Masterthesis

‘Upward spirals’ in a daily setting and the influences of resilience

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Abstract

Background and aim: The broaden – and – build theory of Barbara Fredrickson (1998, 2001) is investigated in this study. This theory suggests that cognition and behavior of people is broadened through the experience of positive emotions. This consciousness and behavior leads in turn to positive emotions in what can be called an 'upward spiral'. To be able to integrate this spiral in the practical setting, it's necessary to get to know specific work mechanisms. Aim of this study was to find out whether these 'upward spirals' also are possible on a micro level. In addition to this primary goal it was examined if resilience plays a role in the development of the 'upwards spiral'.

Method: Participants take part in a survey in this study. They filled in the modified Differential Emotions Scale (mDES) and the Resilience Scale (RS). Participants were furthermore asked to do different tasks of the Guilford's Alternative Uses Task. Between these tasks it was attempted to evoke positive emotions in participants through pictures of the International Affective Pictures System (IAPS).

Results: Results indicate that there is no development of an 'upward spiral' on a micro- level. The study only focused on one part of the spirals: the broaden effect. Data show that cognition does not broaden through positive emotions on a micro-level. In addition the factor resilience has also no influence on the experience of positive emotions of the development of an 'upward spiral'. Reasons why the expectations of this study are not reached are discussed. The research highlighted some methodological areas, which could be investigated on the basis of the result of this study.

Samenvatting

Achtergrond en doel: In deze studie werd onderzoek gedaan naar de broaden- and- build theorie van Barbara Fredrickson (1998, 2001). Deze theorie stelt dat iemands bewustzijn door het ervaren van positieve emoties verbreed. Vervolgens leidt dit tot het ontwikkelen van nieuwe cognities en gedragingen. Deze nieuwe cognities en gedragingen kunnen vervolgens weer tot positive emoties leiden. Dit fenomeen wordt ook 'upward spiral' genoemd. Om deze spiral beter in de praktijk te kunnen gebruiken, moeten speficifieke werkingsmechanismen duidelijk worden. Doel van dit onderzoek was uitvinden of deze 'upward spirals' ook op een micro- niveau tot stand kunnen komen, wat tot nu toe nog niet is onderzocht. In verband hiermee werd in deze studie verder onderzocht in welke mate veerkracht invloed heeft op het ontstaan van een 'upward spiral'.

Methode: Deelnemers vulden een enquête in. Onderdeel hiervan waren de modified Differential Emotion Scale (mDES) en de Resilience Scale (RS). Deelnemers voerden verschillende taken van de Guildord's Alternative Uses Task uit waarbij tussendoor geprobeerd werd om positive emoties door middel van plaatjes (International Affective Pictures System; IAPS) uit te lokken.

Resultaten: De uitkomsten van dit onderzoek laten zien dat er op een micro- niveau geen 'upward spiral' is te vinden. De focus lag in deze onderzoek op een specifiek gedeelte van de spirals: het broaden effect. Uit de gegevens blijkt dat positieve emoties op een micro-niveau geen verbreding van de cognitie ten gevolg hebben. Verder kwam naar voren, dat de factor veerkracht geen invloed op het ervaren van emoties of het opbouwen van een 'upward spiral' heeft. Redenen waaroom de verwachtingen in deze studie niet worden bevestigd worden besproken. Onderzoek en resultaten geven veel aanknopingspunten om het onderzoek in de toekomst op andere manieren te herhalen.

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1 Introduction

Experiences of positive emotions are a great gain for everyone. They evoke a subjective feeling of pleasantness and contribute to people's quality of live in a crucial manner (Fredrickson, 1998). These experiences are not to be taken for granted. The purpose of this study is to consider a theory of positive emotions and to examine whether positive emotions can be established of short- duration (everyday setting), so that they can help people to build other resources to provide quality in life.

One field which deals with positive emotions is the positive psychology. To provide an insight into the topic of this study, positive psychology will be described. Important components of the positive psychology are positive emotions. These emotions constitute a large part of this current study and a more detailed explanation is going to follow. One theory which deals with these emotions is the 'Broaden- and- Build- Theory' of Fredrickson (1998, 2001) which is described subsequently. The aim of this study is to prove the Broaden- and-Build-Theory specifically, so it can be used more efficiently in practice. The last topic of the introduction is the concept of 'resilience'. Resilience steadily gets more regard within the field of the positive psychology (Fröhlich- Gildhoff & Rönnau- Böse, 2009; Johnson & Wood, 2016). It is related to positive emotions in general (Ong, Bergeman, Bisconti, & Wallace, 2006) and, hypothetically, plays a role in processes surrounding the broaden- and-build theory. Therefore, the concept of resilience will be investigated in this study.

1.1 Positive psychology

After World War II psychology was largely concentrated on healing harm and weaknesses of people (Seligman, 2002). The focus on pathology outweighed within the field of psychology which resulted in the development of 'a model of the human being lacking the positive features that make life worth living' (Seligman & Csikszentmihalyi, 2000, p. 5). Other things like mental strength of people were neglected, which is one important component of being human and helpful for therapy (Seligman, 2002). Since the year 2000, there is a new discipline within psychology, termed positive psychology (Seligman, Steen, Park & Peterson, 2005). Seligman and Csikszentmihalyi (2000) describe the initial aim of positive psychology as the beginning "to catalyze a change in the focus of psychology from preoccupation only with repairing the worst things in life to also building positive qualities" (p. 5). Consequently, it centers around concepts like personal strength and resilience

(Seligman & Csikszentmihalyi (2000).The principle 'build what's strong' gained more importance within psychology (Duckworth, Steen & Seligman, 2005). Positive psychology concentrates on mechanisms and processes of well- being and optimal functioning of individuals, relations and communal life (Bohlmeijer, Bolier, Westerhof, & Walburg , 2013). The effectiveness of positive psychology is indicated by some studies that show a positive effect of specific interventions which were designed to increase happiness and well- being (Lyubomirsky, Sheldon, & Schkade, 2005; Seligman et al., 2005; Schueller, 2010; Sin & Lyubomirsky, 2009). Moreover, positive psychology focuses on things like positive social interactions, positive personality traits and positive emotions (Pietrowsky & Mikutta, 2012).

1.2 Emotions

Emotions can be defined in many ways. Seidel and Krapp (2014) define emotions as feelings that are relatively good to detect and give information about the quality of the current person- environment- interaction. Lang (1995), however, characterizes emotions as action dispositions, which are states of alert readiness "that vary widely in reported affect, physiology, and behavior" (p. 372). In turn, Fredrickson and Branigan (2005) describe emotions as "short- lived experiences that produce coordinated changes in people's thoughts, actions, and physiological responses" (p. 313). For example, fear can induce someone to flight and simultaneously blood flow increases in the body (Fredrickson & Branigan, 2005). Joy, as another example, can help people recover from stress (Gleitman, Gross & Reisberg, 2011). Concluding from these different scholarly opinions, emotions can be described as short feelings that display the individual's current mood, which, in turn, evokes specific thoughts and behaviors in people.

Seidel and Krapp (2014) mention that specific triggers lead to emotions. Unexpected difficulties, for instance, lead to an emotion that serves as a signal to act (Seidel & Krapp, 2014). By use of certain triggers, emotions can be evoked experimentally (Drače, Efendić, Kusturica, & Landžo, 2013). Fredrickson and Branigan (2005), for instance, used film clips to elicit different emotions in their study. There is also evidence that besides film clips, pictures have been shown to be useful for evoking (positive) emotions (Lang, 1995; Bradley & Lang, 2007). Viewing pleasant images, compared with neutral images, reliably activate two different areas of the brain: the medial prefrontal cortex (mPFC) and the nucleus accumbens (NAc) (Sabatinelli, Bradley, Lang, Costa and Versace, 2007). The mPFC is responsible for setting of mood (Öngür & Price, 2000) whereas the NAc is part of the reward- related system

(Knutson, Adams, Fong & Hommer, 2001) which is related to emotions (Barrot, Olivier, Perrotti, DiLeone, Berton, Eisch, Impey, Storm, Neve, Yin, Zacharlou & Nestler, 2002). Activation of these two brain areas leads to positive emotions (Sabatinelli et al., 2007).

1.3 Broaden- and- build theory

Positive emotions give rise to life satisfaction (Diener & Larsen, 1993), but it is also hypothesized that they broaden someone's momentary mindset (Fredrickson, 2003), attention and cognition (Fredrickson & Joiner, 2002). Fredrickson (1998) established the broaden- and – build theory of positive emotions which proposes that positive emotions lead to optimal well- being (Fredrickson, 2001). This theory has been explored by many researchers (Fredrickson, 1998; Fredrickson, 2001; Fredrickson & Joiner, 2002; Fredrickson & Branigan, 2006). At first instance the broaden- and build- theory posits that the experience of positive emotions lead to the broadening of cognition, thereby "widening the array of percepts, thoughts, and actions presently in mind (the broaden- effect) (Fredrickson & Branigan, 2005, p. 315). Bohlmeijer, Westerhof, Bolier, Steeneveld, Geurts and Walburg (2013) gave an example to explain the effect from positive emotions in accordance with Fredrickson: Pleasure stimulates to play and be creative; interest invites to study, learn and undergo new experiences, and silence correlates with appreciation of one moment. Studies that tried to assess biases in attentional focus (Fredrickson & Joiner, 2002) gave evidence for the idea that positive emotions broaden cognition and attention. They found that global biases (tendency to detect rather global features of presented stimulus), which are consistent with broadened attention, are generated through positives states (e.g. optimism) (Derryberry & Tucker, 1994; Basso, Schefft, Ris, Dember, 1996). In comparison, local biases that are congruent with narrowed attention, are generated through negative states (e.g. anxiety) (Derryberry & Tucker, 1994; Basso, Schefft, Ris, Dember, 1996; Fredrickson & Braingan, 2005). Furthermore, Fredrickson's theory assumes that, by means of their broadened cognition, people are more likely to engage in new activities and expose themselves to new experiences, which in turn "build their physical, intellectual, social, and psychological resources" (the build- effect) (Fredrickson & Joiner, 2002, p.172). These resources can "function as reserves to be drawn on later to manage future threats" (Fredrickson, 2011, p. 220). These established broadened cognition and resources in turn again lead to more positive emotions. Therefore, this process can also be called an 'upward spiral' (Garland, Fredrickson, Kring, Johnson, Meyer, & Penn, 2010). Positive emotions in the present have an influence on the amount of positive emotions experienced in the future. This is due to their effects on broadened thinking (Fredrickson &

Joiner, 2002). The build effect is rather a phenomenon of long- term duration (Bohlmeijer, Bolier, Westerhof, & Walburg, 2013). In fact, in the long term, the build effect is believed to give rise to an increase in physical- and mental health (Bohlmeijer, Bolier, Westerhof, & Walburg, 2013). Figure 1 illustrates the principle of an 'upward spiral'.

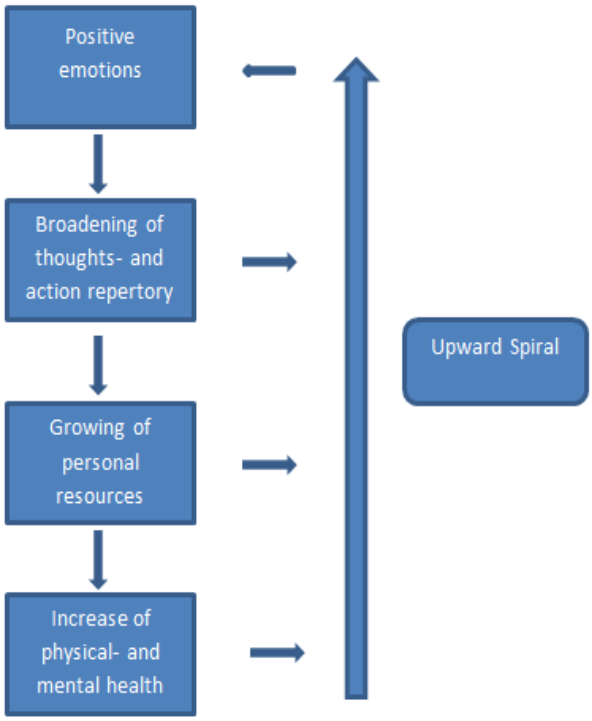

Figure 1.: *'Upward spiral' of positive emotions* (Bohlmeijer, Bolier, Westerhof, & Walburg, 2013).

1.4 Resilience

Fredrickson and Joiner (2002) describe that resources are built through broadening. One resource that is closely related with positive emotions is resilience (Ong, Bergemann, Bisconti & Wallace, 2006; Tugade & Fredrickson, 2004; Block & Kremen, 1996). Resilience is a personality characteristic (Wagnild & Young, 1993) and can be defined as follows: "[…] the capability of individuals to cope successfully in the face of significant change, adversity, or risk. This capability changes over time and is enhanced by protective factors in the individual and the environment" (Stewart, Reid & Mangham, 1997). People who are resilient possess self- esteem. Also, resilience can be seen as a buffer which protects individuals from

psychotic disorders (Rutter, 1987). Resilience is a part of the positive psychology (Johnson, & Wood, 2016). For example, it creates an increased sense of well- being (Bohlmeijer, Bolier, Westerhof, & Walburg, 2013). For that reason, many interventions within the positive psychology are targeted to promote resilience in people (Bohlmeijer, Bolier, Westerhof, & Walburg, 2013).

Resilience and positive emotions are related and positively influence each other. Many studies demonstrate that people who are resilient experience more positive emotions than people who are less resilient (Ong, Bergemann, Bisconti & Wallace, 2006; Tugade & Fredrickson, 2004; Block & Kremen, 1996). Positive emotions, at the same time lead to more resilience (Fredrickson & Joiner, 2002; Cohn, Fredrickson, Brown, Mikels & Conway, 2009). Positive emotions are related to coping styles which are important to build resilience and help people withstand negative emotions faster (Tugade, Fredrickson, & Feldman Barrett, 2004).

1.5 Current study

This study aims to expand upon previous works that have investigated the effects of the broaden –and- build theory and 'upward spirals'. Two key studies in this area are from Fredrickson and Branigan (2005) and Fredrickson and Joiner (2002). Fredrickson and Braingan (2005) performed an experiment with film clips and global- visual using tasks and found out that positive emotions broaden the scope of attention (the broad effect). Fredrickson and Joiner (2002) predicted that positive emotions lead to broadening of attention and cognition and that, the other way around, higher levels of broadened mind lead to more positive emotions (Fredrickson & Joiner, 2002). Both of these predictions were supported through their research. Trigger of these broadened attention and cognition are experiences of positive emotions in the past, which predict experiences of positive emotions in the future (Burns, Brown, Sachs-Ericsson, Plant, Curtis, Fredrickson & Joiner, 2008). Fredrickson and Joiner (2002) tested their hypotheses based on the assumption that these effects could arise in a period of five weeks. Some authors however, say that emotions are not a long-lasting phenomenon (like the mentioned five weeks) but rather lasting from seconds as far as minutes (Gleitman, Gross & Reisberg, 2011). They are present in the here and now. This fact gives rise for this study.

One might wonder, why it should take so long for emotions, which are from short duration, to elicit 'upward spirals' via the path of a broadened cognitive state. In fact, it is still unclear how 'upward spirals' really form. In order to integrate them into therapeutic work

usefully, it is necessary to find out whereupon the spirals are based. Until now it appears that spirals were mainly tested on a long time period. Purpose of this current study is to test whether these 'upward spirals' also arise on a micro- level (everyday setting). If it can be shown that 'upward spirals' arise on a micro- level, this knowledge can may be integrated into everyday life. Based on the idea that positive emotions are of rather short duration, the spiral is going to be tested on a micro- level. The focus of this study is zoomed in on the interaction of the first and second part as seen in figure 1 ('Positive emotions' and 'Broadening of thoughts- and action repertory'). For this study, the building effect will be taken less into consideration because it describes a phenomenon that forms in the long- term (Bohlmeijer, Bolier, Westerhof, & Walburg, 2013).

There are studies about positive emotions and resilience in relation to stress in life (Ong, Bergemann, Bisconti & Wallace, 2006). People who are resilient know the benefit of positive emotions and are able to use this knowledge to cope with stressful events (Tugade, Fredrickson, & Feldman Barrett, 2004). It might be that there is an influence of resilience at the arising of an 'upward spiral' in association with positive emotions independently to stress but on an everyday setting. If resilience has any influence at the arising of an 'upward spiral', people with low resilience could get help to work on it and to learn to generate an 'upward spiral' of positive emotions by themselves for their physical- and mental health.

Out of this, the research question of this study reads as follows: *Is the development of an 'upward spiral' possible upon a micro- level and is resilience a factor which influences this development?*

In order to examine this question, four hypotheses are proposed which will be tested in this study.

1) *Using positive pictures (during the study) evokes positive emotions in participants.*

This hypothesis serves as a manipulation check. To confirm that the induced pictures evoke positive emotions, participants complete a previous questionnaire and a remeasurement (T0 and T1) of the same test (mDES). It is expected that participants in the experimental group show a significant increase in their positive emotions after the study compared to the beginning of the study.

2) *Relative to a neutral state, people who experience positive emotions expose a broadened cognition.*

With this second hypothesis it was tested if it is possible to build an 'upward spiral' on a micro- level (within half an hour). It was expected that people who feel positive emotions

through positive pictures are capable to show a broader cognitive performance than people who are in a neutral state of emotions.

3) *People who score high on resilience relative to people who score low on resilience experience more positive emotions at the end of the study compared to the beginning of the study.*

People with a high level of resilience are signified by their ability to direct their focus in the here and now (Waugh, Fredrickson & Taylor, 2008). In other words, there was found a correlation between resilience and attention (Weick & Sutcliffe, 2006). One possible explanation for this correlation is that resilient people, contrary to low resilient individuals, possess the ability to appropriately self- regulation (Waugh, Fredrickson & Taylor, 2008). Therefore they can possibly also better regulate their attention. Thus, for this study, it would be expected that participants who score high on resilience can focus their attention on the positive pictures better than participants who score low on resilience. As a possible consequence, they report more positive emotions than their low-resilient counterparts at the end of the experiment compared to the beginning of the experiment. This hypothesis would solely be tested in the manipulated condition.

In relation to the prediction that people who score high on resilience experience more positive emotions and the prediction that people with the experience of positive emotions perform better on the task, the last hypothesis of this study arises as follows:

4) *Relative to people who score low on resilience, people who score high on resilience show a broadened cognition.*

It is expected that resilience and the experience of positive emotions on the one hand and resilience and broadened cognition on the other hand show a positive correlation. This expectation will be examined with hypothesis 3 and 4, as mentioned above.

2 Method

2.1 Participants

There were 106 participants in this study. Demographic data (gender, age, occupation) of participants are shown in table 1. Participants were mainly recruited through the Sona-System at the University Twente in Enschede. Furthermore, they are composed of family and friends of the researchers. Participants were randomly distributed over two conditions (experimental- and control condition), with 53 in each. The experiment to test the arranged

hypotheses was conducted with an online survey via the research platform 'Qualtrics' (www.qualtrics.com). Therefore, one premise to take part in the study was having internet access. Furthermore, participants had to be at least 18 years old and have an adequate Dutch- or German language proficiency to take part in the study. The experiment was offered in these two languages.

Table 1. *Demographic data participants*

Participants		N= 106
Nationality		
	Dutch	39 (36,8%)
	German	67 (63,2%)
Gender		
	Male	30 (28,3%)
	Female	76 (71,7%)
Age	M	23.4 years (range from 18- 61)
	SD	6.46
Occupation		
	Student	94 (88,7%)
	Apprenticeship	2 (1,9%)
	Employment	10 (9,4%)

2.2 Materials

The following paragraphs describe the materials applied in this study. The questionnaires used in this study were offered in Dutch and German. All of them are represented in Appendix A, B, C and D.

2.2.1 Modified Differential Emotions Scale (mDES)

To measure emotions of participants during this study, the Modified Differential Emotions Scale (mDES) was used (Fredrickson, 2013). The mDES consists of 16 groups of three words which describe specific feelings, for instance 'joyful, glad and happy'. The six items which belong to positive affect are item 1, 7, 8, 10, 12 and 16 (interest, inspiration, joy, balance, kindness, contentment). Eight items which belong to negative affect are item 2, 3, 5,

6, 9, 13, 14 and 15 (fear, anxiety, anger, shame, sadness, guilt, disgust, contempt). Item 4 and 11 (awe and surprise) are not scored because these emotions are not clearly referred to either positive or negative affect. Participants rated on a 7- point Likert scale (1 = not at all, 7 = extremely) how they are felt at this moment. Cronbach alpha's for the mDES (T0) in this study was $\alpha = .84$ and Cronbach alpha's for T1 was $\alpha = .75$. This shows a good to acceptable reliability.

2.2.2 Resilience scale (RS)

The Resilience scale (RS) is an instrument to measure resilience (Wagnild & Young, 1993; Windle, Bennett & Noyes, 2011). It is composed of 25 statements like 'My belief in myself gets me through hard times' which are based on five components: equanimity, perseverance, self- reliance, meaningfulness, existential aloneness (Wagnild & Young, 1993).

On a 5- point Likert scale (1 = not true, 5 = true) participants have to score in which way the statements describe their feelings and thoughts in general. The RS was completed once in this study (T0) to figure out how resilient participants in this study are (hypothesis 3 and 4).

The internal reliability for the Dutch version of the RS can be seen as good "with Cronbach alpha's of $\alpha = 0.85$" (Portzky, Wagnild, De Bacquer, & Audanaert, 2010, p. 88). Studies from Leppert, Koch, Brähler and Strauß (2008) revealed a reliability for the German version with Cronbach alpha's of $\alpha = 0.94$. In this study, Cronbach alpha's is $\alpha = 0.85$ which shows a good reliability.

2.2.3 Guilford's Alternative Uses Task

Creativity is a cognition that could be broadened through positive emotions (Burns, Brown, Sachs-Ericsson, Plant, Curtis, Fredrickson & Joiner, 2008). Guilford (1967) created the 'Guilford's Alternative Uses Task' to measure creativity in the form of divergent thinking. It is "a widely used, well- validated reliable measure of creativity which measures the ability to produce a broad range of associations to a given stimulus" (de Bloom, Ritter, Kühnel, Reinders & Geurts, 2014, p. 166; Drapeau & DeBrule, 2013). Participants were asked to write down all possible uses for an item. Referring to 'Guilford's Alternative Uses Task' (1967) for this study it was chosen to ask participants for a possible use of a glass bottle, a brick, a newspaper and a tablespoon ('What can you do with a glass bottle? Name all possible uses that you can imagine.'). Fluency determines whether increasing of cognition has occurred (Chermahini, Hickendorff & Hommel, 2012). Fluency is defined as "the ability to generate

numerus responses" (Lemons, 2011, p.744). It is therefore about quantity. The more possible uses participants can imagine, the better the performance on the task.

2.2.4 International Affective Picture System (IAPS)

The International Affective Picture System (IAPS) is a set of over 400 emotionally evocative pictures (Lang, 1995; Lang & Bradley, 2007). They evoke different measurable emotional reactions (Lang, Bradley, Fitzsimmons, Cuthbert, Scott, Moulder & Nangia, 1998) like pleasure and arousal during viewing, which is rated by a large group of men and women (Lang & Bradley, 2007). IAPS are used worldwide to evoke emotional reactions in experimental investigations (Lang & Bradley, 2007). They indicate a cross- cultural validity (Drače, Efendić, Kusturica, & Landžo, 2013; Bradley & Lang, 2007) and "could be considered as a valid system of affectively eliciting stimuli that is capable of being used as a representative tool in experimental studies and other research possibilities including mood, emotion induction, priming and so forth" (Drače, Efendić, Kusturica, & Landžo, 2013, p. 22). Emotional reactions have been detected through introspection, somatic- and autonomic measures while viewing these pictures (Lang, Greenwald, Bradley & Hamm, 1993).

In the current study, pictures that evoke positive emotions were used for the experimental (manipulating) condition and neutral pictures which are not aimed to evoke any emotion were used for the control condition. Examples of positive pictures are happy people, young children's, great landscapes and money. Examples of neutral pictures are household objects (Bradley, Sabatinelli, Lang, Fitzsimmons, King & Desai, 2003). The selection of the pictures in this study was based on a rating from another sample (Marchewka, Zurawski, Jednoróg & Grabowska, 2013). Pictures in this study were rated, for instance, on 'pleasant' or 'unpleasant'. For the experimental condition (positive emotions) pictures with the highest score on 'pleasant' were chosen. Pictures which were rated with a medium score on valence and arousal (around 5.0) where chosen for the control condition. The control condition was confronted with neutral pictures. This implicates that they neither evoke pleasant nor unpleasant reactions in people.

2.3 Procedure /Design

Before this study was put online, an ethical commission has checked the study and gave their approval. Participants in this study had to choose in which language (Dutch or German) they wanted to participate. There were two online links, one in German and one in Dutch. The survey starts with a welcome greeting and introduction with information about duration and procedure of the survey. Participants were given an email address in case of

questions about the experiment on their part. Additionally, participants were asked to agree that his or her participation was voluntary (informed consent).

Participants were randomly allocated to either the experimental condition or the control condition. In both of these conditions, participants first had to complete four different questionnaires (Demographic information, mDES, Resilience Scale and the Mental Health Continuum Short- Form; T0). The mDES was completed twice in this study: before (T0) and after (T1) the cognitive tasks. In this way it can be checked whether the manipulation of the emotions was effective (Hypothesis 1). Participants had to fill in the Mental Health Continuum Short- Form for the other researcher of this study. This questionnaire provides no contribution to the present study. Second, participants were asked to perform the first cognitive task (based on Guilford's Alternative Uses Task). Every participants gets the items in the same order (1. Glass bottle, 2. Brick, 3. Newspaper, 4. Tablespoon). In total, participants had the possibility to fill in 20 alternatives per task. There was given a time limit for participants of three minutes for each task. De Bloom et al. (2014) gave their participants a time limit of two minutes. Through a preliminary test in this study, it would be obvious that two minutes are a bit too short to master the task. Within two minutes there was no chance to thoroughly write down all ideas. It was expected that one minute extra show which participant really have more ideas to fil in at the task. After completion of the first task, participants were confronted with 24 pictures (IAPS), dependent on the group either positive or neutral. It has been decided that there will no (manipulative) pictures be shown before the first task. In this manner there is tried to create a coherent basis that each participant starts at the same level. Each picture is shown for five seconds. After that, participants get the second cognitive task whereon other positive or neutral pictures are followed again. Taken as a whole there were four cognitive tasks (glass bottle, brick, newspaper and tablespoon) and three inductions of emotions through 24 pictures each. In total, participants are confronted with 72 pictures. At the end, participants were asked to fill in the mDES (T1) again. Figure 2 offers an overview of the construction of the experiment. The setup of this study is partially based on research from Fredrickson and Joiner (2002) and Fredrickson and Branigan (2005). They used visual elements to evoke emotions in participants and also gave the idea to use the Guilford's Alternative Uses Task.

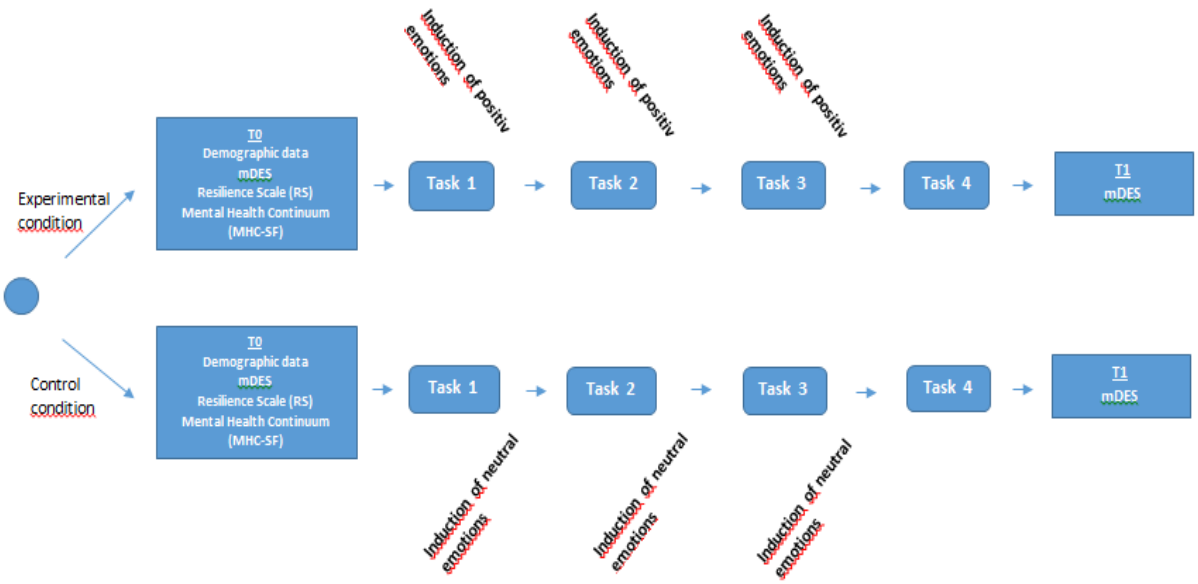

Figure 2.: *Design of the experiment*

2.4 Statistical analyses

Collected data were analyzed using SPSS 23 (IBM SPSS Statistics). To test whether the positive pictures evoke positive emotions in participants for pre- to posttest a Wilcoxon signed ranks test was performed within the experimental group (*N*= 53, Hypothesis 1- Manipulation check). For a countercheck this test was also performed in the control condition.

In order to test hypothesis 2 'Relative to a neutral state, people who experience positive emotions expose a broadened cognition' an independent samples t- test was conducted with 'condition' (experimental and control) as independent variable and 'performance' (number of written alternatives for the subjects) as dependent variable. It is suspected that participants in the experimental condition show a better performance on the cognition task.

Hypotheses 3 ('People who score high on resilience relative to people who score low on resilience experience more positive emotions at the end of the study compared to the beginning of the study') and 4 ('Relative to people who score low on resilience, people who score high on resilience show a broadened cognition.) were tested with an independent sample t- test. These two hypotheses were only tested in the experimental condition. All statements of the resilience scale are formulated positively except for item 11 in the Dutch version. With the proposition: 'I have doubts about the meaning of life' it is negatively formulated. Therefore, the item was transformed before the analyses began. To determine the dependent variable for hypothesis 3 the 'mean difference' (MD) of the two measures of positive emotions (T0 and

T1; in this case T1-T0) was calculated. The independent variable is the score at the Resilience Scale (RS). To determine whether participants belong to 'high in resilience' or 'low in resilience' the mean of a representative sample of the population (*M* (total) = 135,2; *M* = 3,9; *N*= 1361) (cf. Hoijtink, Te Brake, & Dückers, 2011) was used. Participants who score below this mean value were allocated to 'low in resilience' and participants who score above this mean value were allocated to 'high in resilience'. It is expected that people who score high on resilience show more positive emotions after the study than people who score low on resilience.

The independent variable of hypothesis 4 is also the score at the resilience scale (cf. hypothesis 3). The dependent variable in this case was the 'performance' at the cognition task.

3 Results

Table 2 shows the data of the two questionnaires (mDES (T0 and T1) and the RS-scale) and the performance at the Guilford's Alternative Uses Task per condition. Compared to each other, it is obvious that there are no noticeable differences between the control (neutral) - and the experimental (positive) condition, in regard to all values at the questionnaires. It could be seen, that participants in both conditions perform nearly the same at the Guilford's Alternative Uses Task and that there is no steady improvement.

Table 2. *General results of questionnaires and tasks per condition*

	Control condition (N=53)				Experimental condition (N= 53)			
	M	SD	Min	Max	M	SD	Min	Max
mDES: Positive emotions (T0)	3.43	1.16	1.33	5.83	3.30	1.26	1.83	6.00
mDES: Positive emotions (T1)	3.46	1.22	1.50	6.67	3.48	1.20	1.50	6.00
Resilience scale: Resilience	3.75	0.40	2.68	4.68	3.84	0.39	2.96	4.92
Performance glass bottle	10.52	3.85	4.00	20.00	10.37	4.14	3.00	20.00
Performance brick	8.45	3.95	2.00	20.00	8.37	3.84	2.00	20.00
Performance newspaper	11.77	4.31	2.00	20.00	11.49	4.37	3.00	20.00
Performance tablespoon	9.52	4.43	3.00	20.00	9.43	4.91	0.00	20.00
Performance total	40.28	14.52	13.00	80.00	40.13	15.40	10.00	80.00

The following paragraphs describe the results of this study per hypothesis.

3.1 Using positive pictures (during the study) evokes positive emotions in participants.

The first hypothesis was a manipulation check. Results indicated a trend (marginal significant α= 0.1) showing that there was a marginal increase of positive emotions from *M* = 3,30 to *M* = 3,48 through the IAPS pictures between the pre- and posttest [z = -1.919, p= .055]. In comparison, in the control condition, no change in positive emotions (ranged from *M* = 3,43 to *M* = 3,46) at the end of the study compared to the beginning [z = -.550, p= .582] was visible.

3.2 Relative to a neutral state, people who experience positive emotions expose a broadened cognition.

Primary to the first task (glass bottle) no manipulation in emotions was made. Table 4 shows that the experimental and the control group did not differ in terms of the amount of mentioned answers at the first task. Therefore, the first task was not included in the calculation. Thus, only tasks two, three and four were compared. Participants in the control condition mentioned *M* = 29.75 (SD = 11.44) alternatives in total at this three tasks whereas participants in the experimental condition mentioned *M* = 29.75 (SD = 12.06). There was no significant difference between the two groups [t (104) = 0.000, p= .990] with regard to their performance at the cognition task. The second hypothesis which stated that people who see the positive pictures mention more uses for the objects from the Guilford's Alternative Uses Task than people who see the neutral pictures, was not confirmed.

On the basis of a variance analysis of various factors it was determined whether significant differences between the two conditions existed in respect to each individual task (glass bottle, brick, newspaper and tablespoon). Table 4 shows that both conditions did not differ significantly for any of the tasks.

Table 4. *Comparison of each task between the two conditions*

Task	F	df	Sig.
Glass bottle	.429	7, 102	.840
Brick	.250	2, 102	.794
Newspaper	.000	1, 102	1.000
Tablespoon	.750	2, 102	.544

3.3 People who score high on resilience relative to people who score low on resilience experience more positive emotions at the end of the study compared to the beginning of the study'

The score on positive emotions had increased for participants low in resilience (N = 33) with *M* = 0,11 at the end of the study whereas the score for participants high in resilience (N = 20) had increased with *M* = 0,30. There was no significant difference in the amount of experienced positive emotions between people who scored high on resilience and people who scored low on resilience [t (51) = -.979, p= .332]. Thus, the hypothesis that resilience influences the experience of positive emotions was not proven in this study.

3.4 Relative to people who score low on resilience, people who score high on resilience show a broadened cognition.

It was predicted that people who score high on resilience show a better performance at the cognition task than people who score low on resilience. Participants low in resilience mentioned *M* = 42,45 alternatives at the cognition task (Guilford's Alternative Uses Task) whereas participants low in resilience mentioned *M* = 38,72 alternatives. Statistical analyses did not show a significant relation between people's amount of resilience and their performance on the cognition task [t (51) = -.850, p= .399].

4 Conclusion and Discussion

Based on the broaden- and- build theory of positive emotions from Fredrickson (1998, 2011) we tested in this study whether development of parts of an 'upward spiral' of positive emotions is possible on a micro- level (everyday setting). Specifically it was tested whether people who experience positive emotions perform better on a creative thinking task (Guilford's Alternative Uses Task). If an arising of an 'upward spiral' is possible on a micro – level people can learn to generate these spirals in their everyday life to build on their psychical- and mental health. To apply the 'upward spiral' appropriate in the practice, the kind of working of it has to be detected specifically. In this study, it was investigated whether the factor resilience has influence on the experience of positive emotions and the development of an 'upward spiral'.

Results show that in the case of this gathered sample a development of an 'upward spiral' upon a micro- level did not emerge. Furthermore no evidence was found that resilience influences the development of an 'upward spiral' of positive emotions.

The population of this study shows no conspicuousness regarding the values of the questionnaires. The scores are in the middle range of each questionnaire. The mean value of the resilience scale in this study (M = 3,7) is nearly as high as the mean value of a representative sample (M = 3,9) (Hoijtink, Te Brake, & Dückers, 2011). This implies that the sample appears to be adequate and the design seems to work in general.

The first hypothesis was a manipulation check whether the pictures that were used in this study had evoked positive emotions. Results show a marginal significance of increase of positive emotions. The method that was used in this study is easy to integrate into an everyday setting. Besides, the pictures (IAPS) that were used are an appropriate method for evoking positive emotions in a short term.

With the second hypothesis in this study it was proposed that relative to the control group, people in the experimental condition show a broadened cognition. This second hypothesis was not confirmed in this study. Thus, people in the experimental condition did not give more answers in the cognition task than people in the control condition. There are several possible explanations for the fact that this result is not in accord with the theory of Fredrickson (1998, 2001). On one hand it is possible that participants in the control condition get input for answers through the pictures, which can be attributed specific to the task. For example, there were pictures of a hammer, a fork or a scissors. These objects could have helped participants in the control condition to consider possible answers what they can do with the objects whereupon they were asked during the cognition task. One example: participants were shown a picture of a hammer first and should after that write down what one can do with a brick. 'Smashed with a hammer' could be a likely response. As a result, through the possible broadened cognition in the experimental condition both groups show nearly the same performance which speaks against the hypothesis. The experimental design (the combination of the pictures and this specific task) may not have been appropriate for this study. Suggestions for this point are mentioned under 4.1.

On the other hand, the task in this study was a creative thinking task as a part of cognition. Fredrickson and Branigan (2005), for example, considered attention and thought action repertoire with significant results in their study. Maybe there is no correlation of positive emotions and a broaden effect of creativity (part 1 and 2 of the spiral; figure 1), particularly on a micro- level. To be creative, an individual requires some abilities and traits which are related to motivation and temperament (Guilford, 1950). Other aspects which are related with creativity are personal characteristics like openness to experience, sense of responsibility or generally high cognitive abilities (Maier, Möhrle, & Specht, 2016). These properties are not of a short duration as emotions are and seem to be grounded in a person self. Creativity depends on personal characteristics and these are relatively enduring (Gleitman, Gross, & Reisberg, 2011). Maybe creativity can therefore not be evoked measurable on a micro- level by means of the induced experience of positive emotions. Even if positive, emotions are of short- duration (Gleitman, Gross, & Reisberg, 2011), and pleasure and viewing affective pictures activate some specific brain areas (Keil, Bradley, Hauk, Rockstroh, Elbert, & Lang, 2002; Bradley et al., 2003; Sabatinelli et al., 2007), positive emotions possibly need to be experienced over an extended time repeatedly in order to evoke changes in creativity. Thus, the 'upward spiral' with regard to creativity perhaps has to be 'learnt' by people and is no phenomenon of short duration to evoke cognitive changes.

Cognitive processes need some time to develop (Konrad, Firk, & Uhlhaas, 2013).

To figure out how the brain works regarded to positive emotions and the broadening of creativity, it would be a possibility to accomplish neuroimaging studies in further research. Maybe this way makes it possible to see whether specific brain regions, related to creativity, can be evoked through positive emotions or not. If this is the case, it would be interesting whether positive emotions can broaden creativity on a macro- level. Maybe creativity- as a part of personality - could rather be broadened on long duration. For example, for a period of five weeks, which was applied in the research of Fredrickson and Branigan (2005) which tested on attention.

Attentional capacity, (cf. Fredrickson & Branigan, 2005) like emotions is limited (Kahneman, 1973; Gleitman, Gross, & Reisberg, 2011). Maybe positive emotions are therefore more able to broaden attention on a micro- level. It would therefore be reasonable to test attention and positive emotions on a micro- level in further research. Maybe the proposition that positive emotions broaden cognition (Fredrickson 1998, 2003) is too general. In this case it would be better to divide the concept of cognition into it's subparts, regarded to a longer period of time that is necessary to generate an 'upward spiral'.

The third hypothesis that people who score high on resilience relative to people who score low on resilience experience more positive emotions at the end of the study cannot be confirmed through this study. Based on the fact that the value of the first hypothesis was marginal significant it could be possible that the scores of participants especially high in resilience influenced this result. However, statistical analyses did not support this proposition. The literature shows that people high in resilience can direct their attention to the here and now better and are better in self-regulation (Waugh, Fredrickson & Taylor, 2008). It was expected that this ability would have enabled high-resilient people to better concentrate on the (positive) content of the pictures, making it more likely for them to experience more positive emotions. The expectation which was based on the attention regulation that there is an influence of resilience on an 'upward spiral' cannot be confirmed. It is possible that resilience is not related with the experience of positive emotions. One alternative explanation has to do with the duration of the pictures which were shown in this study. Some participants in this study reported, that there were too many pictures, which resulted in boredom. The directed attention of people who are resilient was therefore perhaps restricted whereby the difference between both groups not emerged.

Maybe there are other factors which influence that some people better perceive positive emotions through pictures. This could be a matter for through further research.

People who are optimistic rather see things positive and generally think positive about things than people who are pessimistic (Carver, Scheier, & Segerstrom, 2010). It may be that optimists see the pictures more positive and perceive therefore more positive emotions than pessimists. This would lead to a bigger chance of broadening their cognition.

The last hypothesis 'relative to people who score low in resilience, people who score high on resilience show a broadened cognition' get also no support through the data of this study. Resilience is no factor which influences the development of an 'upward spiral' with regard to creativity. Additionally, it seems that positive emotions by itself evoke no broadening of creativity on a short- term. To determine which factors are possibly jointly responsible that creativity broaden, it could be tested whether properties like openness for experiences or sense of responsibility, which go along with creativity (Maier, Möhrle, & Specht, 2016) have any influences.

Summarizing, in this study, the hypothesis that an upward spiral can emerge at a micro- level could not be confirmed. Moreover, resilience could not be shown to influence the experience of positive emotions, thereby changing the performance on the cognition tasks. Nevertheless it would be reasonable not to rest on these results. Thus, future research should still examiner whether there is an effect on a micro level and which properties of people may have an influence. The discussed points show that there are many possibilities which can be explored in further research in order to get answers on how the broaden- and- build theory exactly works.

4.1 Suggestions

4.1.1 Manipulation check

The first hypothesis was a manipulation check whether the experimental condition experience more positive emotions during this study in contrast to a control condition. The findings indicate that there is a marginal significance which point out that the manipulation was effective but not statistically significant at $\alpha = .05$.

There are still possible reasons that the pictures did not evoke positive emotions significantly. Mainly, these reasons are associated to the design of the study.
One possible explanation is that the pictures did evoke more positive emotions in participants than results show, but that this experience was not captured by the questionnaire. There were at least three minutes between the last row of pictures and the second retrieval of the mDEs because of the last task ('What can you do with a newspaper? Name all possible uses that you can imagine.'). During this time positive emotions that had been evoked with help of the

pictures could have weakened in participants. At the time where they filled in the questionnaire they possibly did not feel the positive emotions anymore the way they felt them while looking at the pictures or a short time thereafter. In order to get a direct insight into the evoked positive emotions it would be better to show 20 pictures after the last task and before the second mDEs again. This way, the time between the mDES and the induced emotions would be shorter and a more direct insight into the emotions of the participants through the pictures during the study could be possible.

After the study some of the participants were asked to answer some questions about the study. This feedback helps to find possible reasons why the manipulation was not optimal. The first possibility is that participant's did not look at the pictures all the time. Many participants reported that they had other websites opened during the study or handle with their smartphones whereby they were distracted because, after the first round, they knew a row of pictures that were not particularly interesting to look at would be shown for a while. Other participants were distracted through other people around them or took part in the study while watching television. As a consequence, people may not have process the content of the pictures in a way that is necessary for the pictures to evoke positive emotions.

Other participants gave feedback that the pictures were too incoherent and also too many. Through this incoherence and high quantity of pictures, they began to feel boredom. Boredom is a negative emotion (Frydenberg, 2002) which possibly counteracts positive emotions.

4.1.2 Future research

Through this research is has become clear that there are some points which are mendable for future research. Some suggestions became clear in this study that could or should be adjusted if the study was to be performed again. To increase the chance that participants really look at the pictures and do not do other things simultaneously, a clear instruction is necessary. It is essential that people get the instruction that it is very important that they do not get distracted from other things around them and really have to look at the pictures. Furthermore it should be necessary to inform them that they do not need to remember the pictures for the study. Some participants thought that they had to do this. On the one hand if people think they have to remember the pictures they can get the feeling of an exam and experience stress which counteracts positive emotions. On the other hand if people still do the study but think they have to remember the pictures, they do not take the pictures in but rather try to remember them as a learning effect. The learning situation can miss the target

to evoke positive emotions.

To avoid boredom it could be better if less that 24 pictures were shown there are shown less than 24 pictures per iteration. The positive pictures are often similar, whereby boredom can arise. If there are less pictures is would be more interesting for participants. Another solution to achieve that participants really look at the visual items which are intended to evoke positive emotions is to show a film clip which are also intended to evoke positive emotions. Fredrickson and Branigan (2005) also used film clips to evoke positive emotions in their study. Through feedback from participants in this study it turned out that they rather looked at film clips than pictures which are incoherent. With a pilot – test it could be tested which film clips evoke positive emotions. Based on the IAPS (Lang, 1995; Lang & Bradley, 2007), film clips with happy people, animals or nature could be tried.

If it is decided to use the IAPS in another research, another cognitive task should be chosen. The Guilford Alternative Uses task alone did work, however, combined with the IAPS, pictures in the neutral condition (which were mainly objects) gave participants in the neutral condition ideas for alternative uses during the tasks. One alternative is the Wallach-Kogan Creativitiy Test (WKCT) (Lemons, 2011). As an example, one part of this test is that people have to name all round things they can think of (Lemons, 2011). In the case of this task, the chance that people get input through the neutral pictures is less. If it is decided to choose another manipulation, for example a neutral film clip, the cognitive task could be maintained. Probably the combination of the IAPS (Lang, 1995; Lang & Bradley, 2007) and the Guilford Alternative Uses Task (Guilford, 1967) should possibly better be avoided.

Another improvement of the study with regard to the second hypothesis could be that no limitation for answers at the cognition task are given (in this study was it possible to give 20 answers) if it is chosen to use this task again. It is a limitation for as well as the experimental condition as the control condition but maybe there were clearer differences if participants were not restricted. This could be a new chance to test whether there are differences with regard to positive emotions and creativity. Furthermore the Guilford Alternative Uses Task was not offered random in this study. All participants got the pictures/tasks in the same order. It seems to be better if they are random allocated. This could be an improvement of the study. Improving this it could be excluded that results get falsified, because some tasks are easier to answer than others.

As previously discussed, there are two possibilities for future research which can be done to possibly specify the broaden- and- build theory. First, it can be investigated whether creativity is broadened through positive emotions on a macro level. One proposal might be

that the pictures and the Guilford’s Alternative Uses Task are extended for example over several weeks. One alternative is that participants have to perform different task to measure creativity over this long period. Second, in order to stay on a micro level, it could be considered whether attention can be broadened on a micro level. The design could remain the same like in this study except for the task. One possibility is to replace the Guilford’s Alternative Uses Task with the global- local visual processing task which was used by Fredrickson and Branigain (2005).

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6 Appendix

Appendix A: Dutch version mDES

Appendix B: German version mDES

Appendix C: Resilience Scale Dutch

Appendix E: Resilience Scale German

Appendix A: Dutch version mDES (Positieve emoties)

Deze vragenlijst bestaat uit 16 groepen van woorden die gevoelens beschrijven. Duid bij elke groep van woorden aan in welke mate u zich **nu (dus op dit moment)** zo voelt: 1 = helemaal niet, 4= matig, 7 = heel intens, of een van de cijfers tussenin.

		Helemaal niet			**Matig**			**Heel intens**
(1)	Geïnteresseerd, geconcentreerd, alert	1	2	3	4	5	6	7
(2)	Bevreesd, angstig, bang	1	2	3	4	5	6	7
(3)	Bezorgd, gespannen, zenuwachtig	1	2	3	4	5	6	7
(4)	Bewogen, ontroerd	1	2	3	4	5	6	7
(5)	Boos, geïrriteerd, kwaad	1	2	3	4	5	6	7
(6)	Beschaamd, gegeneerd	1	2	3	4	5	6	7
(7)	Joviaal, opgewekt, opgetogen	1	2	3	4	5	6	7
(8)	Blij, geamuseerd, gelukkig	1	2	3	4	5	6	7
(9)	Verdrietig, neerslachtig, somber	1	2	3	4	5	6	7
(10)	Tevreden, content, voldaan	1	2	3	4	5	6	7
(11)	Verrast, verwonderd, verbluft	1	2	3	4	5	6	7
(12)	Liefdevol, hartelijk, vriendelijk	1	2	3	4	5	6	7
(13)	Schuldig, berouwvol	1	2	3	4	5	6	7
(14)	Vol afkeer of tegenzin, walgend	1	2	3	4	5	6	7
(15)	Laatdunkend, geringschattend, minachtend	1	2	3	4	5	6	7
(16)	Kalm, sereen, ontspannen	1	2	3	4	5	6	7

Appendix B: German version mDES (Positive Emotionen)

Dieser Fragebogen besteht aus 16 Gruppen von gefühlsbeschreibenden Worten. Gib bei jeder Wortgruppe an inwiefern du dich nun **(also in diesem Moment)** so fühlst: 1 = gar nicht, 4 = mittel, 7 = sehr stark, oder eine der Zahlen dazwischen

		Gar nicht			**mittel**			**Sehr stark**
(1)	aufmerksam, konzentriert, wach	1	2	3	4	5	6	7
(2)	erschreckt, Angst, Furcht	1	2	3	4	5	6	7
(3)	besorgt, angespannt, nervös	1	2	3	4	5	6	7
(4)	bewegt, ergriffen, gebannt	1	2	3	4	5	6	7
(5)	wütend, Ärger, Zorn	1	2	3	4	5	6	7
(6)	gehemmt, verschämt, verlegen	1	2	3	4	5	6	7
(7)	amüsiert, erheitert, vergnügt	1	2	3	4	5	6	7
(8)	fröhlich, glücklich, Freude	1	2	3	4	5	6	7
(9)	niedergeschlagen, entmutigt, Trauer	1	2	3	4	5	6	7
(10)	ausgeglichen, wohl, zufrieden	1	2	3	4	5	6	7
(11)	Überraschung, erstaunt, verblüfft	1	2	3	4	5	6	7
(12)	liebevoll hingezogen, verliebt, Zuneigung	1	2	3	4	5	6	7
(13)	reumütg, schuldig, tadelnswert	1	2	3	4	5	6	7
(14)	angewidert, Ekel, abgestoßen	1	2	3	4	5	6	7
(15)	Verachtung, Geringschätzung, Spott	1	2	3	4	5	6	7
(16)	ruhig, gelassen, entspannt	1	2	3	4	5	6	7

Appendix C: Resilience Scale Dutch

Lees de volgende stellingen nauwkeurig door. Geef op een schaal van 1 tot 5 (1= Helemaal niet mee eens, 5= Helemaal mee eens) aan, in hoeverre de stellingen jouw gedachten en gevoelens weerspiegelen.

	Helemaal niet mee eens	Niet mee eens	Neutraal	Mee eens	Helemaal mee eens
1. Als ik plannen maak voer ik die uit	1	2	3	4	5
2. Ik red het op de een of andere manier wel	1	2	3	4	5
3. Ik kan meer op mezelf rekenen, dan ik verwacht dat anderen op zichzelf kunnen rekenen	1	2	3	4	5
4. Geïntereseerd blijven in dingen is belangrijk voor mij	1	2	3	4	5
5. Ik kan op mezelf zijn als dat nodig is	1	2	3	4	5
6. Ik ben trots op de dingen die ik heb bereikt in mijn leven	1	2	3	4	5
7. Ik kan omgaan met onverwachte	1	2	3	4	5

problemen					
8.Ik ben tevreden met mezelf	1	2	3	4	5
9. Ik heb het gevoel dat ik veel dingen tegelijkertijd aankan	1	2	3	4	5
10. Ik ben vastberaden	1	2	3	4	5
11. Ik twijfel aan de zin van het leven	1	2	3	4	5
12. Ik pak de problemen aan zoals ze zich voordoen	1	2	3	4	5
13. Ik sla me door moeilijke momenten omdat ik al eerder moeilijke momenten heb meegemaakt	1	2	3	4	5
14. Ik heb zelfdiscipline	1	2	3	4	5
15. Ik blijf geïnteresseerd in dingen	1	2	3	4	5
16. Ik vind zelfs in moeilijke tijden wel iets om over te lachen	1	2	3	4	5
17. Mijn geloof in mezelf helpt me door moeilijke	1	2	3	4	5

momenten					
18. In een noodgeval ben ik iemand op wie mensen kunnen rekenen	1	2	3	4	5
19. Ik bekijk een situatie op verschillende manieren	1	2	3	4	5
20. Ik kan mezelf dwingen dingen te doen, zelfs als ik daar geen zin in heb	1	2	3	4	5
21. Mijn leven heeft zin	1	2	3	4	5
22. Ik blijf niet stilstaan bij dingen waar ik niets aan kan doen	1	2	3	4	5
23. In een moeilijke situatie vind ik altijd een uitweg	1	2	3	4	5
24. Ik heb genoeg energie om te doen wat ik moet doen	1	2	3	4	5
25. Het is niet erg dat er mensen zijn die mij niet mogen	1	2	3	4	5

Appendix D: Resilience Scale German

Lies dir bitte die folgenden Aussagen gut durch. Gib auf einer Skala von 1-5 (1= Trifft nicht zu, 5= Trifft zu) an in wie weit die Aussagen deine Gedanken und Gefühle wiedergeben.

	Trifft nicht zu	Trifft eher nicht zu	Teils- teils	Trifft eher zu	Trifft zu
1 Wenn ich Pläne habe, verfolge ich sie auch.	1	2	3	4	5
2 Normalerweise schaffe ich alles irgendwie.	1	2	3	4	5
3 Ich kann mich mehr auf mich selbst verlassen, als ich denke, dass andere sich auf sich selbst verlassen können.	1	2	3	4	5
4 Es ist mir wichtig, an vielen Dingen interessiert zu bleiben.	1	2	3	4	5
5 Wenn ich muss, kann ich auch allein sein.	1	2	3	4	5
6 Ich bin stolz	1	2	3	4	5

auf das, was ich schon geleistet habe.					
7 Ich lasse mich nicht so schnell aus der Bahn werfen.	1	2	3	4	5
8 Ich mag mich.	1	2	3	4	5
9 Ich kann mehrere Dinge gleichzeitig bewältigen.	1	2	3	4	5
10 Ich bin entschlossen.	1	2	3	4	5
11 Ich stelle mir selten Sinnfragen.	1	2	3	4	5
12 Ich nehme die Dinge wie sie kommen.	1	2	3	4	5
13 Ich kann schwierige Zeiten durchstehen, weil ich weiß, dass ich das früher auch schon geschafft habe.	1	2	3	4	5

14 Ich habe Selbstdisziplin.	1	2	3	4	5
15 Ich behalte an vielen Dingen Interesse.	1	2	3	4	5
16 Ich finde auch in schwierigen Zeiten etwas, worüber ich lachen kann.	1	2	3	4	5
17 Mein Glaube an mich selbst, hilft mir auch in harten Zeiten.	1	2	3	4	5
18 In Notfällen kann man sich auf mich verlassen.	1	2	3	4	5
19 Normalerweise kann ich eine Situation aus mehreren Perspektiven betrachten.	1	2	3	4	5
20 Ich kann mich auch überwinden, Dinge zu tun,	1	2	3	4	5

die ich eigentlich nicht machen will.					
21 Mein Leben hat einen Sinn.	1	2	3	4	5
22 Ich beharre nicht auf Dingen, die ich nicht ändern kann.	1	2	3	4	5
23 Wenn ich in einer schwierigen Situation bin, finde ich gewöhnlich einen Weg heraus.	1	2	3	4	5
24 In mir steckt genügend Energie, um alles zu machen, was ich machen muss.	1	2	3	4	5
25 Ich kann es akzeptieren, wenn mich	1	2	3	4	5

nicht alle Leute mögen.					