

Comparing the Effects of Positive Psychology Interventions:  
Using Gratitude Journaling and Personality Strengths Interventions

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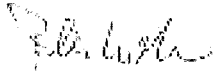
“Comparing positive psychology interventions using gratefulness and personality strengths interventions”

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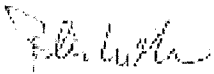
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### Abstract

The aim of this study was to compare and ascertain the effectiveness of two positive psychology interventions, personality strengths interventions on the one hand and gratitude interventions on the other. The goal was to find out which one is more effective in increasing feelings of happiness and reducing feelings of stress, anxiety and low moods. The outcome of the study is that while personality strengths interventions decrease feelings of stress, anxiety and low moods more than gratitude interventions, neither of the interventions showed any effect on subjective well-being. The participants were divided into three groups, group one was instructed to do gratitude activities, group two was instructed to do positive psychology interventions based on their top three personality strengths and group three acted as a control group and did not receive any intervention. The study took place during rather extreme circumstances when most of Europe was experiencing a lockdown due to the coronavirus pandemic which was a major confounding variable. It was carried out over the course of 14 days with participants instructed to spend 20 minutes a day on the exercises in the experimental groups. 57 people started the study and 45 completed it. A between-group experimental design using factorial ANOVAS to analyse the results was used. To measure the participants' stress levels the Perceived Stress (PSS) as well as the stress scale from the Depression, Anxiety and Stress inventory (DASS-42) were used. Participants' low moods were measured using the depression and anxiety scales in the DASS-42. To measure participants levels of well-being the Authentic Happiness Inventory (AHI) was used and to identify participants' character strengths the VIA Character Strengths Survey was used. The standardised tests measuring participants' stress, anxiety, low moods and subjective happiness were measured prior to starting the experiment and measured again on the last and 14th day of study.

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## 1. Introduction

In the past fifteen years, positive psychology and the use of positive psychology interventions have seen a surge of public interest. The western cultural narrative around taking care of one's mental health has shifted from often being a taboo topic to becoming both an attractive and trendy topic of conversation. Countless lifestyle magazines include gratitude exercises next to the vegan diet tips and yoga poses intended to promote happiness. Lifestyle coaches are making millions in book sales, promoting strategies to make people more fulfilled and less depressed. Social media is filled with lifestyle gurus and self-help coaches offering positive psychology snippets that promise relief from low moods and a path to feeling happier. Millennials and generation Z have to a large extent freed themselves from previous generations' stigma around talking about mental health and seeking professional help to improve well-being. Users and brands on social media networks such as Instagram and Facebook, often have strong messaging around thinking positively and do not hold back on instructing people on what they should do or how they should think to become happier. This type of unsolicited laymen advice often attracts thousands of likes and comments, yet the laymen advice found on these platforms is rarely based on empirical evidence. Furthermore, there are increasing numbers of mobile applications and online cognitive behavioural programs with positive psychology interventions, led or put together by mental health professionals that promise to improve peoples' mental health through paid monthly subscriptions or alike. The users are, to a large extent, expected to do the work very independently while receiving pre-recorded videos, meditations or audio messages. "Talkspace" is an online chat and video counseling platform that raised 50 million US dollars in 2019. "Headspace", another mental health application with positive psychology meditations, relaxation tapes and other mental health resources, was recently valued at 320 million US dollars. The relaxation app "Calm" is currently valued at 1 billion US dollars. Online and self-administered therapy and self-care is with other words big business. But what positive



psychology interventions actually work according to empirical studies? And does a one model fits all to become happier and reduce low moods through positive psychology interventions really exist?

In the scientific field of psychology, it long seemed like only tackling problems of grave nature or dealing with how to cure mental illness were rigorous enough issues for serious psychology. Naturally the intense negative states that are associated with many clinical conditions have been seen as more urgent to focus on getting under control as the consequences can otherwise be so detrimental to both the individual and their close ones. A research perspective on what is not working instead of focusing on what makes us thrive has thus from the beginning been the focus on psychology as a science. It is easy to take positive emotions for granted but the absence of hope, enthusiasm, optimism enjoyment and other life-giving emotions lead us to lose motivation, lust for life and enter states of depression that ultimately can have disastrous consequences.

Positive psychology finally became a separate discipline of psychology in 1988 when Martin Seligman made positive psychology the main theme during his time as the president for the American Psychology Association. After having been an outcast discipline, positive psychology gained some recognition and working with clients to identify their strengths and helping them find niches in which they could best live out their inherent character strengths is now more widely accepted. With this study, I intend to contribute to the field of Positive Psychology by ascertaining how effective gratitude and personality strengths based interventions are.

## 2. Literature Review

### 2.1 What is positive psychology?

To study what is best in people is the essence of positive psychology and helping people to uncover, explore, and practice their strengths and talents is key in practising it (Seligman & Csikszentmihalyi, 2000). Mihaly Csikszentmihalyi realised the demand for positive psychology during the Second World War. In the chaos of war, he observed many people becoming helpless once the war ripped all social support away from them. Others, however, persevered despite terrible circumstances and remained decent human beings, which made Csikszentmihalyi curious about their sources of strength. He found the best answers in psychology, purporting that it is not just “the study of pathology, weakness, and damage; it is also the study of strength and virtue” (Seligman & Csikszentmihalyi, 2000, p. 7). Csikszentmihalyi had a vision of psychology being more than just medicine to treat illness. He saw it as a way to embrace life as a whole, to see psychology not as correcting weakness but as a “science of strength” (Seligman & Csikszentmihalyi, 2000, p. 7).

Positive interventions are “treatment methods or intentional activities aimed at cultivating positive feelings, positive behaviours, or positive cognitions” (Sin & Lyubomirsky, 2009, p. 467). These types of interventions normally focus on increasing well-being and decreasing levels of depression (Lyubomirsky, Sheldon, & Schkade, 2005).

According to Martin Seligman (2002) - often called the father of positive psychology - studying happiness involves looking at (1) positive emotions and pleasure, (2) engagement and (3) meaning. Seligman’s research suggests that the most satisfied people are those who focus their lives on all three, with the greatest emphasis on engagement and meaning (Peterson, Park & Seligman, 2005). The idea of centering around creating meaning in life in order to live a more fulfilled were as early as 1946 introduced by Viktor Frankl after having survived the nazi camps

he wrote “everything can be taken from a man but one thing: the last of the human freedoms, to choose one's attitude in any given set of circumstances” (Frankl, 1946).

Happy people are healthier, more successful, and more socially engaged than people who are stressed and who experience low moods. Researchers have long thought that desirable characteristics such as altruism, optimism, sociability and energy and successful outcomes in life were the primary causes of happiness but a substantial amount of research (Lyubomirsky, King, & Diener, 2005) now also points towards people who report feeling happier than the average actually being healthier, having less inflammation in their bodies, more fulfilling marriages and social connections, high incomes, superior work performance, community involvement and longer life-span. The causal direction thus seems to run both ways (Lyubomirsky, King, & Diener, 2005).

Happiness researchers (Lyubomirsky, Sheldon, & Schkade, 2005) put forward that a person's overall levels of happiness are governed by a genetically determined set point for happiness, happiness-relevant circumstantial factors, and happiness-relevant activities and practices. They argue that the best chance to sustainably increase a person's subjective happiness levels is to focus on the activity category. Behavioural activity for example, such as working out regularly and actively doing deeds of kindness for others, are associated with higher levels of well-being (Keltner & Bonanno, 1997; Magen & Aharoni, 1991). The same is true for activities based on one's will, such as striving for personal goals (Sheldon & Houser-Marko, 2001) or devoting effort to meaningful causes (Snyder & Omoto, 2001). Cognitive activities such as reframing situations in more resourceful and positive narratives and counting one's blessings, (Seligman, 2000) are also associated with higher reported levels of happiness.

There seem to be some behaviours and cognitive strategies that are efficient for many people. However, we all have individual values, inclinations, interests and personality strengths that make us more likely to benefit more from certain activities or cognitive strategies than

others. Extrovert individuals could benefit more from positive psychology interventions that have a social element. Individuals who have a strong nurturance motivation could benefit from activities that give them opportunities to take care of others. Individuals who are driven by goal attainment would benefit most from positive psychology interventions that include just that. In numerous studies where participants were instructed to apply 14 different techniques to increase their happiness, the techniques that were considered most effective for increasing subjective happiness varied to a large extent from one individual to another (Lyubomirsky, Sheldon & Schkade, 2005). In the light of this, understanding what positive psychology interventions are the most efficient depending on one's personality is highly relevant.

## **2.2 Positive versus traditional psychotherapy**

Most psychotherapies focus on alleviating symptoms of psychological stress and psychotherapy is the process where emotions are vented, complicated relationships untangled, traumas uncovered, faulty thinking changed, dysfunctional behaviour and secrets disclosed in the hope of restoring a healthier self-concept with the help of an empathic therapist. Traditionally clinicians and clients have tended to focus on the negatives in the psychological treatment and how to achieve symptom remittance. However, the last two decades have also seen positive psychology interventions (PPIs) being used in clinical settings to help people feel more positive and happier (Rashid & Al-Haj Baddar, 2019). Positive psychotherapy systematically amplifies positive resources of clients and especially their positive character strengths, looking for meaning, positive relationships, and intrinsically motivated accomplishments with the goal to reduce or undo psychopathology. Positive psychotherapy is not exclusively about focusing on the positive. It simply focuses on increasing and maintaining the presence of what is preferred in order to have an absence of the dispreferred (Pawelski, 2016). Positive psychology interventions are based on the premise that psychological treatment is an opportunity for underlying the

positive aspects of the human experience as well as improving parts that are not working (Rashid & Al-Haj Baddar, 2019).

To some it might appear shallow and self-centered to focus to such an extent on boosting one's happiness but the literature on the topic tells us otherwise. The ability to be content and happy with life is a central criteria of adaptation and a strong mental health (Diener, 1984, Taylor & Brown, 1988). Studies show that the subjective feeling of happiness and a positive mindset have several benefits for individuals in many life domains. They include "larger social rewards [such as] higher odds of marriage and lower odds of divorce, more friends, stronger social support, and richer social interactions, superior work outcomes", greater creativity, increased productivity, higher quality of work, and higher income and "more activity, energy, and flow" (Lyubomirsky, King & Diener, 2005).

Additional evidence to support that subjective happiness is key to mental health are that people with higher reported subjective happiness levels are likelier to show greater self-control, self-regulatory and coping abilities (Aspinwall, 1998; Fredrickson & Joiner, 2002), as well as a better functioning immune system (Stone et al., 1994). Finally, numerous studies have shown that happy individuals appear to be more prosocial, cooperative and focused on others. (Williams & Shiaw, 1999).

### 2.3 Meta analyses about positive psychology interventions

Three larger meta-analyses examining positive psychology interventions have been widely cited in previous literature on positive psychology. In Sin and Lyubomirsky's (2009) meta-analysis the researchers looked at 49 different studies and found that positive psychology interventions significantly enhanced people's well-being, and the combined results of 25 studies showed that positive psychology interventions were also effective for treating depressive symptoms. A variety of positive psychology interventions were found to be effective, such as including positive behaviours like engaging in enjoyable activities (Fordyce, 1977), using one's personality signature strengths in new ways (Seligman, Steen, Park, & Peterson, 2005) and gratitude exercises. Sin & Lyubomirsky, (2009) concludes that psychologists and other mental health practitioners would be well-advised to incorporate positive psychology interventions both to clinically depressed and nondepressed clients, as both populations are likely to experience benefits. In a 2013 meta-analysis Bolier et al. looked at 39 studies, with a totaling of 6,139 participants. The results showed that both the subjective well-being went up and depressive symptoms decreased but the effects were smaller than in the first meta-analysis. Finally, a meta-analysis by White, Uttl and Holder (2019) criticised the previous two meta-analyses and claimed that they had generalised several inconsistent approaches and grouped them together.

Furthermore, White et al. criticised that the two previous meta-analyses used different inclusion and exclusion criteria, analysed different sets of studies, described their methods with insufficient detail to compare them clearly, and did not report or properly account for significant small sample size bias (White, Uttl & Holder, 2019).

When the small sample size bias was taken into account by White et al., the effect of different positive psychology interventions on happiness were small but significant whereas the effect of positive psychology interventions on depression varied, were dependent on outliers, and generally not statistically significant (White, Uttl & Holder, 2019). Authors from the 2019 meta-

analysis further concluded that future studies need to include larger samples. Furthermore, they purported that new strategies are needed on how to increase the effectiveness of the positive psychology interventions over longer periods of time, increasing the frequency of the interventions, and combining several ones.

As discussed above positive psychology interventions primarily focus on reducing depressive symptoms and increasing well-being. However, both anxiety and stress reduction have been demonstrated in studies where gratitude interventions and applying one's personality strengths have been studied. The specific findings on stress, anxiety and depression from studies using the interventions chosen are further discussed in sections 2.5 and 2.6.

#### **2.4 How do positive psychology interventions work?**

Numerous mechanisms, among others Fredrickson's (2004) "broaden-and-build theory of positive emotions" have been proposed to explain why positive psychology interventions work. Frederickson notes that while emotions such as fear, anger and disgust are often studied in psychology, positive emotions are often left untouched by empirical studies. One important reason for this, according to Frederickson, is that psychology as a whole has centered around a problem-focused approach, thereby focusing on negative emotions. Frederickson's "broaden-and-build theory" argues that positive emotions have a "broadening effect", meaning instead of resorting to automatic responses, they give humans the freedom to find new ways of thinking and acting. Thereby, Frederickson embraces the reason why humans can feel positive emotions from an evolutionary standpoint: to strengthen our social skills and in the end, to survive. In addition, Fredrickson puts forward that "negative emotions carried adaptive significance in the moment that our human ancestors experienced them as their associated action urges and drove behaviors that saved life and limb". Positive emotions on the other hand "carried adaptive significance for our human ancestors over longer timescales" (Frederickson, p. 13, 2013). Cultivating positive

emotions Fredrickson argues was the recipe for discovery, for the search of new knowledge, new alliances as well as new skills. The positive emotions ultimately worked to broaden our repertoire of responses and gave us access to new resources that could later be the difference between living or dying (Fredrickson, 2013).

Furthermore, an increase in mindfulness or self-regulation is also thought to explain why positive psychology interventions work. Mindfulness helps to stay in the present, and self-regulation helps to steer one's emotions towards more positive waters. Mindfulness is here defined as the "state of being attentive to and aware of what is taking place in the present" (Brown & Ryan, 2003). Self-regulation also involves being able to control one's impulses and delay emotional reactions when needed as well as the regulating one's own feelings to a certain degree (Thompson, 1994). Finally, Mongrain and Anselmo-Matthews (2012) put forward that "positive psychology interventions may boost happiness through a common factor involving the activation of positive, self-relevant information rather than through other specific mechanisms" (p. 383).

## **2.5 Gratitude practice as a positive psychology intervention**

Expressing gratitude is the recognition that we have received something of value from others. Robert Emmons and Michael McCullough define it as a two-step process. First, "recognizing that one has obtained a positive outcome" and second, "recognising that there is an external source for this positive outcome." While most of these positive benefits come from other people's actions, people can also experience gratitude toward God, fate, nature and so forth (Allen, 2018).

Expressing gratitude is deeply valued in most cultures worldwide and the virtue of being grateful and expressing gratitude towards life and other people is a character trait and emotion that is emphasized over and over again in all major religions. The roman philosopher Cicero is



thought to have said the following on the virtue of gratitude, “it’s not only the greatest one but also the mother of all the other remaining virtues”. The economist and man often known as the father of capitalism, Adam Smith claimed that gratitude was instrumental for having a society positioned on goodwill (Emmons & Crumpler, 2000). A study from 2017 looking at religion and gratitude in an American sample showed that religious people experienced greater feelings of gratitude than did atheists. There were no differences in recognising the benefits of gratitude or expressing gratitude related behaviour, but the people who identified as Christian rated themselves as having higher grateful emotions than did the people who identified as atheists (Morgan, Gulliford, Kristjánsson 2017).

There seem to be evolutionary origins to our gratitude trait and even in the animal kingdom there are animals who express what appears to be gratitude towards each other. Clearly animals do not write thank-you notes but research points to gratitude being expressed in other ways in the animal kingdom. For example De Waal’s (1997) research on primates demonstrated that chimpanzees were more willing to share food with another chimpanzee that had groomed them earlier and other research also showed that chimpanzees were most likely to help the specific chimpanzee that had helped them retrieve food in the past (Suchak, Eppley, Campbell, & de Waal, 2014). McCullough and colleagues (2008) suggest that gratitude might have developed to help convert unrelated strangers and acquaintances into relationships and friendships through reciprocal altruism.

Gratitude exercises are positive psychology interventions that have been proven to be efficient in increasing happiness and reducing low moods. In gratitude journals, people write down things they are grateful for on a daily basis and studies have shown an increase in reported feelings of happiness after 10 days of a daily gratitude practice (Sin & Lyubomirsky, 2009).

Gratitude letters and counting blessings activities are proposed to work through shifting memory

away from embittering aspects of past events and relationships to savoring all the good things that life, friends and family have afforded clients (Seligman et al., 2006).

A study from 2014 found that writing a gratitude letter and counting blessings had “high utility scores and were associated with substantial improvements in optimism” (Huffman, Dubois, Healy, Boehm, Kashdan, Celano, Denninger, & Lyubomirsky, p.93). Practising gratitude every day has also been found to enhance positive affect, sleep quality, energy, self-efficacy, and lower cellular inflammation (Mills, Redwine, Wilson, Pung, Chinh, Greenberg, Lunde, Maisel, & Raisinghani, 2015). In addition, there are studies pointing towards gratitude working as a protection from stress and depression (Wood, Maltby, Gillett, Linley, & Joseph, 2008). The study of Wood et al. was recently replicated, reconfirming that gratitude works as a protection from stress and depression and can enhance peace of mind, reduce rumination, and reduce depressive symptoms (Liang, Chen, Li, Wu, Wang, Zheng & Zeng, 2018). Cheng, Tsui and Lam (2015) found that symptoms of depression and perceived stress declined in health care practitioners after they had focused on counting their work-related blessings for 14 days.

Gratitude has also been shown to be able to bring people who have experienced traumatic experiences to reach emotional closure by considering the positive consequences of the unpleasant incidents (Watkins, Cruz, Holben, & Kolts, 2008). Ruini & Vescovelli (2013) did gratitude letters research with breast cancer survivors who had higher levels of the trait gratitude and they showed more post-traumatic growth, reduced stress and reported more positive emotions than breast cancer survivors who did not have high levels of the gratitude trait. Chronic pain patients who had a strong personality trait of gratitude reported having lower anxiety, depressive symptoms as well as better sleep another study from 2013 found (Ng & Wong).

There is also research that suggests that people who experience a lot of gratitude are able to convert stressful experiences into post-traumatic growth and are able to look at what they have been through as opportunities for growth despite the emotional pain experienced. This was found

looking at survivors of a US campus shooting (Vieselmeier, Holguin, & Mezulis, 2017) as well looking at survivors of natural disasters (Zhou & Wu, 2016). Numerous studies have found that people who have higher levels of gratitude in their personality show signs of lower levels of stress, clinical depression and anxiety (Wood, Froh & Geraghty, 2010). In (Petrocchi & Couyoumdjian, 2016) study with 410 Italian participants they found that showing gratitude towards oneself, people around you and the world predicted less depression and anxiety symptoms in the general population. Furthermore they concluded that “gratitude is a protective factor against psychopathology not only due to its association with improved relationships with others, but also because it is connected to a less critical, less punishing, and more compassionate relationship with the self”.

To conclude, there is a large body of research that demonstrates how gratefulness can be beneficial both in therapeutic settings as well as benefiting people who are able to independently practice gratitude on a regular basis.

## 2.6 Personality strengths based interventions

Using one's personality strengths, either in new ways or more often than usual, is another positive psychology intervention that has yielded meaningful results in numerous studies. Signature personality strengths have been described as the behaviours, cognitions and feelings a person naturally has the capacity for, takes pleasure in doing, and permits the individual to reach optimal functioning while they pursue desired results (Govindji & Linley, 2007). Peterson & Seligman (2004) describe signature strengths as those strengths that are typical for the personality and that constitute the core of a person. People typically possess between three and seven signature strengths. In this study, the standardised strengths classifications "Values in Action (VIA) Inventory of Character Strengths" developed by Peterson and Seligman (2004) was used. The "VIA Inventory of Character Strengths" is based on a review of currently and historically universally valued character traits. There are 24 identified strengths in the classification and they were initially developed to measure the development of these strengths and their influence on wellbeing (Seligman et al., 2004). The strengths and definitions of them identified by Seligman are the following:

**Table 1. List of personality strengths**

<p><b>Appreciation of beauty and excellence</b></p>	<p>Those who express an appreciation of beauty and excellence notice and appreciate beauty, excellence and/or skilled performance in all domains of life, from nature to art to mathematics to science to everyday experience.</p> <p>People high in Appreciation of Beauty and Excellence are responsive to these three types of goodness:</p> <p><b>Physical beauty</b> This may include auditory, tactile or abstract. This type of goodness produces awe and wonder in the person experiencing it.</p> <p><b>Skill or talent</b> This is often energising, and compels a person to pursue their own goals. It inspires admiration.</p> <p><b>Virtue or moral goodness</b> Virtuous goodness makes someone want to be better, more loving and creates feelings of elevation.</p>
<p><b>Love</b></p>	<p>Love as a character strength, rather than as an emotion, refers to the degree to which a person values close relationships, and contributes to that closeness in a warm and genuine way. Where kindness can be a behavioral pattern applied in any relationship, love as a character strength really refers to the way one approaches one's closest and warmest relationships. Love is reciprocal, referring to both loving others and the willingness to accept love from others. There are four types of love, each with a biological and evolutionary base:</p> <p>Attachment love: parent for child; child for parent Compassionate/altruistic love: kindness Companionate love: friendship Romantic love: spouse/girlfriend/boyfriend</p>

<p style="text-align: center;"><b>Humour</b></p>	<p>Humour is to recognise what is amusing in situations, and to offer the lighter side to others. Humour is an important catalyst for social interactions, and can contribute to team building or moving toward group goals. Where other strengths are more or less essential for achieving certain types of goals or dealing with certain types of problems, humor is rarely an essential component to positive social interactions, but it is often a desirable one. It is also a valuable method of coping with distressing situations.</p> <p>Humour involves the ability to make other people smile or laugh. It also means having a composed and cheerful view on adversity that allows an individual to see its light side and thereby sustain a good mood.</p>
<p style="text-align: center;"><b>Spirituality</b></p>	<p>Spirituality has been defined consistently by scientists as the search for or connection with “the sacred”. The sacred might be that which is blessed, holy, revered, or particularly special. This can be secular or non-secular: sacredness might be pursued as the search for a purpose in life or as a close relationship with something greater. As a character strength, spirituality involves the belief that there is a dimension to life that is beyond human understanding. Some people don’t connect this belief with the concept of a divinity and prefer to think of it in terms of a sense of meaning rather than spirituality, but in the VIA Classification the terms are considered closely related. Spirituality is believed to describe both the private, intimate relationship between humans and the divine, and the range of virtues that result from the relationships. Spirituality is universal. Although the specific content of spiritual beliefs varies, all cultures have a concept of an ultimate, transcendent, sacred force.</p>
<p style="text-align: center;"><b>Curiosity</b></p>	<p>To be curious is to explore and discover, to take an interest in ongoing experience for its own sake. Curiosity is often described as novelty-seeking and being open to experience, and it’s associated with the natural desire to</p>

	<p>build knowledge.</p> <p>There are two key components to curious individuals: They are interested in exploring new ideas, activities and experiences, and they also have a strong desire to increase their own personal knowledge.</p>
<b>Social Intelligence</b>	<p>When a person knows what makes other people tick, he or she is displaying social intelligence. They are aware of the motives and feelings of themselves and others, and how to fit into different social situations. They can feel comfortable and say the right thing in various different settings. Social intelligence involves two general components:</p> <ul style="list-style-type: none"> <li>● Social awareness: what we sense about others</li> <li>● Social facility: what we do with our awareness</li> </ul>
<b>Fairness</b>	<p>Fairness as a character trait is treating people justly, not letting personal feelings bias decisions about others, wanting to give everyone a fair chance, and believing there should be equal opportunity for all, though realising that what is fair for one person might not be fair for another.</p> <p>Fairness is a cognitive judgment capacity that involves reasoning and making judgments. It involves two types of reasoning:</p> <ul style="list-style-type: none"> <li>● Justice reasoning which emphasizes logic and weighing principles to determine moral rights and responsibilities.</li> <li>● Care reasoning which includes empathy and compassion; the ability to put yourself in somebody else's shoes.</li> </ul>

<p style="text-align: center;"><b>Kindness</b></p>	<p>Kind individuals believe that others are worthy of attention and affirmation for their own sake as human beings, not out of a sense of duty or principle. There are three traits of altruistic personalities:</p> <ul style="list-style-type: none"> <li>● Empathy/sympathy</li> <li>● Moral reasoning</li> <li>● Social responsibility</li> </ul>
<p style="text-align: center;"><b>Forgiveness</b></p>	<p>Forgiveness, and the related quality of mercy, involve accepting the shortcomings, flaws, and imperfections of others and giving them a second (or third) chance. As the expression goes, it is letting bygones be bygones, rather than being vengeful. It is important to distinguish forgiveness from:</p> <ul style="list-style-type: none"> <li>● condoning (removes the offense)</li> <li>● forgetting (removes the awareness)</li> <li>● reconciliation (restores the relationship)</li> </ul>
<p style="text-align: center;"><b>Teamwork</b></p>	<p>Teamwork as a character trait includes that in team situations the person is committed to contributing to the team's success. The team could be a work group or a sports team, but it could also refer to one's family, marriage, or even a group of friends working on a project together. Teamwork extends to being a good citizen of the community or country, and more broadly to a sense of social responsibility for particular groups of people or even all of humanity. In other words, the person high in teamwork applies a certain way of acting in whatever context they consider themselves committed to the good of the group as a whole. Most commonly, however, this strength refers to you being a dedicated, reliable, and contributing member to a small group or team.</p>
<p style="text-align: center;"><b>Perspective</b></p>	<p>Perspective is the ability to see the bigger picture in life. Perspective is about being able to see the forest as well as the trees, to avoid getting wrapped up in the small details when there are bigger issues to consider. While</p>



	<p>listening to others, perspective helps to simultaneously think about life lessons, proper conduct, and what's best for the situation being discussed. This ability to look at systems as a whole, or to think in big terms, helps to offer good advice. Perspective is distinct from intelligence but represents a high level of knowledge, the capacity to give advice and to recognise and weigh multiple sides before making decisions. It allows the individual to address important questions about the conduct and meaning of life.</p>
<b>Zest</b>	<p>Zest means approaching a situation, or life in general, with excitement and energy and not approaching tasks or activities halfway or halfheartedly. People who are high in zest are excited to get up in the morning, and they live their lives like an adventure. Zest is a dynamic strength that is directly related to physical and psychological wellness. It is the strength that has the strongest ties to overall life satisfaction and a life of engagement.</p>
<b>Honesty</b>	<p>This strength involves accurately representing your internal states, intentions, and commitments, both publicly and privately. The strength of honesty is often linked to self-concordance- the extent to which your goals accurately represent your implicit interests and values. Honesty allows people to take responsibility for their feelings and behaviors, owning them, and reaping benefits by doing so.</p>
<b>Hope</b>	<p>The character strength of hope has to do with positive expectations about the future. It involves optimistic thinking and focusing on good things to come. Hope is more than a feel-good emotion. It is an action-oriented strength involving agency, the motivation and confidence that goals can be reached, and also that many effective pathways can be devised in order to get to that desired future. Optimism is closely linked with having a particular explanatory style (how we explain the causes of bad events). People using an optimistic explanatory style interpret events as external, unstable and specific.</p>

<p style="text-align: center;"><b>Creativity</b></p>	<p>Creativity is thinking of new ways to do things. It involves producing ideas or behaviors that are original. There are two essential components to Creativity- originality and adaptiveness. A creative individual generates ideas or behaviors that are novel or unusual and these make a positive contribution to the individual's life or the lives of others group).</p>
<p style="text-align: center;"><b>Love of learning</b></p>	<p>Love of learning means a passion for learning, a desire to learn just for learning's sake. In fact, curiosity and love of learning are among the most closely related strengths in the VIA Classification. They can still be distinguished though. While curiosity is the motivating force that leads you to seek out new information, love of learning refers to the desire to hold on to and deepen that information. The person who loves learning is motivated by the expansion of their fund of knowledge. Love of learning describes the way in which a person engages new information and skills. It has important motivational consequences because it helps people persist through challenges, setbacks and negative feedback.</p>
<p style="text-align: center;"><b>Gratitude</b></p>	<p>The character strength of gratitude involves feeling and expressing a deep sense of thankfulness in life, and more specifically, taking the time to genuinely express thankfulness to others. This thankfulness can be for specific gifts or thoughtful acts. It could also more generally reflect recognition of what that person contributes to your life. What marks gratitude is the psychological response: the transcendent feeling of thankfulness. Grateful people experience a variety of positive emotions, and those emotions inspire them to act in more virtuous ways – humbler, more persistent, or kinder. Gratitude tends to foster the character strengths of kindness and love, and therefore is closely associated with empathy and with connection to others.</p>

<p style="text-align: center;"><b>Perseverance</b></p>	<p>Perseverance is sticking with things, being hardworking and finishing what is started, despite barriers and obstacles that arise. The pleasure received from completing tasks and projects is very important to those who are high in perseverance. Sometimes he or she must dig deep and muster the will to overcome thoughts of giving up. Perseverance involves organising oneself to support activities (e.g., scheduling breaks and sticking to them, rewarding in small ways along the way), but when all else fails, this strength helps the person to barrel through until the project is done. This helps build further confidence for future successes and goal accomplishment. Perseverance involves the voluntary continuation of a goal-directed action despite the presence of challenges, difficulties, and discouragement. There are two vectors of perseverance. It requires both effort for a task and duration to keep the task up.</p>
<p style="text-align: center;"><b>Bravery</b></p>	<p>To be brave is to face one's challenges, threats, or difficulties. It involves valuing a goal or conviction and acting upon it, whether popular or not. A central element involves facing – rather than avoiding – fears. There are three types of bravery (an individual may possess one of these or a combination):</p> <ul style="list-style-type: none"> <li>● Physical bravery (e.g., firefighters, police officers, soldiers)</li> <li>● Psychological bravery (e.g., facing painful aspects of oneself)</li> <li>● Moral bravery (e.g., speaking up for what's right, even if it's an unfavorable opinion to a group)</li> </ul>
<p style="text-align: center;"><b>Leadership</b></p>	<p>Leadership can take on many forms. As a character strength, leadership refers to the tendency to organise and encourage a group to get things done, while maintaining good relations within the group. Leadership involves setting goals and accomplishing them, enlisting effective help, building coalitions, and smoothing ruffled feathers. Effective leaders are able to provide a positive</p>

	<p>vision or message that inspires dedicated followers who feel empowered and perhaps even inspired. Leadership is a social phenomenon that can be distinguished into two areas:</p> <ul style="list-style-type: none"> <li>● Practice- defining, establishing, identifying or translating direction</li> <li>● Personal quality- the motivation and capacity to seek out, attain and carry out leader roles There are two types of leaders:</li> <li>● Transactional leaders- this type of leader clarifies responsibilities, expectations, and the tasks to be accomplished</li> <li>● Transformational leaders- this leader motivates their followers to perform at a high level, fostering a climate of trust and commitment to the organisation and its goals</li> </ul>
<b>Judgement</b>	<p>Judgment involves making rational and logical choices, and analytically evaluating ideas, opinions, and facts. It is critical thinking, weighing the evidence fairly, thinking things through, and examining the evidence from all sides rather than jumping to conclusions. Judgment also involves being open-minded and able to change one's mind in the light of evidence, remaining open to other arguments and perspectives.</p> <p>The strength of judgment is a corrective strength in that it counteracts faulty thinking, such as favoring your current views or favoring ideas that are considered the dominant view, and therefore giving less attention to the less-dominant view. It is the willingness to search actively for evidence against your favored beliefs, plans or goals and to weigh all of the evidence fairly when it is available.</p>

<p><b>Humility</b></p>	<p>Humility involves accurately evaluating your accomplishments. Humble people think well of themselves and have a good sense of who they are, but they also are aware of their mistakes, gaps in their knowledge, and imperfections. Most importantly, they are content without being a center of attention or getting praised for their accomplishments.</p> <p>True humility involves an accurate self-assessment, recognition of limitations, keeping accomplishments in perspective, and forgetting of the self. Humble people do not distort information to defend or verify their own image, and they do not need to see-or present- themselves as being better than they actually are.</p>
<p><b>Self-regulation</b></p>	<p>People high in self-regulation have a good level of confidence in their belief that they can be effective in what they pursue and are likely to achieve their goals. They have an ability to control their reactions to disappointment and insecurities. Self-regulation helps keep a sense of balance, order, and progress in life. Self-Regulation can be viewed as a resource that can be depleted and fatigued.</p>
<p><b>Prudence</b></p>	<p>Prudence includes being careful about choices, stopping and thinking before acting. It is a strength of restraint. When a person is prudent, no unnecessary risks are taken. Prudence is a form of practical reasoning, the ability to examine the potential consequences of one's actions objectively, and to control oneself based on that examination. Prudence involves far-sighted planning as well as short-term, goal-directed planning. It is often referred to as cautious wisdom, practical wisdom, and practical reason.</p>

The VIA Inventory has been used in several studies looking at the effectiveness of utilising positive personality strengths to improve well-being. Older personality strengths interventions would typically ask the participants to self-identify their strengths. More recently, classifications such as the VIA Inventory have been used to assist with strengths identification

(Linley et al., 2009; Peterson and Seligman 2004) and these now form the basis for positive psychology personality strengths interventions.

Mitchell et al. (2009) conducted a study of signature strengths interventions which showed an increase in subjective well-being through using the “Personal Well-Being Index” (Adult Scale; IWG, 2006). In an earlier personality strengths intervention by Seligman et al. (2005) 577 participants' character strengths were assessed with the “Values in Action Inventory of Strengths” (VIA-IS; Peterson, Park, & Seligman, 2005), and they were asked to use five of their personality strengths in new ways. In two of the exercises, using one’s signature strengths in new ways and writing about three good things increased happiness and decreased depressive symptoms for six months.

Proyer, Ruch and Buschor (2013) also tested strengths-based interventions on a Swiss sample of 178 adults. They compared two sets of character strengths. One group in the study was trained to focus on curiosity, gratitude, hope, humor and zest, character strengths with high correlation with life satisfaction. The other was trained to concentrate on the appreciation of beauty and excellence, creativity, kindness, love of learning, and perspective - character strengths with low correlation with life satisfaction. Both of the experimental groups were compared with a control group. The group with the strengths most correlated with life satisfaction reported significant improvement in their satisfaction in comparison to the control group. Furthermore, when asked for subjective ratings of well-being after the positive psychology interventions, participants in both intervention groups showed gains above that of the control group (Proyer et al., 2013). O’Connell, O’Shea and Gallagher (2016) found that positive psychology interventions based on one’s personality where social kindness was emphasised led to significantly higher relationship satisfaction as well as less anxiety.

Another study from 2013 that aimed to assess and explore the relative impact of nine positive psychology exercises delivered to American patients hospitalised for suicidal thoughts

or behaviours showed that interventions related to gratitude and personal strengths ranked the highest in effectiveness (Huffman., DuBois & Healy, 2013). In sum, current research underlines the potential of personality strength-based interventions to enhance positive emotions, and reducing low moods in both clinical and non-clinical populations.

## **2.7 Challenges of dropouts in online positive psychology interventions studies**

A literature review from 2017 looked at nine online positive interventions studies promoting well-being and resilience in adolescent populations (Banos, Etchemendy, Mira et al. 2017). The studies used websites, social networks, email or text message reminders to deliver the positive psychology interventions. All nine studies showed positive results with decreasing anxiety and depression scores as well as higher rated well-being scores. The drop-out rates from internet-based interventions and treatment programmes for psychological disorders were however rather high. Furthermore, an in-depth analysis of literature from 19 studies published from 1990 to April 2009, focusing on dropout from Internet-based treatment programmes with minimal therapist contact, showed that dropout rates ranged from 2 percent to 83 percent with an average of 31 percent of the participants failing to complete treatment (Melville, Casey, Kavanagh, 2010). However, the researchers could not find any specific variables that made an individual more likely to drop out of a study. Dropout rates were also noticeable in the study with 178 Swiss participants from 2013 that specifically targeted personality strengths (Proyer et al., 2013). The drop-outs were around 30 percent. Nevertheless, there were no mean-level differences in life satisfaction but the participants who quit earlier tended to be younger than the ones who completed the full program. More studies are needed in order to further examine variables in drop-out rates and what can be done to prevent drop-outs. For in person cognitive behavioral treatment programs for various diagnosis Fernandez et al. (2015) found that there were on average 26.2 percent dropout rates when examining 115 primary empirical studies with

20,995 participants. The same study found that the dropout rate for online based therapy was 10 to 15 percent higher. The highest dropout rate was found with depressed individuals.

In this study there was a significant drop-out rate which appears to be in line with many other online positive psychology and self-help programs.

## **2.8 Unique circumstances**

The present study took place in the beginning of the lockdowns in Europe due to the coronavirus pandemic. Although most countries shut down large parts of their societies and economies, government policies, as to how stark the measures were, varied. According to media reports, the pandemic has had a devastating effect on overall mental health around the world. Nonetheless, very few meaningful empirical studies have been done about the topic. Many studies simply did one-time online surveys, but only during the lockdowns, and not before, leaving them with little validity.

Some studies did, however, manage to make the empirical comparison between before and during the lockdowns. A Danish study (Søndersko, Dinesen, Santini & Østergaard, 2020) surveyed 2,458 people from 31 March to 6 April with the WHO-5 wellbeing-scale from the World Health Organisation, and compared the results to other representative groups that were surveyed before the epidemic. They found a significant increase in the levels of anxiety and depression among the participants during the lockdowns.

In addition, a survey of 2,032 adults in the US from April 27 this year (Twenge & Joiner, 2020) , at the height of the lockdowns, showed that people were eight times as likely to fit criteria for serious mental illness (27,7% versus 3,4%) compared to a demographically similar group of 19,330 participants surveyed in 2018. Both surveys used the Kessler-6 scale of mental distress. According to this study, younger adult's mental health, those between the age of 18 and 44, were more adversely affected than older people. The circumstances in which this study took



place cannot be stressed enough and this sample of people are as likely as the rest of the population to have been mentally affected by the ongoing pandemic.

### 3. Hypothesis & Research Design

The aim of the present study was to compare and ascertain the effectiveness of two positive psychology interventions, personality strengths interventions on the one hand and gratitude interventions on the other. The results of the character strengths based positive psychology interventions were compared with a daily gratitude practice as well as with a control group. Both intervention methods have been shown to be effective in reducing depressive moods, anxiety and stress, as well as improving subjective overall well-being. However, according to the literature review, these two positive psychology interventions have not been compared in this manner.

**Hypothesis:** Using positive psychology interventions matching with the person's core personality strengths for two weeks will show a larger decrease in reported levels of stress, anxiety and low moods symptoms compared to a gratitude and control group as well as show higher increases in subjective reports of happiness in two weeks in individuals with low to high symptoms of stress, anxiety and low moods.

**Design:** The study used a two times three in between-group experimental design looking at the overall effect of the interventions as well as comparing the three groups.

## **4. Methods**

### **4.1 Participants**

A convenience sample was used, participants were chosen primarily based on their willingness and availability to participate. Given that the study was conducted during the lockdown, recruitment of participants was only conducted through social media. The goal was to recruit 45 people living in Europe between the ages 20 to 40, with each group consisting of 15 participants. Several rounds of recruitment were needed, as people repeatedly dropped out of the study. In the end, the goal of having 45 people complete the study was accomplished. In the gratitude group, 20 people started and 5 people dropped out. In the personality strengths interventions group, 22 people started and 7 people ended up dropping out during the course of the study. Most participants started the study at the end of March 2020. However, since 12 people dropped out, the newly recruited participants replacing them started in April.

Participants were not paid for their participation, but received individualised feedback on their results via email at the end of the study. Participants also received continuous support when they had questions or concerns throughout the study.

### **4.2 Materials and Equipment**

The study began by participants signing the consent form and being digitally administered the five standardised psychometric tests. Participants in the study took the Authentic Happiness Inventory (AHI; Shepherd, Oliver & Schofield, 2015) to start with to measure their subjective assessment of their overall well-being. The following standardised tests were used to determine participants' perceived stress levels; "The Depression, Anxiety and Stress Scales - 42 Items" (DASS-42) and the "Perceived Stress Scale" (PSS). These tests corresponded to the research questions and the dependent variables being measured. All participants were finally asked to take the "VIA Institute of Character adult standardised" survey to determine their

top personality strengths. Participants' identities were anonymised through numbers and their real identities only available to the researcher. The participants were asked to answer the tests as truthfully as possible.

### **4.3 Authentic Happiness Inventory (AHI)**

The AHI is a modification of the Steen Happiness Index (SHI; Seligman et al. 2005), which was developed to measure upward changes in happiness. The SHI was designed to be an opposite to the Beck Depression Inventory (BDI; Beck et al. 1961). The AHI is frequently used to measure the subjective assessment of happiness and is primarily used in positive psychology intervention studies. It has been argued that it is sensitive to detect subtle changes in happiness and differentiates happiness at very high levels (Proyer, Gander, Wellenzohn et al., 2013). The AHI examines three kinds of happy lives; the pleasant life, the engaged life, and the meaningful life and contains 24 items. The standardised test comprises questions to which there is a group of five statements as possible answers ranging from a negative to an extreme positive. Three studies designed to test the AHI from 2017 with 5.166 participants validated the German version of the test and showed that the AHI has high test-retest correlations ( $r = .75-.85$ ;  $N = 319$ ) for one week, one month, three months and six months. The three studies also supported its psychometric properties and provided support for the test's validity.

### **4.4 DASS-42**

DASS, the Depression Anxiety Stress Scales is a 42 items widely used self-report survey. Each item reflects a negative emotional symptom and takes around 10 minutes to complete (Lovibond, 1995). The main purpose of the DASS is to identify and assess the degree of severity of symptoms of depression, anxiety and stress the person has experienced the last week.

Cronbach's alpha scores for the depression scale is 0.91, (Mean= 6.34, Sd = 6.97) the anxiety

scale is 0.84 (Mean = 4.7, St = 4.91) and the stress scale is 0.90 (Mean = 10.11, St = 7.91). The sample mentioned consisted of 1.044 males and 1.870 females aged between 17 and 69 years, across participants of varying backgrounds (Lovibond, 1995).

Items are rated on a four-point scale of frequency or severity of the participants' experiences over the last week focusing on states rather than personal traits. Scores range from 0, meaning "does not apply to me at all" to 3, "applied very much to me all or most of the time". There are 14 items for the depression, anxiety and stress scales with a randomised order of the 42 items. The depression scale has subscales for dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia and inertia. The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety and experience of anxious affect. The stress scale's subscales examines levels of non-chronic arousal, difficulty relaxing, nervous arousal and being easily angry and agitated, irritable, over-reactive and impatient (Lovibond, 1995). The depression scale of DASS assumes that the differences in depression, anxiety and stress experienced between the clinical and normal population are the differences of degree. The ranges for the stress scale are the following; 0-10 normal, 11-18 mild, 19-26 moderate, 27-34 severe, 35-42 extremely severe. Anxiety scale; 0-6 normal, 7-9 mild, 10-14 moderate, 15-19 severe, 20-42 extremely severe. Depression scale; 0-9 normal, 10-12 mild, 13-20 moderate, 21-27 severe, 28-42 extremely severe.

#### **4.5 The Perceived Stress Scale (PSS)**

The Perceived Stress Scale (PSS) was developed in 1983 and is a widely used standardised instrument for measuring the perception of stress. It measures the degree to which situations in a person's life are perceived as stressful and ask about feelings and thoughts during the last month of the respondent. The ten items were designed to measure how unpredictable, uncontrollable,

and overloaded respondents find their lives. The scale also includes direct questions about current levels of experienced stress. The items are easy to understand and of a general nature. The norm group consisted of 2,387 respondents from the U.S. The mean in the age group 18-29 was 14.2 and standard deviation 6.2. In the age group 30-44 which also are included in the study the mean was 13 and standard deviation 6.2. Scores ranging from 0-13 are considered low stress. Scores ranging from 14-26 are considered moderate stress and finally, 27-40 scores would be considered high perceived stress (Cohen, 1983).

#### **4.6 VIA Institute of Character adult standardised survey**

The participants were finally asked to complete the standardised strengths classifications “Values in Action Inventory of Character Strengths” (VIA) developed by Peterson and Seligman (2004). For the current version of the VIA Inventory the test-retest correlations for all 24 scales during a 4-month period are .70. The VIA Inventory of Character Strengths is based on a review of currently and historically universally valued character traits. There are 24 identified strengths in the classification and they were initially developed to measure the development of these strengths and their influence on wellbeing (Seligman et al.2005). The VIA Inventory has been used in a multitude of studies looking at the effectiveness of using positive personality strengths to improve well-being. Previous personality strengths interventions would typically ask the participants to self-identify their strengths but more recently, classifications such as the VIA Inventory have been used to assist with strengths identification (Linley et al.2009; Peterson and Seligman 2004) and these now form the basis for positive psychology personality strengths interventions. All participants received a list with their 24 character strengths ranging from strongest to weakest.

## 5. Procedure

The participants were recruited through social media and contacted the researcher through a dedicated email account. Several recruitment rounds had to be made as there were 12 people who did not follow through with the study. Participants were first provided with information about the study, an informed consent form that needed to be signed and they were asked to fill out their age and gender. Participants were randomly assigned to either the gratitude, personality strengths or control group and given all information through email and asked to take the AHI and consequently the DASS-42 and the PSS. The links to take the assessment tools were sent to all participants. The results were then shared by the participants with the researcher through email. All participants were also instructed to take the “VIA Institute of character adult standardised survey” and to share their top three personality strengths through email with the researcher. All test results were recorded by the researcher in a secured file only accessible through password.

The group assigned to do gratitude exercises were instructed to every day, for 14 days write down three things they were grateful for and to journal one page minimum about a particular thing or experience they appreciated in their lives.

The participants in the personality strengths group were given instructions by the researcher on how to use their identified personality strengths for the next 14 days. The specific character strengths intervention exercises they had assigned were based on their three top strengths from the VIA Inventory results. The participants were given several ways of using their strengths based on the VIA recommendations for use of character strengths.

To give an example: humor is a strength identified within the virtue category of transcendence, one of six virtues that subcategories the 24 strengths measured in the VIA Inventory. Participants who got humor in their top three personality strengths were asked to think about a past event in which they used humor for their benefit and the benefit of others and record

them in a daily journal of minimum one page. Other examples of using this signature strength would be to write about humor driven experiences of their everyday life, to each day make a conscious effort to incorporate more of it, be aware of their sense of humor, others' sense of humor, funny situations, and record them.

The experiment groups recorded their daily positive psychology activity through their notes mobile application. Participants did not need to share the content of their daily interventions but had to report that the daily activity had been completed to the researcher through a daily thumbs up email to the researcher. If the daily emails did not come through reminder emails were sent to the participants. Both experiment groups were instructed to spend 20 minutes daily on their positive psychology interventions. The time span of 20 minutes was chosen as other studies have found effects from positive psychology interventions starting at 15 minutes daily in as short as 10 days. Participants were asked to not spend more or less than 20 minutes on the positive psychology activities each day.

On the 14th day the participants were asked to once again take the AHI and the DASS-42 as well as the PSS. The results were once again recorded by the researcher. All participants were asked if any major life events or major life changes that could affect their levels of happiness or stress, low moods and anxiety had occurred during the last two weeks in order to detect any major confounding variables.

After the completion of the study, the participants were debriefed by email and given an opportunity to ask any questions regarding the study with the contact details provided in the beginning. Participants had the opportunity to contact the researcher via email or by phone to obtain support on the exercises at any time if needed. The control group were at the end of the study given advice on how to use their top three personality strengths to benefit their well-being.

## 6. Results

Two-way analyses of variance (ANOVAs) were used to determine whether there were statistically significant differences between the means pre- and post-study in the control, personality and gratitude groups in the following tests: AHI, Depression, Anxiety and Stress Scale and the PSS results. Post hoc tests (paired comparisons) were also used to further examine group differences. The three groups did not have statistically significantly pre-result differences for any of the tests at the start of the study. The pre-mean results were the following. AHI results, Gratitude group: (Mean = 3.25), Personality Intervention group (Mean = 2.99), Control group (Mean = 3.02). DASS-42 Depression Scale, Gratitude group (Mean = 6.87), Personality group (Mean = 8.6), Control group (Mean = 8.07). DASS-42 Stress scale, Gratitude group (Mean = 10.13), Personality group (Mean = 10.93), Control group (Mean = 8.27). Anxiety scale from DASS-42 Gratitude group (Mean = 3.8), Personality group (Mean = 5.13) and Control group (Mean = 4.4). Finally PSS, Gratitude group (Mean = 15), Personality group (Mean = 18), and Control group (Mean = 21). Each group had 12 women and 3 men in them.

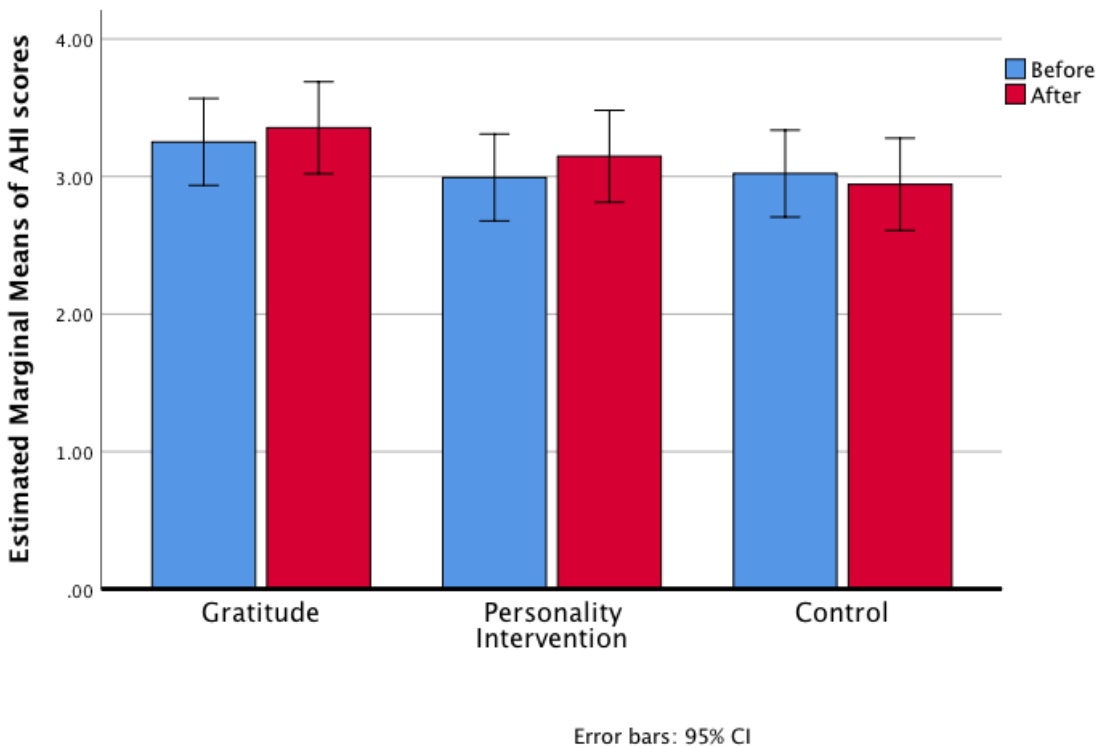


**Table 2. Descriptive Statistics of Group differences**

	Pre-test		Post-test		Total			
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Minimum	Maximum
<b>Gratitude</b>								
PSS	15	8	14	7	15	7	5	29
Depression	6.87	6.45	5.53	6.16	6.2	6.23	0	21
Anxiety	3.8	4.14	2.6	3.2	3.2	3.69	0	12
Stress	10.13	7.84	8	5.95	9.07	6.92	1	25
AHI	3.25	0.48	3.35	0.65	3.3	0.56	2.42	4.75
<b>Personality Intervention</b>								
PSS	18	10	14	8	16	9	2	36
Depression	8.6	6.2	5.33	3.94	6.97	5.37	0	23
Anxiety	5.13	3.83	2.53	3.38	3.83	3.79	0	12
Stress	10.93	8.01	5.47	5.05	8.2	7.15	0	30
AHI	2.99	0.6	3.15	0.6	3.07	0.6	1.83	4.58
<b>Control</b>								
PSS	21	8	21	20	8	8	7	36
Depression	8.07	8.43	8.07	9.73	9.28	8.75	0	36
Anxiety	4.4	6	4.4	4.93	5.32	5.58	0	18
Stress	8.27	7.99	8.27	11.4	8.16	8.09	0	27
AHI	3.02	0.71	3.02	2.94	0.67	0.68	1.83	3.96
<b>Total</b>								
PSS	18	9	18	9	16	8	2	36
Depression	7.84	6.97	7.84	6.97	6.87	6.98	0	36
Anxiety	4.44	4.68	4.44	4.68	3.36	4.15	0	18
Stress	9.78	7.84	9.78	7.84	8.29	6.83	0	30
AHI	3.09	0.6	3.09	0.6	3.15	0.65	1.83	4.75

## 6.1 AHI results

A two way mixed design factorial ANOVA was conducted on the influence of two independent variables (group types and times, two pre- versus post-test times three groups; control, gratitude, personality) levels on the AHI scores. No effects were statistically significant at the  $<0.05$  level. The within- subjects main effect of time (pre- and post-) was found to be a non significant  $F(1,42) = 1.165$ ,  $p = 0.287$ . Along with a non-significant between subjects main effect of group types  $F(1,42) = 1.156$ ,  $p = 0.324$ , the interaction term between pre and post as well as group types was found to be non-significant as well  $F(2,42) = 1.612$ ,  $p = 0.212$ , lending no support to the hypothesis that our interventions would result in increased AHI scores.

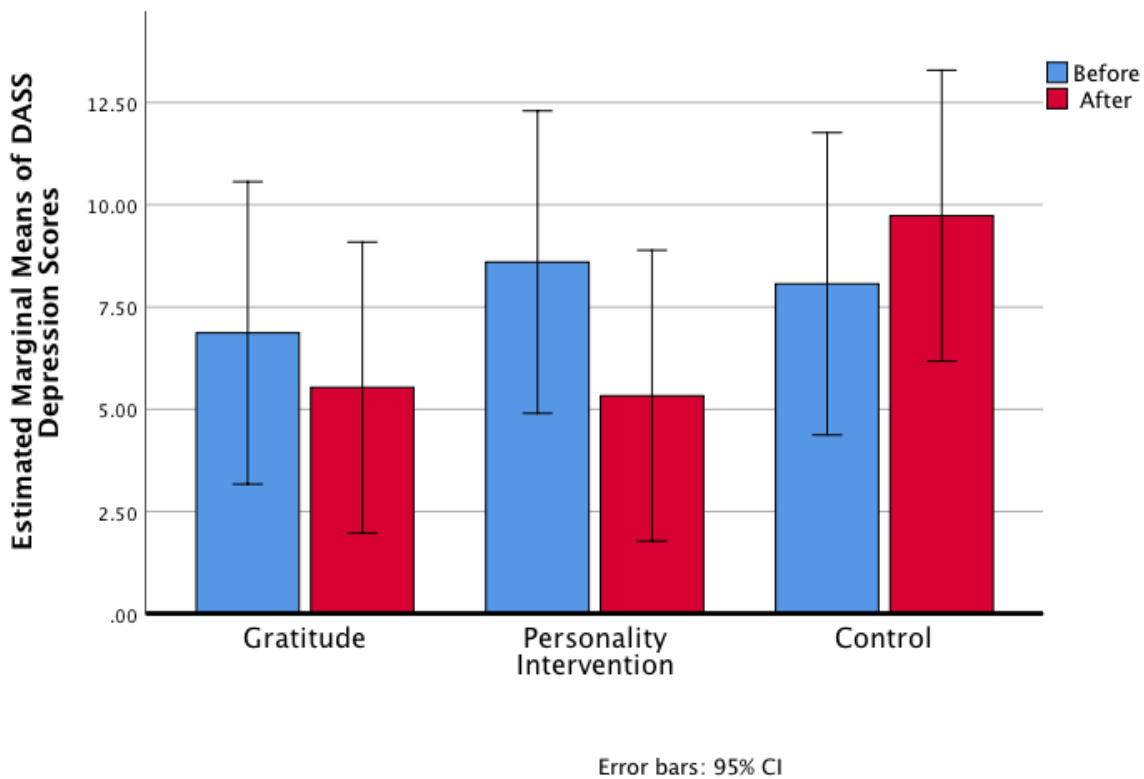
Figure 1. *Authentic Happiness Inventory Scores before and after interventions*

## 6.2 Depression scale results from DASS-42

The results from the depression scores found the within-subjects main effect of time (pre-post-) to be non-significant  $F(1.42) = 2.231$ ,  $p = 0.152$  as well as the between subjects main effect of group types  $F(2.42) = 0.669$ ,  $p = 0.518$ . The interaction term of the two was found to be significant indicating that the reduction in the depression scores to be significantly different among the three group types  $F(2.42) = 4.593$ ,  $p = .016$ . In order to further explore the interaction effect follow up tests were performed in the forms of post hoc multiple comparisons. There was a non-significant change over the course of the study for the gratitude (Mean difference = -1.333,  $p = .257$ ) and control group (Mean difference = 1.667,  $p = .158$ ) as well. In contrast to this the personality intervention group showed a significant decrease in depression scores, (Mean difference = -3.267  $p = .007$ ). However, when the control group's increase was subtracted both

the gratitude (Mean difference = -3000) and the personality strength group (Mean difference = -4.934) reached significant results. This supports the hypothesis that the personality strengths interventions work more efficiently than the gratitude interventions for reducing depressive scores.

Figure 2. *Depression Scores from Depression, Anxiety and Stress Inventory*

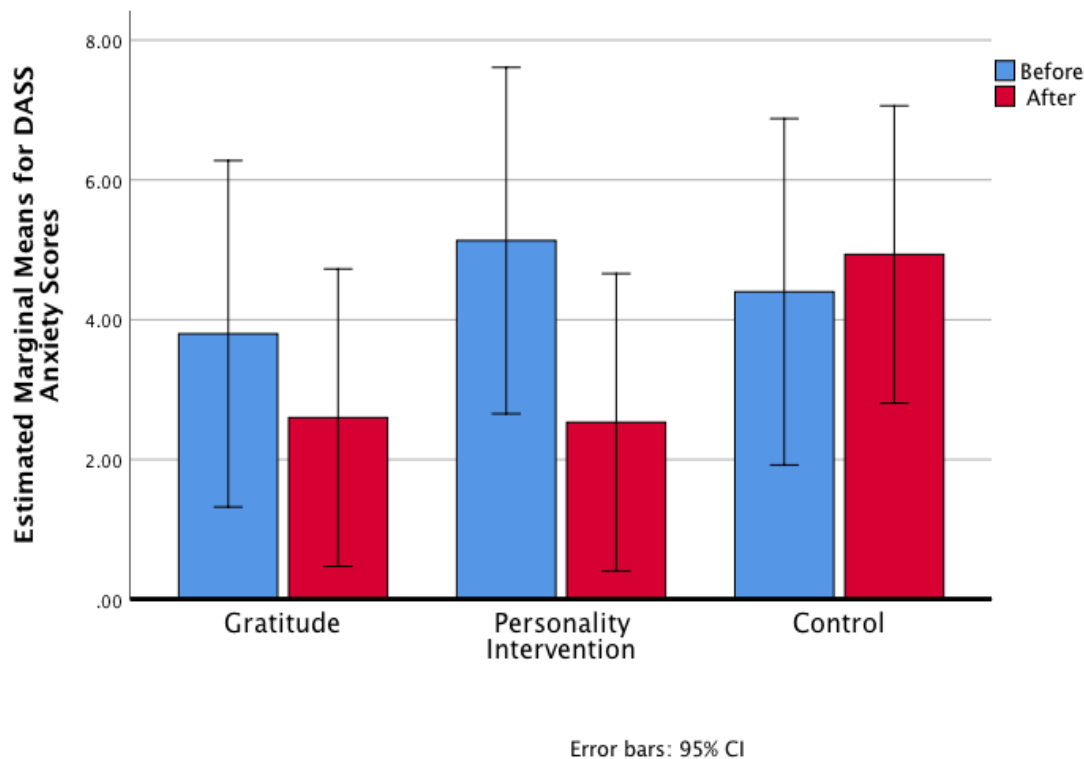


### 6.3 Anxiety scale from DASS-42:

The results from the anxiety scale scores found the within-subjects main effect of pre- and post- test times to be significant  $F(1,42) = 5.996$ ,  $p = 0.019$ . The main effect of group types  $F(2,42) = 0.446$ ,  $p = 0.631$  was found to be non-significant. The interaction term showed significant results showing that the anxiety scores were significantly different among the three group types  $F(2,42) = 4.153$ ,  $p = .023$ . To further examine the interaction effect, follow up tests were performed in the forms of post hoc pairwise multiple comparisons. There was a non-

significant change for the gratitude group (Mean difference = -1.200  $p = .127$ ) and control group (Mean difference = .553  $p = .492$ ) as well. However, the personality intervention group showed a significant decrease in anxiety scores at the end of the study, (Mean difference = -2.600  $p = .002$ ). This supports the hypothesis purporting that personality strengths interventions are more efficient than gratitude interventions.

Figure 3. *Anxiety Scores from Depression, Anxiety and Stress Inventory*

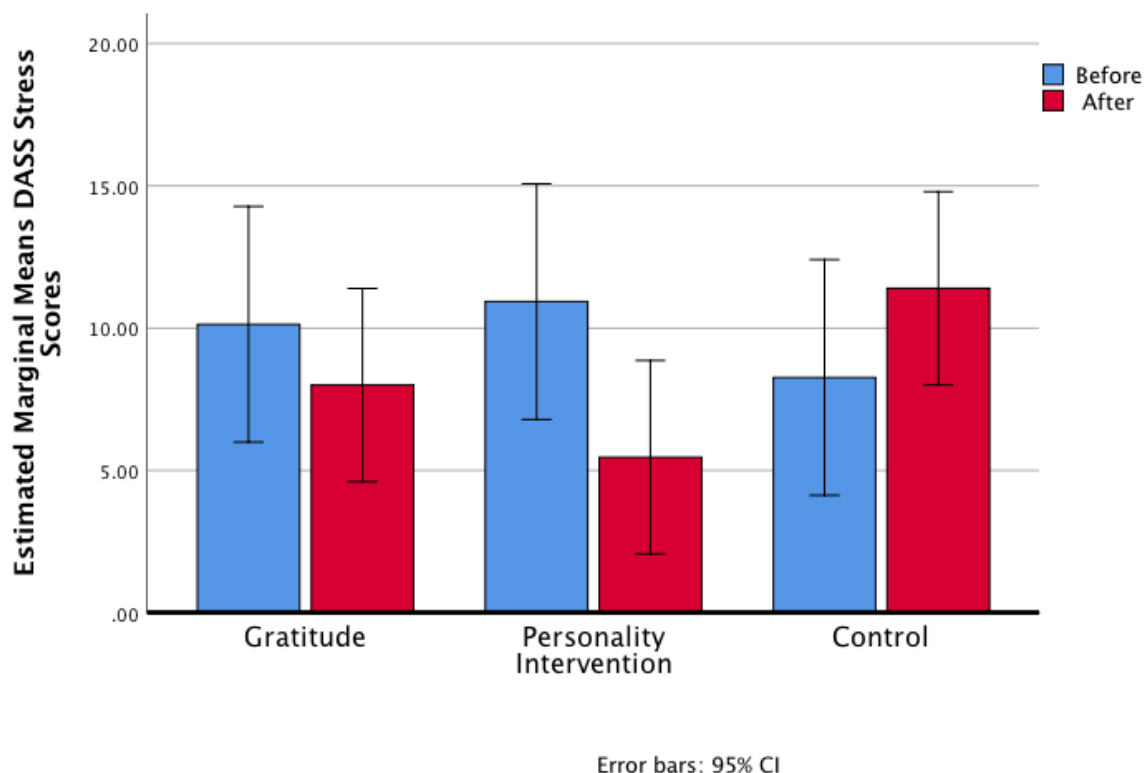


#### 6.4 Stress Scale results from DASS-42

The Stress Scale from the “Depression, Anxiety and Stress Inventory” revealed that the stress scores found that the within-subjects main effect of pre- and post- test to be non-significant  $F(1.42) = 2.646$ ,  $p = .111$  as well as the between subjects main effect of group types  $F(2.42) = .231$ ,  $p = .795$ . The interaction term revealed significant results indicating that reduction in the stress scores were significantly different among the three group types  $F(2.42) = 7.482$ ,  $p = .002$ .

Interaction effect follow up tests were performed to look into the interaction effect, post hoc pairwise multiple comparisons were used. There was a non-significant change over the course of the study for the gratitude group (Mean difference = -2.133,  $p = .186$ ). The control group almost reached significance and the stress had in fact increased (Mean difference = 3.133,  $p = .055$ ). The personality intervention group showed a significant decrease in stress scores (Mean difference = -5.467  $p = .001$ ). When the control group's increases were subtracted the results in the gratitude group were also found to be significant (Mean difference = -5.266) versus the personality strengths group (Mean difference = -8.600). This, again, lends support to our hypothesis that personality strengths interventions are more effective than gratitude interventions.

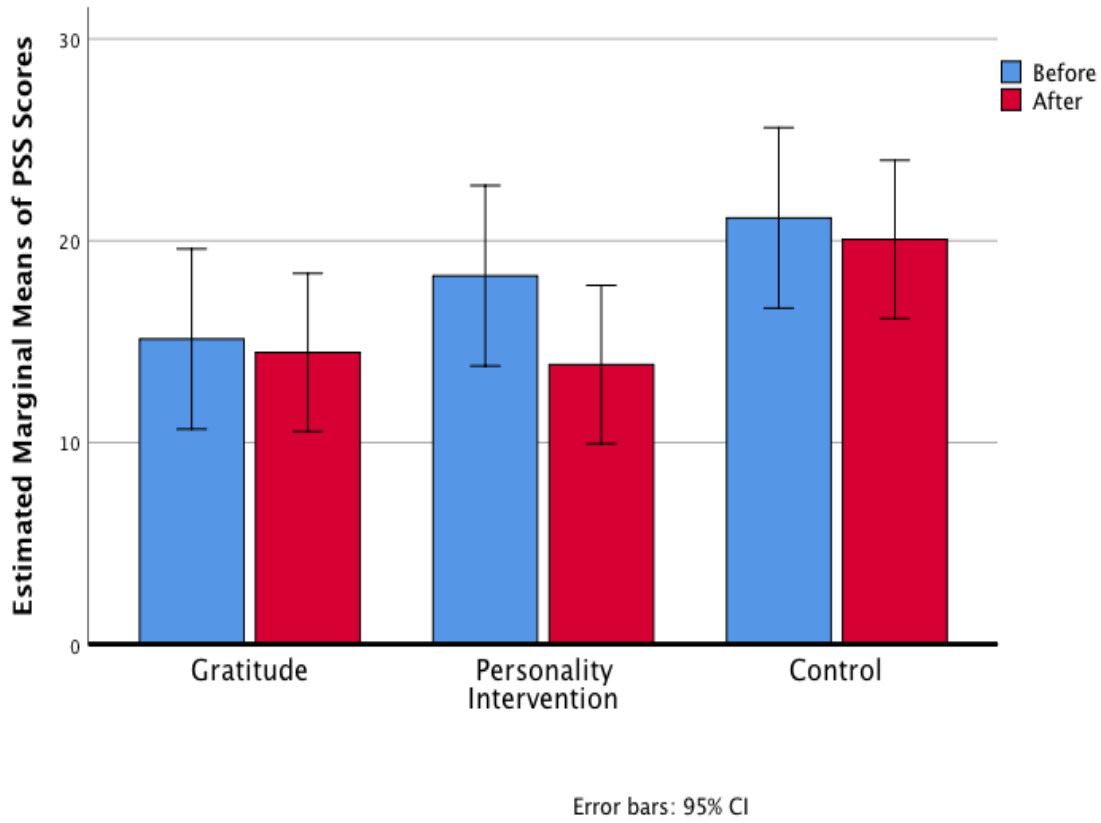
Figure 4. *Stress Scores from Depression, Anxiety and Stress Inventory*



## 6.5 Perceived Stress Scale results

Results from the Perceived Stress Scale (PSS) showed that the perceived stress scores from the within-subjects main effect of pre- and post- tests were significant  $F(1.42)= 5.123$ ,  $p = .029$  where as the between subjects main effect of group types was found to be non significant  $F(2.42)= 2.495$ ,  $p = .095$ . The interaction term revealed non-significant results in the perceived stress scores  $F(2.42)= 1.717$ ,  $p = .192$  as well. Despite the lack of interaction effect follow up tests were performed to look into tendencies. Post hoc pairwise multiple comparisons were used. The gratitude group showed (Mean difference =  $-.667$   $p= .672$ ) and the control group (Mean difference =  $-1.067$   $p= .499$ ) in results. The personality intervention group had lower scores than the other two groups but did not reach statistically significant results (Mean difference =  $-4.400$   $p= .007$ ). When the control group's increase had been subtracted the personality strengths group reached significant results (Mean difference =  $-4.899$ ) which again supports the hypothesis that personality strengths interventions appear to be more efficient.

Figure 5. *Perceived Stress Scores results*



## 7. Discussion

This study did not yield any significant changes pre and post study in the overall Authentic Happiness Inventory (AHI), which several other meta-analyses have found (e.g. White, Uttl & Holder, 2019, Sin & Lyubomirsky, 2009; Bolier et al, 2013). The latest meta-analysis (White, Uttl & Holder, 2019) called for more studies with larger samples and the relatively small sample of 45 people in this study could be a reason there were no statistical differences pre and post interventions or between the three groups. In the small changes seen in the groups, there were however small increases in both the gratitude group and the personality strengths group whereas the control group showed a small decline in scores. All of the meta-analyses discussed included studies that took place from 10 days and up to 3 months.

The PSS only showed a main effect of time for the means pre and post tests but none of the groups reached significant decreases. However, the personality strengths interventions group had scores that decreased the most, gratitude group scores had decreased very little and the control groups' scores stayed around the same. In several previous studies depression and anxiety scores have been reduced, but the literature on how the interventions decrease stress is not as extensive. It is worth considering the unprecedented time the study was conducted in and how that might have influenced participants' overall stress levels. The study took place during the beginning of the lockdown period in Europe for the majority of the participants. The coronavirus pandemic could naturally have had an impact on participants' overall well-being and additional stress factors such as isolation, social distancing, uncertainty and fear of catching the virus and many others might have been more present during the beginning of the lockdown compared to two weeks later.

It is worth noting with regard to the PSS results, that because of the cataclysmic events surrounding the pandemic, the first and second time the tests were taken in starkly different



circumstances. Another possible explanation might be that taking the test and reflecting on one's overall stress levels in general can have an effect on participants' answers.

Interestingly enough, the stress scale scores from the DASS-42 showed significant decreases for the personality strengths intervention group. The PSS measures how unpredictable, uncontrollable, and overloaded the respondents felt as well as current experienced levels of stress. The questions in the PSS ask about feelings and thoughts during the last month (Cohen et al., 1983). The DASS-42 on the other hand assesses the severity of the core symptoms of depression, anxiety and stress. The participants are asked to read the 42 statements and select a response that indicates how much the statement applied to them over the past week (Lovibond, S.H. & Lovibond, P.F., 1995). The effects of the interventions in the experimental groups could have taken place primarily in the last week. When participants were asked to think back about the amount of stress they had experienced the last month, completing the PSS for the second time, the stress perceived during the last month was still strong. That would explain why the stress scale from the DASS-42 showed significant decrease in stress for the personality strengths group in one of the tests but not in PSS. As previously mentioned the study began in the beginning of the Covid-19 crisis which could have influenced how participants answered.

On the three scales from the DASS-42, depression, anxiety and stress, the personality strengths group showed results at the end of the study that had significantly decreased. The largest decrease was seen in stress scale scores in the personality strengths group (Mean difference = -5.467  $p = .001$ ). The depression scale scores showed the second largest significant decrease in the personality strengths intervention group (Mean difference = -3.267  $p = .007$ ). The third largest significant decrease in the personality strengths intervention group was seen in the anxiety scores from the DASS-42 (Mean difference = -2.600  $p = .002$ ). The gratitude group's

results also decreased for all three scales but they were lower and did not reach statistically significant results on any of the three scales.

The results support the hypothesis that stress levels and low moods measured by the anxiety and depression scales would decrease more in the personality strengths interventions group than in the gratitude and control group. This speaks in favour of the argument that choosing positive psychology personality strengths interventions could be more beneficial in general, for both a clinical and a non-clinical population. Rather than giving clients a generic positive psychology intervention, such as a gratitude daily journal activity, the results of this study suggest that giving clients individually designed interventions based on their character strengths are more effective. It is worth noting that the control group had increased stress scale results that almost reached significance on the PSS (Mean difference = 3.133,  $p = .055$ ). Both the depression and anxiety scale scores also increased slightly for the control group but did not reach statistical significance. These results together with the unchanged AHI results might indicate that the positive psychology interventions could have worked as a buffer for participants to not experience increased anxiety and low moods. This is further discussed in the two larger meta-analyses on positive psychology interventions, which included studies using personality strengths that showed positive effects of decreasing depressive symptoms compared to control groups who generally stayed on the same levels or increased slightly (Sin and Lyubomirsky, 2009; Bolier et al. , 2013). In addition, positive psychotherapy (PPT) and well-being therapy (WBT) have shown that clinical depression can be alleviated by nurturing positive emotions, building inner strengths, and fostering engagement and life meaning (Seligman, Rashid, & Parks, 2006). The buffer mechanism is further developed by Trompetter, de Kleine & Bohlmeijer (2017) where they put forward that high levels of positive mental health and self-compassion skills promote resilience against psychopathology. The positive feelings might function as an

adaptive emotion regulation strategy as well as protect against the activation of schema related to psychopathology after negative affective experiences.

Numerous studies along with the latest meta-analysis (White, Uttl & Holder, 2019) also show increases in overall happiness as a result of positive psychology interventions, which was expected for this study as well but did not occur.

As mentioned, the depression scores on DASS-42 scales fell for both experimental groups but the personality strengths group's scores decreased the most and reached significance. This study showed that people who started with the highest scores on the depression scale and were part of the personality strengths based group had scores that decreased the most individually. One participant went from severe depression scores to scores in the normal range, another participant went from mild depression scores to scores within the normal range and a third participant went from moderate to mild depression scores. Another person went from severe anxiety scores to anxiety scores within the normal range and that same person also went from having extremely severe stress scores to having stress scores within the normal range measured through DASS-42. Finally, one person went from having mild stress scores to having scores that were within the normal range also measured by DASS-42. Despite the ongoing pandemic, none of the above mentioned participants reported that something in particular outside the study had happened in their lives that would have affected their stress, anxiety and depression levels during the time of the study.

Previous studies have shown that depressed individuals who receive positive psychology interventions generally experience more improvement in well-being and greater reductions in depressive symptoms relative to non-depressed individuals (Sin & Lyubomirsky, 2009). This was partly consistent with the findings of this study. All the people, who scored outside of the normal range of depression scores in the personality strengths group, did in fact decrease their

scores significantly, from severe and mild scores, normal ranging scores, and from moderate scores to normal ranging scores. On the other hand, more improvement in well-being measured by AHI was not seen in the personality strengths group nor was it seen in the gratitude group. As previously mentioned there were only very small tendencies in increased AHI scores for both groups.

In the gratitude group, there were four people who had scores on the DASS-42 that were quite elevated. One of the participants in the gratitude group had depression and stress scores that went from moderate ranging to mild and another participant in the gratitude intervention group went from having mild depression scores to scores within the normal range. Another of the participants in the gratitude group had depression scores in the normal range at the beginning of the study and severe depression scores at the end of the study. This participant did not report that anything in particular had happened that had affected her mood during the two weeks. Another participant in the gratitude group who had scores that did not follow the curve of the others in the gratitude group reported stress scores within the normal range at the beginning of the study but had stress scores in the moderate levels at the end of it. This participant reported going through a job change, which she experienced as stressful. In the gratitude intervention group the three scales scores tended to decrease slightly for all but the two participants discussed.

Seligman's study (2006) demonstrated that even simple, self-guided exercises could bring long-term benefits to mildly depressed or dysphoric individuals and especially for those who continued to engage in the exercises after the study was over, these effects were measured six months after the initial study and were still significant. There is no follow-up study planned to monitor the continued stress, anxiety and depression levels of the participants but it would be valuable to follow a group like this for a longer period of time to see if there are any long-term effects as previous studies have been able to show. Nevertheless, the results of this study point

towards significant lower levels of stress, anxiety and depression scores in a group that are asked to apply some of their top signature strengths for 20 minutes daily for a period of two weeks.

As mentioned before, the recruitment of the participants was conducted online through social media and mainly through international groups on Facebook and through emailing lists. There was no shortage of people who were interested and 97 people got in touch and wanted to take part in the study. However, 30 of the interested people never even started the study and as previously mentioned, 12 dropped out during the course of the study. Furthermore, it is worth noting that gender may have also played a role in this study. A study from 2013 found that women and girls showed more gratitude and than men and boys (Sun & Kong, 2013) and a study with a young adult sample found that men made more critical evaluations of gratitude and enjoyed fewer benefits of gratitude than women did (Kashdan, Mishra, Breen, & Froh, 2009). Men could possibly associate gratefulness at times with weakness which could be possible a reason gratitude interventions might not be as effective with men. Out of the people interested in starting the study, the majority were women, which later was reflected in the actual sample that completed the study. As women are often the target of media's popular psychology advice the reason more women than men initially showed interest to take part might be that women are already sensibilized and familiar with the topic to a larger extent than a male population as well as possibly more susceptible to reap the benefits of gratitude which the study mentioned have found.

There were only three male participants in each of the groups and twelve female participants in each group. It is difficult to say something conclusive about the male and female comparison scores as there was a relatively small sample in general and an even smaller sample of male participants. However, the results showed that four out of the six male participants had high stress scores both on the PSS and on the stress scale from DASS-42 as well as high

depression scores that ranged from mild to severe scores and anxiety scores in the moderate range at the start of the study. In the gratitude group, one male participant went from having mild depression scores, to scores within the normal range. Another participant had moderate depression scores and they stayed in the same range at the end of the study. In addition the PSS scores of that very participant remained high. The last male participant from the gratitude group started in normal ranges for all tests and remained within the normal range of all scores at the end of the study. In the personality strengths group one of the male participants had normal ranging scores for the PSS and on the three scales from DASS-42 at the beginning of the study and stayed within the normal range at the end of the study. The second male participant had mild depression scale scores and the other two scales along with the PSS scores were within normal range and the results stayed in that range. Finally, the third male participant from the personality strengths group had high PSS scores and they remained high at the end of the study. His moderate depression scale scores decreased to mild ones whereas his stress and anxiety scores stayed within the moderate range. The male participants in the control group also had elevated PSS scores and moderate anxiety and depression scale scores both at the beginning and end of the study.

Rashid (2009) looked at positive interventions in clinical practice, showing that older participants did better in terms of completing activities and had decreased more in low mood scores than younger people did. This study did not show that the older participants had lower stress, depression or anxiety scores than the younger participants.

It is notable that a high number, 25 percent of participants in the gratitude group dropped out and 31 percent in the personality strengths interventions group. All the drop-outs had already completed the four initial tests as well as signed consent forms. With other words they had already invested quite a bit of time to get started. The participants who ended up dropping out all

started doing the daily positive psychology exercises, but gave up after a few days despite daily reminders to report the completion of their daily activity. The relatively high drop-out rate indicates how difficult it can be for people to stay committed and continue going with a daily practice despite knowing that it could benefit their overall well-being.

The total drop-out rate was 26.6 percent which is close to the average of 31 percent dropout rate from the 19 studies analysed from 1990 to 2009 looking at internet-based treatment programmes to reduce depressive moods and increase feelings of well-being found (Melville, Casey, Kavanagh, 2010).

In addition, it is worth mentioning that the 21 percent of participants that dropped out from the study had a slightly higher pre-mean on the PSS, 22.4 compared to the pre-gratitude group that had a mean of 15 and the pre-personality strengths intervention group that had a mean of 18. Finally, the control group had a mean of 21. The dropouts also showed much higher pre scores on the depression (Mean = 14.4), anxiety (Mean = 9.3) scales from the DASS-42 whereas the stress scale (Mean = 13.1) was in the same normal range compared to the total of all groups. The total of all groups showed the following, depression scale (Mean = 7.8), anxiety scale (Mean = 4.4) and stress scale (Mean = 9.8). The dropout group had means for depression that were moderate and stress and anxiety scores that were mild compared to the gratitude, personality and control group. The latter three started off with scores within the normal range apart from the personality group that had moderate PSS scores at the beginning of the study.

Out of the twelve dropouts, only four people had scores from the DASS-42 depression scale that were within a normal range. Two persons had mild depression scores, five persons had moderate scores, one person had severe depression scores and finally one person had extremely elevated depression scores. On the anxiety scale, five persons had scores within a normal range, two people showed mild anxiety scores, two people had moderate anxiety scores, two people had severe anxiety scores and one person had extremely severe anxiety scores. The stress scale

scores from the DASS-42 revealed that only three people from the dropout group scored within the normal range of stress. Five people had mild stress scores, two people had moderate stress scores another two people scored in the severe stress range and finally one person scored in the extremely severe stress range. The dropouts also tended to have slightly lower results on the AHI with a mean of 2.6 whereas the total mean for all three groups were 3.1.

This paints a picture of a dropout group that started with higher levels of low moods, anxiety and stress and could have potentially benefited from taking part in the study. In general, this might be the problem when using positive psychology interventions on a population that is dealing with high levels of low moods and stress. These positive psychology interventions were to a large extent self-administrated. Even if participants had the opportunity to email or call if they had questions, this population might have needed more support to keep the motivation high in order to complete the daily activities. When positive psychology interventions have been used in clinical populations, they are often only a part of the treatment and a compliment to traditional psychotherapy or mood stabilisers. In this study, some of the test results from the participants who dropped out indicate that they might have needed more or other help to improve moods than what these positive psychology interventions could offer. If one is experiencing depressed or anxious moods along with stress, it naturally makes it much harder to have the self-discipline, energy and engagement to keep going with daily exercises. Depressive, anxiety and stress symptoms can include diminished ability to think or concentrate, feelings of tiredness and feelings of overwhelm. Having these symptoms along with the added stressor of the particular time the study took place in certainly could have made it much more complicated for these participants to complete the study.

The participants who started but did not finish were all reminded several times about the daily activities and asked why they did not want to keep going. The majority choose to not



answer, but few of them did. The answers included “I realised that I didn’t have the time, I have so much stress already and this is just adding another thing to my to-do list to complete”.

Two people who took part in the gratitude interventions group responded as follows: “I find writing a gratitude journal ridiculous and don’t see the point of it”, “writing about what I am grateful for everyday is too boring, I thought positive psychology would be more exciting”.

Another dropout participant developed a little more: “I am a bit embarrassed that I let you down but I guess that's also part of a normal sample. I did not just forget about the project completely, I was thinking about it from time to time and thought I should send you a thumbs-up again, but then I forgot again ...However, to be honest, if I had known what the study consisted of, I am not sure if I would have volunteered. I didn't really know what I got myself into (yes, I read the consent file). Maybe only the gratitude journal was too boring for my taste and I expected different types of tasks. This probably says more about me than about the exercises.”

Two people commented and said that they kept forgetting and that it was hard to make these exercises part of their daily activity. Finally, one person from the gratitude group said “gratitude lists and meditations are so wishy washy, it doesn’t fit who I am and I don’t believe in it”.

Finding the time and creating a new habit is a challenge in many people’s lives and perhaps during the time of the coronavirus pandemic, it presented an even bigger challenge.

Working more closely with a mental health worker would naturally be better than only communicating through emails or texting which does not allow for the same accountability system to be put in place. When there is more real life contact, mental health workers are able to follow up with clients and hold them accountable if they do not follow through on daily activities to a larger degree. This is especially important for clients who are suffering from low moods and who need behavioural activation to begin their journey to be able to feel better, but who might benefit greatly from having a clinician who is able to physically meet with them as well.

Comments from the people in the gratitude groups, regarding the daily journal and three things they were grateful for being too boring, or that a person did not believe in it or that it would fit them, are arguments for using personality strengths based interventions instead of generic ones. When the interventions are activities that the participants actually enjoy, they will clearly not be considered boring or not fit the participants as they are individually designed based on a participant's top character strengths.

Participants in any of the three groups who started off with stress, depression and anxiety scores within the normal range as well as relatively high AHI scores tended to stay within the normal ranges and had AHI scores from 3.03 up to 4.75 at the end of the study. 5.0 is the maximum score one can receive on the AHI.

After the completion of the study, all participants in the experimental groups were asked to reflect on how the experience had been for them. According to the testimonials, participants in the gratitude and personality strengths groups who already had normal ranging scores for stress, depression, anxiety as well as normal to high AHI scores sounded quite different compared to the drop-out group.

A female participant from the personality strengths group wrote this:

“This was an amazing experience - to have an accountability buddy really made me motivated to do things that I like to do most anyway way more! Thanks again for this experience! I must say it has caught me in a time where the whole C-crisis had started and it was very difficult to adjust to home office and taking care of kids at the same time, trying not to fail in all areas of life. The adjustment process has taken place and it is definitely more manageable and is reflected in the scores. Nonetheless I feel that self care was the biggest part of it and taking up to an hour of my time a day to learn new things or do good deeds has been a very big motivator and great support, something to look forward to and be accountable to (even if it concerned my own well being). It

was very enjoyable, rewarding and exciting. I will definitely keep it up and having the concrete

tasks in my calendar made me concentrate on what really matters and self care was not on my priority list, even though it should be.”

A female from the gratitude group responded as follows:

“I must say that the daily journal writing of things that I feel grateful for has been a really great thing: it has forced me to stop and see the good things in my every day even if negative things happened or I had negative thoughts. I paused and counted my blessings, if you will. Without this daily habit I might have been entirely focused on the negative things that had happened each day due to Covid-19 as well but as I was "forced" to ponder and reflect on the positive things on each day it really lifted my mood as well as also made me realize each and every day how very lucky I am: how much there is to be grateful for. My partner also commented how the daily journaling has visibly had a positive effect on me: apparently I seemed calmer after writing in my journal. That is to say, I have a physical journal and before this Happiness Experiment I only wrote very occasionally but now obviously have been writing each day. It is a habit I wish to keep as it really makes me focus on the positives of each day.”

A female participant from the personality strengths group wrote:

“During these last two weeks I have gone through an intense hiring process and started a new job, so not only have I had to get used to the new routine of working from home like everybody else but I have also had to get my head around a new role and become familiar with new platforms and new channels of communication. I've discovered that if I push myself to leave my comfort zone then good things can happen and I get more opportunities to develop as a person. Overall, focusing on my personal strengths during this time has been fun and interesting and I found that even with our strengths there is very much always room for improvement!”

A male participant from the personality strengths group responded:

“I felt the daily exercises helped a lot with making me even happier than what I already was :)”

A female participant from the gratitude group replied as follows:

“During the last weeks I have been looking after my mum's health. As I arrived at her place I was doing day 2 and very quickly I found myself fighting for her health instead of her and soon I realised that she wasn't really ready for a change in her life. Now and then it was so hard to cope/deal with my emotions because sometimes I felt like I was failing as a doctor and daughter. It was hard to find focus for myself, because of all the distractions here, but at the end of every day I just lit up to do your activities, to think about all the positive things that actually happened every day, which I didn't see until I finished the tasks. Besides, I was going six days a week for a walk in a very beautiful forest close to my mum's house, it was like being in a holy place and I added that to the gratitude list every day I went there”.

As seen in the above testimonials, several of the participants who were already doing well appear to have enjoyed taking part in the study and explained how it had benefitted them in different ways. However, as they already had normal range scores for stress, anxiety and depression and relatively high overall life satisfaction measured by AHI it is not possible to say how much taking part in the study actually improved their overall well-being. As discussed earlier the AHI did not show any statistical significant changes for any of the three groups. The testimonials however, demonstrate the subjective feeling of having enjoyed the experience and how the participants found meaning in the interventions.

At least one participant ended up spending up to an hour every day on the activities instead of twenty minutes which was asked from them and another participant mentioned she started going for daily walks in a place she described as “holy”. Spending additional time and enjoying the benefits of physical activity that has been shown to reduce depressive symptoms in a multitude of studies (Hansen, 2017) could of course also contribute to further benefits.

Furthermore, two participants mentioned that it got easier with time doing the exercises and creating a new habit does involve a certain amount of commitment, will power, time and motivation that possibly were not so easily accessible for the individuals who were experiencing low moods and stress. There appears to be a “rich getting richer” tendency with the people who were already doing well continuing to do so. However, it cannot be said with certainty, how much the positive psychology interventions actually played a role in that. These participants might have had a multitude of other protective factors in their lives that also influenced how they perceived their moods and rated their overall well-being during the time the study took place.

On the other hand, two participants who had high depression and stress scores on the DASS-42 scales and on the PSS both at the beginning of the study and at the end of it with very small to no improvements shared the following about their experiences.

A male participant from the gratitude group wrote:

“I am an entrepreneur, and have my own transportation company, and due to covid-19 , the government has stopped us from working which I personally was not expecting and the government has extended the lockdown, which has played on my mind in a bad sense. I have employees and find myself losing a bunch of money. As a CEO and manager of my company, I worry and think a lot about the situation. Beside this, we are in our holy fasting month ramadan which also makes me exhausted. Concerning the grateful things, I insist on keeping grateful about the daily things that I have written and as a believer, I thank GOD for keeping them”

Another participant from the personality strengths group commented “...While I understand the field of positive psychology focuses on the healthy and positive traits of the individual, I question how much can come from focusing on what you do well. An example of this was that I found that I performed a majority of those tasks instructed of us even before the experiment, this I believe limits the effectiveness of the study...” The latter participant makes a valid point in that positive psychology interventions work best as a complement to

psychotherapy and if there are clinical problem areas it will certainly be very important to give at least the same if not more attention in trying to reduce the symptoms of those. This participant scored very high in low moods and stress, and for people like him, positive psychology interventions appear not to be enough to alleviate symptoms.

One of the above participants mentioned not only his religion but he briefly alludes to his cultural background which might also have played a role in how the interventions were perceived and the value of pursuing happiness or admitting lower moods. B. Q. Ford et al. (2015) examined the value of pursuing happiness in the U.S, Germany, East Asia and Russia and found that people's motivation to pursue happiness predicted higher well-being in East Asia and Russia whereas in Germany it did not predict well-being and in the U.S it actually predicted low well-being. (Ford et al. 2015) thought it could be due to the fact that the definition of happiness and the motivation to pursue happiness might differ for participants from individualist cultures versus collectivist cultures. In collectivist cultures pursuing happiness were also thought to include centering engagement with other people whereas that was not the case in more individualistic cultures. The sample from this study included only people residing in Europe but their cultures of origins might have been from both individualistic and collectivistic cultures.

Again, the unprecedented time this study took place in must be taken into account. The very large majority of testimonials discuss the impact the coronavirus pandemic has had in their lives during the time of the study. Participants within the normal range for depression, anxiety and stress scores and high AHI scores mentioned meaning and how the positive psychology interventions had helped them focus on what was good in their lives despite a difficult outside situation. The positive psychology interventions could have been a contributing buffer to maintain their already positive mental health. On the other hand, spending twenty minutes on a daily activity to increase mental well-being and to reduce stress and low moods symptoms was

simply not enough for some participants. When participants mention having lost both their job, having income insecurity as well as worrying about their own or their close ones health it is evident that such large stressors and negative life events impact participants' stress and low moods.

The most frequent top three character strengths that were present in the sample of 57 starting participants, including the 12 dropouts, were by far the character trait kindness. The latter was rated in the top three strengths in 22 participants. 15 participants had honesty in their top three character strengths, 12 participants had love of learning in their top character strengths and finally 10 participants had humour in their top three personality strengths.

The least common personality strengths in the sample were teamwork and leadership, only found in one participant each. This sample also revealed that only two people had gratitude as part of their top three character strengths. However, several people in the gratitude intervention group shared their positive experiences on enjoying and benefiting from developing more gratitude in their daily life.

The strengths from the VIA classification that have been shown to correlate the highest with life satisfaction are curiosity, gratitude, hope, humour, and zest (Proyer, Rene, Ruch et al., 2013). Ten participants had, as mentioned, humour as one of their top three personality strengths. Their mean on the AHI was 3.3 compared to the total mean of 3.09 which supports humour being associated with higher life satisfaction. The other three strengths; zest (Mean = 3.15), gratitude (Mean = 3.2), and hope (Mean = 3.2) also showed slightly higher means on the AHI. In Proyer's study, appreciation of beauty and excellence, creativity, kindness, love of learning, and perspective showed low correlations with life satisfaction (Proyer et al., 2013). This study showed that these strengths were indeed associated with having lower scores on the AHI in this small sample. For the strength appreciation of beauty, the mean was 2.8. The one participant in

the study who had creativity as a top personality strength had a score of 2.3. For the 22

participants who had kindness as one of their top three personality strengths the AHI mean was 2.3. Finally, the strengths love of learning and perspective had means of 2.9. This study hence supports the findings regarding certain personality strengths having a higher correlation with life satisfaction. This could be interpreted as support for the idea that primarily the strengths that correlate highly with life satisfaction should be addressed in personality strengths based interventions (Proyer et al., 2013). On the other hand, there might be personality strengths that correlate higher than others with reducing depressive, anxiety and stress symptoms that would be worth incorporating in personality strengths interventions. This study has not been able to detect any such personality strengths patterns in the data.

The present study took place during the course of 14 days. Positive psychology studies starting from seven days and up have shown effect for both treating depression and boosting happiness (Sin & Lyubomirsky, 2009). However, interventions that are longer in duration appear to be more effective than relatively shorter interventions. Longer interventions naturally allow for more practice, greater opportunity to turn activities and into long-lasting habits, and when there they are done in a therapy setting they also allow more exposure to therapeutic guidance (Sin & Lyubomirsky, 2009). Some of the testimonials from the participants who did well to begin with show that they had developed a habit at the end of the two weeks and that they planned on continuing. Several studies have found that individuals who continue to practice positive activities after the required positive interventions have ended experience relatively greater increases in happiness (Lyubomirsky et al., 2009; Seligman et al., 2005; Sheldon & Lyubomirsky, 2006).



## 8. Limitations

There were several limitations in the present study. Firstly, the sample which completed the study included only 45 people. Hence, the external validity of the results is limited. Future studies should include much larger samples if possible.

The sample included a clear majority of women (39) and only 6 men. They were all living in Europe and between the ages 23-40 years old. This sample age range might be too broad to study and future studies should include a smaller age range as well as trying to find a more even distribution of men and women. Furthermore, this sample included women and men living in Europe, from all walks of life with either European or North American nationality and it was not a homogenous sample. There might have been cultural differences in how they perceived doing activities based on one's strength compared to doing gratitude activities and cultural aspects of rating moods and happiness.

It must also be noted that during the coronavirus pandemic, different government policies among European countries could have caused different psychological reactions. This inner-european heterogeneity is not accounted for in the study.

Another limitation was that the researcher had little direct control over how the participants carried out the activities, little power to verify that they had actually done them and how long time they had spent on them every day. As discussed, at least one participant did her daily positive interventions for at least one hour per day. Therefore, comparing these results to someone who only did the interventions for 20 minutes per day is not adequate. The daily reminders and participants' daily messages or emails letting the researcher know the activity had been performed was helpful but a more comprehensive tracking system without compromising the privacy of the participants should be used in future online studies on positive psychology

interventions.

The fact that this study was conducted during the onset of the coronavirus pandemic appears to be a very important factor. There is no telling how much the unprecedented circumstances influenced the scores of the participants, but given the many testimonials that mention the impact of the lockdown it is likely reflected in the scores on some tests. Follow-up studies conducted when the coronavirus no longer dominates news cycles and people's minds are needed in order to investigate whether the results produced in this study are consistent with calmer times.

A further limitation of the study due to the lockdown and enforced social distancing was the lack of real-life contact between the researcher and the participants. This is especially a limit when it comes to individuals who had low scores and would potentially have benefitted from having more in person contact and support. Meeting participants does provide for another level of accountability which is often desired.

All of the psychometric tests were based on participants self-reporting their moods, thoughts and feelings. There is a possibility that participants reported how they wanted to be perceived and how they would have liked their moods to be which could have led to lower scores on the DASS-42 and the PSS as well as higher scores on the AHI than actually represented their inner states accurately.

It is also possible that events in the participants' lives during the two weeks of the study, which are not accounted for here, had an impact on their levels of perceived happiness stress, depressive and anxious moods. Some participants are likely to have numerous life circumstances that have either worked as buffers to protect their positive mental health or had a negative impact on participants well-being, not knowing what they are and how present they have been presents another limitation of this study.

It is also possible that the results are influenced by the participants' background, genetic makeup or inherent personality. In addition, the two weeks study period could potentially not be the optimal length for a study of this kind. A longer study period as well as follow-up studies could yield different results.

In hindsight, more tests measuring the overall psychological well-being as well as stress levels would have been helpful. As the PSS measured experienced stress levels over the last month and the Covid-19 outbreak started during that month and the DASS-42 stress scale measures the stress levels over the last week the different time spans measured by the two tests added some uncertainty to the stress results. Another test focusing on the last one or two weeks could have corroborated what the DASS-42 found. Europe was under lockdown during the study period and most of the participants had started living in lockdown when the study began, which might have influenced the stress scores.

Finally, taking surveys on one's happiness and anxiety, depression and stress levels could lead participants to reflect on their overall well-being and on their results which in turn could have led them to take actions they would otherwise not have taken.

## 9. Conclusion

Positive psychology is a popular topic within psychology and many people are looking for the magic happy pill that will be the cure all and also boast happiness. This study set out to find out the effectiveness of two positive psychology interventions that have been proven to have effect on reducing low moods and stress as well as increasing subjectively rated well-being. These interventions were gratitude and personality strengths based interventions. The results showed that personality strengths interventions were more effective in reducing depression, anxiety and stress levels than the gratitude interventions when measured through DASS-42 for this sample. Stress levels that reflected the perceived stress participants had experienced the last month on the other hand, revealed no effect of any interventions. Furthermore, this study demonstrated that control group levels of stress measured through PSS increased to almost reach significance whereas the experimental groups stress levels measured through the same test decreased and the personality strengths group decreased the most. In improving overall well-being measured by the AHI, none of the interventions were able to show increases in subjective happiness. Nevertheless, the personality strengths; curiosity, gratitude, hope, humor, and zest that have been found to correlate the highest with life satisfaction did also show higher subjective well-being results in this sample compared to the participants who had appreciation of beauty and excellence, creativity, kindness, love of learning, and perspective in their top three personality strengths which have previously been shown to have the lowest correlations with life satisfaction.

The significant effects on decreasing depression, stress and anxiety for people who completed personality strengths based interventions based on their top three character strengths for two weeks is an argument for choosing personality strengths based interventions. Core strength interventions should be individually designed in order to find the most effective

interventions for individuals, rather than choosing a generic positive psychology intervention. One cannot be sure that a generic intervention will fit the client's personality and core strengths which could lead to clients losing motivation to continue with the practice. Although gratitude has been shown to be an effective positive psychology intervention in a multitude of studies this study did not see statistically significant reductions in low moods and stress. However, the gratitude group did have tendencies showing decreases in the low moods and stress compared to the control group but they did not reach significance. The relatively large drop-out rate in this study as well as the initial big interest to take part in the study demonstrate the popularity and draw positive psychology has. However, when participants understand that it requires a certain amount of work, time, motivation and involvement and that there is no magic behind the "positive" in positive psychology they are no longer as interested in participating or can find the motivation to do so. Positive psychology interventions should be used as a complement to psychotherapy or medication in individuals who have clinical levels of depression and anxiety and this study's participants showed that it was the people who felt the worst that had the hardest time to follow through with the study. Finally, more longitudinal studies with larger samples as well as studies using both generic interventions such as a gratitude journal combined with individually designed interventions based on a person's core character strengths are called for to better understand what works the most efficiently as well as measuring the long-term effects of positive psychology interventions on low moods, stress and subjective happiness. A study using this or a similar sample would be very interesting to measure using the same tests during a time when the Covid-19 pandemic has passed or at least is not so present in everyone's lives.

My view of human nature is that we need to be put in the right soil to grow, develop one's strengths, resilience. Discovering and nourishing the resources that already exist in people for them to be able to heal and flourish through positive psychology has been the main

motivation for this research. To conclude, I hope that the same amount of research resources that

has gone into treating mental illnesses in the past will in the future go into preventing mental illness as well as further exploring what conditions and psychological strategies, tools and circumstances make us flourish in order to help psychologists build these qualities and strengths in clients.

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## 11. Appendix

Further testimonials from participants.

A female from the gratitude group wrote this:

“First I thought it would be hard to find three good things against the Corona crisis background. Interestingly enough, things to be grateful for, came to me quite easily. Especially the last few days. Those things were quite simple: my Amaryllis which has started to blossom, the wind caressing my skin, the sunny weather, my good mood, a free coffee, a nice conversation ...”

A female participant from the gratitude group wrote the following:

“I kind of enjoyed this experience, especially the 14 days daily longer analysis on what I am grateful for. It really helped me to focus on what is really good about my life, and what has a value and is worth doing for me. It hasn't been difficult or unexpected at all (if we are talking about the results). I would probably continue the exercise as it also made me focus more about the positive things and put aside worries and fears!!! Thank you again for making me part of your project!!!”

A female participant from the gratitude group responded:

“Even before the Corona Crisis, I had started to understand that you can't control too much in life. Yet, worrying would be the wrong answer. I try to reassure myself that in any given situation I will know what is/will be best for me. I find this perspective now confirmed. I followed the gratefulness task quite closely and was thankful for it. The outlook of a daily piece of structure was one main reason why I decided to participate in this study. And I really think it benefitted me.”