilibrium of mind through non-attachment) (*Sankhya Karika*, 43, 44). Of the four, dharma, listed first, indicates the presence of purpose, meaning, and understanding that makes itself known when the mind is calm and clear. Dharma means to perform actions that are righteous, to be religious minded, but in a more encompassing way, as per Sankhya, that you have clarity of purpose to hold to even when life becomes challenging—which, for most, it will at some point. When the mind is disturbed, troubled, or over-excited, the opposites of these qualities become the overarching experience of oneself. Therefore, purpose is an important aspect spirituality, and perhaps one of the first questions that one should ask to begin to discern meaning in life. In examining the idea of human flourishing, Ryff and Singer (1998) describe the word “meaning” as being indicative of purposefulness (which is an accurate definition of dharma) and that wellbeing is more than being without illness or disease. Wellbeing is accompanied by another sense of fullness. Freedom from disease, including psychological disorders such as anxiety, on its own may not necessarily confer eudemonic wellbeing. By comparing levels of anxiety and meaning in yoga to non-yoga practitioners, it could give insight into whether yoga delivers on one level of what it truly promises: relief from suffering and enhanced sense of eudemonic wellbeing, which means enhanced purpose, meaning, and true sense of one’s potential (Ryff, Singer, 1998).

1.2 Stress and Generalized Anxiety Disorder

Stress, anxiety, and depression are highly prevalent mental health disorders effecting a large global population. Interventions are not always effective, and compliance is challenging for many, hence a need for alternative options for those who do not respond to medication or who cannot attend or continue with therapy. As more and more people turn towards complementary therapies (Birdee, 2008), the limited but robust evidence of yoga as an effective adjunctive treatment shows that more targeted research is needed. The prevalence of the mental health disorder called Generalized Anxiety Disorder (GAD) is a common, but GAD below the diagnostic threshold is nearly twice as common and leads to debilitating psychological suffering and somatic disorders (Haller et al, 2014).

Anxiety affects approximately 7.3% of the global population (Andrade, 2014). Stress is an adaptive, physiological response to the demands of life. Stress and anxiety are differentiated in that anxiety does not need a stressor. Anxiety is the experience of feeling constantly on edge, one worry replaced by another without respite, and a constant backdrop of dread in the mind, then the normal response to stress has become disproportionate to reality, and chronic anxiety occurs. This is termed as anxiety disorder. These disorders can be caused by genetics, chemicals, or psychological (Park, 2021). Cognitive Behavioral Therapy is a proven, effective treatment for GAD, though does not resolve symptoms significantly for a large amount of people due to drop off and other reasons (Simon, 2021).

GAD, as a mental cognition disorder, projects into behavioral dysfunctions (DeMartini, 2019), affecting between 4%-7% of the American adult population, some 6.3 million people (DeMartini, 2013). There has been a global rise of GAD since the 1990's, slowly increasing in scale (GBD 2019 Diseases and Injuries Collaborators, 2020). Anxiety disorders present considerable comorbidities and morbidities, with the lifetime occurrence in

the United States of 28.8% (Kessler, 2005). The lack of eudemonic wellbeing is also a predictor of early mortality (Steptoe, Deaton, Stone, 2015). The symptoms of anxiety disorder include excessive fear (perceived threat and the persistent avoidance of perceived threats, as well as anticipation of future threat), which can several limit social interactions, sleep, restlessness, inability to function in society, and quality of life (Penninx, 2021, Banushi, 2023).

The National Institute of Health characterizes GAD as persistent anxiety, worry or dread, that is continuous for six months or more, sometimes occurring continually for years. GAD is differentiated from panic disorder, which is characterized by hyper-arousal of the adrenergic system, including increased heart rate, chest pain, hyperventilation, feelings of no control. GAD, conversely, presents symptoms that are linked with mental dysfunctions and depression. Brain scans on GAD patients have shown abnormal activity of the amygdala with projections into the cortical regions of the brain, and decreased communication with the insula, thalamus, and other brain regions associated with self-awareness, pain perception, interoceptive sense, and information relay (Etkin, 2009). GAD also presents with a decrease in responsivity in the autonomic nervous system with some evidence showing that the defining characteristics of GAD (worry, anxiety) are associated with low cardiac vagal control (Thayer, 1996). Further, GAD has been shown to be associated with the dampening or reduction of adrenergic sympathetic stress response (Fisher, 2013).

1.3 Slow Breathing, Yoga, and GAD

Dysfunctional breathing is commonly found in anxiety disorders (Banushi, 2023). The experience of distress is often accompanied by shallow or rapid breathing, and simply the act of rapid breathing can induce a sense of panic in the nervous system (Cowley, 1987) (Besleaga, 2016). The act of slowing down the breath activates the parasympathetic nervous

system, which results in heightened states of calm by initiating the relaxation response. This can be done through slowing the breath, chanting mantras, or deep relaxation practices. (Cappo, 1984), (Bernardi, 2001). An experiment performed in 2018 (Kromenacker, 2018) sought to establish the predominance of vagal mediated control of respiratory sinus arrhythmia, also called heart rate variability. This study showed that during slow-paced breathing, HRV power increased. HRV is the measurable changes in the R-to-R waves of the heartbeat, a signal of autonomic nervous system responsivity, which is a function of baroreflex function (Goldstein et al, 2011). Interestingly, the experiment was performed using sympathetic and parasympathetic blockades, and a placebo, and by establishing that even under the influence of a blockade, sympathetic nervous system and placebo interventions had no effect on HRV, but the parasympathetic nervous system blockade reduced HRV to almost zero, showing that vagally mediated HRV is under control of the parasympathetic nervous system. Their results showed that slow breathing influences cardiac vagal tone. The breathing pattern used in this study is essentially the same pattern used in a breathing practice called Sudarshan Kriya Yoga, which has additionally been shown to have a certain level of efficacy in anxiety and depression (Doria, 2015). Health benefits of low-frequency HRV have been linked to mood and mental traits improvements, cardiovascular benefits, lower levels of stress and inflammation (Mather, M, Thayer, J, 2017; Williams et al, 2019).

While Cognitive Behavioral Therapy remains the first, mainline treatment for GAD, there is persuasive evidence that Yoga can help reduce symptoms of excessive worry, dread, and fear as well. One single-armed trial showed that Yoga combined with CBT showed promising results (Khalsa, 2015) with further studies from at least one RCT showing that while CBT is still the “gold-standard,” yoga is efficacious as well (Simon, 2021). Another intervention using a breath technique intervention (Sudarshan Kriya Yoga) found initial reductions in GAD symptoms as well (Katzman, 2012). One hypothesis is that the combined

practices of yoga down-regulate the hyper-arousal of the sympathetic nervous system and upregulate the relaxation response of the parasympathetic nervous system (Chu, 2017). Imbalance of the ANS and low parasympathetic tone have been linked to negative affective states and psychological disorders, hence practices that restore balance to the ANS warrant further investigation (Thayer, 2005).

The mechanisms that make Yoga effective are still under investigation, but one of the overarching hypotheses is that as a mind-body practice, self-regulatory mechanisms are influenced in the limbic system and prefrontal cortex, modulated through the vagus nerve. This includes the so-called bottom-up and top-down information processing that occurs through mind-body practices, where techniques that activate higher brain functions such as meditation, mantra, visualizations, and behavioral change have a down-stream effect on the body, and techniques that activate the body through postures and breathing have an up-stream effect through the brainstem to higher orders of brain function (Gard et al, 2014). Self-regulation is a tool used in CBT and other psychotherapeutic models to give the individual a certain measure of choice and control over automatic impulses and responses to challenges in life (Gard et al, 2014). Breathing is an important self-regulatory mechanism because it is the one function of the autonomic nervous system that we can have a measure of control over. This includes both the periods of time while performing breathing practices, as well as the far-reaching potential for changing inherent respiratory rates into new, intrinsic patterns (Balban et al, 2023). Slowing the breathing rate or introducing new patterns of breath is a simple way to begin learning self-regulation. Temporarily making an autonomic function conscious and controlled has an upstream effect on baroreceptor sensitivity, the signaling of the hypothalamic-pituitary-adrenal (HPA) axis, HRV, and blood pressure (Gard et al, 2014). Nasal breathing, a fundamental component of yogic practices, has also been shown to be directly linked to respiratory oscillations through the olfactory system (as opposed to mouth

breathing), and importantly limbic system communication and the increase of the areas of the brain associated with perception of emotion, emotional response, and memory (the amygdala and hippocampus). Nasal breathing serves as an organizing facilitator of spatiotemporal activity throughout the brain, directly linked to cognitive functions. Along with perceptions of emotion and memory, it is also fascinating to see that cognitive performance decreases during oral breathing and improves with nasal breathing. (Zelano et al, 2016). This could be one route by which yoga practices which include nasal breathing could be an efficacious support of cognitive behavioral therapy.

1.4 Logotherapy, Meaning of Life Questionnaire

Logotherapy was the invention of psychiatrist Viktor Frankl (1905-1997), who authored the influential and popular book *Man's Search for Meaning*. Frankl proposed that there is not one, universal, encompassing meaning that all people adhere to or find, it is everyone's responsibility to find and create meaning in their lives, and through finding meaning, can find fulfillment and happiness in life (Frankl, 1965). Since there is not a one-size-fits-all model for meaning, the creation or finding of meaning is varied. Suggestions to achieve this have included finding and pursuing worthwhile goals (Klinger, 1977), being diligent about daily decisions and actions (Maddi, 1970), and perhaps the most apt regarding yoga, creating a healthy life narrative (Kenyon, 2000) and self-transcendence (Seligman, 2002). Each of these encompass a psychological model of meaning, but there is also research that suggests higher states of health can lead to higher levels of meaning, which is one area where physical yoga practices may be influential. The Meaning in Life Questionnaire (MLQ), authored by Michael Steger et al, contains ten questions that seek to give light to the "presence of purpose" as well as the "search for meaning in life" (Steger, 2006). The MLQ derives its line of questions from Viktor Frankl's logotherapy. (Steger, M, Frazier, P, 2005). The questionnaire has been used in different settings including examining the link between

religiosity and well-being (Steger, M, Frazier, P, 2005), eudemonic wellbeing (Steger, M, 2006), in-patient mental illness settings (Shulenberg, S, Strack, K, Buchanan, E, 2011), Hausa tribals in Nigeria who had been displaced from their homes (Chikwuorji, C, et al, 2019), and cross-cultural comparisons (Boyraz, G, Lightsey, O, Can, A, 2013), all with supportive evidentiary results for its efficacy. MLQ has also been used in adolescent populations, not considered in this paper because of the inclusion parameters for this study (Rose, 2017).

Wellbeing and meaning have also been linked to levels of physical health. Ryff and Singer (1998) have argued that human health is predicted on three measurables; first the personal inventory on the goodness that one has in their life (a philosophical inventory); second is the experience of the mind-body interconnection and their influence on one another; third is that health is best achieved by understanding one's life and sense of well-being as a dynamic process, including body, mind, emotions, and social engagement, and not a finite end state of numbers or measurements. When these three aspects are addressed, physical health is well positioned to flourish, meaning having an enhanced resistance to and recovery from illness. (Ryff, C, Singer, B, 1998). Stress inhibits one's perception of self and changes the perception one has to environmental demand – increased perception of threat when there is none. The higher the stress levels, the lower the levels of tolerance to environmental load (allostasis). Higher levels of adaptation can occur from higher levels of mind-body integration, as mind-body processes are the drivers of stress perception. (Ryff, C., Singer, B, 1998).

Several models of research have been proposed for meaning in life, which can fall into two, general categories. The first model is that meaning in life is goal directed, which is basically the same thing as saying purposefulness. This is a psychological model that has been proposed as being an attribute of wellbeing by Ryff and Singer (1998), Park and

Folkman (1997), and Steger et al (2006). The second, proposed by Park (2010), Czerkierda (2017), examines the connection between increased physical health and increased meaning in life. Considering yoga and its related health disciplines, this creates a compelling argument for how increased body and interoceptive awareness could be a direct correlate to heightened perception of purpose in life. A meta-analysis from Czekierda et al (2017) of 27,609 participants showed a moderate association of better self-reported health to higher meaning in life. While indeed there are different types of meaning and different ways of conceptualizing purpose, this study contained an important finding that the correlation between health and meaning is consistent whether in a healthy person, someone who is dealing with an illness, as well as across age and cultures (Czekierda, 2017).

1.5 Rationale and need for this research study

Yoga, Tai chi, meditation, and other mind-body practices have become attractive options for many people who suffer from anxiety and stress disorders. As of 2017, approximately 13% of the US population practiced some type of Yoga (Zhang, 2021). According to a survey conducted by Crystal Park in 2016, stress relief and relaxation are the top two reasons why people try and stick to yoga, with depression and anxiety being fifth on that list (Park, C, et al, 2016). While the evidence of the effect yoga has on anxiety is not conclusive (Cramer, H, et al, 2018; Bussing et al, 2012), there is enough evidence to show its efficacy and warrant further research to discern precisely where yoga might be helpful, especially as so many people turn to yoga for relief from stress and anxiety.

Yoga is a modality worth considering because, in essence, yoga is a practice of knowing oneself fully and deeply (*Yoga Sutras* 1.3). Anxiety, depression, and associated mental turbulence are outcomes of obstacles in the mind (*Yoga Sutras* 1.31), hence, developing a deep sense of self, developing a confidence in one's ability to accomplish tasks

and understand the direction one should be moving in life, are stated outcomes of Yoga.

Patanjali Yoga Sutras 1.30-31 describe nine mental distractions which, when ruminated upon, turn into four symptoms: anxiety, depression, unsteady limbs of the body, disrupted breath patterns. The practice of postures, breathing, and positive psychological mechanisms inherent in the limbs of yoga could help alleviate these symptoms by virtue of changing thought patterns. This is similar in concept to cognitive reframing, used in CBT and positive psychology. Finding data that associates stress levels with life purpose could provide an interesting focus point for how consistent yoga practice not only balances and restores physiological and psychological parameters (Woodyard, 2011), but also supports or is associated with finding happiness in one's life and leads one towards the stated goals of yoga.

CHAPTER 2

LITERATURE REVIEW

2.1 Ancient literature review

The knowledge texts of India, called the Vedas, date back, by conservative estimates, to at least 1800 BCE (Persaud, 1997) and contain a tremendous corpus of teachings that attempt to examine and explain the nature of mind, consciousness, the distinction between consciousness and nature, along with defining and recognizing one's purpose according to the stages of life (Krishnananda, 1970). The texts also hold various soteriology, cosmologies, explications on worship of divinity, and how to attain liberation. There are untold hundreds of Sanskrit texts (and texts written in local languages of India) devoted to these topics that have been passed down through the oral and written tradition over the past four to five thousand years.

A unique aspect of this textual tradition is the attention paid to the mind. The Yoga shastra, or corpus of teachings related to Yoga, describe a unique conception of mind, and as well put forth guidelines for understanding how to work with the mind. The Yoga Sutras of Patanjali is central to this project (Ranganathan, 2008). According to Patanjali, anxiety, stress, and distress are cognized and perceived in the mind based on past experiences, but that we have agency to directly address them, which is called yoga practice (Yoga Sutras, 1.12). The earlier tradition of Samkhya has given clear explanations of what the mind is, how it is formed, and how information from the natural world flows into the field of mind, and that the mind is part of that field. Yoga builds upon the Samkhya system of thought with practical applications, which include ethical precepts, postures, breathing, chanting, surrender, and different levels of concentration and meditative practices. These practices, taken together as a

whole, are illustrative of mind-body practices (Gothe, 2019). However, the mind and its contents are the central project of yoga (Yoga Sutras 1.2).

At a basic level, Western scientists, such as Daniel Siegal, have stated that the mind is an energy field where sensations, images, feelings, and thoughts are cognized (Siegel, 2007). Dysfunctions in cognitive perception leads to a distortion of reality, and that is one of the bases for mental disorders. Addressing the organizing capacity of the mind and ability to shift mental perceptions is one of the primary projects of yoga, and hence yoga could serve in this capacity as an efficacious adjunctive treatment for mental disorders. The early writings of the Vedas (circa 1800-800 BCE) and Upanishads (circa 800 BCE-200 CE) offer scant instruction or information about Yoga specifically but give overarching or high-level views of what Yoga will accomplish and simple definitions. For example:

“Yoga is said to be the steady fixing of the senses” (*tham yogam iti manyante sthiram indriya dharanam*) Katha Upanishad (2.6.11)

“Yoga is the mastery of the fluctuations in the field of consciousness” (*Yogaschittavritti nirodhah*) Patanjali Yoga Sutras (1.2)

“Yoga is said to be a remedy for calming the mind” (*Manah prashamana upaya yoga ityabhidhiyate*) Yoga Vasishtha (3.9.32)

“Yoga is equilibrium of mind” (*Samatvam yoga ucyate*) Bhagavad Gita (2.48)

The *Vayu Purana*, circa 300-500 BCE, one of the oldest puranas and which is even mentioned in the Mahabharata contains many teachings on pranayama, one which is repeated later in Svamarama’s 15th century *Hatha Yoga Pradipika*:

“A lion or an elephant or any other wild animal of the forest on being captured and tamed becomes mild and quiet. Similarly, though the vital breath is difficult to be controlled in the

case of non-self-possessed persons, it can be controlled by practice of yoga if done regularly.” (10.78-79)

Later, Svatmarama continues this line of teaching, linking the breath firmly to the mind.

“When the breath moves, the mind moves. When the breath is without movement, the mind is without movement. That yogi who masters breath obtains steadiness.” (*chale vate chalam cittam nischalam nischale bhavet | yogi sthanutvamapnoti toto vayum nirodhayet*) Hatha Yoga Pradipika 2.2

“One who binds breath indeed binds the mind. For one who binds the mind, indeed breath comes under control.” (*pavano badhyate yena manastenaiva badhyate | manascha badhyate yena pavanastena badhyate*) Hatha Yoga Pradipika 4.21

“There are two causes for the activity of the mind: subliminal impressions, and breath. If one is destroyed, both are destroyed.” (*hetudvayam tu cittasya vasana cha samiranah | tayoh vinashta ekasmin tao dvavapi vinasyatah*) Hatha Yoga Pradipika 4.22

“Where the mind is stilled, there the breath is suspended Where the breath is suspended, there the mind is stilled.” (*mano yatra viliyate pavanastatra liyate | pavano liyate yatra manastatra viliyate*) Hatha Yoga Pradipika 4.23

Hence, there are convincing doctrines dating back at least 2500-3000 years that link the state of mind with the state of the breath, and later, the state of the body (*Yoga Sutra* 2.46). Based on this continuous chain of yogic insight and several millenniums of practice, it can be reasonably stated that yoga is a fit subject to be examined to determine efficacy for mental health disorders as part of a mind-body adjunctive solution.

2.2 Scientific Literature Review

Sl. No.	Author & Year of Publication	Sample Size	Design	Intervention	Assessment Tools	Results	Conclusion
	Elizabeth Hoge, 2013	93 (48 MBSR, 41 SME)	RCT	8-week MBSR training	HAMA, CGI-S, CGI-I, BAI, TSST	Both interventions led to reduction in HAMA ($P < .0001$) but did not significantly differ. Greater reductions in all other tests and positive self-statements ($P = .004$)	Results suggest that an 8-week MBSR intervention could have a positive effect on symptoms of GAD and improve stress resilience.
	Katrin Hardoerfer, 2018	70	RCT	60 minutes, once per week, 8	GAD-7, PHQ-2, EORTC QLQ-	Anxiety significantly reduced ($P = .0005$), no	Yoga therapy can be used to alleviate symptoms of

				weeks; unidentified asanas, pranayama, and meditation	FA13	effects on depression or fatigue	anxiety in cancer patients
	Naomi Simon, 2020	226 (KY 93, CBT 90, SE 43)	RCT, three-armed, single blind	Unidentified Kundalini Yoga protocol of asanas, pranayama, meditation, chanting, and psychology	GAD Clinical Global Impression Improvement Scale	KY is inferior to CBT, but superior to SE	CBT remains the gold standard for GAD, KY has a less robust efficacy
	Doria, S	69	Non-control single arm trial	Sudarshan Kriya Yoga	HRSA, HRSD, ZSAS, ZSDS,	SKY significantly reduces scores of	SKY can be effective but clinical trials with control

	2015				SCL-90	anxieties, and depression	need to be performed
	Hans, JN, 1996	92	Non-control single arm trial	Breath retraining	Nijmegen Questionnaire	Breathing rate changed after breath retraining; correlation between breath frequency and complaints	Favorable influence of breath retraining for on complaints appears to be due to breathing frequency
	Kramer, 2018	319	Systematic review and meta-analysis	Various yoga interventions for elevated levels of anxiety or anxiety disorder	Chochrane tool for the Systematic review	No effects found for those diagnosed with DSM criteria; robust effect for comparative groups with no diagnosis; low effect for comparison with	Inconclusive evidence for effects of yoga for anxiety disorder

						no treatment	
	Crystal Park, 2021	Not stated	Review paper	Examines all recent published meta-analysis of yoga and a variety of mental health disorders	Examines data from each meta-analysis grouped under the type of disorder	Lack of rigor in findings, limitations in studies, however consistent findings that suggest yoga is helpful for symptoms associated with psychiatric disorders	Yoga is a viable adjunctive treatment for mental health disorders. Research benefits are not strong, but improving over the years, hence the necessity for more and better research
	Catherine Woodyard, 2011		Systematic Review	Search words of Hatha Yoga, stress, anxiety, depression, pain, chronic disease	Examines suitable data grouped according to categories of malady	Yoga is a viable adjunctive therapy, but no guidelines exist for dosage	Depression, anxiety, and stress are common reasons that people seek out yoga and other mind-body therapies.

	Shirley Telles	419	Cross-sectional comparative study	Comparing yoga and yoga-naïve with chronic non-communicable disease	Warwick-Edinburgh Mental Wellbeing Scale, World Health Organization Quality of Health Questionnaires	Yoga group had significantly increased perceived mental wellbeing and perception of their illness, and quality of life	Yoga improves mental wellbeing, quality of life and positive perception in patients with chronic illness
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Chapter 3

Aim and Objectives

3.1 Aim

To examine if yoga practice has an influence on perceived stress and anxiety, and what bearing that may or may not have on a sense of purpose and search for meaning in life, by comparing yoga practitioners to non-practitioners.

3.2 Objective

To administer self-reported questionnaires to examine, discuss, and draw preliminary conclusions about perceived levels of stress, experience of anxiety, and the sense of purpose and search for meaning in life between yoga and non-yoga practitioners.

3.3 Research questions

Does yoga reduce perceived stress? Does yoga reduce anxiety? If so, are lower levels of stress and anxiety associated with higher levels of presence of meaning? What differences or similarities might be discerned between the yoga and non-yoga group in regard to all parameters?

3.4 Hypothesis

Unspecified yoga practices (that can include asanas, pranayama, meditation, and relaxation) done consistently for the past six months contribute to underlying mental characteristic trait changes that reduce perceived stress and experienced anxiety, increase the presence of meaning in life, and have a bearing on the search for meaning.

3.5 Null hypothesis

There is no difference in the mental characteristics of yoga and non-yoga practitioners regarding perceived stress and experienced anxiety levels, along with the presence of meaning in life, and search for meaning.

Chapter 4

Methodology

4.1 Participants

In this cross-sectional study, yoga and non-yoga practicing subjects were recruited for a multi-questionnaire study. Participants largely reported higher than normal levels of anxiety, stress, or worry, with or without a DSM diagnosis. The age range for both groups was 21-75, inclusive of male, female, and non-binary gender identities, inclusive of all races, nationalities, and religious affiliations. They were recruited through an email newsletter from Ashtanga Yoga New York requesting their participation, one announcement on the principal author's Instagram, and referrals from psychiatrists in the author's network. The sample size included a total of 38 for non-yoga, and a total of 33 for yoga group. Additional data was collected from an additional 118 yoga practitioners, not included in this paper. The yoga practitioners were requested to have a minimum of six months of weekly yoga practice (at least three practices per week), and non-practitioners having attended less than 5 yoga classes total in the past year or having no yoga experience whatsoever. Each group was administered four questionnaires: *Perceived Stress Scale*, *Generalized Anxiety Disorder-7 Scale*, and the *Meaning in Life Questionnaire*, which was split into two questionnaires to reflect the subscales and for ease of scoring. PSS measures the perception of stress over the period of the past month; GAD-7 measures levels of anxiety over the past two weeks; MLQ measures one's sense of purpose within their entire life. A comparison was done between yoga and non-yoga practitioners to discern the differences in perceived interoceptive (feelings of purpose, stress, or anxiety) and exteroceptive (responses to changes or pressures from life) perceptions regarding the changes that life brings. By doing this, the search for underlying psychological trait effects of yoga, including psychological wellbeing, mindfulness, and ability to manage stress, could be discerned. As well, associations between levels of stress and sense of purpose in life can be highlighted.

4.2 Inclusion criteria

Adults from 21-75 were included in the yoga arm who have had a yoga practice for at least the past six months, practicing a minimum of three days per week. The types of yoga that they are practicing was unspecified, and no data was collected about the styles, daily duration, or mix of asanas, pranayama, or meditation, though several of the participants sent in emails loosely describing their practices. The lack of data collection regarding yoga styles is per a systematic review on yoga that included 306 randomized control trials on 52 styles of yoga, showing that the outcomes of yoga were largely positive in 91% of the RCTs, and that the positive conclusions were not different between or depending on yoga styles (Cramer et al, 2016). The choice of the style of yoga, according to this study, depended on preference and availability to the practitioner (Cramer et al, 2016). Multi-modal approaches to yoga, which include combinations of asanas, pranayama, meditation, and/or ethical education have been shown to be the most efficacious for anxiety, interoceptive, self-regulation, and biomarkers for stress (Matko et al, 2021).

The participants largely reported doing asanas and pranayama, but those with only an asana practice or those with only a pranayama practice were admitted as well. The participants were told that they can be practicing online, independently at home, or attending classes in a studio or gym. They included those who reported having had experienced higher than normal levels of persistent anxiety at some point in their lives with or without a DSM diagnosis. The non-practicing yoga arm inclusion was no exposure to yoga in the past six months, and before that having attended not more than 5 classes over the previous six-month period. Non-yoga participants reported having had experienced higher than normal levels of persistent anxiety at some point in their lives with or without a DSM diagnosis.

4.3 Exclusion criteria

Those with clinically diagnosed severe psychological disorders (schizophrenia, bi-polar, PTSD) were excluded. Those who do not fit the above listed inclusion criteria were also excluded.

4.4 Ethical Consideration

The Vivekananda Yoga University ethical committee provided clearance for this study. Informed consent forms were signed by all participants, which clearly outlined the nature of the research project before the study commenced.

4.5 Assessments

This is a cross correlational study of yoga and non-yoga practitioners. Each filled out three online questionnaires: the Perceived Stress Scale (PSS), the Generalized Anxiety Disorder (GAD-7), and the Meaning of Life Questionnaire (MLQ), which was separated into two forms, one each for the questions that address the presence and search, to reflect the subscale of scoring within the MLQ. The questionnaires are included in Appendix A.

- The Generalized Anxiety Disorder (GAD-7) is a seven-question, four level ranking scale that seeks to discern perceived levels of anxiety during the past two-weeks. It focuses on questions of worry, difficulty relaxing, dread, and feeling on edge.
- Perceived Stress Scale (PSS) is a standard, widely accepted, ten-question, five level ranking questionnaire that focuses on the perception of stress, coping mechanisms, anger, and irritability over the past month. It also includes questions about how often one has been able to maintain control over challenges and life circumstances.
- Meaning of Life Questionnaire (MLQ) is ten-question, 1-7 ranking scale that examines meaning, purpose, and mission in life. MLQ has two subsets, one for presence of meaning and the other for search for meaning in life. These two subsets were broken up into two questionnaires for ease of scoring. The 9th question of the second subset is reverse scored, and that was accounted for in the online questionnaire by reversing the order in the likert scale from 7-1 instead of 1-7. This information was conveyed to the participants before commencing the questionnaire. The two

subscales of MLQ have several ways that they can function. The author of the study, Michael Steger, has suggested that a high score in presence and a low of search indicates the individual experiences the presence of meaning, and thus is less inclined to feel the need to keep searching for more meaning (Steger, 2010). Low levels of presence and high levels of search have been seen to be, in at least one study (Cohen and Cairns, 2010) to be found in those with clinical levels of depression. However, it is possible that one can score highly on both presence and search, which has been associated with high levels of psychological wellbeing (Steger, 2010).

4.6 Design

Cross-sectional, comparative study between practitioners and non-practitioners of yoga. Additional data was collected for 118 people in the yoga group due to many respondents to the study participation request email, which is not included in this study.

4.7 Intervention

No intervention was given in this study. It is a cross sectional study.

4.8 Data extraction

Data collected from the questionnaires was collected via Google forms. Participants were sent a link, which they used to fill out the four questionnaires sequentially. The results of the survey were uploaded to excel spread sheets.

4.9 Data Analysis

The data was entered and organized in Microsoft excel and statistical analysis was performed using JASP (Version 0.17.1) software. Data was tested for normality using Shapiro-Wilk test. Between group comparisons were made using independent samples t-test / Mann-Whitney U test.

Chapter 5

Results

The group mean and standard deviation for the scores for PSS, GAD-7, and MLQ (with the two subscales) for the Yoga Group and Control group are presented in Table 1.

The data was organized in Microsoft excel and statistical analysis was performed using JASP (Version 0.17.1) software. Data were tested for normality using Shapiro-Wilk test. PSS scores and presence of meaning were normally distributed ($p > 0.05$), whereas search for meaning and GAD-7 scores not normally distributed ($p < 0.05$).

There was a significant difference in GAD-7 scores between the Yoga group and Control group ($p = 0.003$, Mann-Whitney U test). Anxiety scores were lower in Yoga group ($M = 6.46$; $SD = 4.98$) compared to control group ($M = 10.84$; $SD = 6.11$).

There was a significant difference in Presence of Meaning scores between the Yoga group and Control group ($p = 0.008$, Independent samples t-test). Scores were higher in Yoga group ($M = 24.4$; $SD = 4.09$) compared to control group ($M = 21.7$; $SD = 4.37$).

There was no significant difference in PSS scores between the Yoga group and Control group. There was also no significant difference in Search for Meaning scores.

Table 1. Scores for perceived stress scale (PSS), Generalized Anxiety Disorder 7 (GAD-7) and Meaning of Life questionnaire for Yoga Group and Control group. Values presented below are Mean and Standard

Deviation.

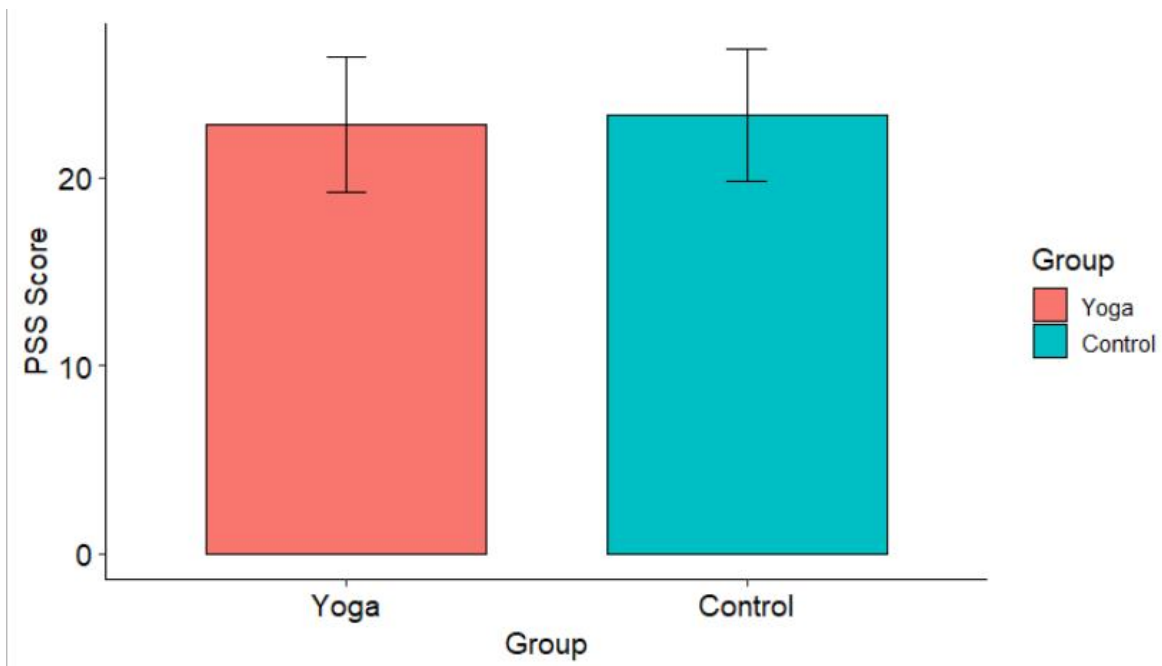
Variables	Yoga Group Mean (SD)	Control Group Mean (SD)	p values	Effect size
PSS	22.8 (3.6) [n = 31]	23.3 (3.53) [n = 38]	0.536	0.150
GAD-7	6.46 (4.98) ** [n = 33]	10.84 (6.11) [n = 38]	0.003	0.411
Presence of Meaning	24.5 (4.09) ** [n = 33]	21.7 (4.37) [n = 37]	0.008	0.656
Search for Meaning	24.4 (10.21) [n = 32]	26.5 (8.24) [n = 37]	0.405	0.117

a

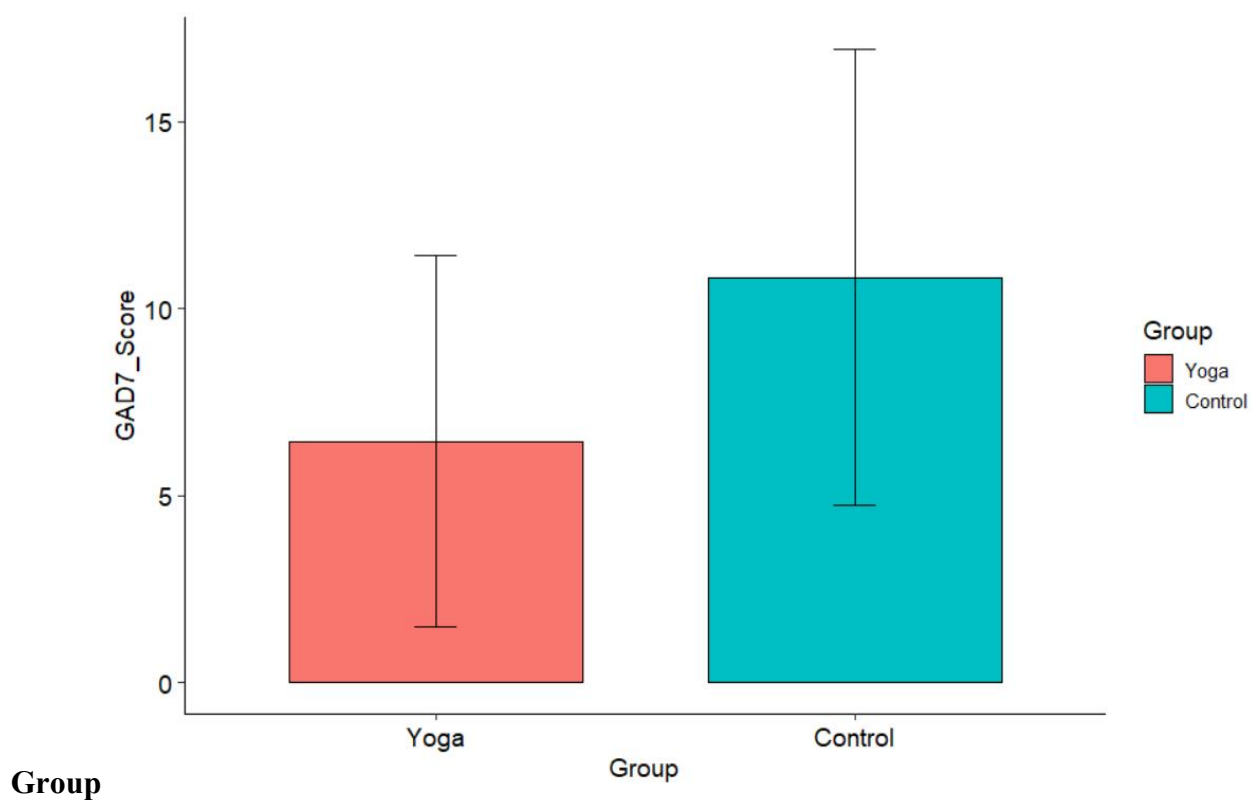
** p< .01 GAD -7 scores of Yoga group compared with Control group using Mann-Whitney U test.

** p< .01 Presence of Meaning scores of Yoga group compared with Control group using Independent samples t-test.

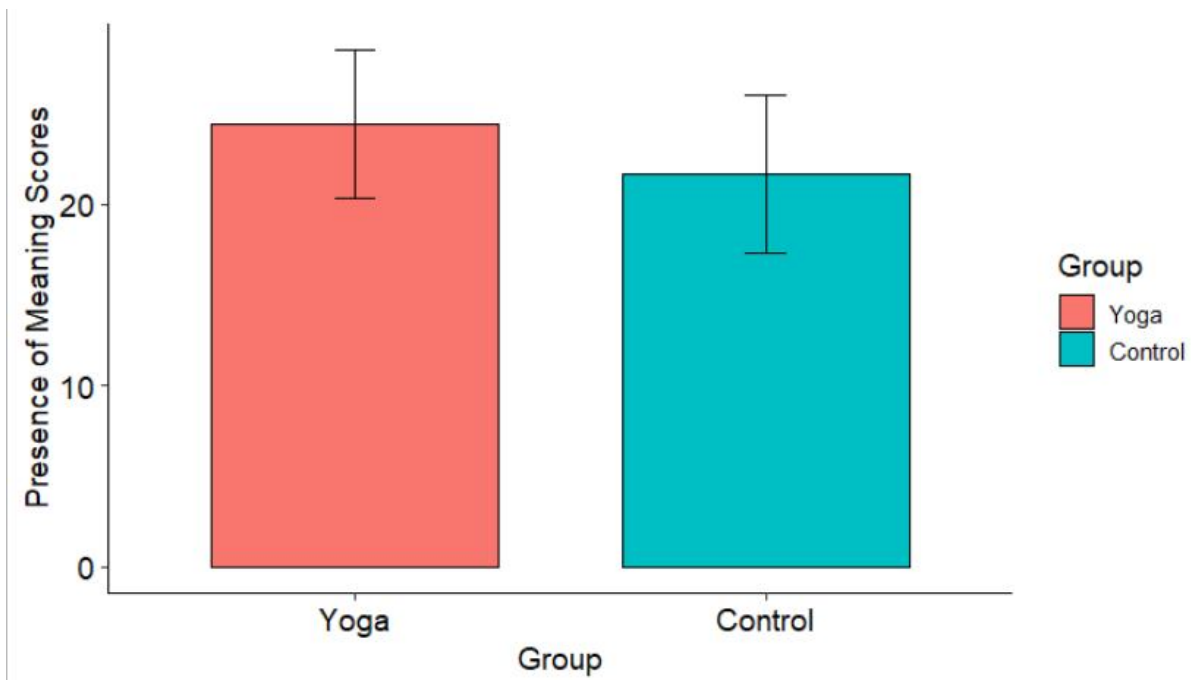
Graph 1: Perceived stress scores in Yoga Group and Control Group



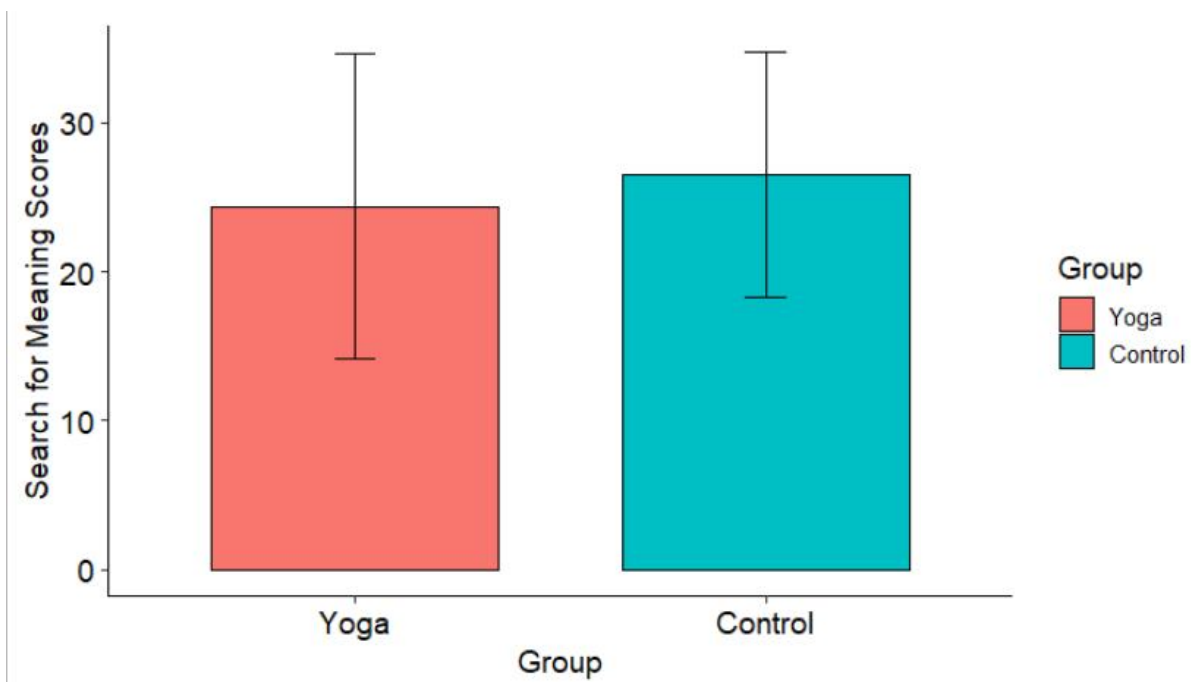
Graph 2: Scores of GAD-7 in Yoga Group and Control



Graph 3: Presence of Meaning scores in Yoga Group and Control Group



Graph 4: Search for Meaning scores in Yoga Group and Control Group



6.1 Discussion

The data from this study shows that there are significantly lower levels of anxiety between yoga and non-yoga practitioners, and that the presence of meaning in yoga practitioners is moderately higher than the non-yoga group. Levels of perceived stress were not significantly different between the yoga and non-yoga groups, which indicates that both groups experience stress at almost the same levels. However, as the levels of anxiety between the two were significantly different, it could indicate that because yoga plays a role in self-regulation, it can alter the way one responds to stress while not necessarily having a significant impact on the perception of stress. While stress and anxiety are two, separate disorders, chronic stress can lead to persistent anxiety (Daviu, 2019) and this, then, becomes a very interesting data point. It is a stated truism in yoga that the ups and downs of life do not disappear, but the way we respond to them changes as we learn to self-regulate (*Yoga Sutras* 2.48). The significant differences in GAD-7 scores between the two groups warrants further research on the efficacies of yoga for GAD and is supported by Upadhyay et al (2022) showing that yoga in comparison with non-yoga at three-time points display lower levels of anxiety, depression, and elevated levels of well-being. The search for meaning scores were not significantly different between the two groups, though the yoga group was slightly lower. According to Steger (2005), a score of above twenty-four on both subscales indicates that life has meaning and value to you, you are still open to exploring what that means, and that meaning is an ongoing process for you. Scores of above twenty-four on presence and below twenty-four on search indicates that you feel your life has meaning and value, and you do not feel the need to continue searching for more meaning, because you are fulfilled. The reporting yoga group scores of 24.5 and 24.4 for presence and search indicates that the yoga group experiences the presence of meaning, and remains actively interested in exploring meaning, perhaps as part of the continuance of yoga practice. The score of 21.7 for presence and 26.5 for search in the non-yoga group indicates that the control group experiences less of a presence of meaning in their lives and higher level of a continued search to find meaning.

6.2 Study Limitations

Limitations to this study suggest that only the most general conclusions can be ascertained. Foremost, the data collected on the participants of both groups was limited to the questionnaires as a one-time point collection. There is no data on gender, age, religious affiliation, or country. As such, the inclusion parameters were quite broad. The anxiety levels for inclusion were all self-reported, and a diagnosis was not required. The yoga styles, frequency, and duration were also unspecified, which means that some participants may have been practicing every day for twenty years, and some may have been practicing within the inclusion parameters. Some participants reported practicing slow yoga such as Yin Yoga, and others dynamic practices such as Ashtanga Yoga. Hence, the population was widely varied. An important aspect of yoga are the lifestyle habits and ethical principles which are the foundation of classical yoga. Some research has begun to examine the role and necessity of ethical and moral education on the positive outcomes of yoga (and yoga studies) (Bussing et al, 2012, Sullivan et al, 2018). These principles were not accounted for, and the study focused on physical postures and breath practices. This study did not account for therapeutic interventions that either group may be undergoing. As there was only one data collection point for this study, additional collection points over time as well as a more thorough inventory of the participants would be needed to establish or provide additional information towards the hypothesis of this study.

6.3 Study Strengths

The data analysis from this study shows that there is a significant difference in levels of anxiety between yoga and non-yoga practitioners, which could indicate that yoga does influence or change experienced levels of anxiety. This is encouraging, for there are millions of people affected by anxiety who are seeking solutions, and expanding on data such as in this study could potentially help in providing adjunctive treatments and solutions for many people. Practitioners of yoga will be the first to tell you that “yoga works,” yet we do not have the words or measurements yet to describe exactly how that happens or what the

correlates are. As more theories are put forward, and more research produced to make determinations, it is important to incorporate the purpose of yoga into mechanical models of study.

Chapter 7

7.1 Conclusions

There is emerging research that shows the positive impact of yoga on self-regulation, improved levels of

stress management, reductions in anxiety, improved quality of life, and enhanced wellbeing. In this study we see evidence that practicing yoga is associated with lower levels of anxiety and higher levels of presence of meaning in life, equated with the Hindu concept of dharma, which on a basic level means our intrinsic, individualized purpose in life. Dharma is a foundational principle of Hindu philosophy, and an essential purpose of yoga is to support the alignment of our lives with dharma. The line of inquiry in this paper was to see if the practice of yoga reduces suffering, in the form of anxiety, and delivers on the promise of enhancing purpose in life. This was seen to some degree in the research, though further studies with more precise measures are needed.

7.2 Future Studies

In examining the efficacy of yoga in somatic and psychological disorders, a wide range of interventions have been explored, largely in the domain of postures, breathing, meditation, and relaxation. Less work has been focused on the ethical, foundational principles of yoga. However, there has been an increasing interest in how education in the yamas and niyamas—the ethical principles of yoga that relate to social and emotional intelligence and spiritual wellbeing—have a positive and direct influence on the outcomes of the practice of asanas and pranayama (Matko, et al 2021; Bussing et al 2012; Sullivan et al, 2018; Smith et al, 2011). These are important facets for further research, as dharma is both personal and societal, and the yamas and niyamas have a bearing on how one engages inwardly with yoga, and outwardly with relationships, through kindness, compassion, thoughtfulness, and listening. Although not addressed directly in this study, the principles speak to the primary goals of yoga. By understanding that the overarching intent of yoga is to remove suffering and lead to higher levels of self-knowing and recognition of meaning and purpose, further research can be oriented towards identifying the active practices that support these goals (including education in ethics), which would be advantageous to the field of yoga research by framing yoga within its original intents, and helpful for practitioners as well.

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Appendix A

Perceived Stress Scale

Perceived Stress Scale

A more precise measure of personal stress can be determined by using a variety of instruments that have been designed to help measure individual stress levels. The first of these is called the **Perceived Stress Scale**.

The Perceived Stress Scale (PSS) is a classic stress assessment instrument. The tool, while originally developed in 1983, remains a popular choice for helping us understand how different situations affect our feelings and our perceived stress. The questions in this scale ask about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer fairly quickly. That is, don't try to count up the number of times you felt a particular way; rather indicate the alternative that seems like a reasonable estimate.

For each question choose from the following alternatives:

0 - never 1 - almost never 2 - sometimes 3 - fairly often 4 - very often

- _____ 1. In the last month, how often have you been upset because of something that happened unexpectedly?
- _____ 2. In the last month, how often have you felt that you were unable to control the important things in your life?
- _____ 3. In the last month, how often have you felt nervous and stressed?
- _____ 4. In the last month, how often have you felt confident about your ability to handle your personal problems?
- _____ 5. In the last month, how often have you felt that things were going your way?
- _____ 6. In the last month, how often have you found that you could not cope with all the things that you had to do?
- _____ 7. In the last month, how often have you been able to control irritations in your life?
- _____ 8. In the last month, how often have you felt that you were on top of things?
- _____ 9. In the last month, how often have you been angered because of things that happened that were outside of your control?
- _____ 10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

Generalized Anxiety Disorder-7

GAD-7 Anxiety

Over the <u>last two weeks</u> , how often have you been bothered by the following problems?	Not at all	Several days	More than half the days	Nearly every day
1. Feeling nervous, anxious, or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid, as if something awful might happen	0	1	2	3

Column totals + + + =

Total score

If you checked any problems, how difficult have they made it for you to do your work, take care of things at home, or get along with other people?			
Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Source: Primary Care Evaluation of Mental Disorders Patient Health Questionnaire (PRIME-MD-PHQ). The PHQ was developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke, and colleagues. For research information, contact Dr. Spitzer at rs8@columbia.edu PRIME-MD® is a trademark of Pfizer Inc. Copyright© 1999 Pfizer Inc. All rights reserved. Reproduced with permission

Scoring GAD-7 Anxiety Severity

This is calculated by assigning scores of 0, 1, 2, and 3 to the response categories, respectively, of "not at all," "several days," "more than half the days," and "nearly every day." GAD-7 total score for the seven items ranges from 0 to 21.

0–4: minimal anxiety

5–9: mild anxiety

10–14: moderate anxiety

15–21: severe anxiety

Meaning of Life Questionnaire

Scale

Please take a moment to think about what makes your life and existence feel important and significant to you. Please respond to the following statements as truthfully and accurately as you can, and also please remember that these are very subjective questions and that there are no right or wrong answers. Please answer according to the scale below:

Absolutely Mostly Somewhat Can't Say Somewhat Mostly Absolutely

Untrue Untrue Untrue True or False True True True

1 2 3 4 5 6 7

- _____ 1. I understand my life's meaning.
- _____ 2. I am looking for something that makes my life feel meaningful.
- _____ 3. I am always looking to find my life's purpose.
- _____ 4. My life has a clear sense of purpose.
- _____ 5. I have a good sense of what makes my life meaningful.
- _____ 6. I have discovered a satisfying life purpose.
- _____ 7. I am always searching for something that makes my life feel significant.
- _____ 8. I am seeking a purpose or mission for my life.
- _____ 9. My life has no clear purpose.
- _____ 10. I am searching for meaning in my life.

Scoring:

Item 9 is reverse scored.

Items 1, 4, 5, 6, & 9 make up the Presence of Meaning subscale

Items 2, 3, 7, 8, & 10 make up the Search for Meaning subscale

Scoring is kept continuous.

Appendix B

Consent form

INFORMED CONSENT FORM

You are being invited to participate in a research study. This form is designed to provide you with information about this study. The principal investigator will answer any of your questions and describe the study for you further if you need additional information beyond the scope of this consent form.

Title of the Study:

Anxiety and Purpose in Life: A Cross-Sectional Study of Practitioners and Non-Practitioners of Yoga

Investigator: Eddie Stern, Vivekananda Yoga University

Guide: Dr Manjunath Sharma, S-VYASA

Co-Guide: Dr Raghavendra Bhat, S-VYASA, Dr Sree Kumar, S-VYASA

About the Project:

Stress, anxiety, and depression are highly prevalent mental health disorders effecting a large global population. As more and more people turn towards complementary therapies, the limited but robust evidence of yoga as an effective adjunctive treatment shows that more targeted research is needed.

Study Details:

The aim of this study is to examine the long-term mental trait changes that the influence of yoga practice *may* have on anxiety, stress, and sense of purpose in life in dedicated yoga practitioners and non-practitioners.

The objective of this study is to administer self-reported questionnaires to examine, discuss, and draw preliminary conclusions about experienced levels of anxiety, perceived stress, and sense of purpose in life in yoga and non-yoga practitioners.

Assessment Details:

The participants will fill out the following, short questionnaires:

The Generalized Anxiety Disorder (GAD-7): this is a seven-question, four level ranking scale that seeks to discern perceived levels of anxiety over the past two-weeks.

Perceived Stress Scale (PSS): this scale is a standard, widely accepted, ten-question, five level ranking questionnaire that focuses on the perception of stress over the past month.

Meaning of Life Questionnaire (MLQ): this is ten-question, ranking scale that examines meaning, purpose, and mission in life. This questionnaire is broken up into two parts, search for meaning, and feeling purpose.

All the information obtained during the study will be kept confidential. You can withdraw from the study at any point of time unconditionally.

If you agree to participate, please read the below statement, and sign your name (digital signatures accepted).

I hereby have understood the above & consent voluntarily to participate in the study titled:

Anxiety and Purpose in Life: A Cross-Sectional Study of Practitioners and Non-Practitioners of Yoga.

Signature of the participant

Date

Signature of the investigator

Date

Appendix C Raw Data

Non-Yoga Perceived Stress Scale

[illegible]

Non-Yoga GAD-7

ID	Start time	Completion time	Email	Name	Feeling nervous, anxious, or irritable	Not being able to stop or worry too much about things	Trouble relaxing	Not being able to sit still or restlessness	It is easy to become annoyed	Feeling afraid, as if something bad might happen
1	3/13/23 17:05:57	3/13/23 17:06:21	anonymous		3	3	3	0	3	3
2	3/13/23 17:05:52	3/13/23 17:08:12	anonymous		1	1	1	0	1	0
3	3/13/23 18:35:10	3/13/23 18:38:15	anonymous		1	2	1	1	0	1
4	3/13/23 18:40:18	3/13/23 18:41:10	anonymous		2	2	3	3	3	1
5	3/13/23 18:43:05	3/13/23 18:43:51	anonymous		1	1	1	3	1	3
6	3/13/23 19:22:41	3/13/23 19:24:16	anonymous		3	3	3	0	3	3
7	3/13/23 19:41:02	3/13/23 19:44:23	anonymous		3	2	3	1	1	3
8	3/13/23 19:41:03	3/13/23 19:44:33	anonymous		2	1	1	1	3	1
9	3/13/23 20:35:20	3/13/23 20:36:08	anonymous		3	3	3	2	3	3
10	3/13/23 21:55:16	3/13/23 21:56:38	anonymous		0	1	1	0	0	1
11	3/14/23 0:51:16	3/14/23 0:52:32	anonymous		2	1	1	1	1	0
12	3/14/23 2:23:15	3/14/23 2:24:36	anonymous		3	3	3	3	0	3
13	3/14/23 4:42:47	3/14/23 4:44:07	anonymous		2	2	1	1	0	0
14	3/14/23 8:51:14	3/14/23 8:52:00	anonymous		3	1	2	3	1	2
15	3/14/23 10:40:38	3/14/23 10:43:12	anonymous		2	0	0	0	1	0
16	3/14/23 11:48:47	3/14/23 11:52:21	anonymous		0	0	2	1	0	1
17	3/14/23 13:17:44	3/14/23 13:18:23	anonymous		3	3	3	3	2	3
18	3/14/23 14:57:24	3/14/23 14:58:21	anonymous		2	1	1	2	3	0
19	3/14/23 15:34:42	3/14/23 15:36:07	anonymous		0	0	1	0	1	0
20	3/14/23 16:22:47	3/14/23 16:23:31	anonymous		1	1	1	1	0	2
21	3/14/23 16:51:40	3/14/23 16:52:20	anonymous		1	0	0	1	0	0
22	3/13/23 21:09:42	3/14/23 20:33:42	anonymous		2	2	2	3	3	1
23	3/15/23 13:57:36	3/15/23 13:58:35	anonymous		0	0	0	0	0	0
24	3/16/23 9:31:05	3/16/23 9:32:41	anonymous		3	2	1	1	1	2
25	3/16/23 13:13:41	3/16/23 13:16:02	anonymous		2	3	3	2	2	1
26	3/17/23 20:21:53	3/18/23 4:26:59	anonymous		2	1	1	2	2	1
27	3/19/23 7:15:47	3/19/23 7:16:44	anonymous		2	2	2	2	0	1
28	3/19/23 17:45:48	3/19/23 17:46:53	anonymous		2	2	2	2	3	0
29	3/20/23 7:05:05	3/20/23 7:06:00	anonymous		3	2	3	3	3	3
30	3/20/23 11:18:45	3/20/23 11:19:50	anonymous		1	0	1	0	1	0
31	3/21/23 16:14:58	3/21/23 16:15:56	anonymous		2	2	3	2	2	1
32	3/23/23 3:05:02	3/23/23 3:07:06	anonymous		0	0	1	0	0	0
33	3/24/23 4:01:29	3/24/23 4:02:59	anonymous		0	0	0	0	0	0
34	3/26/23 11:10:00	3/26/23 11:10:45	anonymous		3	3	3	3	2	3
35	3/27/23 10:33:00	3/27/23 10:33:36	anonymous		1	2	2	2	1	3
36	3/29/23 2:59:34	3/29/23 3:00:06	anonymous		3	3	3	3	2	1
37	3/29/23 18:41:15	3/29/23 18:42:27	anonymous		2	2	3	2	0	3
38	4/1/23 21:45:12	4/1/23 21:45:55	anonymous		3	2	2	3	1	3

Non-Yoga Presence of Meaning

ID	Start time	Completion time	Email	Name	I understand my life's meaning: My life has a clear sense of purpose I have a good sense of what I have discovered a satisfactory My life has no clear purpose				
1	3/13/23 17:06:27	3/13/23 17:06:56	anonymous		4	4	2	2	5
2	3/13/23 17:08:57	3/13/23 17:10:48	anonymous		6	6	7	6	7
3	3/13/23 18:38:24	3/13/23 18:39:18	anonymous		5	5	4	5	5
4	3/13/23 18:41:15	3/13/23 18:42:31	anonymous		4	3	7	2	6
5	3/13/23 18:43:54	3/13/23 18:44:43	anonymous		4	2	6	2	6
6	3/13/23 19:24:32	3/13/23 19:27:14	anonymous		1	2	2	2	6
7	3/13/23 19:44:42	3/13/23 19:46:06	anonymous		6	6	6	7	1
8	3/13/23 19:44:45	3/13/23 19:46:06	anonymous		4	4	6	3	2
9	3/13/23 20:36:18	3/13/23 20:37:39	anonymous		5	4	5	5	2
10	3/13/23 21:56:44	3/13/23 21:58:12	anonymous		5	4	5	4	3
11	3/14/23 0:52:42	3/14/23 0:53:47	anonymous		5	5	6	6	1
12	3/14/23 2:24:48	3/14/23 2:26:48	anonymous		2	2	2	2	6
13	3/14/23 4:44:15	3/14/23 4:45:08	anonymous		6	6	6	6	2
14	3/14/23 8:52:06	3/14/23 8:52:52	anonymous		4	6	6	6	2
15	3/14/23 10:43:24	3/14/23 10:45:27	anonymous		6	6	6	5	2
16	3/14/23 11:52:38	3/14/23 11:56:18	anonymous		6	4	2	6	6
17	3/14/23 13:18:31	3/14/23 13:19:19	anonymous		4	3	5	2	5
18	3/14/23 14:58:34	3/14/23 15:00:34	anonymous		5	5	6	4	1
19	3/14/23 15:36:13	3/14/23 15:37:29	anonymous		5	4	6	5	2
20	3/14/23 16:23:39	3/14/23 16:24:14	anonymous		2	3	5	4	2
21	3/14/23 16:52:27	3/14/23 16:54:32	anonymous		5	5	6	6	7
22	3/14/23 5:54:02	3/14/23 20:36:00	anonymous		7	7	7	5	1
23	3/15/23 13:58:47	3/15/23 14:00:44	anonymous		4	5	5	5	4
24	3/16/23 9:32:54	3/16/23 9:34:17	anonymous		4	5	5	5	4
25	3/16/23 13:12:10	3/16/23 13:16:34	anonymous		5	4	5	4	2
26	3/18/23 4:27:10	3/18/23 4:28:23	anonymous		2	2	3	6	6
27	3/18/23 4:28:49	3/18/23 4:29:59	anonymous		2	2	2	5	5
28	3/19/23 17:49:52	3/19/23 17:50:37	anonymous		5	5	6	5	2
29	3/20/23 7:06:11	3/20/23 7:06:59	anonymous		7	6	5	5	1
30	3/20/23 11:19:59	3/20/23 11:20:27	anonymous		6	6	6	6	4
31	3/21/23 16:16:03	3/21/23 16:19:06	anonymous		5	5	5	4	3
32	3/24/23 3:27:11	3/24/23 3:36:54	anonymous		4	4	4	5	7
33	3/26/23 11:10:51	3/26/23 11:11:51	anonymous		5	2	2	2	6
34	3/27/23 10:33:41	3/27/23 10:34:19	anonymous		2	2	3	3	6
35	3/29/23 3:00:11	3/29/23 3:00:57	anonymous		2	3	3	3	3
36	3/29/23 18:42:36	3/29/23 18:43:44	anonymous		6	6	6	6	1
37	4/1/23 21:46:05	4/1/23 21:47:02	anonymous		7	4	5	3	4
38	4/17/23 17:24:34	4/17/23 17:25:24	anonymous		7	5	7	4	1

Non-Yoga Search for Meaning

ID	Start time	Completion time	Email	Name	I am looking for something I am always looking to find I am always searching for something I am seeking a purpose or I am searching for meaning				
1	3/13/23 17:07:02	3/13/23 17:07:22	anonymous		7	6	5	7	7
2	3/13/23 17:10:54	3/13/23 17:12:06	anonymous		3	2	2	2	2
3	3/13/23 18:39:28	3/13/23 18:40:13	anonymous		7	7	7	7	7
4	3/13/23 18:42:35	3/13/23 18:43:06	anonymous		7	5	5	7	7
5	3/13/23 18:44:48	3/13/23 18:45:12	anonymous		7	7	7	7	7
6	3/13/23 19:27:21	3/13/23 19:29:00	anonymous		2	2	2	2	2
7	3/13/23 19:46:14	3/13/23 19:48:17	anonymous		5	4	4	4	4
8	3/13/23 19:46:20	3/13/23 19:48:40	anonymous		2	1	2	2	2
9	3/13/23 20:37:48	3/13/23 20:38:53	anonymous		7	7	7	6	7
10	3/13/23 21:58:20	3/13/23 21:58:58	anonymous		7	7	7	7	7
11	3/14/23 0:53:55	3/14/23 0:54:16	anonymous		7	7	7	7	7
12	3/14/23 2:27:05	3/14/23 2:27:58	anonymous		7	7	7	7	7
13	3/14/23 4:45:17	3/14/23 4:46:53	anonymous		2	1	2	2	3
14	3/14/23 8:52:57	3/14/23 8:54:09	anonymous		2	1	3	1	5
15	3/14/23 10:45:36	3/14/23 10:47:58	anonymous		7	7	7	2	2
16	3/14/23 11:56:40	3/14/23 11:59:21	anonymous		1	5	6	6	6
17	3/14/23 13:19:23	3/14/23 13:19:46	anonymous		7	5	7	6	7
18	3/14/23 15:00:38	3/14/23 15:01:26	anonymous		6	5	5	5	5
19	3/14/23 15:37:36	3/14/23 15:38:38	anonymous		7	6	7	7	6
20	3/14/23 16:24:20	3/14/23 16:24:54	anonymous		3	5	2	2	2
21	3/14/23 16:54:38	3/14/23 16:55:21	anonymous		7	5	4	5	6
22	3/14/23 5:54:04	3/14/23 20:36:36	anonymous		5	6	4	4	3
23	3/15/23 14:00:50	3/15/23 14:01:37	anonymous		5	4	5	5	5
24	3/16/23 9:34:25	3/16/23 9:35:04	anonymous		6	5	4	4	5
25	3/16/23 13:09:14	3/16/23 13:12:06	anonymous		7	6	6	7	7
26	3/18/23 4:30:13	3/18/23 4:30:56	anonymous		7	7	6	6	7
27	3/19/23 17:55:28	3/19/23 17:55:59	anonymous		7	6	6	6	7
28	3/20/23 7:07:08	3/20/23 7:07:40	anonymous		7	7	7	7	7
29	3/20/23 11:20:37	3/20/23 11:21:02	anonymous		7	6	6	6	6
30	3/21/23 16:19:14	3/21/23 16:20:55	anonymous		5	5	3	4	5
31	3/24/23 3:37:17	3/24/23 4:00:01	anonymous		4	4	4	4	4
32	3/26/23 11:11:58	3/26/23 11:12:30	anonymous		7	6	6	6	7
33	3/27/23 10:34:24	3/27/23 10:34:52	anonymous		7	5	6	6	7
34	3/29/23 3:01:02	3/29/23 3:01:42	anonymous		5	6	5	6	6
35	3/29/23 15:37:38	3/29/23 15:38:19	anonymous		4	5	5	6	5
36	3/29/23 18:43:53	3/29/23 18:44:43	anonymous		7	6	6	6	6
37	4/1/23 21:47:07	4/1/23 21:47:57	anonymous		7	7	6	5	7

Yoga Perceived Stress Scale

[illegible]

Yoga GAD-7

ID	Start time	Completion time	Email	Name	Feeling nervous, anxious, or	Not being able to stop or	Worrying too much about	Trouble relaxing	Do not at	Being so restless that it is	Becoming easily annoyed	Feeling afraid, as if some
5	3/7/23 2:46:03	3/7/23 2:47:35	anonymous		1	0	0	0	1	0	0	0
6	3/7/23 7:00:56	3/7/23 7:01:51	anonymous		0	0	0	1	0	0	0	0
7	3/13/23 17:48:10	3/13/23 17:49:53	anonymous		1	1	1	0	0	0	0	0
8	3/13/23 17:58:21	3/13/23 17:59:27	anonymous		2	1	1	1	1	1	1	1
9	3/13/23 18:19:15	3/13/23 18:20:31	anonymous		2	2	2	2	1	2	2	2
10	3/13/23 19:14:33	3/13/23 19:15:52	anonymous		2	1	1	2	1	2	1	2
11	3/13/23 21:33:13	3/13/23 21:35:45	anonymous		3	2	2	2	1	0	2	1
12	3/13/23 22:13:14	3/13/23 22:33:08	anonymous		1	1	0	0	0	0	0	0
13	3/14/23 7:08:12	3/14/23 7:11:36	anonymous		3	3	3	3	2	1	3	3
14	3/14/23 7:20:25	3/14/23 7:24:30	anonymous		3	0	0	0	0	0	0	1
15	3/14/23 9:01:50	3/14/23 9:02:15	anonymous		2	1	2	2	0	0	0	2
16	3/14/23 9:11:39	3/14/23 9:12:37	anonymous		1	1	0	1	0	0	0	1
17	3/14/23 9:55:17	3/14/23 10:02:38	anonymous		3	2	2	3	2	1	1	1
18	3/14/23 10:45:42	3/14/23 10:46:48	anonymous		0	0	0	2	0	0	0	1
19	3/14/23 11:45:14	3/14/23 11:46:22	anonymous		0	0	0	0	0	1	0	0
20	3/14/23 12:04:33	3/14/23 12:05:52	anonymous		1	1	1	1	0	1	0	0
21	3/14/23 12:36:12	3/14/23 12:39:29	anonymous		1	2	2	1	1	1	1	1
22	3/14/23 17:53:37	3/14/23 17:56:11	anonymous		1	0	0	0	0	0	0	0
23	3/14/23 18:38:51	3/14/23 18:40:27	anonymous		2	1	1	1	0	2	0	0
24	3/14/23 19:02:56	3/14/23 19:04:31	anonymous		2	1	1	1	0	1	1	1
25	3/15/23 10:49:40	3/15/23 10:51:46	anonymous		1	2	1	1	1	2	1	1
26	3/15/23 19:13:13	3/15/23 19:15:19	anonymous		1	0	0	0	1	0	0	0
27	3/15/23 20:27:34	3/15/23 20:28:48	anonymous		0	0	0	0	0	0	0	0
28	3/16/23 11:11:33	3/16/23 11:12:33	anonymous		1	0	0	0	0	0	0	0
29	3/16/23 10:52:59	3/16/23 10:53:44	anonymous		0	0	0	0	0	0	0	0
30	3/16/23 11:29:10	3/16/23 11:30:08	anonymous		2	2	2	1	1	1	3	3
31	3/18/23 7:32:39	3/18/23 7:33:18	anonymous		2	3	3	2	1	1	3	3
32	3/18/23 12:15:09	3/18/23 12:16:04	anonymous		1	1	1	1	1	1	1	1
33	3/19/23 18:56:49	3/19/23 18:57:32	anonymous		2	3	2	1	0	3	2	2
34	3/19/23 23:14:46	3/19/23 23:17:15	anonymous		1	2	1	1	1	1	0	1
35	3/20/23 10:03:57	3/20/23 10:04:48	anonymous		0	0	0	1	0	0	0	0
36	3/24/23 11:14:37	3/24/23 11:15:22	anonymous		0	0	0	1	0	1	0	0
37	3/30/23 2:22:20	3/30/23 2:23:39	anonymous		1	1	1	1	0	0	0	0

Yoga Presence of Meaning

ID	Start time	Completion time	Email	Name	I understand my life's me	My life has a clear sense o	I have a good sense of whi	I have discovered a satisfy	My life has no clear purpo
5	3/7/23 2:47:46	3/7/23 2:49:32	anonymous		6	5	6	6	2
6	3/7/23 7:01:59	3/7/23 7:02:52	anonymous		6	6	7	6	2
7	3/13/23 17:59:35	3/13/23 18:00:49	anonymous		5	5	6	6	2
8	3/13/23 17:50:00	3/13/23 18:08:40	anonymous		7	7	7	7	1
9	3/13/23 18:21:01	3/13/23 18:21:35	anonymous		7	7	7	7	1
10	3/13/23 19:16:02	3/13/23 19:16:32	anonymous		6	6	6	6	1
11	3/13/23 21:35:59	3/13/23 21:38:21	anonymous		5	2	7	2	4
12	3/13/23 22:33:26	3/13/23 22:43:35	anonymous		4	4	3	4	3
13	3/14/23 7:11:50	3/14/23 7:14:45	anonymous		5	5	6	4	2
14	3/14/23 7:24:39	3/14/23 7:27:54	anonymous		7	7	7	7	1
15	3/14/23 9:02:19	3/14/23 9:02:51	anonymous		5	6	7	5	2
16	3/14/23 9:12:52	3/14/23 9:13:59	anonymous		6	5	6	5	2
17	3/14/23 9:55:19	3/14/23 10:02:03	anonymous		5	7	6	5	2
18	3/14/23 10:46:53	3/14/23 10:47:22	anonymous		7	7	7	7	1
19	3/14/23 11:46:27	3/14/23 11:47:08	anonymous		7	7	7	7	1
20	3/14/23 12:05:58	3/14/23 12:07:51	anonymous		6	5	6	6	2
21	3/14/23 12:39:42	3/14/23 12:41:18	anonymous		6	5	5	5	1
22	3/14/23 17:56:24	3/14/23 17:58:53	anonymous		6	6	5	5	1
23	3/14/23 18:40:35	3/14/23 18:42:04	anonymous		4	3	5	2	6
24	3/14/23 19:04:42	3/14/23 19:06:06	anonymous		4	6	5	6	2
25	3/15/23 10:51:56	3/15/23 10:57:21	anonymous		6	4	2	5	1
26	3/15/23 19:15:35	3/15/23 19:17:41	anonymous		5	5	5	5	3
27	3/15/23 20:28:55	3/15/23 20:29:33	anonymous		7	7	7	7	1
28	3/16/23 1:12:42	3/16/23 1:13:59	anonymous		6	6	7	7	7
29	3/16/23 10:53:50	3/16/23 10:54:41	anonymous		6	7	7	7	1
30	3/16/23 11:30:17	3/16/23 11:31:48	anonymous		4	4	4	4	3
31	3/18/23 7:33:24	3/18/23 7:33:59	anonymous		6	5	6	5	1
32	3/18/23 12:16:12	3/18/23 12:16:57	anonymous		5	7	7	7	1
33	3/19/23 18:57:39	3/19/23 18:58:36	anonymous		4	2	5	1	2
34	3/19/23 23:17:38	3/19/23 23:20:22	anonymous		6	5	5	4	2
35	3/20/23 10:04:57	3/20/23 10:05:39	anonymous		5	6	6	6	6
36	3/24/23 11:15:31	3/24/23 11:17:15	anonymous		6	6	6	5	1
37	3/30/23 2:23:44	3/30/23 2:24:41	anonymous		6	6	6	6	1

Yoga Search for Meaning

ID	Start time	Completion time	Email	Name	I am looking for something I	am always looking to find	I am always searching for s	I am seeking a purpose or	I am searching for meanin
4	3/7/23 2:49:40	3/7/23 2:52:05	anonymous		6	6	5	5	5
5	3/13/23 18:00:55	3/13/23 18:01:42	anonymous		5	6	6	3	2
6	3/13/23 18:08:46	3/13/23 18:18:35	anonymous		1	1	1	1	1
7	3/13/23 18:21:43	3/13/23 18:22:19	anonymous		7	7	7	7	7
8	3/13/23 19:16:41	3/13/23 19:17:58	anonymous		6	6	6	6	6
9	3/13/23 21:38:30	3/13/23 21:39:46	anonymous		6	4	4	7	4
10	3/13/23 22:43:46	3/13/23 22:46:14	anonymous		6	5	5	5	7
11	3/14/23 7:14:55	3/14/23 7:19:07	anonymous		7	6	6	6	4
12	3/14/23 7:28:03	3/14/23 7:30:52	anonymous		7	7	7	7	7
13	3/14/23 9:03:00	3/14/23 9:03:18	anonymous		6	5	7	7	7
14	3/14/23 9:14:12	3/14/23 9:15:24	anonymous		4	5	5	5	5
15	3/14/23 9:55:23	3/14/23 10:01:30	anonymous		7	7	6	7	7
16	3/14/23 10:47:28	3/14/23 10:47:59	anonymous		2	1	3	1	1
17	3/14/23 11:47:12	3/14/23 11:47:57	anonymous		2	2	1	1	2
18	3/14/23 12:07:58	3/14/23 12:09:00	anonymous		2	1	1	2	2
19	3/14/23 12:41:26	3/14/23 12:42:08	anonymous		7	7	7	7	7
20	3/14/23 17:59:09	3/14/23 18:06:09	anonymous		6	5	5	5	6
21	3/14/23 18:42:21	3/14/23 18:43:42	anonymous		6	6	5	6	5
22	3/14/23 19:06:12	3/14/23 19:07:12	anonymous		6	7	6	6	5
23	3/15/23 10:57:33	3/15/23 10:59:42	anonymous		7	7	7	6	6
24	3/15/23 19:18:07	3/15/23 19:19:19	anonymous		6	6	6	6	6
25	3/15/23 20:29:38	3/15/23 20:31:05	anonymous		7	7	7	7	7
26	3/16/23 1:14:14	3/16/23 1:15:18	anonymous		7	7	5	6	6
27	3/16/23 10:54:48	3/16/23 10:55:27	anonymous		1	1	1	1	1
28	3/16/23 11:31:57	3/16/23 11:32:39	anonymous		6	7	6	6	7
29	3/18/23 7:34:06	3/18/23 7:34:55	anonymous		2	4	3	4	5
30	3/18/23 12:17:02	3/18/23 12:17:35	anonymous		7	7	7	7	7
31	3/19/23 18:58:41	3/19/23 18:59:29	anonymous		7	5	5	3	6
32	3/19/23 23:20:39	3/19/23 23:22:17	anonymous		4	2	2	2	2
33	3/20/23 10:05:46	3/20/23 10:06:17	anonymous		5	6	6	6	6
34	3/24/23 11:17:19	3/24/23 11:18:50	anonymous		3	4	4	4	4
35	3/30/23 2:24:49	3/30/23 2:25:28	anonymous		1	1	1	1	1