BACHELORTHESIS

Happiness n' stuff

The influence of the ACT intervention Happiness n' stuff on Mental Health and Stress

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Abstract

In this study, the effects of this intervention on mental health and stress, and the way these two constructs influence each other were assessed. 17 students participated in this study and their stress and mental health level were assessed with the PSS and the MHC-SF before and after the intervention. There was one test-condition. Participants with neurological impairment or clinical relevant conditions were excluded. The sub scale emotional well-being, part of the MHC-SF, was the only scale that showed a significant change of .94 points (p=.024). For the sub scales- psychological well-being, social well-being and the PSS, no significant change could be shown. Furthermore, a correlation between the PSS and the MHC-SF was indicated. There was no correlation in the change scores of the PSS and the MHC-SF what may be due to the missing effect of the intervention in general. With the use of an evaluation form, exams in the time of the intervention were negatively tested for a confounding effect. It was also indicated that most people liked the intervention even though they did not experience a direct effect.

Introduction

Behavioral Therapy has a long-rooted tradition in the modern sciences of psychology. It can be divided into three *Waves* of therapy (Hayes, 2004). The first one was behavioral, focusing on direct behavior and principles like conditioning (Hayes, 2004). From this early beginning of empiricism in the field of psychology, with many positive and negative results, the second wave of therapies emerged, the cognitive wave. In this second wave, the focus shifted towards the underlying cognitions evoking the maladaptive behavior, hence the name. Therapy was aimed at solving contradictory ways of thinking, dysfunctional information processing and other maladaptive cognitions (Hayes, 2004). Out of this wave, the third wave of therapies emerged. Even though they still fall in the field of cognitive-behavior therapy, they use a much more holistic approach and are working with concepts that are less 'objective'. Like the other approaches, it is also a witness of society. In the former working society, functioning was the central aspect to mental health, and so theories developed around this principle. In modern days, subjective happiness is more central and so modern approaches must cope with that more complex definition of health. Factors like stress, that were a necessary evil in the past, are nowadays rightfully considered to have a severe impact on the health of people. Because the old approaches were not developed to treat these conditions, innovative ways of therapies are needed. The third wave of therapies aims at the production of "flexible and effective" (Hayes, 2004, S.1) ways of therapies, dealing with different forms of problems by using a flexible pool of treatments. These forms of therapy are already shown to be effective in the treatment of a wide range of disorders like generalized anxiety disorder, posttraumatic stress disorder, chronic pain and many more (Butler, Chapman, Forman &

Beck, 2006). One particular form of cognitive behavioral therapy from the third waves of therapies, is the *Acceptance and* Commitment Therapy (ACT) (Hayes, 2004).

Acceptance and Commitment Therapy (ACT)

ACT aims at clarifying the function of a behavior and, if it is maladaptive, tries to give more productive solutions for the same functions (Schreurs & Veehof, 2013). The ACT model is often used in the context of chronic pain. In general, the treatment of chronic pain with ACT is effective and produces elevated levels of satisfaction among patients (Wetherell, Afari, Rutledge, Sorrell, Stoddard, Petkus & Atkinson, 2011). This was also indicated by a meta-analysis, showing that for example depression and anxiety could be significantly reduced in patients with chronic pain (Veehof, Trompetter, Bohlmeijer & Schreurs, 2016). Nonetheless, ACT was not particular developed to treat chronic pain but as an enhanced or updated version of therapy in general (Hayes, Strosahl & Wilson, 1999). Meta studies about the ACT indicate this effect for the general population with an effect size of about .66 compared to a control group, and .42 compared to the use of medical treatment (Powers, Zum Vörde Sive Vörding, Emmelkamo, 2009). It was also shown that ACT can achieve significant improvements with Depression and anxiety disorders (Hayes, Luoma, Bond, Masuda & Lillis, 2006). ACT is based upon the concept of mindfulness and commitment and it aims at increasing the psychological flexibility of a person (Fletcher & Hayes, 2005). This is defined by having the ability to monitor the reasons- and reactions of the own behavior and by being able to modify the own behavior in the context of these insights and the given values to it (Fletcher & Hayes, 2005). That means that one tries to understand what the behavior aims at. In a next step, these reasons are confronted with a more objective, meta reflection about the own person and values. In a last step, this information is used to modify the new occurrence of behavior in a way that it fits the values one holds. Another definition of psychological flexibility by Kashdan & Rottenberg (2010) is that it enables one to change behavior if it is maladaptive in the current circumstances. The goal is to promote behavior that is congruent with the values one holds (Kashdan & Rottenberg, 2010).

There are six factors that foster psychological flexibility (Fletcher & Hayes, 2005). The factors are intertwined, they promote and build upon each other and in practice, are sometimes hard to distinguish. The first one is '*Acceptance'*. This describes the process of accepting the negative state of arousal that a stimulus evokes rather than trying to avoid or suppress it. (Fletcher & Hayes, 2005). This paves the way for the next step, '*Defusion'.* This process aims at reducing the impact of negative cognitive states by defining and especially accepting them as subjective experience and not as a universal truth (Fletcher & Hayes, 2005). Through that process, it is also possible to come in '*Contact with the present moment'.* Being aware of how factors experienced in the current moment mutually influence behavior and cognition, helps to create a better sense of relationship between the own person and the environment (Fletcher & Hayes, 2005). Another related factor in psychological flexibility is '*Self as Context'* and describes the ability to see the own person in a bigger context and as "transcendent" (Fletcher & Hayes, 2005, S. 321). It helps to see behavior and emotions in relation to a situation and to move away from absolute statements over the own person (Fletcher & Hayes, 2005). The refinement

and/or discovery of the own '*values'* is also crucial. Chosen Values resemble a subjectively perfect way of life as a direction for own goals and behavior (Fletcher & Hayes, 2005). The last factor is called *Committed Action.* It is defined by concrete goals and methods of changing behavior to follow the established values (Fletcher & Hayes, 2005).
It is proposed that when these 6 factors are achieved, psychological flexibility is present. Psychological flexibility is important because it is closely related to the mental health status of a person (Kashdan & Rottenberg, 2010).

Positive Mental Health

Positive mental Health is a broad construct that usually consists out of several factors such as emotional well-being, social functioning and many more (Keyes, 2002). It is not merely the absence of negative symptoms (Keyes, 2002), even though the presence of negative symptoms can often be correlated to decreased mental health. It is important to remember that even though there is high correlation between symptoms and negative mental health, they do not lie on the same dimension. Some people report a high degree of mental health even though a high degree of symptoms is experienced and others report low mental health without any observable symptoms. Because what makes people happy is highly individual, the construct of mental health is often accessed through perceived well-being of a person, that is indeed connected to the ACT concept of psychological flexibility (Keyes, 2002). Ian McDowell (2010, p.70), describes well-being as follows: 'the reference point for judging well-being is a person's own aspirations, based on a blend of objective reality and their subjective reactions to it'. This means that a person judges his own well-being based on the values he or she sets for him-/herself and the assessment of the own person in context of the environment and these values. One factor that often is described as part of positive mental health is 'positive functioning' (Keyes, 2002). This is often similar to definitions of well-being and consists out of factors like self-acceptance, purpose in life, personal growth and others (Ryff, 1989). These factors are related to ACT, especially acceptance of negative emotional states. Another factor that also seems to have a considerable influence on Mental Health is Stress. In a study done by Bovier, Chamot and Perneger (2004), it is shown that the factor stress was responsible for about 49% of the total variance in the construct of mental health. The effect of Stress on mental health is also shown through a study conducted by Shapiro, Brown and Biegel, (2007). The study aimed at the effects of mindfulness based stress reduction and its effect on Mental Health and showed that it is indeed possible to, among other factors, reduce stress and increase mental health through means of a mindfulness based intervention (Shapiro, Brown & Biegel, 2007). This further indicates a connection between psychological flexibility, being part of mindfulness based intervention, and mental health. It also gives an indication that there might be a connection between mental health and stress.

Stress

Stress is a very broad concept. Everyone experiences it and often it is part of everyday life. One of the earliest definition of stress is that it is the perception of an external demand, exceeding the own perceived ability to cope with this demand (Lazarus, 1966). The external demands that one experiences are called stressors (Almeida, 2005). These stressors are potentially stress evoking events in the environment of a person like for example an upcoming deadline or an argument with the family (Almeida, 2005). The amount of stress, a stressor evokes, depends on the individual and his perceived ability to cope with that stressor (Lazarus, 1966). This represents the modern assessments of stress which are subjective to an individual and do not purely add up potential stressors into one 'objective' stress experience. Other definitions involve the concepts of homeostasis, a "complex, dynamic and harmonious equilibrium" (Chrousos & Gold, 1992, S.1245). Stress in this context is described as a disruption of that inner equilibrium and produces efforts to restore it (Chrousos & Gold, 1992). The disruption it can elicit and the efforts that are existent to counter their influence also depends on the individual. Nevertheless, an often-apparent consequence is the occurrence of negative emotions in the presence of stress (Feldman, Cohen, Lepore, Matthews, Kamarck & marsland, 1999). According to these definitions, the own perceived capability to cope with the stressors are crucial in the perception and consequences of stress. […] One factor that is important in the coping abilities of a person is emotional intelligence, with the key component of reflective thinking (Kinman & Grant, 2011). Reflective thinking and emotional intelligence are factors that enhance the capability of a person to cope with potential stressors in the form of negative emotions, therefore increasing the resilience of person in this relation. If this factor could be enhanced, the perceived stress level should decline. A Sub-group that is particular prone to stress are students (Abouserie, 1994) About 77.6% of students experience moderate levels of stress and about 10.4% even report high levels of stress (Abouserie, 1994). The most significant sources of stress are examinations and associated factors like 'too much to do' and 'the amount to learn' (Abouserie, 1994, S.1). Considering the negative consequences of stress for health, this symptomatic is problematic in an age that early. A new intervention from the field of ACT is an intervention called 'Geluk en zo', roughly translated to 'Happiness n' stuff', uses this reflective thinking. It (partly) utilizes the constructs that are defined by ACT to make up psychological flexibility.

''Happiness n' stuff''

It is an intervention that lasts about 2 weeks and, after a brief introduction, can be conducted by an individual without external assistance. It takes the form of an app that like the name says, focuses on subjective happiness. To promote that, the intervention makes use of several factors of the ACT model. The intervention provides a guidance and a structure that aims at enabling the participant to reflect about his own person. This represents the adaptive aspects of ACT, in that it does not focus on a strict method of treatment but holds the person, its resources and capabilities central. Instead of adjusting a psychological treatment to the needs of the patient, the needs of the patient are used by the patient to create

a subjective, individual method of treatment.

The key aspect of the intervention is to help the participant discover, or at least organize the values he or she holds. To achieve the refinement of the own values, the participant should think about what he or she generally aims at with his behavior like the avoidance of negative feelings. The reason for avoidance are often emotional. Something in the environment elicits a negative emotion. If the disruption this emotion elicits gets to strong, it is often tried to avoid the emotion. This is problematic since avoidance is often connected to the onset of illnesses like depression and the creation of other stressors (Holahan, Moos, Holahan, Brennan & Schutte, 2005). These stressors can then elicit even more stress and foster an avoidant coping style.

Through the monitorization of the own behavior, the intervention aims at connecting a person closer to his emotions. If one realizes what the own behavior aims at, for example the avoidance of work, a person can begin to develop alternative strategies to cope with the avoided subject. It is proposed that this will also reduce the stress that the avoidance elicits by increasing the ability of a person to cope with the stressor. Another pier of this intervention is the promotion of an approaching coping style. This coping style is characterized by the tendency to approach anxiety arousing stimuli rather than to avoid them (Bell & Byrne, 1978). This process allows to counteract their origin and therefore decrease negative arousal. It is correlated to increased mental health (Herman-Stabl, Stemmler & Petersen, 1995). The monitorization of behavior that has positive consequences and aims at achieving positive feelings, should indicate to a person what makes him/her happy in life. Through that realization, the person can start to modify his or her behavior in a way to cope with unpleasant emotions, and concentrate on positive ones.

In order to achieve these processes, the intervention makes use of factors of the ACT model. Participants are asked to write down the circumstances of the occurrence of their behavior. It helps to see the own person in relation to the context of the environment. This defuses the implication of negative emotions in that it makes them less refining for the own identity and more connected to the circumstances they occur in. the participant should have less motivation to avoid this behavior and ultimately be able to accept the negative emotion, resulting in less distress and an increase in his mental health. Resembling these factors from the ACT, it can be assumed that some degree of psychological flexibility will be created that will guide the participant through the process. This psychological flexibility increases the ability of a person to cope with the stressor of the negative emotion. This should increase the resilience of a person against this stressor and reduce stress. Because Stress is also shown to increase negative emotions (Feldman et al., 1999), the occurrence and severity of these should also decline.

Furthermore, because of the reciprocal relation of stress and negative emotions, it is proposed that the stress level of participants will also decrease. Through enhanced capability to cope with the own emotions, the perceived capabilities to cope with this stressor is increased. Through that, the stress it evokes should be decreased, indeed resulting in less negative emotions. Because reflection is a key aspect in this intervention, and reflective thinking is also related to decreased stress, it should further be decreased (Kinman & Grant, 2011).

The research questions that is aimed to solve here is:

1)To what extent does the cognitive behavioral intervention '*Happiness n' stuff*' change the experienced stress level and the mental health of students?

2)Do the experienced stress level and the mental health status of students influence each other?

Methods

Design

The intervention 'Happiness n' stuff' was designed as a two-week intervention divided into several different steps. The research was exploratory and aimed to generate knowledge about the relation between the intervention, the factor of stress and how/if it is related to mental health. It was a Semi-experimental study without a control group and without random assignment. To measure the change in stress and mental health, the participants received two test batteries at the beginning and at the end of the intervention, therefore resembling a pretest-posttest design. There was also a second researcher involved who explored the relationship between the intervention, anxiety and well-being. For that there were two additional tests in the test battery. To get as many participants as possibly it was decided to share them and give everyone the whole test battery consisting of 4 tests with pre- and post-measurement.

Participants

The participants were recruited from the social environment of the researcher. They were all students, what was an inclusion criteria, and were between 19 and 28 years old. There were 18 students that were all part of the intervention group. From the 18 participants, 1 did not start with the intervention. The participant named personal circumstances as a reason and was not included in the study. Thus, the final sample consisted out of 17 participants. The students were asked in person to participate in the intervention and if needed, had the chance to be rewarded with the 'SONA' credit system of the University of Twente (UT). The mean age of the participants was 22.56. The sample consisted of 7 male-, and 10 female participants. Furthermore, they had to be able to speak and understand Dutch and should have no neurological damage or other impairments. Participation with the existence of an active psychological disorder was also prohibited and accessed through self-assessment.

Intervention

After the participants were addressed, they received the materials in person by the researcher and the whole intervention was being discussed to eliminate misconception. All participants had the chance of directly contacting the researcher to solve potential questions considering the intervention. The materials of the intervention were divided into two parts. One was a detailed, written step-by-step description of the whole intervention, the other one was the exercise book that contained space for the participants to do the exercises. The whole materials were given in the form of one ring book. The exercise book was structured so it is easier for the participants to oversee their process. Text boxes, tables and Likert scales were used for that. The description of the manual was the same as the one in the exercise book. This helped the participant to connect the description of the exercise found in the manual to the actual exercises found in the exercise book. Even though a frame was chosen to guide the participants through the intervention, it was adaptive to the individual lives and needs of the participants. It was important that the participants do the exercise and do not just write something down for the sake of writing something down so the participants were able to choose the exact timing of the intervention by themselves. This enabled them to adapt the time frame so that it fits best in their routine, aiming at decreasing random errors.

The following part will give an overview of the exercises the participants were supposed to do during the intervention.

Beginning Week 1; 30- 90 minutes.

Exercise 1 a) Write down behavior that is aimed at avoidance of unpleasant sensations.

Exercise 1 b) Write down behavior that is aimed at approaching pleasant sensations.

The first step tried to enable the participant to realize what is important to the person and what he is trying to avoid. If these values become clear and the person understands what he/she is aiming at with the behavior of avoidance, it enables the person to modify that behavior. At the end of this step, a person should have gotten an idea of behavior that he/she wants to move away from and of behavior that should replace the old patterns. This coincides with the processes of ‘acceptance’ and especially ‘values’, described by the ACT model and functions as a point of orientation for the intervention.

Week 1; 3-6 minutes a day, at least 3 days a week.

Exercise 2) Writing down the behavior one exhibits at a given moment and categorizing the reason for it according to exercise 1.

In the second step of the intervention, a person tried to detect how he uses his behavior throughout the day. Use in this context means either to achieve something that a person wants or to avoid something the person does not want, resembling either an approach- or avoidance directed coping. After achieving clarity about the foundations of behavior, the participant is asked to observe and realize how he exhibits this behavior in the real-life context. This stands in accordance to the ACT steps of ‘Contact with the present moment’ and ‘Self as Context’.

Beginning Week 2; 10 minutes.

Exercise 3) Active reflection upon the own behavior from Exercise 2; giving meaning to it.

In this step, the participant tried to give meaning to the information he/she gathered throughout the first week of the intervention. Giving meaning to the own behavior helps to foster an understanding of the circumstances it occurs in. It connects a person to either the negative feelings that are avoided with it, or the positive feelings that are approached with it.

Week 2; 30 minutes.

Exercise 4) Quantification of the preceding steps.

The participant is asked to note down what has been the most present reason for his behavior, avoidance or approach. The results should be interpreted by the participants and he is asked to make conclusions from that. Like the previous step, this one also functions to increase the understanding of the own behavior and its context.

Week 2 15 minutes.

Exercise 5) Conclusions from the previous step.

The participant is asked to draw conclusions from the previous step. This further helps to achieve insight into the own, subjective reasons for behavior.

Week 2, 15 minutes.

Exercise 6) Refinement of values.

The insight that was gained in the previous steps is contrasted to the values defined in Exercise 1b. This is done by comparing the reason for approach directed behavior with the previously defined values.

Week 2, 30 minutes.

Exercise 7) Analysis of avoidance directed Behavior.

In this step, the reasons for avoidance directed behavior and the way it expresses itself were analyzed. Through that process, the participant should understand that the positive consequences of avoidance are only temporally. For a long lasting positive effect, the negative emotions must be approached.

Week 2, 15 minutes.

Exercise 8) Conclusion from previous step.

The participant was asked to draw conclusion from the previous step. Avoidance mostly aims at emotions to achieve a pleasant state of mind. The realization that avoidance coping can have an opposing effect, helps the participant to see his behavior in a new, steadier context and to plan behavioral change.

After Week 2, 6 minutes a day for seven days

Exercise 9) Translation into Behavior

Like the exercise in week one, the participant should categorize his/her behavior. During this time, the participant should try to use his/her gained knowledge to actively engage in approach directed behavior. Through the categorization of his behavior once again, the connection between his capability to alter behavior, the circumstances of it and the positive consequences it brings with it are highlighted.

Measuring

Quantitative Measurement

Before and after the intervention, a test batterie consisting out of 4 different tests was administered. The perceived stress of a participant was assessed through the Perceived Stress Scale 14 (PSS-14). The answers on the questions were indicated with a five point Likert scale that gives option from 'Never' to 'Very Often'. The answers lay on two dimensions, accessing either stressful experiences or experiences that counter stress. Because of that, these items had to be reversed. The test had a reported Cronbach's Alpha of .84 and a Test-retest reliability of .85 (Cohen, Kamarck & Mermelstein, 1983). In this sample, the Pretest reported a Cronbach's Alpha of .83 while the Posttest showed a value of .80.

Well-being was measured with the Mental Health Continuum Short Form (MHC-SF), that consists out of 14 questions. It was also answered by a five point Likert Scale that ranges from 'Never' to 'Every Day'. The Questionnaire measured three different dimensions of well-being. Emotional Well-Being (Items 1-3), Social Well-Being (Items 4-8) and Psychological Well-Being (Items 9-14). The test had an excellent internal consistency of >.80 (Keyes, 2005b, 2006). After 3 months, the test-retest reliability still had an average of .68. Additionally, the test was analyzed with a Dutch sample of 1.932 adults without significant differences in their performance, further indicating a good fit for the study (Lamers, Westerhof, Bohlmeijer, Ten Klooster, & Keyes, 2011). In this sample, the pretest had a Cronbach's Alpha of .83 while the posttest showed a value of .87. For the Pretest, the sub-scales emotional-, social- and psychological well-being respectively had a Cronbach's Alpha of .49, .60, and .86. The Post test showed Cronbach's Alphas of .82 for emotional well-being, .69 for social well-being and .81 for psychological well-being. The Alpha value for the pre-test of emotional well-being was very low, considering the high value of the post-test however the results were still used.

Evaluative Measurement

Next to the quantitative part of the measures, a questionnaire for the evaluation of the intervention was handed out. It consisted out of ten questions. The extent to which the questions were answered was free, therefore the answers differed in their length and amount of information given. To compensate for this effect, the answer from each participant were coded as one answer with one meaning, indicating either a positive attitude or a negative attitude toward the question.

This led to some information being lost in the coding process but made sure that the opinion of each participant was weighted equally. The Questions concerned some crucial aspects of the intervention and general impressions of the participants.

Data Analysis

To answer the research, question the statistic program SPSS was used. Missing values were not present. At the beginning of the analysis, the Kolmogorov Smirnov Test was successfully used to test the sample for normality. Furthermore, Cronbach's Alpha was calculated to make sure the scales had adequate internal consistency. The statistical method of a paired sample t-test was chosen to test for differences between the pre- and post-test. This test calculates the difference between two times of measurements from the same individual. It does that by subtracting p0 from p1 with both tests. To test if there was indeed a significant change, a significance level of 0.1 was chosen. Generally speaking, this is a high level of significance. Concerning the very small sample of 17 participants and the exploratory nature of the intervention however, it was chosen to make sure that eventual differences are detected. In a next step, the Bonferroni procedure was used to apply the significance level to the number of tests that are used. The PSS was used as one test and the MHC-SF was divided into the three sub-scales that it consists of. Because of that, the significance level was divided by 4 and a level of .025 was handled for each test.

To answer the question of an eventually existing relation between changes in Stress and Mental Health, the correlation between these two was calculated. In this circumstance, the MHC-SF was not divided into its subscales. The change scores of the Pre- and Posttest were calculated and then correlated to each other. It was then observed if there is a correlation between these changes. Furthermore, the correlation of the Pre-Tests and the Post-tests among themselves was also calculated using the Pearson Correlation and a significance level of .1. It measures linear correlation between two variables and therefore fits well to answer the research question. Next, the potential confounding effect of the exams was analyzed. The participants were divided into four categories, no exams, exams before, exams during and exams after the intervention. On basis of these groups, a one-way ANOVA Analysis was conducted to observe if there were significant difference between the groups.

The implications of the Pearson-correlations are as stated

r= .10-.30 Small

r= .30-.50 Medium

r= .50-1.00 Large

Results

Examinations

14 people had an examination before, during and/or after the intervention. Especially the connection of exams and stress and the proposed connection of stress and mental health makes it clear that this could be a crucial factor. Because of that, possible influence on the results was tested. The ANOVA analysis did not show significant differences between groups, therefore indicating that the exams had no confounding effect on the results. The exact distribution of the exams can be seen in table 1.

Table 1: Exams in the Intervention.

Exams	3x no exams
	4x before (6x)
	7x during
	1x after
	1x before and after
	1x before and during

Note. Because of the small validity of N=1, the two participants who had exams on different points in time were coded as before for analysis.

Effect

Pre-Post-test changes can be seen in table 2. Handling a significance level of .025, no significant effect could be found on either PSS or MHC-SF even though there was a positive effect in both cases. From the three sub-scales that make up the MHC-SF, only the dimension of Emotional Well-being reported a significant change level of 0.024. This however should be regarded with caution.

Psychological well-being is not significant as well but the only factor that shows a negative result in that it decreased. From all three sub-scales, this one reported the highest change of -1 between pre- and posttest in the opposite direction of what was expected.

Table 2: Decriptive statistics and test score of participants

	Pretest Mean	**Posttest Mean**	**Difference**	**Sig. (two-sided)**	**Std. Deviation Pre**	**Std. Deviation Post**
PSS	23.0588	21.6471	-1.41176	.191	6.07732	6.61382
MHC-SF	45.9412	46.5294	+0.58824	.670	10.23762	10.05682

MHC-Emotional	10.5882	11.5294	+0.94118	.024	1.93839	2.21127
MHC-Social	13.4118	14.0588	+0.64706	.408	4.75735	4.46473
MHC-Psychological	21.9412	20.9412	-1.00000	.202	5.94212	5.12921

Table 3 shows the Pearson correlation between the PSS-14 and the MHC-SF. The Table shows a correlation of -.02 with a significance of .941. This indicates that no correlation among change scores exists. The results of the Pre- and Post- tests correlated with each other as can be seen in table 4 and 5. This is indicating a medium correlation between the two tests According to Pearson. The significance of the posttest correlation is .003 above the threshold. Because of the medium correlation and the small pool of participants it is still regarded as reasonable.

Table 3: Pearson Correlation for change score of PSS and MHC-SF.

		PSS	**MHC-SF**	**Significance (two-tailed)**
PSS	Pearson Correlation	1	-.020	.941
MHC-SF	Significance (two-tailed)	-.020	1	.941

Table 4: Pearson Correlation for Pretests

		PSS-Pre	**MHC-SF-Pre**	**Significance (two-tailed)**
PSS-Pre	Pearson Correlation	1	-.494	.044
MHC-SF-Pre	Significance (two-tailed)	-.494	1	.044

Table 5: Pearson Correlation for Posttests

		PSS-Post	**MHC-SF-Post**	**Significance (two-tailed)**
PSS-Post	Pearson Correlation	1	-.477	.053
MHC-SF-Post	Significance (two-tailed)	-.477	1	.053

Evaluation

The qualitative data gathered through the questionnaire can be seen in table 6. The answer of every person is judged as either positive or negative. It is not possible to judge an answer according to both dimension.

Table 6: Evaluation Questionnaires.

	Positive comment	Negative comment
General Impression	12	5
Still thinking about the intervention	7 ➔ 5 'sometimes'	10
Influence of the Intervention	6 ➔ 4 'sometimes'	11
Title (1x no opinion)	8	8
Background of the intervention (3x no opinion)	11	3
Starting exercise	16	1
Content Questions	11	6
Exercise 3 times a day	14	2 'more' 1 'less'

The Table shows that especially the starting exercise was assessed very good with 14 out of 17 participants liking it. The general opinion of the people towards the intervention was also positive with about 12 participants stating that. This stands in contrast especially with the reported influence and the retrospective thinking about the intervention. Only 7 participants reported that they still think about the intervention and 6 reported that they fell influenced by the intervention. From these people, only two reported that they think about it on a regular basis and that it influenced their behavior more than just 'a little'.

Discussion

In this study, the effect of the ACT-intervention Happiness n' stuff on the variables of stress and mental health was assessed. Through the systematic creation of reflective processes on the side of the participants, the intervention creates a frame which enables the participants to modify their own behavior. To assess if the intervention creates an actual change in the participants, the perceived stress and the perceived mental health of the participants were assessed before and after the intervention. Furthermore, the way these two constructs are related to each other was observed. At last, an evaluation form was handed out to evaluate the intervention and give additional feedback.

Effects

Except for an increase in the MHC subscale emotional well-being, no changes in outcomes were observed. Emotional well-being is often associated to the degree with which positive aspects of life are appreciated (Diener, Suh, Lucas, & Smith, 1999; Keyes, 2009) meaning that not the occurrence, but the perception of positive events in the own life is crucial. This coincides with the functioning of the intervention. It aims at accepting negative sensations and emotions and therefore directs the attention away from that. This then enables the next process of the intervention, fostering the attention in an approach directed manner to more valued aspects of life. The significant increase in emotional wellbeing could therefore indicate that the participants made an attentional shift towards the positive aspects of their life. This reflects the hedonic tradition of wellbeing in which positive aspects are maximized and negative ones are minimized (Lamers et. Al. (2011). The dimensions of social and psychological wellbeing are part of the eudaimonia tradition in that optimal functioning stands central (Lamers et. Al., 2011) This could (partly) explain the difference in effects of the intervention. The intervention achieves a shift in the attention of the participants. Because of its limited duration and limited plans for action, this shift may not have influence on actual behavior to a big extant. People feel more positive because they attend more positive aspects of their life, but did not perceive changes in social or psychological functioning because they were not able (yet) to actually change their behavior.

This is also reflected by the evaluations. From the 17 participants, 12 liked the intervention in general even though just 6 participants reported an actual effect. People were happier after the intervention and due to this emotion, developed a positive attitude towards it even though there were very few behavioral consequences. 94% of the people liked the first exercise. This exercise asked the participants to reflect upon negative and positive aspects of their life. This further indicates that an attentional shift indeed happened and that the intervention was at least partly the reason for it. 4 of the 6 people who reported an effect said that it was mainly a shift in the way they think about stuff and not in the way they behave. The two people who reported an actual effect on their life, both stated that they already engaged in reflection and similar processes.

This fosters the idea that the intervention increases the knowledge about the own person, values and preferences but does not enable a person to actually make the changes.

Psychological Flexibility

Psychological Flexibility is one of the main concepts in ACT. In the intervention Happiness n' stuff, several factors that make up the concept of psychological flexibility are utilized. Especially the monitoring and added meaning to the own behavior stands central in this intervention. However, another crucial point of psychological flexibility is the capability to actual change the own behavior (Fletcher & Hayes, 2005). This is called committed action, as defined by having concrete goals and methods of changing behavior to follow the established values (Fletcher & Hayes, 2005). It is likely that this factor was missing in the intervention, representing the functional aspects of well-being (Lamars et Al., 2011). Because of that, even though reflective capabilities and self-perception were enhanced, it was not possible for the participants to translate this into behavioral consequences. If a person managed to reflect upon himself, he is likely to see parts of himself that he does not like and maybe tried to avoid in the past. Without the capability to actual change the own behavioral patterns, a participant is leaved with the realization that his behavior has negative consequences, but without the means to change that. These missing capabilities to cope with the stressor combined with the constant monitoring, could indeed elicit stress (Lazarus, 1966). If one can see how his behavior contradicts his values but does not have the means to change it, it can create a dissonance in the way of thinking. If there is no mean to solve that, this could instead be avoided again, opposing the beneficial effect of the intervention. Because stress additionally is known to foster negative ways of thinking per se (Feldman et al., 1999), this could further increase negative emotions and avoidant behavior.

One problem that could have led to the missing behavioral change is the duration of the intervention. A two-week intervention is a very short to time elicit actual change and indicate correlation between the change scores in stress and mental health. Other, comparable interventions do often last longer, have more psychological support or aim at 'lower' goals. An ACT intervention that aimed at 'just' increasing psychological flexibility and the 6 associated factors, had an duration of 8, 2-hour sessions with direct guidance by psychotherapist (Fledderus, Bohlmeijer, Smit & Westerhof, 2010). This intervention also used the guidance of the psychotherapists in a way that gives clear instruction about how to achieve behavioral change (Fledderus et al., 2010).

In summary, psychological flexibility is just partly created by the intervention. Because the participants are missing ways to translate their knowledge into behavior, the constant monitorization of these discrepancies may elicit stress and negative emotions that eventually leads to the recreation of avoidant coping strategies. A factor that could eventually be used to reduce this problem is *perceived behavioral control*. It was already shown in other researches that it 'can account for considerable variance in intentions and actions' (Ajzen, 2002, S.679) and could bridge the gap between knowledge and behavioral consequences.

Stress and Mental Health

The results of the Pearson correlation indicate no relation between the change in stress and mental health. Because the intervention failed to show change in the perception of stress and mental-health, it is hard to assess if the correlation is

missing because of this, or because there is actual no positive influence of decreased stress on mental health. The test also shows that between the pretests of the PSS and the MHC-SF, and their posttests, a correlation exists, indeed indicating a relation between stress and mental health. A lot of research was already conducted and showed that stress can be responsible for up to 49% of the variance of mental health, making it likely that some correlation between the change scores in these two constructs exists (Bovier et al., 2004). One factor that could have to do with that is the nature of stress and mental health. The way these constructs were thought to influence each other were as following. Stress increases the emergence of negative emotions. These will lead to less capabilities to cope with them, fostering an avoidant coping style that indeed is correlates with low well-being. The relations between stress and negative emotions was interpreted as a causal relation. This might not be the case. Mental Health, even though correlated to the absence of symptoms, was not defined as the absence of symptoms but as the presence of positive well-being (Keyes, 2002). In this circumstance, negative emotions can be regarded as a negative symptomatic. The MHC-SF however does not measure this negative symptomatic but well-being. In this case emotional-, social- and psychological well-being. This indicated that these two constructs lie on different dimensions. One indicating either light or sever symptoms and the other indicating either low or high mental health. These two are related but not the same and therefore even though a correlation between the two tests could be shown, a correlation between the change scores is missing. For further research, it would therefore be interesting to test for factors that could mediate between the perception of symptoms and the emergence of well-being.

Confounders

Another very important factor in this intervention is the existence of exams during it. 14 participants had examinations before, during and/or after the intervention which resemble an environmental stressor. Considering the construct of stress, it is highly likely that exams have an influence on the results. The analysis concerning these factors could however not prove any of the proposed causations. The time of the exams does not seem to have an influence on the scores of the participants in this research.

Generally speaking, exams seem to have a strong influence on stress, as shown by Abouserie (1994). Because of that, it is likely that they influenced stress, but that it was either not indicted by the measures of the PSS or that it was distorted by some other factors. One possibility could be the missing means to change the behavior and the associated stress that elicits. If participants experience significance amounts of stress due to dissonances between behavior and values, the confounding effect of stress due to exams could diminish in the ANOVA analysis. What makes it additionally difficult is that due to the nature of stress, the amount that is elicited by exams is highly subjective. The participants were not sampled and it could be the case that individual differences in the perception of stress distorted a homogenous effect by the exams.

Weak Points

What should be mentioned is that the posttests were administered shortly after the end of the intervention. That could mean that behavioral consequences may have been in the development but did not have consequences on the perceived stress- and mental health level.

Another restrictive factor is the limited number of participants. There were only 17 participants, making the influence of random error much higher as it already is with the exams. Additionally, a control group is missing what would have made it difficult to credit potential effects to the intervention if they were found. It also undermines the chance to correct for global events that may have influenced Stress and Mental Health.

Another factor that could play a role here is that all participants are selected out of the direct, social environment of the researchers. They were informed not only over the intervention but also about the circumstances of the bachelor's degree. Besides the usual suspects such as the participant bias and social desirability, it could also be the case that the participants gave better feedback than they would have given in other circumstances. This could also be an alternative explanation for the discrepancy between the general impression and the actual effect of the intervention.

Recommendations

The intervention utilized the reflective capabilities of the participants and promoted these with a structured reflective intervention. Through that combination of a rigid structure that enables for subjective reflection, the intervention can be tailored to a vast amount of unique needs. A Behavioral change however could not be observed by the participants. It could be the case that because of the brief time frame, behavioral consequences develop after the intervention through means of an approach directed coping style. Another assessment of stress and mental health a couple of weeks after the end of the intervention could help to clarify that. Another factor that could be added into the intervention are direct means for behavioral changes. These should have the form of clear behavioral instructions, based on the subjective needs and values of the participant. Another recommendation with possible influence on behavioral change is the time of the intervention. Giving the participants more time for their reflection could enhance their understanding about themselves that enables them to change behavior.

Another recommendation concerns the relation among stress and mental health. Even though it could not be proven to be very effective in this small samples, further studies should be conducted to increase the effectiveness of this intervention and to illuminate the relation between stress and mental health. Rising levels of stress and reduced levels mental health makes it necessary to find solutions for that problem. This intervention is in its development but has the potential to do exactly that. High stress and low mental health can lead to the development of severe psychological problems. In times of demographic change one the one hand, and decreased mental health on the other, interventions that are preventively administered before the onset of severe problems are needed. A point in time may come where the development of psychological illnesses and the amount of people who pay for our health care system reaches a threshold

where it is no longer possible to guarantee adequate treatment for anyone anymore. If the window of opportunity to prevent this with preventive ways of therapies closes, it may lead to very negative consequences.

Sources

Abouserie, R. (1994). Sources and levels of stress in relation to locus of control and self esteem in university students. *Educational psychology*, *14*(3), 323-330.

Almeida, D. M. (2005). Resilience and vulnerability to daily stressors assessed via diary methods. *Current Directions in Psychological Science*, *14*(2), 64-68.

Ajzen, I. (2002). Perceived behavioral control, Self-Efficacy, locus of control, and the theory of planned Behavior1. *Journal of applied social psychology*, *32*(4), 665-683.

Bell, P. A., & Byrne, D. (1978). Repression-sensitization. *Dimensions of personality*, 449-485.

Bolger, N., DeLongis, A., Kessler, R. C., & Schilling, E. A. (1989). Effects of daily stress on negative mood. *Journal of personality and social psychology*, *57*(5), 808.

Bovier, P. A., Chamot, E., & Perneger, T. V. (2004). Perceived stress, internal resources, and social support as determinants of mental health among young adults. *Quality of Life Research*, *13*(1), 161-170.

Butler, A. C., Chapman, J. E., Forman, E. M., & Beck, A. T. (2006). The empirical status of cognitive-behavioral therapy: a review of meta-analyses. *Clinical psychology review*, *26*(1), 17-31.

Cohen, S., Kamarck, T., Mermelstein, R. (1983). A global measure of perceived stress. Journal of Health and Social Behavior, 24, 385-396

Chrousos, G. P., & Gold, P. W. (1992). The concepts of stress and stress system disorders: overview of physical and behavioral homeostasis. *Jama*, *267*(9), 1244-1252.

Ed, D., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin*, *125*(2), 276-302.

Feldman, P. J., Cohen, S., Lepore, S. J., Matthews, K. A., Kamarck, T. W., & Marsland, A. L. (1999). Negative emotions and acute physiological responses to stress. *Annals of Behavioral Medicine*, *21*(3), 216-222.

Fledderus, M., Bohlmeijer, E. T., Smit, F., & Westerhof, G. J. (2010). Mental health promotion as a new goal in public mental health care: A randomized controlled trial of an intervention enhancing psychological flexibility. *American journal of public health*, *100*(12), 2372-2372.

Fletcher, L., & Hayes, S. C. (2005). Relational frame theory, acceptance and commitment therapy, and a functional analytic definition of mindfulness. *Journal of rational-emotive and cognitive-behavior therapy*, *23*(4), 315-336.

Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: Model, processes and outcomes. *Behaviour research and therapy*, *44*(1), 1-25.

Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (1999). *Acceptance and commitment therapy: An experiential approach to behavior change*. Guilford Press.

Hayes, S. C. (2004). Acceptance and commitment therapy, relational frame theory, and the third wave of behavioral and cognitive therapies. *Behavior therapy*, *35*(4), 639-665

Herman-Stabl, M. A., Stemmler, M., & Petersen, A. C. (1995). Approach and avoidant coping: Implications for adolescent mental health. *Journal of Youth and Adolescence*, *24*(6), 649-665.

Holahan, C. J., Moos, R. H., Holahan, C. K., Brennan, P. L., & Schutte, K. K. (2005). Stress generation, avoidance coping, and depressive symptoms: a 10-year model. *Journal of consulting and clinical psychology*, *73*(4), 658.

Kashdan, T. B., & Rottenberg, J. (2010). Psychological flexibility as a fundamental aspect of health. *Clinical psychology review*, *30*(7), 865-878.

Keyes, C. L., & Annas, J. (2009). Feeling good and functioning well: Distinctive concepts in ancient philosophy and contemporary science. *The Journal of Positive Psychology*, *4*(3), 197-201.

Keyes, C. L. (2002). The mental health continuum: From languishing to flourishing in life. *Journal of health and social behavior*, 207-222.

Keyes, Corey L. M. (2005b). The subjective well-being of America's youth: Toward a comprehensive assessment. *Adolescent and Family Health, 4,* 3-11

Keyes, C. L. M. (2006). Mental health in adolescence: Is America's youth flourishing? *American Journal of Orthopsychiatry, 76,* 395-402

Kinman, G., & Grant, L. (2011). Exploring stress resilience in trainee social workers: The role of emotional and social competencies. *British Journal of Social Work*, *41*(2), 261-275.

Klohnen, E. C. (1996). Conceptual analysis and measurement of the construct of ego-resiliency. *Journal of personality and social psychology*, *70*(5), 1067.

Lamers, S., Westerhof, G. J., Bohlmeijer, E. T., ten Klooster, P. M., & Keyes, C. L. (2011). Evaluating the psychometric properties of the mental health continuum-short form (MHC-SF). *Journal of clinical psychology*, *67*(1), 99-110.

Lazarus, R. S. (1966). Psychological stress and the coping process.

McDowell, I. (2010). Measures of self-perceived well-being. *Journal of psychosomatic research*, *69*(1), 69-79.

Powers, M. B., Zum Vörde Sive Vörding, M. B., & Emmelkamp, P. M. (2009). Acceptance and commitment therapy: A meta-analytic review. *Psychotherapy and psychosomatics*, *78*(2), 73-80.

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of personality and social psychology*, *57*(6), 1069.

Schreurs, K.M.G. and Veehof, M.M. (2013) *Acceptance and Commitment Therapy bij chronische pijn.* In: C.P. van Wilgen & P. Calders & J.J.X.R. Geraets & J. Nijs & C. Veenhof & E.E.H. van Wegen (Eds.), Jaarboek Fysiotherapie Kinesitherapie. Bohn Stafleu van Loghum, Houten, 196 - 207. ISBN 9789031391721

Veehof, M. M., Trompetter, H. R., Bohlmeijer, E. T., & Schreurs, K. M. G. (2016). Acceptance-and mindfulness-based interventions for the treatment of chronic pain: a meta-analytic review. *Cognitive behaviour therapy*, *45*(1), 5-31.

Vyas, A., Mitra, R., Rao, B. S., & Chattarji, S. (2002). Chronic stress induces contrasting patterns of dendritic remodeling in hippocampal and amygdaloid neurons. *Journal of Neuroscience*, *22*(15), 6810-6818.

Wetherell, J. L., Afari, N., Rutledge, T., Sorrell, J. T., Stoddard, J. A., Petkus, A. J., ... & Atkinson, J. H. (2011). A randomized, controlled trial of acceptance and commitment therapy and cognitive-behavioral therapy for chronic pain. *Pain*, *152*(9), 2098-2107.

Appendix

Evaluatievragen

1. Will je hier onder je globale indruk van deze interventie opschrijven?

2. Heb jij nog aan de interventie gedacht buiten de momenten van registratie?

3. Heeft de interventie invloed op je activiteiten?

4. Wat vindt je van de titel “Geluk en zo”?

5. Wat vindt je van de uitleg over de achtergrond van de interventie?

6. Wat vind je van de 2 beginoefeningen waarin je beschrijft waar je naartoe wilt en waar je vanaf wilt?

7. Wat vindt je van de inhoud van de vragen die je 3 keer per dag kreeg?

8. Wat vind je van het aantal momenten van 3 op een dag?
    a. Minder
    b. Meer
    c. Juist goed
    d. Anders:

9. Had jij een aantal dagen vóór begin, tijdens, of een aantal dagen na de interventie één of meerdere examen? (Kruis alle antwoorden van toepassing aan)
    a. Geen exam
    b. Vóór
    c. Tijdens
    d. Na

10. Heb jij nog andere opmerkingen?