The Value and Applicability of Positive Psychology Interventions for Health Management

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Management Summary

Today, about 350 million people worldwide suffer from depression. This disease is expected to become the second largest disease by 2020. As a consequence, employees suffering from stress and depression constitute a big cost factor for organizations. The rise of Positive Psychology gave birth to many studies aiming at identifying the effects of Positive Psychology interventions on health. However, the applicability of interventions in a working context has not been investigated. A five-week long experimental study examined the effects of regularly practicing three assigned positive activities (expressing optimism and gratitude and practicing mindfulness) on well-being. In addition, effects on health and performance were evaluated. Moreover, the study enabled the investigation of the applicability of the interventions in a working context. The results illustrate mixed results regarding positive effects on well-being but indicate a positive influence on participants' health and health behavior. The study shows beneficial effects on performance factors whereby the effects on individual performance is more unambiguous than the effect on team performance. Regarding the applicability of the interventions in a working context, the results show that, with adjustments to its frequencies, all interventions are applicable. As a conclusion, organizations and team leader should incorporate the mix of interventions at work as a means to improve health and performance of its employees.

Introduction

The rise of Positive Psychology since the initial work of Seligman and Csikszentmihalyi (2000) gave birth to many interesting studies which were aimed at identifying the effects of tailored Positive Psychology interventions. Several studies were specifically interested in the effects on health. Health as a topic for companies gained momentum as an increasing number of individuals suffer from stress and depression. The causes for stress and depression are many and can also be caused by work. In any case, the negative effects of depressed and stressed employees affect the performance of teams and organizations. In addition, it resembles a big cost factor for companies. This is why team leaders and organizations started to look for means to increase well-being and health of employees.

Fisher (2010) mentioned that the means to improve well-being could also be applied in a work setting. Thus, this study extrapolates his thoughts and tries to prove the applicability of certain interventions in a corporate setting. It is the first study which aims at building a bridge between Positive Psychology research and health management applied in companies or teams. In particular, three interventions

developed by Positive Psychology researchers are under scrutiny. These are the 'Gratitude Letter', the 'Three Good Things' exercise, and a 'Meditation' exercise. The thesis is important because there is no qualitative assessment of the applicability of these interventions within a working context. Assessing how the interventions are carried out can help researchers to develop interventions that are useful and feasible for employees. Furthermore, it is the first study that combines these three interventions to evaluate their common effects. This results in the first two research questions:

1. Does the mix of the chosen interventions ('Three Good Things', 'Meditation', and 'Gratitude Letter') lead to an improvement in 'subjective well-being' (SWB)?

and

2. Is the mix of the chosen interventions applicable in a working context?

In particular, the study tries to figure out whether the interventions affect health-related issues such as sleep, stress, and energy level. This leads to the third research question:

3. Does the mix of the chosen interventions positively affect the health of the participants?

The study also tries to evaluate whether the interventions affect the working conditions of employees and the entire team, which leads to the fourth research question:

4. Does the mix of the chosen interventions positively affect individual and team performance?

In addition, the study aims at identifying means and methods to reduce stress and improve well-being. The analysis will therefore generate advice for leaders and organizations. Finally, the majority of the previous studies have been carried out with students in the United States. Although the participants in this study are also students, they do work full-time and receive a salary for their work. Furthermore, most of them come from countries across Europe, resulting in a more diverse sample. Another advantage of this study is that it includes a multi-method design. In contrast, many studies focus on cross-sectional or longitudinal studies and researcher begin to ask for studies with an experimental design or a multi-method design to increase the quality of research.

Hereafter, this study gives an overview over research done with respect to stress and highlights its consequences. This is followed by research on health management. The introduction ends with an explanation of Positive Psychology and its recent findings.

Stress, Anxiety, Depression

In 1999, Edwin Friedman stated that we live in a "*chronically anxious and reactive society*" (Friedman, 1999) and William R. Stixrud highlights that in recent years, the situation has gotten worse. In his opinion, the "*stress-soaked atmosphere*" negatively affects learning, judgment, and also physical and

mental health of individuals and organizations (Stixrud, 2012). According to the German Federal Ministry of Health, about 350 million people worldwide suffer from depression. They expect depression to become the second largest disease by 2020 (Bundesministerium für Gesundheit, 2014). One of the precursors of depression is stress. There is a strong connection between stress and mental health problems, while stress is seen as an environmental influence (Stixrud, 2012). Stress can cause cardiovascular and psychological diseases. Moreover, it can result in increased absenteeism and impact individuals' productivity (Sauter et al., 1999). In 2011 and 2012, the prevalence of stress as a work-related illness amounted to forty percent of the overall cases (Buckley, 2013). Although there is an overall decrease in numbers of working days lost due to illness, there is an increase in numbers caused by diseases related to depression (Wittchen et al., 2010).

The 'Allostatic (stability through change) Load Model' (AL) of the stress process, which has emerged as the dominant theoretical perspective in stress physiology, illustrates the outcomes of stress on an individual (Figure 1) (Ganster & Rosen, 2013).

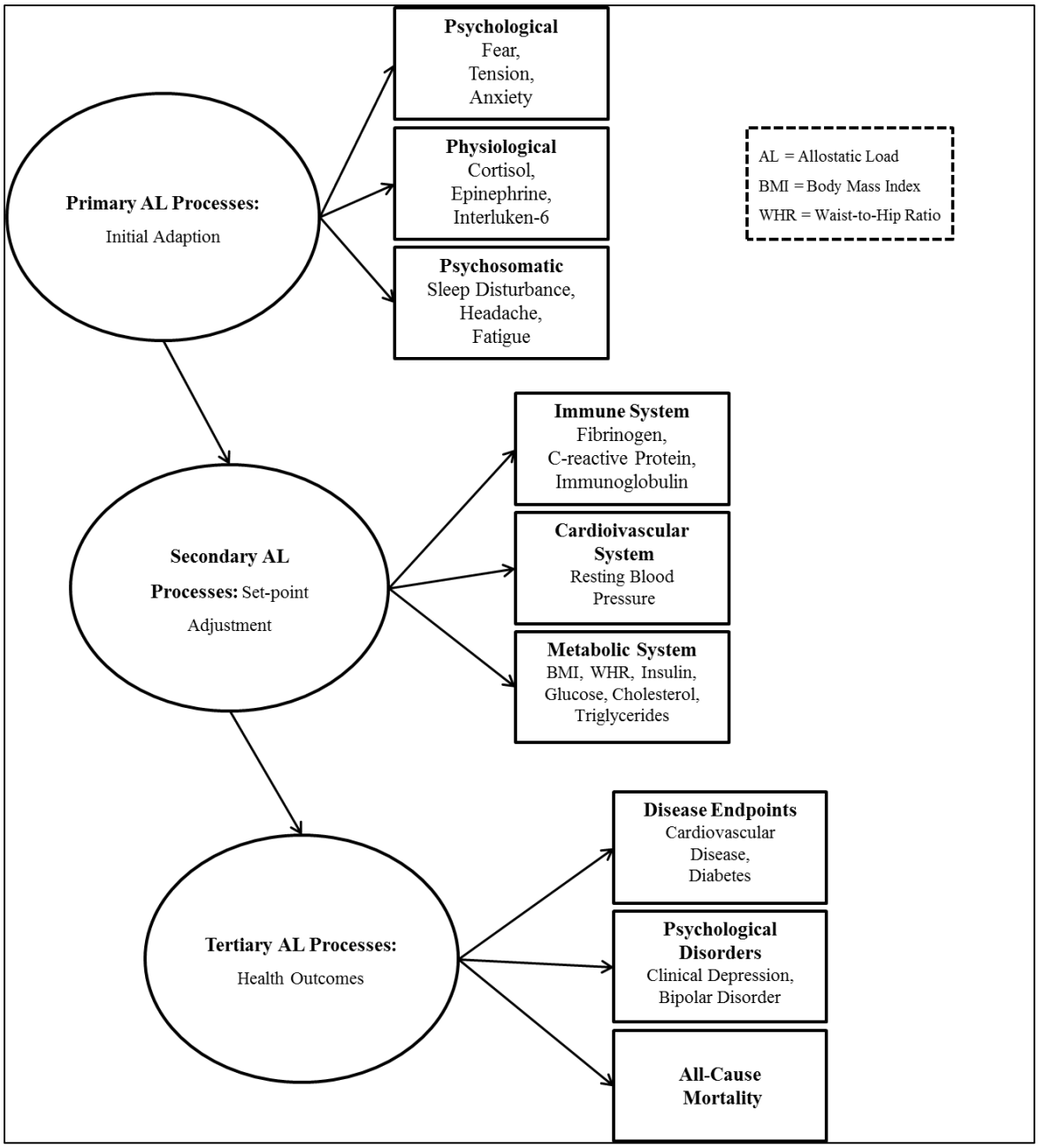


Figure 1: Allostatic Load Model of the Stress Process (Ganster & Rosen, 2013)

Stress is a feature of the external environment that acts on an individual and or the individuals' responses (psychological, physiological, and behavioral) to environmental demands, threats, and challenges (Ganster & Rosen, 2013). The AL model illustrates that there is a temporal process involved. The first sequence ('primary AL processes') affects psychological, physiological, and psychosomatic factors. The second sequence ('secondary AL processes') affects the immune system, cardiovascular system, and metabolic system. The last sequence ('tertiary AL processes') presents disease endpoints. It will cause psychological disorders, and influences all-cause mortality.

Stress researchers who are interested in changes in allostatic responses as outcomes of stress interventions focus on primary AL mediators. Stress causes affective outcomes like anxiety or emotional exhaustion and acute stress-related health complaints, e.g. headache or fatigue. Research shows that

work stressors show modest to strong correlations with well-being. Work stressors, such as workload, correlate with emotional exhaustion which is a dimension of job burnout. This poses a constant challenge for companies' health management.

Classical Health Management

Ahmad (2013) states that "*work has become an indispensable part of the everyday life of a person, whether the person is in service or the business field*", and that we spend about one-third of our lives at the workplace. Conditions of living and working have an influence on factors such as well-being, quality of life, and length of life, which, in turn, influence the innovative strength and productivity of an economy (Badura, 2002).

Nowadays, the topic of health is growing in importance. In the preamble to the Constitution of the World Health Organization it is stated that "*Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity*" (World Health Organization, 1948). This is remarkable as the statement is from 1948 and already highlights the positive effect of health on well-being. Astonishingly, almost seventy years later, Seligman writes that mental health is not a state of being disorder-free but rather being in a state of flourishing. He contrasts it to Sigmund Freud's definition, which states that mental health is merely the absence of mental illness (Seligman, 2011). The fact that this has to be clarified seventy years after the words were written in the WHO constitution is an indicator that health did not get the attention it deserves.

Pfeffer (2010) mentions that health suffers when human needs are not being met. Due to advancing globalization, there is an increasing pressure on the adaptability of a company. This pressure also affects the company's health policy. Especially the consequences of stress - causing chronic diseases, and new insights that health and well-being influence motivation and performance of individuals, demand a new approach (Badura, 2002). In this modern approach, companies are seen as social systems whose economic well-being depends on the well-being of its employees.

Consequently, an increasing number of organizations are developing innovative concepts and implementing a modern health management approach (Badura, 2002). Furthermore, over the last two decades companies have started to recognize the importance of healthy employees (Wienemann & Wattendorf, 2004). The aim of health management is to improve the state of health of employees to increase job satisfaction. The used measures are considered to increase the health rate ('Gesundheitsquote'), meaning to reduce the number of absences and sick leaves, which are major cost drivers for companies (Wittchen et al., 2010).

Components of a health management system include health protection, occupational safety, health promotion, and prevention of drug dependence. Moreover, a proper health management encompasses health-oriented leadership which aims at improving employees' well-being and creating a stimulating

work climate (Wienemann & Wattendorf, 2004). Accordingly, companies' health management is a strategic factor and therefore a management task.

There are several examples of what companies do to increase the health status of its employees. One example is introducing a wellness program. Liu and colleagues (2013) define a wellness program as "*a program offered by an employer that is designed to promote health or prevent disease*". One example is an online magazine that offers practical advice for healthy living published by a hospital (Hinkin & Tracery, 2010). Other companies bring smoking cessation or weight management programs into being (Liu et al., 2013). Further examples of wellness programs include health risk assessments (HRAs), fitness control, healthy diets, biometric screenings, immunization, and stress management (Baicker et al., 2010; Goetzel & Ozminkowski, 2008). However, a review of eleven studies found out that only few studies demonstrated clear evidence on medical cost savings (Nyman et al., 2010). Furthermore, a study by Van de Voorde and colleagues (2012) revealed mixed outcomes of effects of human resources (HR) practices on health related well-being. Furthermore, the data demonstrated a negative relationship between HRM and health-related well-being. This finding is puzzling, as one of the goals of HR management is to improve well-being of employees and not to have a detrimental effect.

Positive Psychology

Since Seligman and Csikszentmihalyi (2000) wrote about the holistic approach of Positive Psychology for the first time, an increasing amount of research in the field has followed. The promising results of the effects on people's well-being have attracted a lot of researchers. Due to the fact that Positive Psychology is still in its "infancy", there is still a lot to discover. Especially the field of Positive Psychology, interventions showed biased results, though, in general, much of the conducted research demonstrates an at least moderate positive effect.

Research on Positive Psychology often investigates the well-being of people and how to improve their lives. Well-being and happiness are often used interchangeably. In this study, the focus lies on 'subjective well-being' (SWB) which is also referred to as 'happiness'. SWB consists of two correlated components, namely judgment of 'life satisfaction' and 'affect' balance (Fisher, 2010; Toepfer et al., 2011). Life satisfaction can be seen as the cognitive and personal assessment of an individuals' quality of life. Life satisfaction can be assessed globally as well as in more specific areas (e.g. relationships, health, work, and leisure). Affect consists of positive affect (PA) and negative affect (NA) whereas affect balance means to have more positive feelings in relation to negative feelings.

According to Lyubomirsky and colleagues (2005), there are three factors that contribute to peoples' level of well-being. The first factor is called the 'happiness set point' and refers to the genetically determined stable level of happiness. The second factor is 'life circumstances' and the last factor consists of "*positive cognitive, behavioral, and goal based activities*" (Lyubomirsky et al., 2011). Especially the third factor is of interest as a target of interventions. Interventions from Positive Psychology are

exercises that address one or several components of well-being. There is an ongoing debate about whether it is possible to become lastingly happier (Lyubomirsky, 2011), e.g. due to the detrimental effects of 'hedonic adaption'. Hedonic adaption constitutes the "*process by which people become accustomed to a positive or negative stimulus, such that the emotional effects of that stimulus are attenuated over time*" (Lyubomirsky, 2011). Nevertheless, many studies demonstrate that well-being can be increased by interventions in the short term and also over longer periods (Lyubomirsky et al., 2005). These findings support the notion that, despite an already fixed set point and effects such as hedonic adaption, Positive Psychology interventions enable an improvement of individuals' level of well-being for significant periods of time (Lyubomirsky et al., 2011).

The present study

This study will investigate the effects of a mix of three interventions. The interventions will cover three constructs, namely gratitude, mindfulness, and optimism. The three constructs as well as their interventions which were used in this study have been proven to be beneficial to individuals' SWB. Each of the interventions will be explained and discussed in the following paragraphs.

Gratitude

According to Adler and Fagley (2005), gratitude is one aspect of the overall construct of appreciation. Wood and colleagues (2010) state that gratitude, at the dispositional level, is "*part of a wider life orientation towards noticing and appreciating the positive in the world*". The construct of gratitude is considered both as a trait and a state, while both are linked to SWB (Toepfer et al., 2011; Rash et al., 2011; Emmons & McCullough, 2003). As a state, gratitude is understood as a "*positive, social emotion experienced when an undeserved act of kindness or generosity is freely given by another person*" (Rash et al., 2011). Gratitude, as a trait, is seen as a virtue or characteristic of people. However, this trait is not stable across individuals but rather varies in intensity, frequency, and span. Moreover, gratitude is related to PA, optimism, lack of depression, and lack of anxiety (Emmons & McCullough, 2003). This study focuses on the emotional state of gratitude as a means to elicit change in SWB.

Longitudinal and experimental studies show that the effect of gratitude on well-being might be causal (Wood et al., 2010), meaning it can be altered. The means to provoke that change, in this study, will be an intervention named 'Gratitude Letter'. Writing about moments of feeling grateful, in an organized format, helps to structure and shape these experiences, which in turn influence an individuals' well-being (Rash et al., 2011). In addition, writing in a positive and insightful way is associated with positive effects on health, e.g. reduction of depression. Participating in this intervention, individuals showed improvements in satisfaction with life and overall well-being over time. The 'Gratitude Letter' exercise might be a useful intervention for reducing depressive symptoms. However, practicing gratitude three times per week is less effective than exercising it once per week. A possible cause can be hedonic adaption that might be accelerated by performing it too often (Armenta et al., 2014).

Recent literature points out various benefits of high levels of gratitude. Benefits include increases in satisfaction with life (Emmons & McCullough, 2003; Rash et al., 2011; Fagley, 2012) and optimism (Emmons & McCullough, 2003; Rash et al., 2011). In addition, improvements in health-related aspects, such as alleviation of physical experiences, increased motivation to engage in spending time exercising, and improvements in sleep (Emmons & McCullough, 2003; Wood et al., 2010) as well as reduced stress and depression, were found (Wood et al., 2010; Rash et al., 2011; Lambert et al., 2012). Furthermore, gratitude was shown to have a positive influence on PA and NA (Emmons & McCullough, 2003; Rash et al., 2011). Moreover, several studies highlight the positive effects of gratitude on social relationships (Wood et al., 2010; Lambert & Fincham, 2011).

Mindfulness

Mindfulness has its roots in Buddhism, a spiritual tradition which is over 2500 years old (Walach et al., 2006; Keng et al., 2011) and mindfulness is associated with a number of indicators of well-being (Brown & Ryan, 2003). Mindfulness is a way of conscious living that is increasingly practiced in Western cultures (Isenberg, 2009). Walach and colleagues (2006) describe mindfulness as a virtue that needs to be cultivated through practice (e.g. by meditation). There are several definitions of the concept of mindfulness, indicating the existence of an ongoing debate about which aspects contribute to the overall term. One definition states that mindfulness is "*paying attention in a particular way: on purpose, in the present moment, and non-judgmentally*" (Kabat-Zinn, 1994). It is also regarded as "*intentional self-regulation of attention from moment to moment*" (Kabat-Zinn, 1982). These definitions are in line with the key characteristics of mindfulness identified by Brown and colleagues (2007), which are elaborated on in the following. Firstly, one characteristic encompasses a receptive awareness and registration of inner experiences. Secondly, mindful information processing is understood as pre-conceptual, meaning that individuals purely notice the sensation without evaluating, analyzing or reflecting upon it. This is what Kabat-Zinn and other researchers call non-judgmental (e.g. Walach et al., 2006; Bishop et al., 2004). Thirdly, a present-oriented consciousness is a further characteristic, and finally, mindfulness is also understood as an inherent human capacity that varies in strengths across situations and individuals. Furthermore, mindfulness is related to 'affect' and 'satisfaction with life' (Walach et al., 2006). In addition, Bishop et al. (2004) see it as a "*state of attentiveness towards experiences that is characterized by curiosity, openness and acceptance*". The different characterizations of mindfulness underline the complexity of the construct.

Meditation is associated with mindfulness, though it is only one part of mindfulness. Meditation can be considered as one of many techniques that are used to learn and develop mindfulness (Isenberg, 2009). However, a variety of research has supported the positive effect of meditation practices. In a study authored by Carmody and Baer (2008), mindfulness was increased significantly with moderate to large effect sizes when meditation was practiced and in another study by Zeidan and colleagues (2010), it was found that brief meditation trainings increase mindfulness. With increases in mindfulness come various

benefits. Among these benefits are improvements in psychological health in clinical as well as non-clinical samples (Hülsheger et al., 2013; Keng et al., 2011), in psychological well-being (Brown & Ryan, 2003), in SWB (Keng et al., 2011), and in fatigue, anxiety and working memory (Zeidan et al., 2010; Regehr et al., 2013). Awareness and non-judgmental acceptance, two elements of mindfulness, serve as an antidote against anxiety, fear, and anger (Keng et al., 2011). In another study, a mindfulness intervention group experienced less emotional exhaustion (burnout) and increased job satisfaction (Hülsheger et al., 2013). In addition, Hülshegers' study draws a link between mindfulness and PA and NA, as mindfulness evoke more positive and less negative affective reactions. A meta-analysis by Josefsson and colleagues (2014) highlighted beneficial effects on stress and blood pressure. Furthermore, they state that mindfulness interventions should be recommended to people with "*mild and moderate depression who are willing, motivated, and physically healthy enough to engage in such a program*".

Optimism

Optimism can be defined as a focus on expectancies of the future (Carver et al., 2010). However, Seligman (1998) stated that optimism is not solely oriented towards the future but also towards the evaluation of the past or recent events. The future orientation of optimism is linked to expectancy-value theories which assume that behavior reflects the pursuit of goals. Furthermore, it is linked to confidence of expectations. This describes the belief that the goal can be achieved (Carver et al., 2010). Other researchers define optimism in terms of explanatory style (Peterson et al, 1982; Seligman, 1998). Explanatory style consists of three dimensions, as individuals attribute (negative) events to being either: (1) internal or external, (2) global or local, and (3) stable or temporal (Meevissen et al., 2011). Based on explanatory style, an optimist is someone who sees negative events as external, temporal and local.

Optimism is often equated with hope and although both constructs are related, and both are considered indicators of psychological and physical health, they represent distinct constructs (Alarcon et al., 2013). The difference between optimism and hope is that "*hope is more explicitly concerned with the self-initiated actions one can take to create a successful future for oneself*" whereas optimistic people believe that their future will be successful either by luck, actions of others, or their own actions (Alarcon et al., 2013).

Although optimism, as a trait, is rather stable (test-retest correlations ranging from .58 to .79 over periods from a few weeks to three years), research has shown variations in optimism (Carver et al., 2010). This indicates that change in optimism is possible. The intervention used in this study to train optimism is called 'Three Good Things' and is sometimes referred to as 'What Went Well' or 'Counting Blessings' exercise. The positive effect of this intervention has been proven in several studies (see Lyubomirsky et al., 2011; Mongrain & Anselmo-Matthews, 2012; Seligman et al., 2005; Seligman et al., 2006). Sheldon and Lyubomirsky (2006) discovered that a steady engagement in an optimistic thinking exercise resulted in greater maintained change in SWB. However, they realized that optimism only increases SWB when

the person is truly aware of the exercise's purpose and has the will to increase their own well-being. In 2005, Seligman and colleagues tested the effects of the 'Three Good Things' exercise and demonstrated that participants were less depressed and also happier over the course of six months after the intervention took place (Seligman et al., 2005; Seligman et al., 2006). Another study, designed to test the effects found by Seligman and colleagues in 2005, confirms that the 'Three Good Things' exercise significantly increased happiness one week and up to six months later (Mongrain & Anselmo-Matthews, 2012).

The proposed benefits of being optimistic are various. In general, optimism is positively related with SWB, e.g. by increasing satisfaction with life (Lyubomirsky, 2008; Diener et al., 2010; Ho et al., 2010; Wu et al., 2013; Monzani et al., 2014). Moreover, several studies found positive effects on physical health (Carver et al., 2005; Lyubomirsky et al., 2005; Lyubomirsky, 2008; Carver et al., 2010; Alarcon et al., 2013; Wu et al.; 2013; Seligman, 2011; Monzani et al., 2014) with beneficial outcomes regarding cardio vascular diseases (CVD), faster healing wounds, and better immune system functioning. Moreover, they found an improved behavioral outcome, meaning that participants engaged in better lifestyles and more exercising. Furthermore, a vast amount of research highlights the beneficial effects on mental health (see Lyubomirsky et al., 2005; Alarcon et al., 2013). Individuals high in optimism are more resilient (Lyubomirsky, 2008) and demonstrate better adaptive coping with difficult and negative events (Carver et al., 2005; Carver, 2010; Segerstrom, 2010; Wu et al., 2013). Optimism is also inversely related to high levels of distress, anxiety, and depression (Carver et al., 2005; Carver et al., 2010; Segerstrom, 2010; Alarcon et al., 2013; Monzani et al., 2014).

Other benefits include better relationships and social support as optimists tend to work harder on their relationships (Carver et al., 2010; Seligman, 2011; Wu et al., 2013). Research also demonstrated improvements in creativity, job satisfaction, and absenteeism (Rego et al., 2012). However, optimism also has its drawbacks. With regard to immune system functioning, under high stress optimism was linked to lower immune responses (Carver et al., 2010). In addition, the same study found that optimism can be detrimental in a gambling setting and can lead to greater goal conflict.

Method

The next paragraphs give an overview of the experimental design and the steps involved. Moreover, the scales which measure the constructs SWB, gratitude, mindfulness, and optimism will be discussed to achieve a better understanding of what can be evaluated. The five used scales constitute the quantitative part of the questionnaire. The section closes with an overview over the qualitative part of the questionnaire which is a component in the third and fourth questionnaire.

Experimental Design

The participants in this study are part of a certain national board of the youth organization called AIESEC or the board of the Impact Hub Berlin, which has similar characteristics. The AIESEC boards

are referred to as member committees (MC). These teams usually consist of international members. Although they are students, they take a break of one year in order to work as MC member. Furthermore, their work is paid and they work approximately forty hours a week with tight deadlines and much stress involved. Typically, members of a MC team have been in the organization for years. They had to start at the national level in a local community (LC) which is the representation of AIESEC in a specific city or region.

There are different roles involved. Member can be part of the talent management team, which resembles the HR department of an organization. Moreover, they can be part of the finance team, or the communications team. Another opportunity is to be part of the external relations team. The core teams of AIESEC are outgoing exchange and incoming exchange. The outgoing exchange team is responsible for helping students to find an internship abroad and support with information and care. The incoming exchange team helps and takes care of students from abroad who do an internship in the city. Member of the MC usually have been responsible for one team or for the whole LC. In order to be part of the MC applicants have to go through a process which can be compared to an assessment center. All positions are open for member from the home country and international applicants, too. This results in international and diverse teams.

During their time in the organization, the member of a MC attended a multitude of conferences and they met many different people from all over the world. This makes them more culturally aware than other students. Furthermore, all have had at least one leadership role. An interesting aspect is that members of the organization are used to reflect on their behaviors and therefore it is likely that they provide detailed and reflective information when filling out the survey. The mentioned characteristics make them an interesting target group for research.

The experiment spans five weeks. During the experiment, the participants have to fill out four surveys which consist of five sub-surveys to test the different constructs (PANAS and SWLS for measuring SWB, LOT-R for optimism, FFMQ for mindfulness, GQ-6 for gratitude). The following graphic (Figure 2) illustrates how the constructs are related to each other.

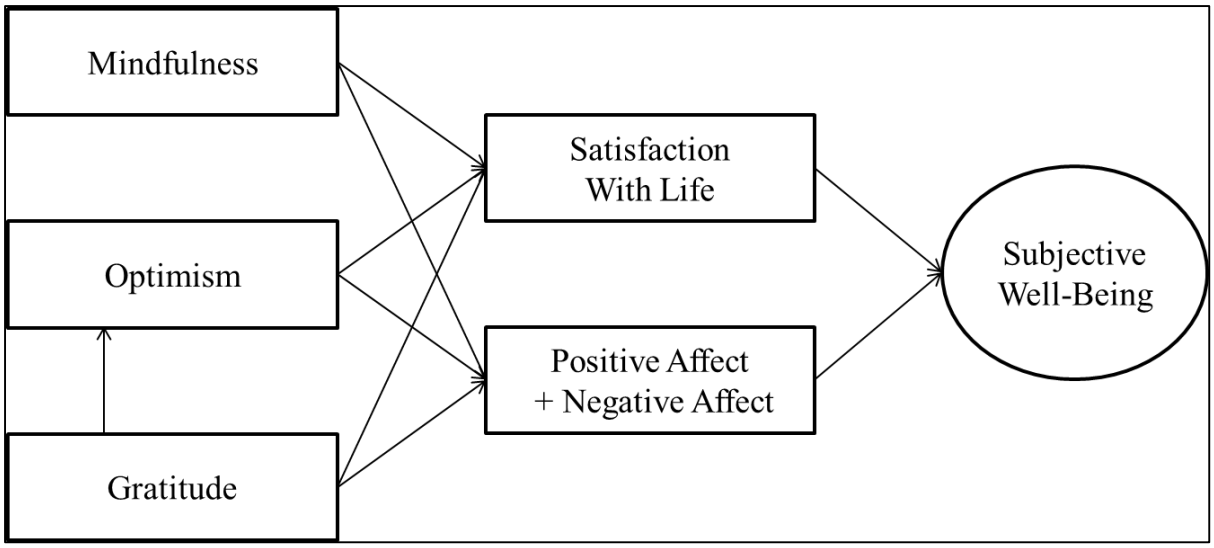


Figure 2: Relationship and causality between constructs

In addition, there is one mandatory week of carrying out the interventions followed by three non-obligatory weeks. In an interview that was conducted before the experiment started, all actions already in place to reduce stress and improve well-being of the members were assessed. The experimental design is inspired by the research of Lyubomirsky and colleagues (2011). Figure three shows the procedural steps over the course of the five-week experiment.

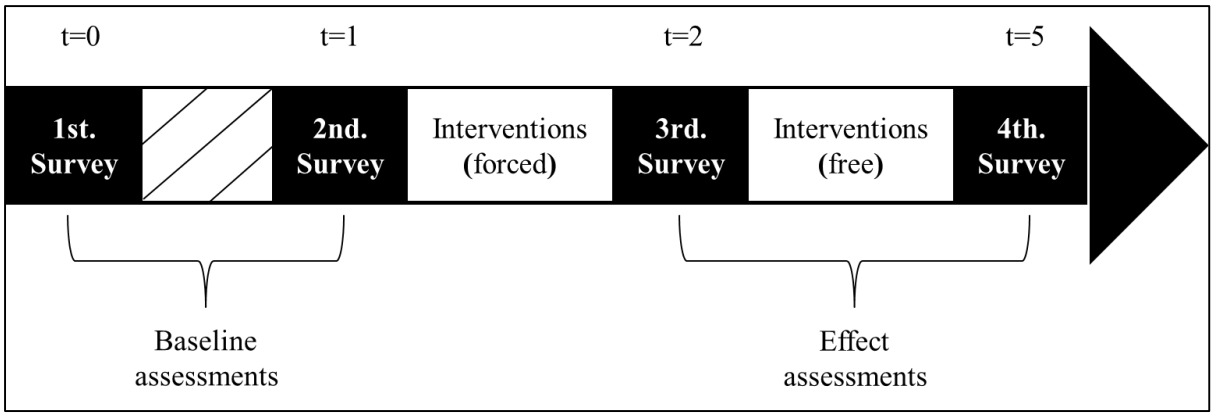


Figure 3: Process of the Experiment

To have a more robust baseline-measure, the participants fill in the questionnaire two times before the beginning of the interventions. This is done at the beginning (t=0) and one week afterwards (t=1). Both questionnaires contain the five scales. After filling out the second survey, all participants are asked to carry out the interventions for exactly seven days in a row. After the week of the interventions, the participants fill in the third survey (t=2) as the first effect- or post-intervention measure. For the next three weeks, the participants can choose to continue with the interventions or decide against doing so. At the end of the experiment (t=5), they receive the fourth questionnaire. The third and fourth questionnaire include an additional qualitative part with open and closed questions. They are sent the links to the questionnaires and are asked to fill out the questionnaires on their own. In order to get anonymized results, every participant receives an individual code before the start of the experiment.

The interventions are chosen to not only cover a broad range of constructs related to Positive Psychology but also due to the fact that they are considered to be easily executable. The ‘Gratitude Letter’ exercise used in this study is an abbreviated version. There are several studies which combine writing and delivering the letter to the person. Delivering the letter and reading it to the person is considered to have an additional positive effect. However, the abbreviated version was demonstrated to lead to positive results as well. The ‘Meditation’ exercise is an adjusted version of the ‘take ten’ meditation by Andy Puddicombe (Puddicombe, 2011). It is shorter and does not contain all elements of the three parts (introduction, main part, and outro). This is due to the fact that it requires increased practice until all steps are learned. Moreover, the amount of steps that needs to be learned can be discouraging. Finally, this study can evaluate whether the short version also generates positive effects. The briefing for the interventions are:

Gratitude letter: (Frequency of execution: once a week)

> Close your eyes. Call up the face of someone still alive who some time ago did something or said something that changed your life for the better. Write a letter of gratitude to this individual. The letter should be concrete and about three hundred words: be specific about what she/he did for you and how it affected your life.

Meditation: (Frequency of execution: daily)

> Please make sure that you’ll be left undisturbed for the next ten minute (set a timer)s. Sit down (on a chair or on the ground [it shouldn’t be too soft]) in an upright position. Begin with eyes open. Not staring at a particular thing, but rather looking forwards with a very soft gaze, aware of your peripheral vision too – above, below, and to either side. Then take five deep breaths, breathing in through the nose and out through the mouth. As you breathe in, really try to get a sense of the lungs filling with air and the chest expanding. And as you breathe out, just let the breath go. You don’t need to forcefully exhale, but just let the breath go and imagine that you are letting go of any tension or stress you might have been holding on to. As you breathe out for the fifth time, you can gently close your eyelids. You can then allow the breath to return to its own natural rhythm, in and out of the nose. Now focus on your breath. Rest your attention on the physical movement, that rising and falling sensation. As you’re doing this, you can slowly begin to notice the rhythm of the breath. How does the breath feel in the body? Is it fast or is it slow? Are the breaths deep or shallow? Try to apply a gentle curiosity to your meditation. Having a good sense of how those sensations feel in the body, now focus on the breath as it comes and goes each time. In the moment you realize that you’ve been distracted, that the

> mind has wandered off, you're no longer distracted. So all you need to do is gently bring the attention back to the physical sensation of the breath.

Three-Good-Things: (Frequency of execution: daily)

> Please take a notebook and a pen (or open a new document on your computer). Write down three good things that happened to you that day. The three things can be small in importance ("I answered a really hard question right in language arts today") or big ("The guy I've liked for months asked me out!!!"). Next to each positive event, write about why did this good happen, or what does this mean to you, or how can you have more of this good thing in the future? You can do it either at the end of the day or in the next morning (though still for the previous day then).

With regard to the qualitative part of the questionnaire, codes are formed when necessary. These codes are then allocated to a category. The coding is done double blind. This means that a psychology major get the codes and comes to the same categories and allocates the codes similarly. In the quantitative analysis, which include the scores from the five scales (see below), the mean, standard deviation, maximum and minimum have been computed.

Positive and Negative Affect Schedule (PANAS)

The 'Positive and Negative Affect Schedule or 'Positive and Negative Activation Schedule' - in short 'PANAS' - was developed by Watson, Clark, and Tellegen (1988) and is a widely used measurement tool (see Albuquergue et al., 2011; Brown & Ryan, 2003; Diener et al., 2010). It is a twenty-item self-report measure of positive and negative affect. NA and PA are dispositional factors. High NA is characterized by subjective distress and unpleasant engagement, whereas low NA is characterized by the absence of these feelings. On the other hand, PA portrays the extent of pleasurable engagement with the environment. The twenty-item measure is divided into ten positive affect words and ten negative affect words (Rash et al., 2011). Individuals indicate on a 5-point Likert scale ranging from one (very slightly or not at all) to five (extremely) to which degree they feel or felt each particular emotion at that specific time or over a pre-defined period of time (last week). The 'PANAS' is considered as a mean to measure SWB, often in combination with the 'Satisfaction with Life Scale' (SWLS).

Although the 'PANAS' suggests that the measures of PA and NA are independent, an extended model allowing both constructs to co-vary led to significantly improved model fit (Crawford & Henry, 2004). This finding indicates that PA and NA are to a certain degree interdependent. The conclusion of the study is that PA and NA are distinct though moderately negatively correlated factors. Furthermore, the hierarchical regression analysis showed that interactions between demographic variables did not account for variance, indicating that scores of gender, occupation, education, and age are negligible.

Several studies confirm the reliability of the 'PANAS' with Cronbach's alpha ranging from .79 to .89 for NA and PA (Crawford & Henry, 2004; Rash et al., 2011; Cloninger & Zohar, 2011). These coefficients indicate accurate estimates of the internal consistency (Crawford & Henry, 2004). Besides measuring what it is intended to assess, PA and NA are related to measures of anxiety and depression. According to research, it is the amount of time that people experience PA which defines happiness and not the intensity of the affect and this is why high average levels of PA are often referred to as SWB (Diener & Chan, 2011). While the scale is remarkably useful, it does have its shortcomings. Diener and colleagues (2010) emphasize that the items are all high arousal feelings and may include emotions or feelings, e.g. 'active' and 'strong' that do not necessarily refer to feelings.

Satisfaction With Life Scale (SWLS)

The 'Satisfaction With Life Scale' (SWLS) constitutes the second measure of SWB and is considered to be the more robust construct of SWB (Corrigan et al., 2013). In general, life satisfaction is rather about cognitive-judgmental processes than emotional processes (Diener et al., 1985; Corrigan et al., 2013), and is defined as "*a global assessment of a person's quality of life according to his chosen criteria*" (Shin & Johnson 1978). According to Diener and colleagues (1985), assessing life satisfaction is dependent on a comparison of ones' circumstances with what one thinks resembles an appropriate standard.

The SWLS is a five-item scale to measure life satisfaction as a cognitive-judgmental process (Diener et al., 1985). The SWLS is useful as it assesses an individuals' global judgment of his or her life and does not solely focus on satisfaction with specific domains (Pavot & Diener, 1993). Nevertheless, respondents can place different weightings on domains of their own lives using a 7-point Likert scale ranging from one (strongly disagree) to seven (strongly agree) (Pavot & Diener, 2008). An absolute as well as a relative interpretation of the scores is possible (Pavot & Diener, 1993). A neutral score is represented by a score of twenty. Furthermore, the scores can be allocated into four different categories ranging from dissatisfied (5-9) to satisfied (21-25) whereas the mean ranges between twenty-three and twenty-eight.

The SWLS seems to be a robust measure as several studies found supporting results. The scale has a good level of internal consistency and moderate temporal stability (Diener et al., 1985; Pavot & Diener, 1993; Glaesmer et al., 2011). Moreover, a meta-analysis of sixty studies found a mean Cronbach's alpha of .78, indicating a good reliability (Corrigan et al., 2013). Furthermore, SWLS correlated with inter-viewer estimates of life satisfaction at a good level (Diener et al., 1985). Glaesmer and colleagues (2011) support the notion that SWLS is a valid instrument in epidemiological research, which makes it a useful tool for this study.

The scale is negatively correlated with distress, NA, anxiety, pessimism, and depression, whereas it is positively correlated with extraversion (Pavot & Diener, 1993; Garrido et al., 2013). In addition, the SWLS correlates with marital status and health but is unrelated with gender or age. For example,

Siahpush (2008) concluded that life satisfaction predicts self-perceived health and other health outcomes such as physical health and that the relationship between life satisfaction and health is simultaneous. The SWLS was found to have sufficient sensitivity to change which makes this measure a helpful indicator for the effectiveness of interventions (Pavot & Diener, 2008). However, due to broadly-based responses, the scale may not be extremely sensitive and thus should be supported by other measures that are focused on improvements in the particular domain of the intervention. Therefore, this study includes measures of optimism, gratitude, and mindfulness. Another advantage of the scale is that it can be part of an assessment battery with minimal cost in time (Pavot & Diener, 1993). This aspect of the scale makes it a useful tool as the willingness to fill out long surveys is limited. In addition, the tool is able to detect changes over time, which supports the purpose of the interventions.

Besides the advantages of the SWLS, there is a multitude of limitations. As mentioned above, the simultaneous relationship between life satisfaction and health indicates that unidirectional models will provide biased estimates, under- or overestimating the true impact of life satisfaction on self-perceived health (Garrido et al., 2013). Moreover, mood is likely to influence responses. Although the effect seems to be small (Pavot & Diener, 2008; Corrigan et al., 2013) it can lead to biased results when the observation period is short. Another limitation which is also a general limitation for any self-report measurement, is that respondents can consciously distort their responses to the scale (Pavot & Diener, 1993). Furthermore, the standards people set for theirselves are subjective and can vary substantially. Furthermore, it is not possible to place weightings on specific life domains which can lead to respondents overemphasizing domains that are dominant at the time of testing. The SWLS cannot measure all aspects of SWB, which is the reason for the often conducted measurement of SWB together with the 'PANAS'. Research found that satisfaction with life, PA, and NA are moderately correlated, though the affective and cognitive components are somewhat distinctive and therefore provide complementary information (Pavot & Diener, 1993; Corrigan et al., 2013).

Life Orientation Test – Revised (LOT-R)

To measure the construct optimism, the 'Life Orientation Test – Revised' (LOT-R) is used. The original 'Life Orientation Test' was developed by Scheier and Carver (1985) and was considered to give psychometrically sound measures of dispositional optimism, which was defined as the favorability of a person's generalized outcome expectancy. Therefore, the 'LOT' and the revised version 'LOT-R' measure trait optimism rather than state optimism (Burke et al., 2000). The 'LOT-R' is a self-report measure containing ten items. Three of these items are positively worded and three are negatively worded (reverse coded) (Creed et al., 2002). In addition, there are four items which serve as fillers. Respondents indicate their level of agreement with each item on a 5-point Likert scale from zero (strongly disagree) to four (strongly agree). The scores can take on values between six and twenty-four. Individual scores between nineteen and twenty-four are regarded as high optimism, between fourteen and eighteen as moderate optimism, and between zero and thirteen as low optimism.

Nonetheless, there is an ongoing discourse about whether the 'LOT-R' should be used as a unidimensional scale, i.e. using positively worded items as well as negatively worded items to create a common score (optimism) (see Rauch et al., 2007; Segerstrom et al., 2011; Monzani et al., 2014) or whether it should be applied as a bi-dimensional scale, measuring optimism and pessimism separately (see Creed et al., 2002; Glaesmer et al., 2012). In the preliminary study of the 'LOT-R', the authors use an overall score (Scheier et al., 1994). As there is a prevalence of studies using the 'LOT-R' as a unidimensional scale, this study uses the LOT-R as a unidimensional measure. Moreover, several studies which favor the bi-dimensional approach also acknowledge the value of the unidimensional scale (Glaesmer et al., 2012).

Studies assessing the unidimensional scale reported reliability scores between .60 (Creed et al., 2002) and .79 (in an undergraduate sample) and even up to .83 (in a web sample) (Segerstrom et al., 2011). The scale, as a measure of generalized expectancy, is also considered to provide good construct validity (Monzani et al., 2014). Furthermore, the gender effect size is negligible (Glaesmer et al., 2012). In summary, the 'LOT-R' is a useful, valid and reliable measure to assess optimism.

However, the scale has its limitations, too. Besides the uncertainty of the best model (unidimensional versus bi-dimensional) there are other factors that can undermine the explanatory power of the scale. Method effects, defined as systematic variance which is attributable to the measurement method, can influence the results (Rauch et al., 2007). In this case, socially desirable responding (SDR), a response style which subjects may use consciously or unconsciously tat shifts the answer to a more socially acceptable norm, exerts influence, as it decreases the correlations of positively and negatively worded items. Self-deceptive enhancement (SDE), as a "*less conscious tendency to give favorably biased but honest self-descriptions*" is linked to optimism. It is seen as a tendency to deceive oneself about likely events. Moreover, impression management, the tendency to present oneself favorably to others is another common source of measurement error. Both can lead to deviations from unidimensionality observed scores.

Five Facet Mindfulness Questionnaire (FFMQ)

To assess the mindfulness construct, the 'Five Facet Mindfulness Questionnaire' (FFMQ) (Baer et al., 2006) is used in this study. The main purpose of the scale is to examine the facet structure of mindfulness (Isenberg, 2009). The 'FFMQ' is the result of a still ongoing debate whether mindfulness has a multifaceted structure and what facets should be included, respectively defined (Baer et al., 2008). The scale has been developed from five mindfulness questionnaires: 'Mindful Attention Awareness Scale' (MAAS; Brown & Ryan, 2003), the 'Freiburg Mindfulness Inventory' (FMI; Buchheld et al., 2001), the 'Kentucky Inventory of Mindfulness Skills' (KIMS; Baer et al., 2004), the 'Cognitive and Affective Mindfulness Scale' (CAMS; Feldman et al., 2007), and the 'Mindfulness Questionnaire' (MQ; Chadwick et al., 2005). There are five facets that constitute the FFMQ: 'observing' [O] (noticing internal

and external stimuli); ‘describing’ [D] (noting or mentally labeling these stimuli with words); ‘acting with awareness’ [AwA] (attending to one’s current actions); ‘non-judging of inner experiences’ [NJiE] (omitting evaluation of one’s sensations, cognitions, and emotions); and ‘non-reactivity to inner experiences’ [NRiE] (letting thoughts and feelings come and go, without one’s attention getting caught up in them) (Baer et al., 2008).

The ‘FFMQ’ is a 39-item scale. Participants rate the items on a 5-point Likert scale ranging from one (never or very rarely true) to five (very often or always true) (Baer et al., 2006). The internal consistency of the FFMQ demonstrated adequate to good internal consistency (Baer et al., 2008). Alpha coefficients, for the total score, ranged from .75 to .93 and from .51 to .95 for the subscales (see Baer et al., 2008; Kattenstroh, 2009; Bränström et al., 2010). The huge differences in the subscale scores are due to differences between experienced meditators and non-meditators. Moreover, the test-retest reliability was assessed and resulted in an ‘Interclass Correlation Coefficient’ of .798 for the total ‘FFMQ’. Additionally, it ranges from .657 to .863 for the five facets, indicating that mindfulness and its five facets seem to be stable constructs (Isenberg, 2009).

The scale is able to assess mindfulness by means of self-report and is a useful measurement as it is sensitive to change over time and to the development of mindfulness (Bränström et al., 2010). Furthermore, a study by De Bruin and colleagues (2012) validated the construct of mindfulness in a country other than the USA using the ‘FFMQ’, which underlines the usefulness of the scale to assess mindfulness in different cultures. In consequence, the ‘FFMQ’ is regarded as a comprehensive scale and is a valuable measurement tool for the assessment of differentiated contributions of mindfulness aspects (Bergomi et al., 2013).

Nonetheless, the scale has its limitations. Especially in a small sample, the results from experienced meditators can significantly bias the overall measure and therefore question the appropriateness of comparison between meditators and non-meditators (Van Dam et al., 2009). Furthermore, particular item characteristics (negatively and positively worded items) may create response sets subject to general and group-specific demand characteristics. This presents a challenge to the scales’ validity as a pre-post measure following mindfulness practices. Moreover, constructing the ‘FFMQ’ from the five mindfulness questionnaires might have led to the absence of meaningful theoretical aspects of mindfulness, whereas others are potentially under- or overrepresented.

The Gratitude Questionnaire – 6 Item Form (GQ-6)

The construct gratitude is measured by the ‘Gratitude Questionnaire – 6 Item Form‘, short ‘GQ-6’ (McCullough et al., 2002). Due to its short form, it is a widely used tool to measure gratitude in research (see Sergeant & Mongrain, 2011; Toepfer et al., 2011; Chan, 2011; Fagley, 2012). The ‘GQ-6’ assesses dispositional gratitude through self-reported measures and measures the frequency and intensity of how people experience gratitude (McCullough et al., 2004). Furthermore, the scale evaluates the span or the

variety of life aspects and the density or the number of persons that can cause grateful feelings (Chan, 2011). Together, these four facets resemble the qualities of gratitude (Froh et al., 2011). Participants are asked to indicate their agreement to the statements on a 7-point Likert scale from one (strongly disagree) to seven (strongly agree). Two of the items are reverse-scored and the summation of all scores results in a total score with higher scores indicating greater dispositional gratitude.

The 'GQ-6' has been found to be positively correlated with self-reported forgiveness, peer reports of participants' prosocial traits and behaviors, PA, life satisfaction and has further been found to be negatively correlated with envy, depression, and NA (Emmons & McCullough, 2004; Froh et al., 2011). However, although related to the following measures, the 'GQ-6' is distinct from measures of happiness, vitality, satisfaction with life, optimism, and hope, supporting the scales' discriminant validity from related traits. Despite its short form, the scale has good to very good psychometric properties with a robust one-factor structure and high internal consistency (McCullough et al., 2002). Cronbach's alpha scores ranged from .70 up to .87 (see: McCullough et al., 2004; Emmons & McCullough, 2004; Chen et al., 2008; Froh et al., 2011).

A specific limitation of the 'GQ-6' comes with the age structure of the participants, as levels of gratitude vary with age (Chen et al., 2008). The age range, in the present study, lies between twenty-one and twenty-nine. This variation can bias the results.

Open Survey

Survey number three and four contain a qualitative part in which respondents have to answer questions about individual and team level aspects. Individual aspects include health factors such as sleep, energy level, and stress, as well as work-related factors such as memory and concentration. Team level aspects include social behavior and team climate. Participants have to answer closed and open questions. Moreover, they have to rate several statements on a 5-point Likert scale ranging from one (strongly disagree) to five (strongly agree).

To assess the changes, the study uses and evaluates two types of data. First, it will analyze the scores as an outcome of the five scales (PANAS, SWLS, LOT-R, FFMQ, and GQ-6). These scores will be used to assess the first research question and gives an overview about changes in values over time. However, due to the limited number of participants these scores will be used to show a tendency. Moreover, they will be compared with the second type of data available, namely qualitative statements. The qualitative statements are the main source to illustrate changes that are caused by the interventions. In order to get statements that are the output of a reflection of the last week or weeks participants are asked to think about changes that occurred over the last week (3rd survey) or the last three weeks (4th survey).

Although the experimental design is new in its way of combining quantitative and qualitative data there are several characteristics that are used in other studies to ensure the quality of the design. The overall

design is to a large degree based on the study of Lyubomirsky and colleagues (2011).This means that the participants were told about the aim of the study. Moreover, this study incorporates pre- and post-intervention measurements, too. As in Lyubomirsky's study, this thesis conducts two surveys to generate a more stable baseline measure. Furthermore, it test the effects immediately after the intervention took place. This research tries to build up on future research questions stated in the work by Lyubomirsky and colleagues (2011).

In addition, many studies that assess SWB and related constructs, such as optimism, mindfulness, and gratitude apply a battery of different questionnaires to test the constructs (see e.g. Baer et al., 2006, Lyubomirsky et al., 2011). Moreover, it is a common method to split the assessment into pre- and post-intervention measures (e.g. Bullis et al., 2014; Hülsheger et al., 2013). How the interventions are carried out varies significantly among studies. It ranges from once a week up to seven times a week over periods from two weeks to six months. This is because the durability of the effects is not fully investigated. Moreover, all studies use self-reported measures.

The study at hand is explorative in nature. Therefore it builds upon previous future research recommendations. As the study is the first of its kind, it tries to build a foundation for future research. On order to identify new areas, many researchers use qualitative research interviews. This is collecting descriptions of the respondents' life world. In particular, the questions concern their personal interpretations of the topic's meaning. This helps to understand respondent's perspectives and how they came to have it (King, 2004). As a consequence, the study focuses on assessing statements made by participants. As there is no prior research with a similar design, future research has to evaluate the validity and usefulness of this approach.

Results

The study results consist of a quantitative and a qualitative part. Each part will be analyzed separately. In the discussion part, the results will be compared to highlight dependencies, support or differences between both parts and whether there is support for the research questions. The data collected consists of the four surveys (t=0, t=1, t=2, t=5) which contain quantitative as well as qualitative elements. In addition, there are interview responses that are qualitative in nature. To be considered for the analysis, a participant had to answer the first two surveys. This restriction ensures a robust baseline measurement before the start of the interventions. In the following, the combination of the first and second survey will be called 'baseline' measure. Furthermore, participants have to fill out one or both of the last two surveys in order to enable a comparison between pre-intervention measures and post-intervention measures. Of an initial twenty-six participants, three participants were removed from the data set as they did not meet requirements. The remaining twenty-three participants (N=23) represent five different teams, namely MC Bulgaria, MC Norway, MC Ireland, MC Kazakhstan, and the Impact Hub Berlin. The affiliation of all participants can be seen in the graphic below (Figure 4).

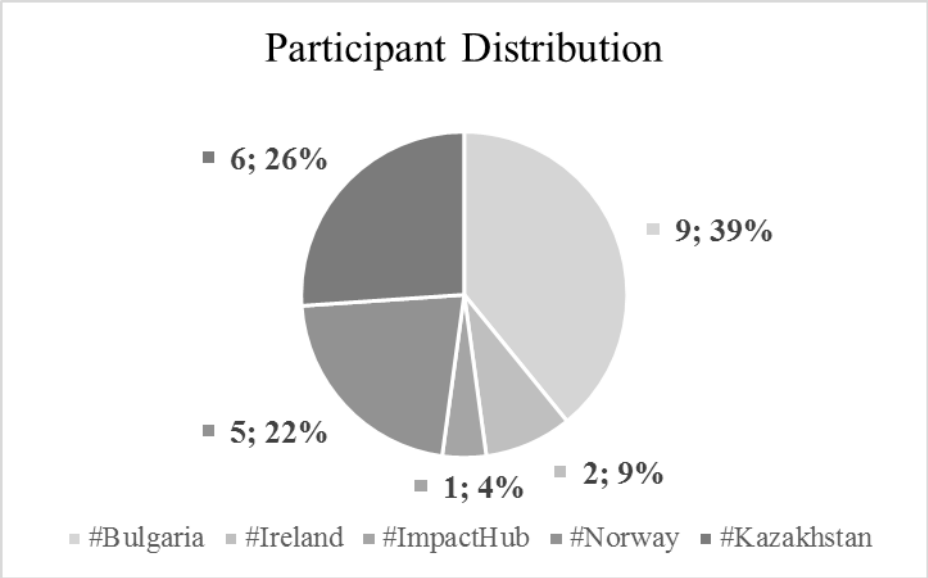


Figure 4: Distribution of participants

The average age of the participants is 23.04 years (male: 22.88 years; female: 23.23 years). The sample is divided into thirteen females and ten males. Sixteen of them [male: 5; female 11] are single and seven [male: 5; female: 2] are in a relationship. The weekly average of working hours among all participants is 41.79 hours and ranges from nine hours to seventy hours a week. All participants filled out the first two questionnaires. Fifteen participants filled in both last surveys, eighteen filled in the third survey and twenty people filled in the fourth survey.

Quantitative Analysis

The quantitative analysis includes the measurements of the five scales included in the questionnaires and is divided into three parts. The first consists of a comparison between the baseline measures and the measures from the third survey (group 1), whereas the second part focuses on the baseline measures compared with the results of the fourth survey (group 2). In the third and final part, the development from the baseline measure to the fourth survey is examined, including the third survey (group 3). Due to the variations in responses there are three separate baseline measures for group 1, group 2, and group 3.

The first group consists of participants who filled in at least the third survey in addition to the first two. The table below (Table 1) shows the results of the pre-intervention baseline measure and the results of the post-intervention measurements of the third survey one week after the start of the interventions.

Variable	*Baseline (group 1)*				*t=2 (group 1)*			
	Mean	**s.d.**	**Min.**	**Max.**	**Mean**	**s.d.**	**Min.**	**Max.**
Positive Affect (PA)	35.81	3.44	28.5	42.5	35.94	3.89	28.0	44.0
Negative Affect (NA)	22.92	5.27	12.0	33.5	21.56	5.42	12.0	30.0
Satisfaction with Life (SWLS)	23.42	3.98	15.0	30.0	24.00	4.41	11.0	31.0
Optimism (LOT-R)	16.69	2.52	11.5	22.0	16.61	2.69	12.0	22.0
Observing (O)	27.69	4.27	21.0	36.5	27.94	5.59	20.0	40.0
Describing (D)	23.31	4.99	13.0	31.0	22.72	6.09	8.0	32.0
Acting with Awareness (AwA)	27.33	5.13	17.0	35.0	27.44	5.51	15.0	37.0
Non-judging of inner Experiences (NJiE)	26.33	6.55	16.5	39.5	27.28	6.79	15.0	39.0
Non-reactivity to inner Experiences (NRiE)	21.50	2.76	16.0	29.5	21.61	3.16	14.0	28.0
Gratitude (GQ-6)	32.94	4.09	24.0	39.5	31.44	4.52	23.0	40.0

Table 1: Development of scores for group 1

The scores that are related to the measurement of SWB are PA, NA, and SWL. The change in PA from baseline to survey three (t=2) shows a slight increase. The score of NA decreases over the course of the two measurements. In addition, the SWLS score also slightly increases. The changes in PA and SWLS and the decrease in NA are even bigger when corrected for an outlier that yielded atypical results (Appendix A 1). Although the optimism score (LOT-R) decreases, it remains almost the same and becomes slightly positive when corrected for the outlier mentioned above. Four out of five mindfulness scores (optimism [O], acting with awareness [AwA], non-judging of inner experiences [NJiE], and non-reactivity to inner experiences [NRiE]) increase from one measurement to the next, whereas describing [D] decreases. However, the high standard deviations indicate a wider distribution of mindfulness scores and are therefore difficult to assess. The level of gratitude (GQ-6) moderately decreases over the measurement period.

The results for group two are presented in the following table (Table 2). This group consists of all participants who filled in the fourth survey (t=5).

Variable	*Baseline (group2)*				*t=5*			
	Mean	**s.d.**	**Min.**	**Max.**	**Mean**	**s.d.**	**Min.**	**Max.**
Positive Affect (PA)	35.63	3.70	28.5	42.5	36.45	6.26	23.0	50.0
Negative Affect (NA)	22.58	6.07	12.0	36.5	21.20	5.56	11.0	32.0
Satisfaction with Life (SWLS)	23.48	3.76	17.0	30.0	24.20	4.35	13.0	33.0
Optimism (LOT-R)	17.05	2.36	11.5	22.0	16.75	3.59	9.0	22.0
Observing (O)	26.13	4.65	13.5	35.0	27.20	4.98	19.0	38.0
Describing (D)	24.68	4.54	13.0	31.0	25.60	5.55	11.0	36.0
Acting with Awareness (AwA)	27.65	5.41	17.0	35.0	26.20	6.93	12.0	40.0
Non-judging of inner Experiences (NJiE)	28.30	6.88	17.5	39.5	27.40	7.84	13.0	40.0
Non-reactivity to inner Experiences (NRiE)	21.00	2.35	16.0	25.0	22.20	5.04	9.0	31.0
Gratitude (GQ-6)	32.70	3.55	24.0	39.5	31.85	5.82	19.0	41.0

Table 2: Development of scores for group 2

Comparing the baseline measures with the results of survey four (group 2) yields similar results as it does with group one. The mean PA score and the mean SWLS score increase slightly more than in group one, while the NA score also decreases. This might be an indication for a sustainable effect of the intervention. Again, the results are more unambiguous when controlled for the outlier (Appendix A 2). The decrease in optimism (LOT-R) is larger than in group one and remains negative when controlled for the outlier, though only slightly negative. Three scores from the 'FFMQ' (O, D, NRiE) increase from baseline measure to the fourth survey at the end of the experiment, whereas two scores (AwA and NJiE) decrease. Moreover, the gratitude score (GQ-6) decreases over time once again.

The third group represents the development of the results from baseline measure to the results of survey three (t=2) up to the results of the fourth survey (t=5). The results from group three can be seen in the next table (Table 3).

Variable	*Baseline (group3)*				*t=2*				*t=5*			
	Mean	**s.d.**	**Min.**	**Max.**	**Mean**	**s.d.**	**Min.**	**Max.**	**Mean**	**s.d.**	**Min.**	**Max.**
Positive Affect (PA)	36.20	3.62	28.5	42.5	35.40	5.20	23.0	44.0	35.00	6.48	23.0	50.0
Negative Affect (NA)	22.23	5.42	12.0	33.5	21.00	5.66	12.0	30.0	21.87	5.70	12.0	32.0
Satisfaction with Life (SWLS)	23.83	3.70	17.0	30.0	24.73	3.19	19.0	31.0	23.93	4.36	15.0	33.0
Optimism (LOT-R)	16.90	2.56	11.5	22.0	16.80	2.79	12.0	22.0	16.47	3.50	9.0	21.0
Observing (O)	27.53	3.75	21.0	35.0	27.67	4.85	23.0	39.0	27.27	5.37	19.0	38.0
Describing (D)	23.43	4.52	13.0	31.0	23.33	5.20	11.0	32.0	24.47	5.28	11.0	33.0
Acting with Awareness (AwA)	27.73	5.50	17.0	35.0	27.87	5.60	18.0	37.0	25.47	6.93	12.0	36.0
Non-judging of inner Experiences (NJiE)	27.17	6.55	17.5	39.5	27.80	7.24	15.0	39.0	26.40	8.01	13.0	40.0
Non-reactivity to inner Experiences (NRiE)	21.03	2.12	16.0	24.0	21.40	3.05	14.0	28.0	21.07	4.99	9.0	31.0
Gratitude (GQ-6)	33.23	3.74	24.0	39.5	32.20	4.21	24.0	40.0	32.40	6.10	19.0	41.0

Table 3: Development of scores for group 3

The biggest difference compared to group one and two is that PA decreases gradually. This effect remains even when controlled for the outlier (Appendix A 3). Furthermore, although NA levels decrease and SWLS levels increase from baseline to the first post-intervention measure (t=2), the scores from the second post-intervention measurement (t=5) tend to return to baseline values. This can be a sign that although changes are possible, the scores will return to their initial values. This would be in line with the hedonic adaption theory. The 'LOT-R' scores gradually decrease, which is in line with the findings from group one and two. When controlled for the outlier, the 'LOT-R' score slightly increases in the first post-intervention measurement (t=2). Four of the 'FFMQ' scores show a similar pattern. 'Observing', 'acting with awareness', 'non-judging of inner experiences', and 'non-reactivity to inner experiences' all increase in the first post-intervention measure and then decrease to or below baseline measures in the second post-intervention measure. 'Describing 'shows the opposite pattern, as it first declines and then increases over baseline measures. In the beginning, the 'GQ-6' score decreases and then increases slightly, remaining below baseline measures.

Qualitative Analysis

The qualitative analysis is divided into three sections. The first section deals with influence factors that may have affected the individual states of participants. The second and third section analyze the qualitative parts of surveys three and four. The separation enables a detailed analysis of the data at certain points in time. Conversely, changes over time are considered in the discussion section.

Factors of Influence

At the beginning of each survey, the participants were asked which events happened during the last week that might have influenced the way they feel. The events or factors that were reported influencing the participants' perceived states can be categorized into six broad categories: spare time, family and friends, relationships, work, health, and miscellaneous influencing factors. Statements added to the category 'spare time' include traveling (not work-related) and hobbies such as visiting the ballet or a rock concert. Another common topic in this category is doing sports. Among the replies, mentioning doing sports, one participant explicitly states that he perceives doing sports as a form of gaining energy. These findings underline the importance of physical activities on peoples' subjective well-being.

'Family and friends' represent the second largest category. The importance of this category may be related to the fact that many MC member are come from different countries and therefore have left their family and friends in their home country in order to work abroad for a limited amount of time. Although the MC team may become a kind of substitute for family and friends, as they spend almost all of their time together, the sample mentioning meeting and talking to friends and family as an influence factor underlines the importance of maintaining the relationship with them. Reporting on events happening in the lives of friends and family is an indicator that individuals are also influenced by the state of their loved ones. Spending time with friends is equated to a means to relax and can be seen as an approach to a better work-life balance. A related but distinct influencing factor consists of statements about 'relationships' or a persons' love life. Although the minority of the participants is in a relationship, comments about spending time with the partner or having a date illustrate the relevance of a more intimate relationship with others to a persons' well-being.

The biggest factor consists of statements regarding 'work-related' issues. These statements can again be divided into sub-groups. The first sub-group includes responses about work itself and deals with topics such as meaningful work or new stimuli (e.g. a new task or something that is different from normal work). One respondent writes:

> *"Went out of town for four days to work with local offices in West-Norway > did something different from normal and in different environment > refreshing".*

The statement demonstrates that some individuals need variation in their work to stay motivated. Another aspect that is mentioned is whether the work is structured and clear to the individuals or not. Moreover, a lot of responses are about workload and pressure at work. One participant states:

> *"A lot of random work in the office due to a major shift in IT systems > this caused some stress across the last weeks"*

and another one notices:

> *"Did not take much time off on the weekend because of major deadlines and work pressure".*

Both statements show that heavy workload can lead to stress, which is detrimental to a person's well-being.

Climate, another sub-group, is regarded as an influencing factor as well. Several respondents state that having team meetings or feedback sessions affect the way they feel. Furthermore, people state that having team events influences their states. These team events range from having dinner together to a joint trip to another city. Moreover, disputes among team members can affect the overall team climate and in turn alter the way individuals feel. Another sub-group of work consists of conferences or work-related travels. MC member have to attend many conferences that are dispersed all over the country or even take place in other countries. The last sub-group is about accomplishments at work. The statements included problems:

> *"The website was down for 2 days which gave me a lot of headaches!",*

and successes

> *"(Finally) Found NatCo chair",*

although there were more negative than positive statements. Focusing on the negative events rather than the positive ones can be explained by the cognitive negativity bias. This principle means that "*in most situations, negative events are more salient, potent, dominant in combinations, and generally efficacious than positive events*" (Rozin & Royzman, 2001). In addition to accomplishments at work, some participants indicate that feeling appreciated impacted the way they felt. For example, one participant mentioned having established moments of appreciation in the team. Feeling appreciated can in turn influence the team climate and can lead to a more positive environment at work.

A puzzling insight is that when asked for factors that may influence their ratings on SWB, Optimism, Mindfulness, and Gratitude, 'health' is not considered to have an influence, except for unusual events such as a surgery. Only few participants report that not eating well, feeling tired or feeling stressed (as an outcome of heavy workload) might influence the responses. However, many participants say that they had long working hours and little sleep when asked directly about their sleep. This may be due to the fact that employed subjects are used to feeling tired from time to time and that it is nothing worth mentioning. A study conducted in the USA about disruptions of sleep, based on a sample of 1,139 employees, found that seventy-six percent felt tired many days of the week, which makes tiredness a common phenomenon (Turgiss et al., 2014). Be that as it may, sleep deprivation negatively affects well-being and can cause depression.

The last category consists of statements that cannot be allocated to a specific theme and therefore yield the category 'miscellaneous influencing factors'. Statements revolve around personal issues such as

having coaching sessions, thinking about financial matters and cultural phenomena. These results can be useful for team leaders. Knowing about the broad categories can help figure out which current events might influence the well-being and performance of team members and can serve as a starting point to develop means to mitigate or preserve certain states.

Analysis of 3rd survey

The third survey constitutes the first post-intervention measure taking place one week after the start of the interventions. It is the first survey with an additional qualitative part to it. Participants are told to do the exercises on a daily basis, except for the 'Gratitude Letter', creating some external pressure. The first part of the analysis is about the intervention itself. The second part evaluates statements about health aspects. In a third step, factors that influence work are analyzed.

In a first step, the participants are asked to assess, on a five-point Likert scale ranging between one (strongly disagree) and five (strongly agree), whether it is easy for them to do the interventions. There is a tendency that the 'Three Good Things' and the 'Gratitude Letter' exercises are easier to carry out than the Meditation exercise. The standard deviation for all three are around one. A higher standard deviation would suggest the existence of two separate groups, one for which it is easier to do the exercise and one for which it is more difficult. The next question is about the integration of the interventions in the daily lives of the participants. Similarly, participants rate their level of agreement on the same five-point Likert scale. The results can be seen in the graphic below (Figure 5).

The graphic shows that it is slightly more difficult for the participants to integrate the interventions. Similar to the first question, the 'Meditation' exercise seems to be the most challenging intervention. Moreover, there is an inclination to recommend the exercises whereas 'Three Good Things' and 'Meditation' are more likely to be recommended. For the 'Meditation' exercise, this is in contrast to the previous results.

The participants are supposed to do the 'Three Good Things' and the 'Meditation' exercise seven times and the 'Gratitude Letter' once a week. The graphic shows that on average the participants do the first two interventions roughly three times and the last intervention once. However, although asked to execute the 'Gratitude Letter' once, several participants execute it more often. The standard deviation for the 'Meditation' exercise exceeds two. This indicates the presence of two different groups: one group in which people tend to do the exercise less than three times and another group in which the individuals execute the exercise more than three times a week.

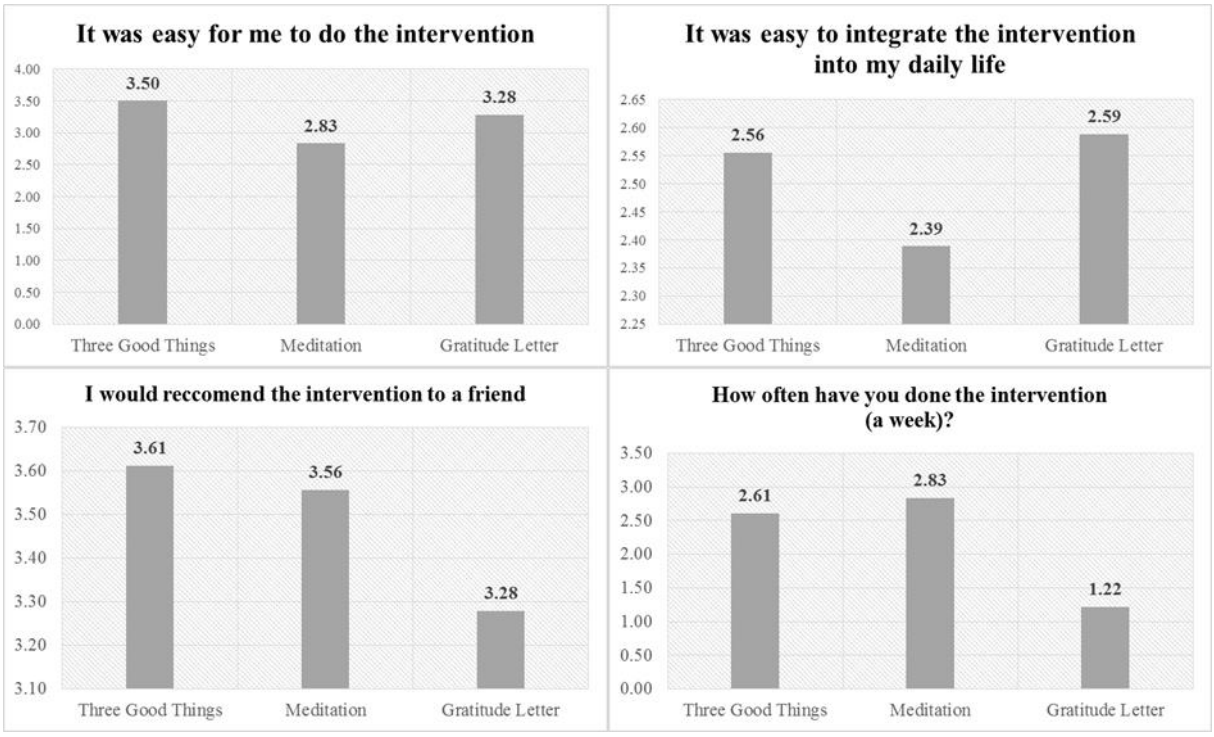


Figure 5: Evaluation of applicability of the three interventions (3rd survey)

When asked whether they do the interventions individually or with a partner or group, sixteen people report doing them individually, whereas two say they do them in a group or with a partner. Reasons to do them on an individual basis include that participants feeling more comfortable doing them alone:

> *"individual state give me the feeling of inspiration. Actually I need to feel privacy to do such things".*

Moreover, it is more convenient because they can be flexible and are not dependent on another person. Furthermore, individuals report that they need to be focused to execute the interventions. Another person mentions that she needs guidance to do the meditation exercise and therefore she uses an app. People who do the exercises with a partner or in the group say that they consider themselves to be team players or feel more comfortable. One participant states that, in order to do the exercises together, she needs a person whom she can trust.

Furthermore, they are asked which of the interventions they want to continue with and the reasons for their decision. The graphic below (Figure 6) shows the allocation of which exercise individuals want to continue with. The number exceeds eighteen because some subjects wish to pursue more than one.

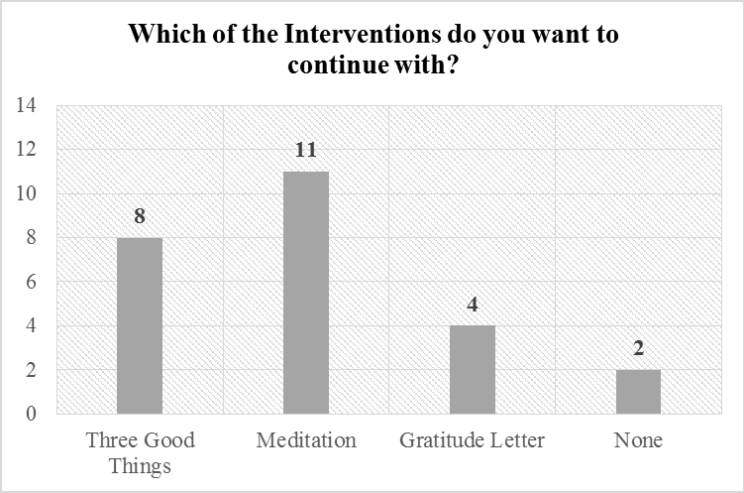


Figure 6: Continuation of interventions by participants (3rd survey)

People who want to continue the 'Three Good Things' exercise say that they enjoy it as a form of journaling and that it is the most convenient exercise. One individual writes:

> *"I need to learn to be a bit more positive about the things that surround me in the present, and do not always think and plan the future"*

and another notes:

> *"To be more grateful for the things we do not always see and be a more positive person".*

Both statements show that people do this exercise in order to become more positive and optimistic. Participants who want to continue with the 'Meditation' exercise say that it helps them to be more structured and purposeful. In addition, they regard the exercise as a means to calm down and reduce stress, to think more clearly, and to be more balanced. People who say that they want to continue with all of them highlight the advantage of creating time for themselves, which they would not give themselves in general. The reasons for not continuing with the exercises are that the exercises' meanings are not clear and that people forget to do them.

To assess the health factor, the survey taps into individual reflections on sleep, energy level, stress, and general health observations. Four out of eighteen subjects report that their sleep improved over the course of the last week with the interventions. Observations regarding sleeping behavior are mixed. On the one hand, several people state that they need more sleep than usual:

> *"I slept more, and I dreamed less"*

and

> *"I slept more than usual, but when I wake up I feel tired".*

On the other hand, participants write that they wake up earlier and need less sleep. These statements indicate a change in the individual sleeping pattern. However, many participants do not perceive any changes. Some of them mention that they have problems with getting proper sleep due to the workload.

When asked about changes in their energy level, eight participants say that it increased, six state that it decreased and four say that it remains the same. People who report an increase write that they feel more focused. One individual, who says his energy level remains the same, remarks that although it remains the same, he is able to do more things. When assessing the participants' stress observations, the majority report improvements regarding how they deal with stress. One participant writes:

> *"When something unexpected happened to me, I didn't start panicking right away. Instead, I was able to listen and think logically about a solution. I was a lot more relaxed and reacted to the situation a lot calmer than I would have in the past".*

Other participants state that they become calmer or tackle stressful situations step by step. Only two people say that they feel more stressed, while six people report no changes. General health observations include to pay more attention on food and on personal habits, an improved self-body image, and one participant states to be in a better physical condition.

The factors that are linked to performance at work and that are assessed are perceived changes in memory, concentration, social behavior, and team climate. Memory does not seem to be affected after the week of interventions, as fifteen out of eighteen do not see any changes, whereas two participants see a decline and one person an improvement of memory. With regard to changes in concentration, nine out of eighteen report an improved ability to concentrate. One participant writes:

> *"I noticed I could concentrate better on days after having used the meditation app in the evening, because I slept a bit more calmly and had more energy the next day".*

This statement links the positive change in concentration to the 'Meditation' intervention. Furthermore, seven people say there was no change and two people say that their ability to concentrate decreased. The individual social behavior improves (ten participants) or remains the same (seven participants). Only one participant states that it got worse. Participants write that they are more at ease when dealing with other people:

> *"I was a lot calmer with people. Also, when I would normally take something as personally offensive, I was more understanding and didn't get upset"*

and that they are more open towards other people:

> *"When I had more energy and was calmer (e.g. on Friday) I was also more open to other people and more social in my behaviour. I felt more excited about meeting other people".*

The perceived team climate either improves (eleven participants) or stays the same (seven participants). One of the reasons for improvement includes a feedback session within the team and is said to be not related to the interventions theirselves. Other observations include a more open and adaptable team, as well as a being more cooperative.

Analysis of 4th survey

The fourth survey is the second and last post-intervention measure. The survey is due three weeks after the third survey. As in the third survey, the fourth survey has an additional qualitative part with open and closed questions. During the three weeks since the last survey, participants are free to choose whether and which interventions they want to continue with. They can also decide on their frequencies.

Compared to the results of the third survey, participants have more problems to do the intervention which can be seen in the decline of the values (Figure 7). Approximately, all interventions can be executed, with slight problems arising in regard to the execution of 'Meditation' and 'Gratitude Letter'. Although still representing a challenge, the 'Three Good Things' and 'Meditation' exercises are considered to be more easily integrated compared to the results from survey three. The integration of the 'Gratitude Letter' is considered as the most challenging. Recommendations are almost the same with slight decreases for 'Three Good Things' and 'Gratitude Letter' and an increase for 'Meditation'. The graphic below points out the reduced execution of all interventions. Similar to the results from survey three, the standard deviation of the execution of the 'Mediation' exercise is above two, supporting the existence of two separate groups.

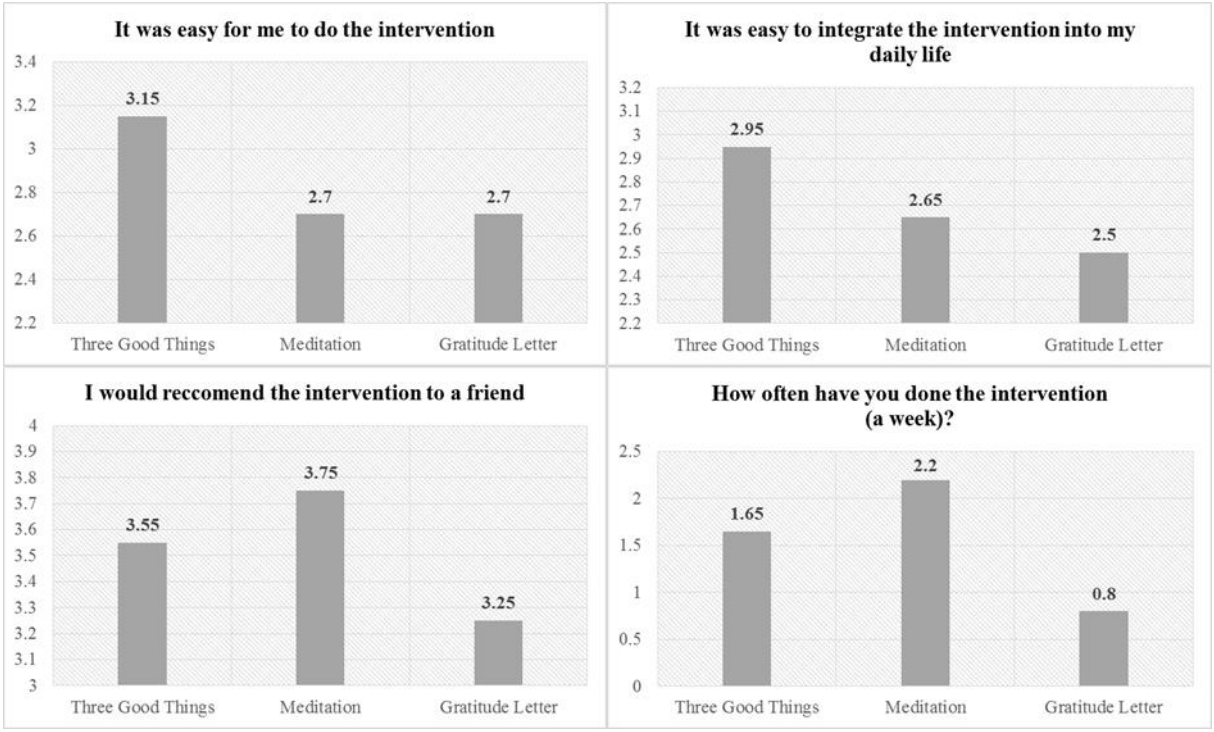


Figure 7: Evaluation of applicability of the three interventions (4th survey)

There is still a preponderance to do the interventions individually although some people favor to do the exercises with others. One reason to do the interventions individually that is not mentioned in survey number three is that it can be difficult to share personal things. A reason to do it in the group focuses on the 'Gratitude Letter'. In one team, this exercise is used to show appreciation within the team. Furthermore, the participants are asked again which of the interventions they want to continue. The results can be seen in the following graphic (Figure 8).

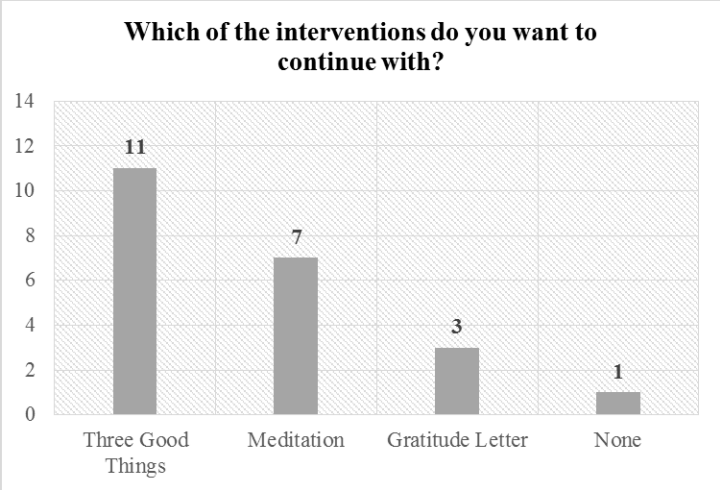


Figure 8: Continuation of interventions by participants (4th survey)

Among the reasons to continue with the 'Three Good Things' exercise are that it helps to focus on the positive in life and gives a sense of relief. Moreover, it helps individuals to focus more on the present. Reasons to continue with 'Meditation' that are not reported yet are to increase motivation and appreciation of life. A reason to do the 'Gratitude Letter' is that it immediately lifts the mood. Furthermore, the exercise is reported to give energy and peace.

When assessing the health factor, eight out of twenty report an improved sleep over the last three weeks. Compared to the results from survey three, this is an increase of about eighteen percent. Statements include feeling less tired though having less sleep and having deeper sleep. With regard to the participants' energy level, several individuals mention having peaks and low points. Furthermore, six participants say that their energy level increased over the last three weeks. Two people say their levels decreased and five say it remained the same.

Analyzing the stress observations made by the participants reveals that most people cope with stressful situations in a better way. Comments include phrases such as:

> *"Well now when I am in difficult situation I am taking breath and thinking objectively about the subject of concern. I do not feel stressed and I think that there is no such subject that will lead to the end of the world. So this is why I do not feel stressed so easily",*

and

> *"I am less stressed than I would expect with the current workload, not sure why though. I can easier say I work a bit longer without stressing to finish every single task".*

Both statements illustrate an approach towards stress that is more detached and balanced. In total, three individuals report feeling more stressed over the last three weeks and three people report that there were no significant changes. The general health observations show that many participants become more careful about their health. Several people mention that they started exercising and are also more aware of how they sleep and what they eat.

Analyzing the work-related factors memory, concentration, social behavior, and team climate, the results confirm the findings of the third survey. As seen in survey three, the majority of participants do not see any changes with regard to their ability to memorize things. However, six participants report an improvement with respect to their memory. One individual specifically links the improvement to the 'Three Good Things' intervention:

> *"3 things helps keep track and weeks don't seem like black boxes".*

Moreover, the changes in concentration are similar to the findings from survey three. Six people report an improvement, seven report no change, three say it decreased, and one says it went up and down. As can be seen in survey three, the majority report improvements in regard to their own social behavior (thirteen participants). Five say that there were no changes and one reports a decline in social behavior. People who say that their social behavior improved, state that they are more attentive towards their peers:

> *"I pay more attention on what people say and I ask more question in order to understand them"*

and, to be more open:

> *"i can tell how i feel about people more easily. still have problems expressing it however noticing how much people enjoy hearing positive things, it's great to finally draw a connection and actually tell people what i feel or why i like them / value them".*

They further mention being more able to connect to and understand other people. Furthermore, eleven participants say that the team climate improved over the last three weeks while seven people see no significant change. They state that, due to an improved team climate, they feel more comfortable within and aligned with the team and see an increased awareness amongst each other.

Discussion

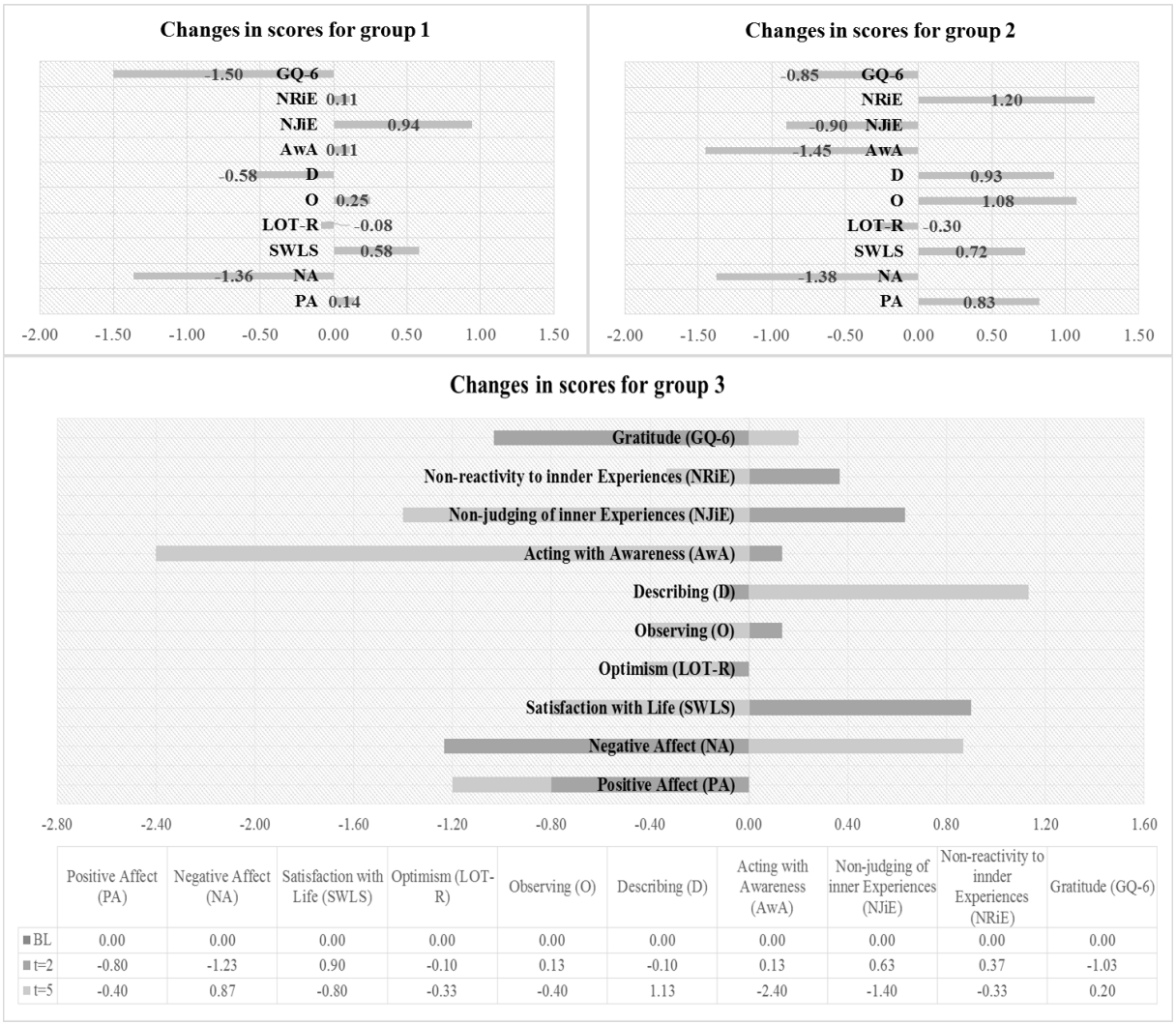
In the following, the findings from both analysis sections (quantitative and qualitative) will be evaluated with regard to the research questions. Furthermore, the study discusses the meaning of the findings and

gives advice to leaders and organizations. Subsequently, the study's limitations are presented and recommendations for future research are given. The discussion part concludes with a reflection on the experimental design.

Contradicting results make it impossible to assess the effects on SWB

Answering the first research question of whether a combination of the three interventions lead to an improvement in well-being is difficult. The analysis of the quantitative data shows mixed results (Figure 9). The scores that constitute the measurement of SWB are SWLS, PA, and NA. With regard to group one (from baseline measure [BL] to 3rd survey [t=2]) and two (from BL to 4th survey [t=5]), all scores show a positive tendency. SWLS and PA increase, while NA decreases. These findings support the first research question. However, the results for the sub-constructs are ambiguous. The gratitude score (GQ-6) and the optimism score (LOT-R) show a decrease for group one and two. This result contradicts the research question as both constructs are considered to be related to SWB. In addition, the mindfulness scores (O, D, AwA, NJiE, NRiE) are ambiguous, too.

The results of group three also contradict the first research question. Here, the results show a constant decrease in PA over time. The NA and SWLS scores yield opposing developments. First, they show a positive trend in which NA decreases and SWLS increases (t=2). Afterwards they show a negative trend (t=5). Similar to the first two groups, the optimism score (LOT-R) shows a steady decline. The mindfulness scores and the gratitude scores also show mixed developments. One of the reasons leading to these results might have been a lack of reflection. Most people rarely think about how optimistic, mindful, or grateful they are. Being asked to rate these factors can lead to an over- or underestimation. These subjective ratings therefore need to be adjusted over time and might lead to a biased outcome when assessed over a short-term period. Another reason probably is the small sample size which leaves the data vulnerable to outliers, as shown in the analysis section. Moreover, some scores (e.g. PA and NA) can vary a lot from one measurement to the next because they assess current states which can be affected by personal events.



	Positive Affect (PA)	Negative Affect (NA)	Satisfaction with Life (SWLS)	Optimism (LOT-R)	Observing (O)	Describing (D)	Acting with Awareness (AwA)	Non-judging of inner Experiences (NJiE)	Non-reactivity to innder Experiences (NRiE)	Gratitude (GQ-6)
BL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t=2	-0.80	-1.23	0.90	-0.10	0.13	-0.10	0.13	0.63	0.37	-1.03
t=5	-0.40	0.87	-0.80	-0.33	-0.40	1.13	-2.40	-1.40	-0.33	0.20

Figure 9: Direction of changes in scores (group 1, 2, 3)

Despite the quantitative findings, several statements correlate with one or more of the constructs. The following statements link the intervention to a more positive state:

> *"Meditation helps me calm down and think clearly. In addition, I am more positive and optimistic when I get a chance to slow down and take a moment to think",*

> *"Gratitude letter: makes me feel good, but also makes others feel good",*

> *"It [Three Good Things] is a good reminder of what is going well in my life even in times when I am very busy at work or depressed about the weather etc.".*

This illustrates that the interventions affect the way the participants feel and that they are even used as an antidote against depressive symptoms. The interventions are also considered to increase feeling of gratitude and appreciation:

> *"It calms me down and learns me to appreciate things more and enjoy my life more".*

Other participants report a feeling of relief and a general sense of feeling happier. However, although supporting the first research question, these statements remain subjective perceptions and can therefore not be used to make a universally valid claim whether the interventions increase SWB.

With some adjustments to the frequency of the interventions, they are easily applicable in a working context

Whether the interventions are applicable in a working context is dependent on a variety of factors. Do the users find them to be easily executable and can they be integrated in their daily routines and schedules? Moreover, how often are the employees willing to do the exercises? Furthermore, it is important to know how employees carry out these activities and if individuals enjoy doing them. Bringing all elements together illustrates whether and how the interventions have to be designed in order to increase the applicability and usability.

The analysis reveals that all of the interventions are executable, whereby 'Three Good Things' is the easiest intervention to do. This might be due to the fact that it is the shortest of all interventions. Interestingly, the participants regard the feasibility of the interventions to be higher when they have to do the interventions (t=2). When they are free to choose, the values decline for all interventions, yet ranging around a neutral score. This result speaks in favor of making the interventions obligatory.

The participants slightly struggle to integrate the interventions into their daily lives with scores ranging from two (disagree) to three (neutral). This is expected, as the exercises imply additional effort. However, the results also show that it is manageable to integrate them. Moreover, the scores improve from survey three (t=2) to survey four (t=5). This might indicate people getting used to doing the interventions as a part of their daily lives. Another reason for the increase can be that when there is no obligation to do them, they are more flexible on how to do the interventions and when to do them. This would negate obligatory interventions.

When the participants are asked to do the 'Three Good Things' and 'Meditation' interventions once a day over a period of seven days, they do them, on average, less than three times a week. The 'Gratitude Letter' intervention has to be done only once a week. Here, participants execute the exercise a little bit more than once a week. On the one hand, it shows that it is not feasible to do the interventions every day. On the other hand, it illustrates that when people like the intervention, they are willing to do it more often. Consequently, intrinsic motivation triggered by the benefits of the intervention is directly related to how often they do the exercises and which of them they execute.

When the participants are not obliged to do the exercises, the number of executions declines. However, the decrease is not as drastic as expected. The 'Three Good Things' exercise is carried out roughly twice a week and the 'Meditation' exercise a little bit more than twice a week. The 'Gratitude Letter' is carried out roughly once a week, as proposed in the initial briefing. These findings also underline the importance

of intrinsic motivation. Although there is an additional effort in continuing with the interventions, most of the participants continue with one or more of them. This is directly linked to whether they see the benefits or not. However, the decline again raises the question whether there should be an obligation to do them or not.

The majority of participants do the interventions individually, however some favor to do them with a partner or with a group of people. In order to increase the likelihood of participation, the team leader or organization should create an environment in which individuals have enough privacy to execute the interventions. This can be reached by creating a quiet area or by dedicating a timeslot to doing the interventions. Furthermore, people should be encouraged to do the interventions at home, if they do not want to do them at work. It is important that people are free to do them individually and on their own terms and are not forced to do them with the team. This would lower the genuine participation in those exercises.

To assess which of the interventions the participants find most valuable, they have to indicate which of them they would recommend to a friend and why they would do this. The 'Three Good Things' and 'Meditation' exercises get more recommendations than the 'Gratitude Letter'. An explanation for these results can be seen in the statements made by the participants:

> *"[Three Good Things is] more convenient to me",*
>
> *"It [Three Good Things] is an easy way to see good things in daily life",*
>
> *"Because it [Meditation] is something normal, natural, it helps me to be more structure and purposeful",*
>
> *"This [Meditation] is a really healthy way for me to manage my stress tolerance. Meditation helps me calm down and think clearly. In addition, I am more positive and optimistic when I get a chance to slow down and take a moment to think".*

They value the convenience of the 'Three Good Things' exercise and that it helps to focus on the positive. In addition, some state that it helps them to be more grateful. Therefore, the dominance of the 'Three Good Things' exercise over the 'Gratitude Letter' can be due to a substitution in which individuals regard the 'Three Good Things' exercise as an easier way to become more grateful than with the 'Gratitude Letter'. The preference towards 'Meditation' can be linked to its effects on sleep and its usefulness to become more balanced and to improve dealing with stressful events. Although there is a preference towards 'Three Good Things' and 'Meditation', all of the interventions are regarded as beneficial and should therefore be offered simultaneously. As a consequence, people can choose which interventions work best for them and can have variation which slows down the effect of hedonic adaption.

In summary, there is strong support for the applicability of the interventions within a working context and in turn a confirmation for the second research question. Interestingly, several people report

beneficial effects of doing the interventions even after a short period of time. This is another reason for advocating the integration of the interventions: they can be means to create positive effects in a short period of time. Moreover, even when there is no time for executing the interventions, they still influence the way of thinking among team members:

> *"I noticed we talked about the interventions as a team, we were tracking each other a bit, although most of us didn't manage to do them. This made that we sometimes talked about the importance of taking some team for yourself and being more relaxed".*

With regard to whether the interventions should be obligatory or not, the findings are mixed. Although the interventions seem to have various beneficial effects, it is counterproductive to force individuals to do them. Leaders and organizations should rather offer a dedicated time slot to do the interventions on a regular basis. A necessary change is to adjust the frequencies of the interventions to increase the likelihood of usage.

The interventions and the research itself exert an immense positive influence on the participants' health and health behavior

Whereas the first research question tapped into the overarching construct of SWB, the third research question focuses more narrowly on the effect on health. Therefore, four areas were under scrutiny: sleep, energy level, stress, and general health observations. As the analysis reveals, some of the participants experienced improvements regarding their sleep. The number further increases over time. A reason for this can be that some of the interventions reveal their benefits after repetitive training. Often, sleep is mentioned in conjunction with work. Participants report that they influence the way they feel:

> *"tired, commuting to cities, three huge workshops = exhausting"*

and the effects of sleep deprivation:

> *"because of lack of sleeping it was hard to concentrate".*

This underlines the importance of enough sleep in order to have productive employees.

Assessing the changes in participants' energy levels after the obligatory week of doing the interventions shows mixed results. Almost as many people report they experienced a decline in their energy levels as people say that it increased. Moreover, some do not experience a change at all. The analysis of survey four at the end of the experiment shows a positive tendency. Here, only two participants say their energy level decreased over the last three weeks, whereas six individuals mention an improvement. However, the difference between both samples is small and needs to be investigated further. Furthermore, a few participants state that their energy level directly influences their ability to concentrate:

> *"I felt a lot more focused and clear on my job"*

and

"higher and more focused…".

The biggest change may be how the experiment influences their stress levels and also how they deal with stressful situations. Specifically, the 'Meditation' intervention is reported to alter the participants' state:

"It [Meditation] helps me to get relaxed and be more in the moment + be aware of my body & environment".

In addition, the reflective character of the other two interventions might contribute to that change as well. One participant writes:

"i find it [Gratitude Letter] useful and calming"

and another one mentions that the 'Three Good Things' exercise helps to have a more balanced view on life:

"I need to learn to be a bit more positive about the things that surround me in the present, and do not always think and plan the future".

These findings support the vast amount of research that has shown that all of the interventions are useful to reduce stress. However, this is the first study that shows that also a combination of the interventions can be considered as a means to reduce stress.

Furthermore, there are different observations people make with regard to their health. Besides reports of feeling healthier, two participants write that their breathing was positively affected. Other statements include a heightened awareness of their body. Interestingly, the experiment affected the participants' health behavior. Several statements include food:

"I start paying more attention on food",

"I paid more attention about what I'm eating and about my habits",

"If I sleep and eat properly, I feel way much better",

and

"I feel motivated to work out and eat healthier. There was a moment I got very sick with a fever and swollen tonsils. This made me realise that I needed to eat healthier and exercise more"

Another aspect is that participants start to value their own time more:

"being harsher in saying "no" "

and

> *"Better time management. More respect towards my personal time. I have less average working hours per week because of that".*

This is an indicator that people take care of themselves more, which positively affects their health. Furthermore, the experiment might have evoked an increased tendency to do sports. Comments that support this tendency include:

> *"i start using more exercising and i feel my body is more relaxed",*

> *"I lose one-two kilos and I am feeling better and better in my body cause I have more physical activities",*

and

> *"Started going to gym in spare time".*

Another statement shed light on the research itself:

> *"Because we were let free as to whether we were doing the exercises or not, I did not do a lot of them. What I did notice was that I thought much more about stress prevention/health in general and started having other initiatives (such as less phone usage, shorter working days, etc). So not so much direct effect of the exercises, but the whole research (incl these questionnaires) made me more aware of these things".*

Here, the participant mentions that although she did not do the interventions on a regular basis, the whole research made her think more about health. The vast amount of statements reporting a positive impact on health and health behavior gives strong support for research question three. The combination of the three interventions clearly affects the health of the participants in a positive way.

The interventions have a positive impact on individual performance factors, whereas the influence on team performance factors needs further research

Health is closely linked to an individuals' performance at work. Based on this, the fourth research question investigates whether the combination of the interventions also has a positive impact on people's performance. In the context of this study, performance includes memory, concentration, social behavior, and team climate. The analysis reveals that there is little change in memory directly after the mandatory week of interventions (t=2). At the end of the experiment (t=5), thirty percent experience an improvement regarding their memory. One reason can be the journaling character of the 'Three Good Things' intervention. In addition, the 'Gratitude" exercise requests individuals to look back which in turn trains their memory. Moreover, there is evidence that the interventions positively affect the ability to concentrate. Between thirty-five percent (t=5) and fifty percent (t=2) of the participants report an improvement regarding concentration. This finding supports the research conducted by Motowidlo and colleagues (1986) who demonstrated that stress and the ability to concentrate co-vary.

The factors which exert an influence on team performance are social behavior and team climate. Up to sixty-eight percent of subjects (t=5) state that they recognized an improvement regarding their own social behavior. As can be seen in the analysis, several people reported to be more calm and open:

> *"i am more open toward others; share more; more calm"*

and

> *"Closed individuals trying harder to open up. People talking more about what bothers them".*

However, one reason to become more open might be due to fact that the teams are at the beginning of their term and have to get to know each other first. It was not possible to evaluate how open they were at the beginning of the experiment. Be that as it may, the interventions do not have a negative influence on the team dynamics. On the contrary, the majority sees an improvement in team climate. Participants report that they look after each other more:

> *"We are more engaged and concerned about each other"*

and

> *"not many but i do think that team got to be much closer and humble towards each other".*

Furthermore, there is an increased willingness to work together:

> *"members started working more, they are more responsible and we are cooperating more",*
>
> *"Maybe more honesty in the team and working together",*

and

> *"it became more cooperative".*

In summary, the findings mainly support the fourth research question. Although there more evidence is needed regarding whether the effects on team performance are caused by the interventions or are the result of a team building process, the positive impact on the individual factors speaks in favor of research question four.

Means to reduce stress and increase well-being can be applied off work and at work

As part of the study, team leaders are asked to report what they currently do to reduce stress and increase the well-being of their team members. The statements can be categorized into two groups. The first group contains methods that can be used outside work. The second group includes methods to reduce stress at work. One method that is frequently used to increase well-being and reduce stress outside work

is joint cooking. Furthermore, the teams try to meet and do things together on a regular basis. One team has its team day every Saturday where they go out and they do not talk about work. Another means to increase well-being that can be done outside work is to form joint sport groups.

The means to reduce stress at work are diverse. The most common one is to establish office rules. This includes setting a time when work should end for all team members. Another subject reports that she tries to match the job description to the person with the corresponding profile. This way, the individual is more likely to enjoy work. Some teams set up individual or team meetings in which they exchange feedback and recognitions and assess their stress levels. Another team mentions that they create weekly priorities for the team to work on. This includes working on a topic that might not be part of the individual job description. As a consequence, individuals are less likely to experience heavy workload over a long period of time.

Caveats, Limitations & Future Research

The study has several limitations and caveats. Firstly, the quantitative part cannot generate generalizable results. This is because of the limited number of participants and due to the convenience sample. A sample size of twenty-three participants is too small to generate sound findings. Furthermore, the convenience sample consists of well-educated, young, and mainly white participants. In addition, people working for AIESEC may be more open towards the interventions as they experienced a wide range of methods within their AIESEC experience. Another aspect that impedes generalizability is that participants are self-selected. Participants could choose whether they wanted to participate in this study or not. Thus, self-selected and non-self-selected participants' results could differ and it would be interesting to see whether non-self-selected participants would benefit, too. Therefore, future research should include a more representative sample with all age groups, people with different educational attainment, different occupations, and more diverse ethnicity. In addition, they should include self-selected and non-self-selected participants in their study to control for differences in both groups.

Secondly, there are several problems that accompany the use of self-reported measures. One aspect is reporting or response bias. Self-reports are prone to the biasing effects of mood. Individuals tend to overestimate or underestimate their own traits and related aspects such as health and well-being if in a positive or negative state. Another problem might be the effort justification paradigm. This paradigm is about the consequences of voluntarily engaging in an effortful activity in order to reach a goal and to attribute a greater value to the outcome which is greater than the objective value (Axsom & Cooper, 1985). This might have influenced the results as participants knew about the goal of the study to increase SWB and health-related aspects. Another problem with self-reported measures is social desirability. Here people respond in a way that makes them look good rather than reporting in an accurate and truthful manner (Holtgraves, 2004). Furthermore, respondents might refer to stereotypes and preconceptions. For example, individuals who know about the benefits of the 'Meditation' exercise might not state their

actual experience but rather what they have heard or read about it. These reporting biases can render some of the findings ambiguous.

Thirdly, there is no control group. Having a control group was planned, however the selected group canceled their participation inmidst the experiment. Unfortunately, there was not enough time to recruit another control group. This fact renders the quantitative and qualitative analysis difficult. Although several statements about positive changes were linked to the interventions, it is not clear whether all of the mentioned effects are caused by the exercises. Therefore, future research should include a control group to validate the findings.

As a fourth point, there are limitations in the method of self-assessment. Participants have to fully understand what is being measured. This affects the validity of the study. Furthermore, the survey asks about specific feelings and weights them all identically. This neglects the potential case in which an individual values one specific element more than the others. As a fifth point, the answer to the question of which of the interventions causes which effect is ambiguous. Due to the nature of the experiment in which all three interventions occurred as a combination, it is difficult to separate and differentiate cause and effect. Finally, the study aims at investigating developments over a short- to mid-term period. As a consequence, it is not possible to assess whether the effects are sustainable over a long-term period. It would be interesting to see research evaluating long-term effects and the potential effects of hedonic adaption.

Research based on this study might address the interesting question of which rhythm for carrying out the interventions is most natural to people and could examine whether the interventions would still exert a positive influence on SWB and health. Moreover, it would be interesting to test other interventions. These could also evaluate other constructs related to SWB, such as resilience. Another future research question would be whether there are spillover effects of the interventions when executed with only one team in a larger corporation. Due to partially large variations in individual scores (e.g. scores in FFMQ), it would make sense to evaluate whether individuals need to approximate their natural level in several consecutive tests. Furthermore, future research could assess whether enduring high levels of stress and heavy workload would lead to a decline in satisfaction with life, which is considered to be a rather stable construct.

As a conclusion, researchers, interested in positive psychology, should increase focus on the applicability of the interventions that have been created. This is in order to create value for health management and further aspects that are related to a business setting (e.g. concentration, team climate, performance). It would be beneficial if researchers from positive psychology and business work hand in hand to exchange ideas on how to best implement these interventions and in turn create synergy effects. The working context is a difficult environment and interventions have to be adjusted to the demands of an organization and a team and researcher should therefore experiment with different settings.

Furthermore, it is important to assess the durability of the effects in order to provide leaders and members with a timeline when to execute the exercises and how to prevent hedonic adaption.

Reflection on study

The initial experimental design of the study looked different and was adjusted as a response to several factors. Originally, the experiment was supposed to be conducted with four teams in one company. The company should have been situated in Berlin. The idea was to conduct short workshops to introduce the three intervention to the employees. There would have been three groups doing the intervention and one control group getting a control exercise to control for the Hawthorne effect which is an increase in participants' treatment responses produced by the psychological stimulus of being singled out and made to feel important (McCarney et al., 2007). Team leaders were excluded from the interventions. They would serve as an external source to evaluate whether they did sense change within the team or with regard to individual team members. Similar to the final design, the participants would have filled in the four surveys and had to carry out the intervention for one week. After this week they could choose to continue with the exercises or decide against doing so. However, instead of having the qualitative assessment as part of the questionnaire, the plan was to conduct short interviews with the participants. This is advantageous as it enables follow up questions to trail interesting thoughts and ideas. As a consequence, the outcome of the qualitative part would have been richer. The team leader would have been interviewed before the experiment, after the week of the interventions, and at the end, enabling a comparison between their evaluations and the findings generated by the participants.

Due to the additional effort that accompanies the experiment and the five-week horizon it was difficult to convince companies to take part in the study. Being in negotiations with two companies, both declined participation due to the expected effort and the fact they could not promise the required number of participants. Another aspect that might have been problematic was that questionnaires have to be approved by the workers' council. Therefore, it was uncertain whether the study could be executed within the company and also how long it would take the workers' council to come to a decision.

At that point in time, the new national boards of AIESEC began their terms. Being a member of AIESEC, it was possible to contact several national boards. However, because of the transition period, which involves massive workload and several upcoming conferences, it was again difficult to recruit a sufficient number of teams. This search significantly prolonged the study. The initial idea was to have four MC teams with at least seven member each taking part in the study. After beginning the experiment, I had to remove one of the groups from the design due to too low response rates. To simplify the experiment, I lowered the requirements so that it was irrelevant how many participants of the team participated. Therefore, I increased the number of teams. This last adjustment led to the final experimental design.

If I had to start again from the very beginning, I would have changed the design of the study based on the difficulties occurring during the process. Firstly, I would have excluded the quantitative part. This can cause two major benefits. On the one hand, the study is then more focused on health issues. On the other hand, the time-consuming part of filling out all scales can be avoided. In turn, the recruitment of participants might have been easier. Moreover, with no quantitative evaluation, there is no need to assess baseline measures, which reduces the period by one week. The final design would have consisted of three surveys focusing on health and performance aspects. The experiment would have lasted four weeks with one mandatory week of executing the interventions followed by three weeks without commitment. As mentioned above, I would have included a control group. Another major difference would have been to make the experiment open for everyone who wants to take part. This might increase the number of participants and make the sample more diverse. Furthermore, it would allow participants to choose their starting time. This might generate a constant flow of results and in turn prevent potential idle time.

Conclusion

Although most Positive Psychology research is concerned with how interventions can help people to live a happier life and become healthier, none of it has evaluated the applicability of interventions in a corporate context. As a result, the question about their usefulness outside a clinical sample remains unanswered. Therefore, this study tries to build a bridge between Positive Psychology research and health management in organizations and teams and assesses the usefulness and effects of three interventions. These three interventions are ‘Three Good Things’, ‘Meditation’, and ‘Gratitude Letter’. Furthermore, it is the first study which tests a common effect of a combination of these interventions. Specifically, the research aims to identify effects on health aspects such as sleep, stress, and energy level. In addition, effects on individual and team performance are under scrutiny. In order to assess the effects on a deeper level, this study incorporates a quantitative and a qualitative part.

The most important finding is that all interventions assessed in this study are applicable in a corporate context. The only change that is necessary is to adjust the frequency of the interventions in such a way that it is more natural to individuals. Several participants reported continuing with one or more of the exercises even after the study had ended. Furthermore, the study showed that the interventions positively affect participants’ health. Interestingly, the study also changed their health behavior in such a way that they became more health-conscious. Moreover, the study revealed positive effects on individual and team performance. However, it is not clear whether the interventions are responsible for all of the effects found in this study. With respect to whether the interventions had a positive impact on SWB the results were mixed.

Furthermore, due to the limited amount of participants, the study cannot generate generalizable results. However, it does show a positive tendency underlining the value of these interventions in a corporate context. As a conclusion, leaders and organizations should consider to integrate this combination of

interventions from Positive Psychology. They improve the health of employees and help to cope with stress in a more balanced manner. In turn, when integrated into the health management of teams or organizations, these interventions can serve as an antidote against the increasing levels of stress and depression that more and more people suffer from. This would not only benefit employees but may also benefit the company as it reduces costs which stem from days off work or unproductivity due to tired or sick employees.

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List of Abbreviations

AL = Allostatic load

AwA = Acting with awareness

BL = Baseline

BMI = Body mass index

D = Describing

e.g. = For example

etc. = Et cetera

FFMQ = Five Facet Mindfulness Questionnaire

GQ-6 = Gratitude Questionnaire – 6 Item Form

HR = Human resources

HRAs = Health risk assessments

incl. = Inclusive

LOT-R = Life Orientation Test – Revised

Max. = Maximum

MC = Membership committee

Min. = Minimum

NA = Negative affect

NatCo = National conference

NJiE = Non-judging of inner experiences

NRiE = Non-reactivity to inner experiences

O = Observing

PA = Positive affect

PANAS = Positive and Negative Affect Schedule

s.d. = Standard deviation

SDE = Self-deceptive enhancement

SDR = Socially desirable responding

SWB = Subjective well-being

SWLS = Satisfaction With Life Scale

WHR = Waist-to-hip ratio

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Appendix

A 1 - Development of scores for group 1 (checked for outliers)

Variable	*Baseline (group 1)*				*t=2 (group 1)*			
	Mean	**s.d.**	**Min.**	**Max.**	**Mean**	**s.d.**	**Min.**	**Max.**
Positive Affect (PA)	35.88	3.53	28.5	42.5	36.24	3.81	28.0	44.0
Negative Affect (NA)	23.15	5.33	12.0	33.5	21.88	5.40	12.0	30.0
Satisfaction with Life (SWLS)	23.62	4.01	15.0	30.0	24.00	4.54	11.0	31.0
Optimism (LOT-R)	16.85	2.50	11.5	22.0	16.88	2.52	13.0	22.0
Observing (O)	27.56	4.35	21.0	36.5	27.94	5.75	20.0	40.0
Describing (D)	23.44	5.11	13.0	31.0	22.76	6.26	8.0	32.0
Acting with Awareness (AwA)	27.41	5.26	17.0	35.0	27.24	5.60	15.0	37.0
Non-judging of inner Experiences (NJiE)	26.41	6.73	16.5	39.5	27.35	6.98	15.0	39.0
Non-reactivity to inner Experiences (NRiE)	21.38	2.80	16.0	29.5	21.61	3.26	14.0	28.0
Gratitude (GQ-6)	33.06	4.18	24.0	39.5	31.44	4.27	23.0	40.0

A 2 - Development of scores for group 2 (checked for outliers)

Variable	*Baseline (group2)*				*t=5*			
	Mean	**s.d.**	**Min.**	**Max.**	**Mean**	**s.d.**	**Min.**	**Max.**
Positive Affect (PA)	35.63	3.79	28.5	42.5	36.45	5.58	24.0	50.0
Negative Affect (NA)	22.58	6.17	12.0	36.5	21.20	5.67	11.0	32.0
Satisfaction with Life (SWLS)	23.48	3.77	17.0	30.0	24.20	3.61	18.0	33.0
Optimism (LOT-R)	17.05	2.31	11.5	22.0	16.75	3.32	9.0	22.0
Observing (O)	26.13	4.68	13.5	35.0	27.20	5.01	19.0	38.0
Describing (D)	24.68	4.58	13.0	31.0	25.60	5.48	11.0	36.0
Acting with Awareness (AwA)	27.65	5.54	17.0	35.0	26.20	7.02	12.0	40.0
Non-judging of inner Experiences (NJiE)	28.30	7.02	17.5	39.5	27.40	8.04	13.0	40.0
Non-reactivity to inner Experiences (NRiE)	21.00	2.33	16.0	25.0	22.20	5.02	9.0	31.0
Gratitude (GQ-6)	32.79	3.62	24.0	39.5	31.85	5.51	19.0	41.0

A 3 - Development of scores for group 3 (checked for outliers)

Variable	*Baseline (group3)*				*t=2*				*t=5*			
	Mean	**s.d.**	**Min.**	**Max.**	**Mean**	**s.d.**	**Min.**	**Max.**	**Mean**	**s.d.**	**Min.**	**Max.**
Positive Affect (PA)	36.32	3.72	28.5	42.5	36.29	4.15	28.0	44.0	35.86	5.83	24.0	50.0
Negative Affect (NA)	22.46	5.54	12.0	33.5	21.00	5.69	12.0	30.0	21.71	5.87	12.0	32.0
Satisfaction with Life (SWLS)	24.11	3.68	17.0	30.0	24.79	3.30	19.0	31.0	24.71	3.35	15.0	33.0
Optimism (LOT-R)	17.11	2.52	11.5	22.0	17.14	2.56	13.0	22.0	16.93	3.15	9.0	21.0
Observing (O)	27.36	3.82	21.0	35.0	27.71	5.02	23.0	39.0	27.57	5.43	19.0	38.0
Describing (D)	23.61	4.63	13.0	31.0	23.43	5.37	11.0	32.0	24.86	5.25	11.0	33.0
Acting with Awareness (AwA)	27.86	5.68	17.0	35.0	27.64	5.73	18.0	37.0	25.07	7.00	12.0	36.0
Non-judging of inner Experiences (NJiE)	27.32	6.76	17.5	39.5	27.93	7.48	15.0	39.0	26.29	8.28	13.0	40.0
Non-reactivity to inner Experiences (NRiE)	20.86	2.09	16.0	24.0	21.36	3.15	14.0	28.0	21.36	5.04	9.0	31.0
Gratitude (GQ-6)	33.39	3.82	24.0	39.5	32.79	3.73	25.0	40.0	33.14	5.62	19.0	41.0