Happy Students, Great Results: a Study about the Effects of Short Positive Interventions on Well-being among Students.

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Abstract

This study explores the influence of the short positive intervention three good things and meditation on the PERMA elements of well-being among students. If well-being can be built by short positive interventions, creative thinking and learning can improve and feelings of stress can decrease, which could make well-being a helpful tool for academic education. Students (n=42), aged between nineteen and twenty-six, were assigned to one of three conditions. N=18 students were assigned to the three good things condition, n=10 to the meditation condition and n=14 to the control condition for a time period of two weeks. All participants completed a PERMA-scale questionnaire before and after the intervention. A MANOVA was used to analyze the effect between the two intervention conditions and the control condition on the five elements of the PERMA scale and an ANOVA was used to analyze the effect of the interventions and the control condition on overall well-being. A significant increase in Positive Emotion was found in the three good things condition compared to the control condition. This increase is found within a time period of two weeks, while other research only showed an increase after one month. This implies that there are short term benefits from this intervention for students.

Introduction

There's a growing mental health problem among students in Universities (Mowbray, Megivern, Mandiberg, Strauss, Stein, Collins, & Lett, 2006). The pressure to get good grades and excel in college is high and this induces a lot of stress (Reisberg, 2000). Research shows that there is a strong association between stress and depression (Hammen, 2005). And the percentage of people with a diagnosed depression is rising, especially among younger adults (Fombonne, 1998). A number of articles have expressed concerns about the increased number of students with mental health problems and the severity of these problems (Benton, Robertson, Tseng, Newton & Benton, 2003; Bishop, 1990; Kiracofe, 1993; O'Malley, Wheeler, Murphey, O'Connell & Waldo, 1990; Stone & Archer, 1990). Although these researches were conducted in the United States, these issues may not be confined to the United States alone (Association for University and College Counseling [AUCC], 1999). Mowbray et al. (2006) found that the number of students with depression is rising and that the pressure is a danger to the mental health of students on Universities. Stress and depression are not only dangers to the mental health of students but it also diminishes productivity, creativity and happiness (Kompier & Cooper, 1999). These are factors that are helpful for a successful educational career. Can this approach that leads to stress, depression and diminished productivity and creativity be transformed into a more beneficial approach?

Mental health is more than just the absence of mental illness. The World Health Organization's has given a definition of mental health: "Mental health is a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community" (World Health Organization, 2004, p. 1). Recent studies acknowledge that increasing well-being could counter effect the negative effects of stress and decrease depression by enabling people to flourish

(Cameron, Dutton & Quinn, 2003; Easterbrook, 2003; Gardner, Csiksgentmihalyi & Damon, 2001; Kahneman, Diener & Schwartz, 1999; Keyes, Dhingra & Simoes, 2010; Murray, 2003; Seligman, 2011; Vaillant, 2000). Well-being not only helps to decrease the effects of stress and depression (Wood & Joseph, 2010), it also increases creativity, productivity, motivation and initiative (Achor, 2012). The benefits of well-being also include improved productivity, having more meaningful relationships and less health problems (Keyes & Grzywacz, 2005; Lyubomirsky, King & Diener, 2005; Veenhoven, 2006).

"Positive education" (Seligman, Ernst, Gilliam, Reivich & Linkins, 2009) shows promising results by increasing the students grades and motivation by teaching them in a positive way on secondary schools, for example by adding meditation and positive interventions to the educational system. However, positive education is only implemented on high schools and not yet on universities (Oades, Robinson, Green & Spence, 2011). Therefore this research will focus on university students. Most universities still focus on getting better grades and getting students through college in time instead of focussing on how to increase the students' well-being and enticing them to flourish. Mowbray et al. (2006) states that Universities have a responsibility to solve this problem of depression and stress, but they do not have all of the responsibility. The students have their own responsibility too. Seligman (2011) states that well-being is buildable by using positive interventions which consist largely of self-help tools. This raises the question: when students are given the tools to increase their well-being, will they flourish and if they do, how?

What is well-being?

Before we can explore the implications of well-being, we first need to understand what well-being is and how it is to be measured. Well-being is defined as a cognitive and/or affective appraisal of one's own life as a whole (Diener, Suh, Lucas & Smith, 1999). Seligman (2011) interchanges the terms well-being, happiness and flourishing. He argues that well-being consists of five different elements: positive emotion, engagement, positive relationships, meaning and accomplishment. Useful measures of general well-being exist (Diener, Emmons, Larsen & Griffin, 1985; Fordyce, 1977; Lyubomirsky & Lepper, 1999) with the Satisfaction with Life Scale by Diener et al. (1985) being the most widely used measurement for overall well-being. Veenhoven (2006) however has shown that when participants use the life satisfaction scale, most of the participants' answer is what mood they are in and only a small part is about the appraisal of one's life as a whole. This means that only a small part of the scale shows a result of well-being. Seligman, Steen, Park and Peterson (2005) argue that the life satisfaction measurements do not allow researchers to make finer distinctions in levels of well-being. To measure finer distinctions in well-being, Seligman (2011) divided well-being into five separate elements, he called this the PERMA criteria: (P) positive emotion, (E) engagement, (R) positive relationships, (M) meaning and (A) accomplishment. Seligman (2011) constructed the PERMA-scale and PERMA-questionnaire in order to measure these specific elements and their relation to well-being. Seligman (2011) states that people who have increased well-being by PERMA criteria are physically healthier, more productive at work, and more peaceful than people who do not have increased well-being. The PERMA-scale is divided in individual scores for five elements of well-being and a combined score for overall well-being.

Positive Emotion

The first element of well-being according to Seligman (2011) is Positive Emotion. Positive emotion consists of hedonic feelings such as happiness, pleasure and comfort (Khaw & Kern, 2014). Positive emotions have a positive effect on overall well-being and negative emotions have a negative effect on overall well-being (Howell, Kern & Lyubomirksy, 2007). The genuine expression of positive emotions helps individuals to flourish. Positive emotions broaden awareness and allow people to develop an open mindset. People with an open mindset are more social and emotionally connected (Fredrickson, 2011).

Engagement

Seligman (2011) defines engagement as "being absorbed". Csikszenrmihakyi and Csikszentmihayli (1998) gave a more elaborate definition: Engagement is defined as a state wherein an individual is so engrossed in activity they lose the sense of time and sense of self. This flow state is described by Csikszentmihayli (1990, 1997) as a single-minded immersion, an optimal state of concentration on an intrinsically motivating task. Awareness of time may fade, and positive thought and feeling may be absent during the flow state.

Positive Relationships

Seligman (2011) states that people are motivated to seek out and maintain positive relationships, even when it brings none of the other PERMA elements. Relationships is defined as having feelings of integration with society or a community, feelings of being cared for by loved ones, and being satisfied with one's social network (Khaw & Kern, 2014). Positive relationships have been linked to decreased depression, better health, and other positive outcomes (Cohen, 2004; Perissinotto, Senzer & Covinsky, 2012).

Meaning

Meaning is defined as having a sense of purpose and direction in life, and feeling connected to something larger than the self (Seligman, 2011). People who claim that to have more meaningful lives often report high well-being, although the meaningful life is not necessarily the happy one (Baumeister, Vohs, Aaker & Garbinsky, 2013).

Accomplishment

Many people are motivated to achieve, to have mastery, to have competence even if it brings no positive emotion, no engagement, no relationships, and no meaning (Seligman 2011). Accomplishment can be defined both objectively and subjectively. People tend to define accomplishment in objective terms as having a high salary, and it is subjectively defined by personal ambition, drive, and personality differences (Khaw & Kern, 2014). Additionally, accomplishment is often pursued for its own sake. For example, research shows that expert bridge players are driven to play to the best of their ability: even if they lose, they feel a sense of accomplishment in the knowledge that they played well (Seligman, 2011).

In this research well-being is defined as a cognitive and/or affective appraisal of one's own life as a whole (Diener, et al. 1999) divided into positive emotion, engagement, positive relationships, meaning and accomplishment (Seligman, 2011).

Well-being & implications for education

Research indicates that well-being has various positive impacts on the lives of students (Bryan, Mathur & Sullivan, 1996; Csiksgentimihalyi, 1997; Rowe, Hirsch & Anderson, 2007; Seligman et al., 2009). Seligman, Kamen & Nolen-Hoeksema (1988) researched the effects of optimism on the students grades on the University of Pennsylvania. Optimism is classified as a positive emotion on the PERMA scale (Seligman, 2011). Their research showed that optimistic students scored 1,5 standard deviations better on their grades than pessimistic students. Seligman, Nolen-Hoeksema, Thornton & Thornton (1990) also showed that optimist improve after failure and pessimists worsen. Seligman et al. (2009) states that more well-being is synergistic with better learning. Actor (2012) argues that most people believe that success precedes well-being, "once I get good grades, I'll be happy." But Achor's (2012) research found that it's the other way around: people who cultivate a positive mind-set perform better in the face of challenge.

Critical and analytic thinking are foundations of academic education, which are induced by negative emotion and narrow attention (Bolte, Gosche & Kuhl., 2003; Kuhl, 1983, 2000). Csiksgentmihalyi (1997) argues that both critical thinking and creative thinking are equally important for education. Creative thinking is induced by broader attention (Bolte et al., 2003) which is induced by positive emotion (Bolte et al., 2003; Fredrickson, 1998; Fredrickson & Branigan, 2005; Rowe et al., 2007). Positive emotion also induces more creative thinking (Isen, Daubman & Nowicki, 1987; Estrada et al., 1997), more holistic thinking (Isen, Rosenzweig & Yung, 1991; Kuhl, 1983, 2000) and better learning (Bryan et al., 1996). Seligman et al. (2009) argue that well-being should be taught in education for three reasons: first as an antidote to depression, second as a vehicle for increasing life satisfaction and third as an aid to better learning and more creative thinking. Oades et al. (2011) suggest further research in Positive Education and it's implication for Universities and implementing interventions for building well-being into the educational system of Universities around the world. This research aims to add to this field.

Building well-being

Well-being has shown to have positive effects for students and academic education and as Mowbray et al. (2006) states, Universities and students have a shared responsibility to actively counteract the effects stress and depression. To sustainably increase well-being and decrease stress and depression, appropriate strategies and practices must be performed with effort and habitual commitment (Seligman, 2005). Seligman (2011) states that well-being is buildable with positive psychology interventions. A meta-analysis of positive psychology interventions conducted by Sin and Lyubomirksy (2009) suggested that such interventions significantly enhance well-being and decrease depressive symptoms. Seligman et al. (2005) have researched the effect and implementation of short positive interventions to increase happiness and flourishing. Short positive interventions are interventions that take up a short amount of time and can be executed without the

supervision of an expert. All participants in Seligmans (2005) research with positive interventions tended to be happier and less depressed at the posttest than the control condition. Bolier, Haverman, Westerhof, Riper, Smith & Bohlmeijer (2013) showed in a meta-analysis of randomized controlled studies that short positive interventions and positive psychology interventions show a small but significant increase in well-being.

There are dozens of short positive interventions which have a positive impact on well-being (Bolier et al, 2013; Seligman, 2005; Sin & Lyubomirksy, 2009). One of the most widely used positive interventions is called "Three Good Things" (Bolier et al, 2013; Seligman, 2005; Sin & Lyubomirksy, 2009). In this intervention participants write down three things that went well of that day before they go to sleep.

Seligman et al. (2005) argue to broaden the perspective of these interventions with meditation and mindfulness exercises. While meditation is not classified as a positive intervention, Seligman et al. (2005) advise that it should be included in future research because of the potential benefits for well-being (Broderick & Metz, 2009; Hassed, de Lisle, Sullivan & Pier, 2008; Nakai & Schultz, 2000; Oades et al., 2011; Shapiro, Schwartz & Santerre, 2002).

Meditation

"Meditation refers to a family of techniques which have in common a conscious attempt to focus attention in a non-analytical way, and an attempt not to dwell on discursive, ruminating thought" (Shapiro, 1980, p. 14). Research shows that meditation can be used to reduce depressive symptoms (Shapiro, Schwartz & Bonner, 1998). Shapiro et al. (1998) stated that well-being is one of the aims of meditation.

A number of positive effects of meditation on well-being are found in various researches, which include a positive influence on memory, creativity, interpersonal functioning, self-esteem, well-being, positive affect, concentration, stress hardiness, empathy, self-actualization and trust (Alexander, Rainforth & Gelderlos, 1991; Hassed et al., 2008; Murphy, Donnovan & Taylor, 1997; Nakai & Schultz, 2000; Shapiro et al., 1998). Long-term meditators showed even higher levels of self-esteem, satisfaction, ego strength, self-actualization and trust in others, as well as an improved self-image (Shapiro et al., 2002). Meditation can reduce negative affect, increase emotional awareness and emotional regulation, along with increased feelings of calmness, relaxation and self-acceptance compared to control groups (Broderick & Metz, 2009)

Meditation is also found to have a positive influence on intelligence, school grades, learning ability, and short- and long-term recall (Cranson, Orme-Johnson, Gackenbach, Dillbeck, Jones & Alexander, 1991; Dillbeck, Assimakis & Raimondi, 1986; Lewis, 1978). Hall (1999) found that students who meditate before and after studying and before their exams got significantly higher grades than the control group. Furthermore, meditation appears to equalize the workload of the two cerebral hemispheres (Banquet, 1973). This may enhance the intuitive, holistic and creative thinking through the right hemisphere (Carrington, 1993).

When meditation is compared to the PERMA elements of well-being according to Seligman (2011), most effect is suspected to be seen on positive emotion, accomplishment and positive relationships. Positive affect, emotional awareness, emotional regulation and increased feelings of

calmness may influence the element of Positive Emotion. Self actualization, improved self-image, self-esteem are associated with accomplishing your personal ambitions (Khaw & Kern, 2014). Therefore it can be expected that these effects of meditation may influence the element of well-being, Accomplishment. There are some long-term effects found that increase empathy and interpersonal relationships (Shapiro et al., 1998) which may influence the element of Positive Relationships.

Three good things

As stated before, one of the most widely used short positive interventions is called *Three Good Things* (Bolier et al, 2013; Seligman, 2005; Sin & Lyubomirksy, 2009). Participants using this intervention showed the most effect on short term (Seligman, 2011). This is an exercise where participants write down three good things about their day, every day for 1 week. Results of Seligmans (2011) research showed an increase in overall well-being and a decrease in depressive symptoms for the participants. The beneficial effects of this exercise became apparent after one month and continued until six months after the intervention.

Achor (2012) also used *the three good things* exercise and added other short positive interventions like exercising, journaling and meditating to his research. For this research he used the "well-being" and "satisfaction of life scale" He found that participants scored significantly higher on well-being in comparison to the control group. After four months the mean score for life satisfaction of the participants was still on average five points higher than before the intervention.

Although the *three good things* intervention is known to have a positive influence on overall well-being, not much is known what the influence of this intervention is on the separate elements of well-being such as the PERMA-scale (Seligman, 2011). Wing, Schutte & Byrne (2006) have shown that positive writing has a positive effect on emotional intelligence, life satisfaction and emotions. Several researches have noted that gratitude typically has a positive emotional valence (Emmons & Shelton, 2002; Lazarus & Lazarus, 1994; Mayer, Salivary, Gomberg-Kaufman & Blainey, 1991; Ortony, Clore & Collins, 1987; Weiner, 1985). This implies that the three good things interventions may influence the element of Positive Emotion.

Present study

Research concerning short positive interventions and well-being is not new. Seligman (2005, 2011), Bolier et al. (2013) and Achor (2012) all showed that short positive interventions have a significant influence on well-being and the positive effects of well-being, but there is more to discover. This research aims to carry on this field of research by further exploring the positive intervention three good things using the PERMA-scale by Seligman (2011). In order to broaden the field of positive interventions, Seligman (2009) suggest to include meditation as a positive intervention because of it's beneficial effects on well-being. Therefore this research will add meditation as a short positive intervention.

As Seligman (2011) stated, most research with short positive interventions focusses on the effects on overall well-being using the Satisfaction with Life scale (Diener et al., 1985). In order to make the finer distinctions in well-being as Seligman (2011) suggests, this study uses the PERMA-

scale with the interventions *three good things* and meditation. Bolier et al. (2013) recommended to further explore the effect of short positive interventions on different elements of well-being to discover which intervention works best for who. The effects of these short positive interventions will be measured in individual scores for the five elements of well-being and a score for overall well-being. This may conclude in a better understanding of the influence of the interventions on the different elements of well-being.

Most research on this topic is done in North America on a very broad spectrum of people. Therefore Bolier et al. (2013) recommend research to be done on very specific groups of people from different countries to answer the question: what works for who? The research on short positive interventions by Seligman (2011), Bolier et al. (2013) and Achor (2012) is done on mixed groups of students and others. To our knowledge, no research on this topic is done on the specific target audience of students. Students make an interesting target audience because of the aforementioned benefits of well-being on their academic results, personal life and the counteracting effects of well-being on depression and stress. Therefore this research will target specifically on Dutch students.

In Seligmans (2005) research, the participants executed the three good things exercise for one week. He recommends to elongate the time in which participants partake in this intervention because participants who kept executing the intervention increased well-being even further than participants who stopped after one week. This is why this research executes this intervention in an elongated time period of two weeks.

Research Question

What influence, if any, do the short positive interventions three good things and meditation have on the PERMA elements of well-being among Dutch students?

Hypothesis 1

The three good things intervention has been shown to increase well-being (Seligman, 2005). And other researches show that this positively influences positive emotions (Emmons & Shelton, 2002; Lazarus & Lazarus, 1994; Mayer et al., 1991; Ortony et al., 1986; Weiner, 1985). Therefore it is expected that the three good things intervention will have the most effect on the element of Positive Emotion and the overall well-being score compared to the control group.

Hypothesis 2

Because of the effects of meditation on positive affect, emotional awareness, emotional regulation and increased feelings of calmness, an influence is expected on the element of Positive Emotion. And because of the effects of meditation on self actualization, improved self-image, self-esteem, an influence is expected on the element of Accomplishment. There are some long-term effects found that increase empathy and interpersonal relationships (Shapiro et al., 1998) which may influence the element of Positive Relationships. But it is not expected that any long-term effects will show in a timeframe of two weeks. As Shapiro et al. (1998) stated that well-being is one of the aims of meditation, it is expected to see an influence on overall well-being. In summary meditation is expected to show the most effect on Positive Emotion, Accomplishment and overall well-being.

Method

Sample

138 students signed up for this research, 118 participants were female and 20 participants were male. The mean age was 22 with a standard deviation of 2,129. These students were recruited through an online sign-up form which was available through SONA-systems of the University of Twente and the companies “De Super Student” and “365 Dagen Succesvol”. Every participant signed an online informed consent form and all data was gathered anonymously, the students were made aware that they can withdraw from this study at any time. All participants were compensated upon completion for their participation with the book “Super CV.”

Every participant was assigned to a specific group based on their experience with the interventions and the possession of a smartphone which is mandatory for the meditation condition. If a participant was not in possession of a smartphone, participation in the meditation condition was not possible because the app Calm (Calm.com Inc, 2013) is used for this condition. Experience was measured using a 10 point scale in which participants answered the amount of experience with the intervention. A 10 being very experienced and a 1 being not experienced. A maximum score of 6 was attained to determine to which group the participant would be assigned. If a participant had experience with both interventions, the participant was excluded from this research to eliminate the chance of long-term effects of earlier practice. If a participant had a score higher than 6 on one of the interventions, the participant would be randomly assigned to either the other intervention group or the control group. If the participant had a score lower than 6 on both interventions, the participants would be randomly assigned to one of the three groups.

Measures

To assess the effect of the interventions compared to the control condition, the PERMA-scale by Seligman (2011) was used in it’s original language English. This scale consists of 23 items and results in six different result scores. One score for each of the five elements of PERMA and one overall happiness score. An example of the items is this: “In general, how often do you feel joyful?” with a 10 point scale where 0 is “not at all” and 10 is “all the time”. There are 5 items measuring Positive emotion, 3 items measuring Engagement, 4 items measuring positive Relationships, 3 items measuring Meaning and 4 items measuring Accomplishment. The overall happiness score is measured as a means of all 23 items. The scores of items 7, 12, 14 and 20 are to be inverted because these items are negatively framed. The PERMA-questionnaire was used for the pre-test and the post-test. Cronbach’s alphas ranged from 0,809 at the pre-test to 0,813 at the post-test. These are both above the alpha minimum of 0,70 and therefore considered reliable (Moore & McCabe, 2005).

Procedure

This research was approved by the ethics commission of the University of Twente and consists of two quantitative questionnaires before and after the two week intervention is conducted. The procedure of the research starts with participants filling in a pre-test questionnaire. This questionnaire consists of four parts, all information and questions were in Dutch except for the

PERMA-questionnaire, this was in the original language of English. Part one is the online informed consent form with information about this research and the participants had to sign the form with their name, the date and an agreement to participate in this research.

Part two are the demographics: age, gender, study and how many years they have been studying. The last three items in this part were used to determine to which group the participant would be assigned. The first item is about the participants experience with meditation, the second item about experience with writing down three good things and the last item about whether the participant has a smartphone, which is mandatory to the meditation condition.

Part three is the 23 item PERMA questionnaire and at the end there was room for participants to comment on questions they did not understand.

Part four is the debriefing and room for extra comments for the participants. The briefing states that the participant will receive an assignment in the next 24 hours by mail.

In the 24 hours after completing the pre-test the participants were assigned to a group and would receive a briefing by mail about the intervention they would exercise for two weeks. All participants in the intervention conditions are advised to participate in the intervention for 10 days. A minimum of 5 days of participation was required to be included into this research.

Group 1 - Three good things

The participants in this group are instructed to take a pen and paper and put them on the nightstand next to their bed. The assignment they have to complete the next two weeks is to think about the last 24 hours and write down three good things they've experienced during this time. These experiences are personal and the information participants write down will not be used in this research. The aim of this exercise is simply to have participants contemplate about that day and write about it in a positive way.

Group 2 - Meditation

The participants in this group are instructed to meditate every day for at least five minutes. To help participants with meditating we use an app called Calm™. This is a free app that participants will have to install on their smartphone. This app is specialized in short calming meditations and has a 7 step program to teach users how to meditate. Participants are instructed to set up the daily reminder function in the app and to use the "5 minutes of Calm" program in the app. This is a guided body scan meditation with soothing background music. This makes it easier for the user to relax and the daily reminder function also remembers on which days the user meditated. This helps the participant with filling in how many days he/she participated in the intervention.

Group 3 - Control condition

The participants in this group do not receive further instruction other than that they will receive a second questionnaire in two weeks that they will be required to fill in.

Group 1 and 2 will be sent a questionnaire by mail after one week. This is the Check-up form where the participants are asked to truthfully fill in the number of days in that week they exercised the intervention. This will be used to exclude participants who do not meet the minimum compliance of 5 days.

After two weeks all participants receive the post-test questionnaire by mail. This consist of the PERMA-questionnaire and a de-briefing asked the participant for feedback and informing the participant of the end of this research. They are informed that they will receive the results of this research and the compensation for their effort at the end of July.

Participation Rates and Compliance

Of the 138 participants that signed up for this research 45 (32,6%) participants were excluded from the data. 6 (4,0%) participants were excluded because of having scored higher than 6 points experience on both interventions. 7 (5,1%) participants were excluded because they were not students. 4 (2,9%) participants asked to be excluded from this research and 28 (20,3%) participants were excluded because they did not complete the pre-test questionnaire. The remaining 93 (67,4%) participants were divided over the three groups based on their experience with the interventions.

31 participants were assigned to the three good things condition (group 1), this group consisted of 3 male participants and 28 female participants. 23 (74,2%) participants completed the checkup form and the same 23 participants also finished the post-test questionnaire.

31 participants were assigned to the mediation condition (group 2), this group consisted of 7 male participants and 24 female participants. 16 (51,5%) participants completed the checkup form and the same 16 participants finished the post-test questionnaire.

31 participants were assigned to the control condition (group 3), this group consisted of 3 male participants and 28 female participants. 14 (45,2%) participants completed the post-test questionnaire, 1 male and 13 female participants.

Participants self reported their level of compliance at the check-up and post-test in number of days in which they executed the intervention. A minimum of 5 days of compliance was requisite for inclusion in this research, that is half of the amount of days this research advised. In the three good things condition 18 participants (58,1% of the original 31 participants) met the minimum of 5 days. In the meditation condition 10 participants (32,3% of the original 31 participants) met the minimum of 5 days. The mean number of days participated was 10 days with a range of 6 to 14 days. The participants who were excluded participated for either zero, one or two days only. This is not sufficient to research the effects of the interventions.

Of the 138 participants that originally signed up for this research, the data of 42 participants (30,4%) was used for to analyze the results.

Table 1
Demographics in gender and age for the three good things, meditation and control conditions. (N=42)

	Three good things (n=18)	**Meditation (n=10)**	**Control (n=14)**
Gender			
Male	1 (2,4%)	4 (9,5%)	1 (2,4%)
Female	17 (40,5%)	6 (14,3%)	13 (31,0%)
Age			
Range	19 - 26	20 - 25	20 - 26
Mean	22	22	23

Analyses

First the difference scores between the post-test and pre-test were calculated. These difference scores were grouped according to the elements of the PERMA scale to be able to only compare the difference scores of P, E, R, M, A and overall well-being. Normality was tested used the Shapiro-Wilks test, both the five elements of PERMA and the score on overall well-being showed normality.

To investigate the differences on the PERMA elements between all three groups a MANOVA was used within SPSS with an added contrast option assigned to the control condition to investigate both hypotheses. The MANOVA compared both intervention conditions individually against the control condition.

And to investigate the differences on overall well-being between all three groups an ANOVA was used with an added contrast option assigned to the control condition to compare both intervention conditions individually against the control condition. Table 2 shows an overview of the mean score, standard deviation and difference score per condition, PERMA element and overall well-being.

Results

Table 2
The mean score of the pretest and posttest per condition for the PERMA scale and overall well-being, and their standard deviation and mean effect score. (N=42)

Measure	Pretest		Posttest		Difference score
	Mean	SD	Mean	SD	
Positive emotion					
Three good things	6,48	1,27	7,20	1,28	0,72
Meditation	6,74	0,85	7,00	1,03	0,26
Control	6,29	0,79	6,19	1,12	-0,11
Engagement					
Three good things	7,02	1,24	7,17	1,06	0,15
Meditation	6,90	0,94	7,23	0,85	0,33
Control	6,91	0,82	7,18	0,97	0,27
Relationships					
Three good things	7,58	1,04	7,65	1,17	0,07
Meditation	6,70	0,98	6,75	1,24	0,05
Control	6,67	1,24	6,70	1,32	0,03
Meaning					
Three good things	7,11	1,11	7,31	1,08	0,31
Meditation	6,73	1,31	7,13	1,39	0,40
Control	6,91	1,20	6,96	1,21	0,04
Accomplishment					
Three good things	7,24	0,96	7,31	1,04	0,07
Meditation	6,88	0,64	7,30	0,85	0,43
Control	7,13	0,99	7,15	0,82	0,02
Well-being					
Three good things	7,09	0,79	7,37	0,67	0,28
Meditation	6,77	0,77	7,08	0,96	0,32
Control	6,84	0,57	6,90	0,75	0,06

Meditation condition vs. control condition and three good things condition vs. control condition.

MANOVA

A MANOVA with the five elements of the PERMA-scale as the dependent variables and condition as a between groups variable examined the difference between the three conditions. No statistically significant differences was found between the three conditions (Table 3).

Table 3
Multivariate test results for the MANOVA of the PERMA-elements between the three good things condition, the meditation condition and the control condition. (N=42)

Measure	***df***	**F**	***p***
Group	10	1,406	,163

Contrast MANOVA

A MANOVA with contrast scores for all five categories of the PERMA-scale as the dependent variables and condition as a between groups variable, examined the contrast between the three good thing condition against the control condition and the meditation condition against the control condition (Table 4). A significant increase was found on Positive Emotion in the Three Good Things condition against the control condition of $p = .002$.

Table 4
Significance, standard error and 95% confidence interval for difference as result as a contrast score for the MANOVA of the three good things condition versus the control condition and the meditation condition versus the control condition. (N=42)

			95% Confidence Interval for Difference	
Measure	***p***	**Std. Error**	**Lower bound**	**Upper bound**
Positive emotion				
Three good things vs. control	,002	,256	,312	1,346
Meditation vs. control	,227	,299	-,237	,971
Engagement				
Three good things vs. control	,664	,272	-,668	,430
Meditation vs. control	,837	,317	-,575	,707
Relationships				
Three good things vs. control	,912	,324	-,619	,692
Meditation vs. control	,965	,379	-,749	,782
Meaning				
Three good things vs. control	,341	,280	-2,96	,835
Meditation vs. control	,282	,327	-,304	1,017
Accomplishment				
Three good things vs. control	,828	,242	-,436	,542
Meditation vs. control	,156	,283	-,163	,979

ANOVA

An ANOVA with overall well-being as the dependent variable and condition as a between groups variable, examined the difference between the three good thing condition, the meditation condition and the control condition (Table 5). No significant effects were found.

Table 5
Univariate test results for the ANOVA of overall well-being between the three good things condition, the meditation condition and the control condition. (N=42)

Measure	***df***	**F**	***p***
Group	2	1,256	,296

Contrast ANOVA

An ANOVA with contrast scores for overall well-being as the dependent variable and condition as a between groups variable, examined the contrast between the three good thing condition against the control condition and the meditation condition against the control condition (Table 6). No significant effects were found on either one of the interventions.

Table 6
Significance, standard error and 95% confidence interval for difference as result as a contrast score for the ANOVA of the three good things condition versus the control condition and the meditation condition versus the control condition. (N=42)

			95% Confidence Interval for Difference	
Measure	***p***	**Std. Error**	**Lower bound**	**Upper bound**
Well-being				
Three good things vs. control	,181	,166	-,110	,561
Meditation vs. control	,183	,194	-,129	,654

Discussion

This study examined the influence of the short positive interventions three good things and meditation on well-being among Dutch students. We found that within a two week period of time the short positive intervention three good things significantly increases Positive Emotion compared to the control group. There were no other significant effects found. In contrary to Seligman's (2005) research we found a significant increase in positive emotion at the immediate post-test, where Seligman only found a significant increase in positive emotion a month after the completing the three good things intervention. This means that this intervention has a larger positive short term effect than was previously assumed by Seligman (2005).

Learning that we can increase positive emotion in a timespan of two weeks has proven that the three good things intervention can be a helpful intervention to be used by universities and students to improve learning, well-being and counteract the effects of depression and stress.

Our first hypothesis stated that we expected to find an increase in Positive Emotion and Well-being in the three good things condition. While a significant increase was found in Positive Emotion, no significant increase was found on well-being. This is contrary to the research of Wing et al. (2006) who did find a significant increase in well-being in a timespan of two weeks. Bolier et al. (2013) argues that even interventions presenting small effect sizes can in theory have a major impact on well-being when many people are reached (Huppert, 2009). Wing et al. (2006) included 175 participants in their research whereas 18 participants were included in the three good things condition in this research. This may explain why our results in well-being differs from the results from Wing et al. (2006).

Our second hypothesis stated that we expected to find an increase in Positive Emotion, Accomplishment and Well-being in the meditation condition. No significant increase was found in either of these elements. This counteracts previously found research (Alexander et al., 1991; Carrington, 1993; Cranson et al., 1991; Dillbeck et al., 1986; Hassed et al., 2008; Lewis, 1978; Murphy et al., 1997; Nakai & Schultz, 2000; Shapiro et al., 2002;). The lack of significance in these results may also be due to the small sample size of this condition which was 10 participants. When this research would be conducted in a large sample size, small effect sizes may prove significant (Huppert, 2009).

Some participants also stated that meditation is "not for them" which may imply that personal affinity with the intervention may be a factor that influence the effect of the intervention Emmons & McCullough (2003), Seligman et al. (2005) and Sheldon, Kasser, Smith and Share (2002) argue that increases in well-being are highest when the activity fits the person's interests and values and when it is premiered neither too frequently nor too seldom.

Another factor that may account for the counteracting effects on the elements of well-being may be that most benefits from meditation are found to be long-term effects (Shapiro et al., 2002). Bolier et al. (2013) acknowledges this argument and states that larger effects are found in

interventions with a longer duration. This may also explain why short term effects on positive emotion were found in the three good things condition but not in the meditation condition.

Bolier et al. (2013) also argues that inclusion of meditation as a positive intervention reduces the robustness of the results for pure positive interventions. This is in line with the data we found in this research as the three good things exercise gave more robust results. Further investigation is advised on the similarities and differences between meditation interventions and pure positive interventions. This may lead to an inclusion or exclusion of meditation practices as a positive intervention in future research and/or practice.

Another influence on the data may be culture. All students who participated in this research were Dutch. The research by Huppert and So (2013) showed that people in the Netherlands score slightly below average on well-being in comparison to other European countries. If well-being is culturally determined, this may also account for the lack of significant increases in well-being in this research. This is also seen in this research, in the pretest participants scored an average of 6,9 on a ten point scale on overall well-being. When using the criteria by Huppert and So (2013) only two (4,7%) participants are considered to be flourishing on well-being, this is even lower than the overall Dutch percentage of well-being which is 21% and even lower when compared to Denmark with a well-being score of 41%. Therefore further research about the cultural differences in increased well-being through positive interventions with use of the PERMA-Scale should be conducted. This can uncover whether certain interventions are more effective for certain cultures and it can uncover whether differences in results can be explained by cultural differences.

Limitations and Further Research

The participation rates were one of the main limitations of this web-based intervention study. Low participation rates are seen as a common problem in this web-based intervention research (Mitchell, Stanimirovic, Klein & Vella-Brodrick, 2009; Schueller, 2010, 2011). Although we started with a group of 138 participants, the data of only 31% of the participants contributed to this research. Largely because of participants not complying with the intervention or not filling in the post-test form. It is possible that the impersonal internet interface may contribute to non-compliance. Seligman et al. (2005) and Bolier et al. (2013) suggest that personalization and tailoring self-help interventions to individual needs as well interactive support might contribute to increased adherence and likewise improved effectiveness of internet self help interventions (Cuijpers, Donker, van Straten, Li & Andersson, 2010). A number of participants in this research did not even start practicing the intervention because of the perceived time consumption. Most participants who did start practicing the intervention immediately reported that they had no problem keeping up with the practice. This is why, for future research, we suggest to start with a personal session, briefing the participants to the specific interventions and to start practicing the intervention in a personal setting. This will help the participant over the hump of getting started and if there are doubts about the time consumption they can be addressed right away.

Time was also a limitation. Because of the strict deadlines of this research it was not possible to exercise the interventions for a longer period than two weeks. Therefore all we could examine were relatively short-term effects, whereas the research of Seligman et al. (2005) and Bolier et al. (2013) show more beneficial long-term effects for these interventions. As most participants perceived the time consumption as grave in the beginning, taking even a longer period of time might affect participant rates even more. Most participants that started exercising the intervention stated that they would continue the intervention even after the research was conducted. Therefore we expect that with a personal approach to getting participants started with the intervention, there will be less participation problems with a study over a longer period of time. And we suggest to conduct this research in a long-term timeframe.

In this research the participants were not fully assigned randomly to the conditions. Assignment was done based on experience and the possession of a smartphone. This may imply a bias was created because of personal preference for an intervention. This may have had effect on the results, because when a participant dislikes an intervention, the likelihood of the intervention having a positive effect could decrease. If a participant was already practicing an intervention, the participant would be assigned to either the other intervention or the control group. Which implies that selection effect could occur rather than randomization effects. Seligman et al. (2005) argue that full randomization will give the most reliable results because of the absence of selection. Fordryce (1983) however argues that a notion of fit has a large influence on the effectivity of the intervention. A positive intervention may or may not fit with a persons personality, motives, strengths or needs. Increases in well-being are highest when the activity fits the person's interests and values and when it is premiered neither too frequently nor too seldom (Emmons & McCullough, 2003; Seligman et al., 2005; Sheldon et al., 2002). But what interventions fits with who is not yet clear and needs further research. Therefore it is advised to research personality traits associated with positive interventions to discover which interventions fits which personality trait.

Conclusion

In this research it was found that the intervention three good things has a positive effect on Positive emotion. In practice, this means that it may be beneficial for students to invest time and effort in this short positive intervention. Further research to explore the effects of different interventions and ways to support students in executing the short positive interventions, could help the field to understand the potential benefits, possibilities and implications.

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