The Flourishing Scale in comparison with other well-being scales:
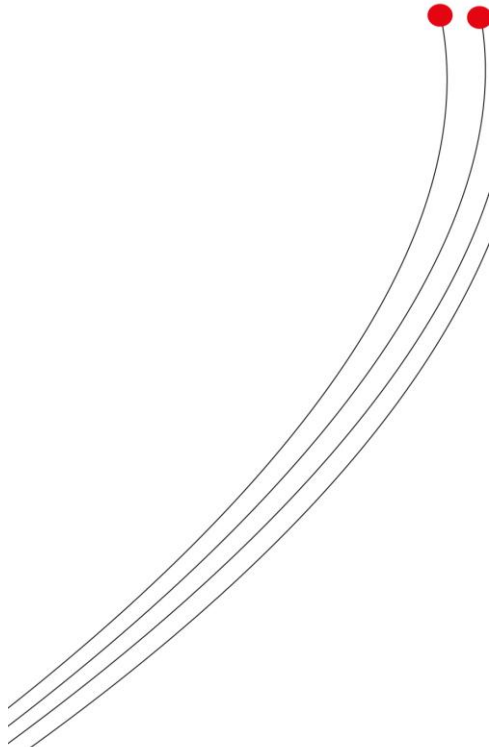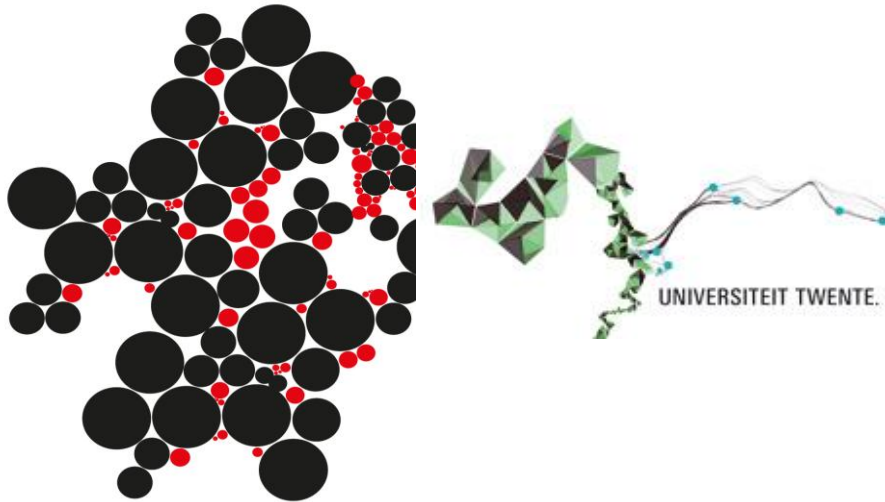
The examination and validation of a new measure

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Abstract

The Flourishing Scale is a measure that assesses mental well-being by means of a Positive Psychology approach. The scale was designed in 2009 and there is still a lack of validation and examination work with regard to this 8-item questionnaire. The present study picks up this need for examination and validation and applies several methods to evaluate the Flourishing Scale´s value in practice. The empirical unidimensionality of the measure was assessed with a Principal Component Analysis. Furthermore, exploratory factor analysis helped to point out mutual underlying factors that are shared with two other positive mental health scales. With regard to the two-continua model, which makes a distinction between positive mental health and mental illness, several scales were used to illustrate the difference of these concepts with the help of correlation analyses. The congruence of the social-psychological aspects of the Flourishing Scale with a measure of social needs was examined. Finally, the scale´s ability to predict general health above and beyond mental illness was assessed. The results confirmed most of the hypothesized assumptions. The Flourishing Scale emerged as unidimensional scale that shares measurement factors with more established positive mental health scales. In line with the distinction of psychopathology and positive mental health, it could be indicated that the scale is legitimately regarded as a positive mental health scale. Furthermore, social aspects of the Flourishing Scale and the measure of social needs showed a moderate correlation, indicating a congruence of social needs and social flourishing. Additionally, the Flourishing Scale represented a significant predictor for general health over and above the mental illness scale.

Keywords: Flourishing Scale, validation, positive mental health, mental illness

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1. Introduction

1.1. The growing importance of positive psychology

With the recent rise of the concepts of the 3ʳᵈ generation of psychotherapy the scientific focus of attention steadily shifted to positive psychology. Within this relatively new branch of research, issues like human self-actualization, personal fulfillment and positive aspects of the behavior and functioning of mankind are taken as central themes (Compton, 2005). Instead of just treating mental illness and emotional malfunction of people, there is the idea to promote and enforce the well-working sides of life and the personal strengths of the individual. These positive aspects may include the optimal level of individual functioning, with amongst others the degree of personal self-actualization or human relations on lots of domains such as the workplace, educational settings, sports, or mental health care (Bohlmeijer et al., 2013).

Several scientists and psychiatrists have made efforts to apply the ideas of positive psychology to practice. In this context, aversive deviations of mental functioning, to some extent, are regarded as a common constraint to human live that may occur during a person´s lifetime. While taking this into account, positive psychology aims to promote the desirable and positive sides of human functioning that comprise aspects like goodness, generosity, growth, and resilience (Fredrickson & Losada, 2005).

As such, the concept of *positive mental health* describes the condition that is achieved by the personal flourishing of those aspects. During the last decade, the application of positive psychology´s approaches has increasingly been seized in conferences, courses, and psychological interventions (Seligman, Steen, Park & Peterson, 2005).

Positive psychology aims to find a supplement to mental disorders which includes the understanding of *suffering* and *happiness*, as well as the ability to increase the one condition while relieving the latter (Seligman et al., 2005). It is not the goal to fight dysfunctional processes that are inherent to mental illness. Accordingly, the World Health Organization (WHO, 2005) argued that the attention on mental well-being should not only be limited to the absence of psychological problems, but that the focal point should be the positive character of the mental system and the thoughts and attitudes that are inherent to it. This is the central idea to the concept of positive psychology on which its therapy and measurement forms are based on.

1.2. Examining a new approach for assessing positive mental health: The Flourishing Scale

Newly developed approaches of positive psychology require measuring tools and interventions within modern psychotherapy which need to be validated. This study compares a new way of

assessing well-being to established ones. After all, there may be different ways to reach the goal of measuring how stressful or restricted an individual´s life is, or to what extent this is not the case. It is a main purpose of the present study to examine and validate a recently introduced measuring instrument (the *Flourishing Scale*) which emanated from the scope of positive psychology (Diener, 2009).

The *Flourishing Scale* covers essential parts of human functioning and human *needs* like competence, relatedness, and self-acceptance. Those concepts are closely related to the ancient, philosophical concept of *eudaimonia* which is the Greek expression for happiness or welfare. A more elaborated expression has been provided by Robinson (1989) who translated this expression into "human flourishing". However, eudaimonia is exactly the conception the Flourishing Scale is refering to in a broader sense.

To illustrate the quite abstract spirit of the focal concept, Ryff & Singer (2008) divided human fulfillment, or *flourishing*, into six categories: Autonomy, personal growth, self-acceptance, purpose in life, environmental mastery, and positive relations with others. The *Flourishing Scale* was designed on a closely related basis of those factors, but is especially highlighting the *social* facet of human mental prosperity. Anyhow, flourishing rather has to be regarded as an accumulation of coherent aspects, than as a stand-alone expression addressing just a single part of human life.

In summary, it can be stated that Diener et al. (2009) developed this brief 8-item summary measure to address the respondent´s self-perceived success in important life areas like relationships, self-esteem, optimism, and purpose.

The process of the Florishing Scale´s examination and validation in this study is applied by means of several steps. Most basically, the unidimensionality of the Flourishing Scale is examined. Additionally, mutual underlying factors of the Flourishing scale and other positive mental health scales are explored. On the basis of the Two-continua model, the Flourishing Scale and two other positive mental health scales are assigned to a distinct approach of psychodiagnostics. Furthermore, social flourishing items of the scale are compared to a measure of human social needs and its additional value to explain general health is pointed out.

The following paragraphs aim to outline the process of the scale investigation that was applied here. The relevance and goals of the operational steps are presented in each case.

1.2.1. The importance of scale unidimensionality

A common method to validate scales within human sciences is to assess the construct validity. According to Dunn, Seaker, and Waller (1999), a scale is construct valid "to the degree that it assesses the magnitude and direction of a representative sample of the construct; and to the degree

that the measure is not contaminated with elements from the domain of other constructs of error." (p. 161). However, a scale cannot have construct validity unless it is sufficiently unidimensional. The idea behind the concept of unidimensionality is that all the items of a single scale estimate one factor (Gerbing & Anderson, 1988), which is *positive mental health* in the case of the Flourishing Scale. Diener et al. (2009) already showed that the scale is assessing one single factor in the context of a sample which consisted of American and Singaporean participants. The present study replicates this test among a Dutch sample.

1.2.2. Ranking the Flourishing Scale among other positive mental health scales

Ongoing research on the field of positive psychology is regularly bringing up measurement scales which follow the goal to describe/predict good mental health.

The *Flourishing Scale* is a more recently created scale which is focused on in the present study. Among the already established methods which measure the extent of positive mental health or well-being among individuals, there are two established scales that serve as useful comparison tools. In order to examine scale-related commonalities and thus the *convergent validity*, these two scales and the Flourishing Scale are compared with regard to content and mutual measurement dimensions. In other words, the extent to which the Flourishing Scale and the other two scales correlate with each other is checked. Several scales which are designed to tap the same construct should actually show an adequate correlation to be declared as having a high convergent validity (Cunningham, Preacher & Banaji, 2001). The two scales that serve as a comparison are briefly discussed.

At first, the *Warwick-Edinburgh Mental Well-Being Scale* (Tennant et al., 2007) is a scale that is used within the present study. The WEMWBS proved to be a valid and reliable tool for measuring well-being in diverse populations (Stewart-Brown et al., 2011). Amongst others, it has been confirmed to be suitable as a mental well-being measure for teenagers aged 13 or older (Clarke et al., 2011) and as an indicator of mental health and well-being in an occupational research group with elevated suicide risk (Bartram, Sinclair and Baldwin, 2013).

Secondly, the *Mental Health Continuum- Short Form* (Lamers, Westerhof, Bohlmeijer, ten Klooster & Keyes, 2011) emerged as a reliable measure which also accrued from the area of positive psychology and addresses the domains of emotional, social, and psychological well-being. This measurement tool thus covers three essential components of positive mental health. The scale´s adequate validity and reliability has been confirmed in the U.S.A. (Keyes, Eisenberg, Dhingra, Perry & Dube, 2012) and South Africa (Keyes et al., 2008). In addition, it is a reliable and valid instrument to measure mental health in the Dutch population (Lamers et al., 2011). The following paragraphs provide a theoretical rationale for the comparison of these three scales.

Theoretical commonalities of the three measures of positive mental health

It is remarkable that the sub-dimensions of the presented positive mental health scales show some congruence with regard to the underlying concepts they originate from. As mentioned earlier, they all share the source of positive psychology. In detail, especially the already discussed philosophic idea of eudaimonia is inherent to all of the scales and is used as a basis.

Besides that, the WEMWBS, the MHC-SF, and the Flourishing Scale contain only positively worded items which focus on *positive* mental health.

Moreover, all the used scales include aspects of social life and social functioning. While the Flourishing Scale and the MHC-SF explicitly mention their social-psychological components within the scale instructions, one has to take a closer look at the WEMWBS to find out that these aspects also play an important role here. Four (out of 14) items cover social functioning. Incidentally, there´s no need to mention that emotional dimensions are covered within all the scales. Finally, all the scales are created as self-report instruments.

In a scientific context, there are a few studies that aimed to compare the scales mentioned above. Ikink (2012), for example found a moderate positive correlation (.54) between the MHC-SF and the WEMWBS while examining a sample of mostly high-educated women with mild depressive symptoms (N= 286). Additionally, Clarke et al. (2011) found a moderate correlation coeffecient of 0.65 between those two scales. Due to its currentness, there are practically no studies that point to the relation of the Flourishing Scale and other scales assessing positive mental health or well-being. This is, amongst others, an appealing fact that led to the examination of this measuring instrument.

1.2.3. The distinction of psychopathology and positive mental health

There are several scientific psychological measures that repeatedly showed to be a valid indicator of mental well-being. Nevertheless, the new therapy forms that arose from positive psychology have to be connected to new measurement tools. Therefore, it is focused on new outcome measures that represent the ideas of positive psychology with their focus on aspects like flourishing, personal growth, and pleasant social relations.

Within this context, it is important to emphasize the distinction between *positive mental health* and *mental illness.* In line with this proposed differentiation, Westerhof & Keyes (2010) pointed out that mental illness and mental health are two related but distinct dimensions. The authors underlined this intellectual approach by means of a comparison between participants in their study: Older participants revealed to be suffering significantly less from psychopathological symptoms and mental illness than younger ones. On the other hand, younger adults were in a better positive mental health state than older ones. To illustrate the conclusion to that finding which has been replicated in

some other studies as well (Keyes, 2006 , Keyes et al. 2008 & Westerhof and Keyes, 2008), the *two-continua model* has been created. This model which is displayed below depicts the independency of positive mental health and mental illness in a simplified way.
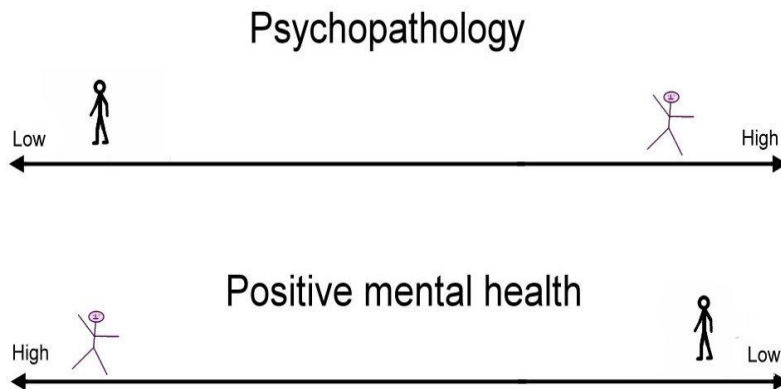
Fig. 1 *The two-continua model: Two related continua. A high degree of psychopathology is possible with a parallel presence of high positive mental health for a certain person. The same is true for the reverse case*

It states that it is possible to be in a state of high positive mental health, but to suffer from mental illness at the same time (see Fig. 1). Of course, the same condition is applicable to the reverse case. *Positive mental health* always was and still is a condition that is charged with positive personal perspectives on life. Taking psychopathology into account, it is remarkable that depressed people tend to focus on negative sides of life, psychotics often feel threatened, and anxiety patients suffer from fear. All these symptoms are negatively charged and typically evoke the therapist´s and patient´s intention to be fought.

The plan to apply the assessment of well-being by using positive psychological "symptoms", as well as psychopathological ones, may gain interesting results. An empirically underlined distinction of the two dimensions serves to confirm that the Flourishing Scale is a positive mental health scale, rather than a psychopathology scale. Thus, the assessment of the *concurrent validity* of psychopathology measures on the one hand, and positive mental health measures on the other hand, may verify if the Flourishing Scale keeps what it promises with regard to the assessment of positive mental health. Yet, it is expected that all the measures are congruent to some degree as they all assess personal well-being and health.

1.2.4. The role of social needs in the context of psychological flourishing

In line with the idea of strengthening positive thinking processes and actions which is enrooted in positive psychology, one has to realize that the desirable, as well as the frightening or depressing aspects of life belong to the human nature (Segal, Williams & Teasdale, 2012). This approach provides the initial point where people who are inhibited by mental illness or psychopathology need to start creating a new perspective on life: To thrive on life by following own ambitions and to fulfill *needs* that lead to personal satisfaction and positivity. By pursuing this way of living, it is easier to achieve a state of good mental well-being or optimal function, which is induced by the fulfillment of personal *needs* and values (Deci & Vansteenkiste, 2004).

Ryan and Deci (2001) stated that the needs *autonomy, competence,* and *relatedness* are closely connected to psychological growth, life satisfaction, and psychological health. Their self-determination theory (2004) applies the three basic and intrisic needs as key factors which determine optimal function and psychological growth.

This study acts on the importance of *social needs* (or *relatedness*) to relate them to the social-psychological dimension of the Flourishing Scale. The comparison of this dimension with the social dimension of an established basic human needs measure (BNSG-S) serves the purpose to check the relevance of the Flourishing Scale in terms of its correspondence to needs fulfillment.


1.2.5. The ability to explain general health

In the context of the present examination, a reduced version of the *Medical Outcomes Study 12-Item Short Form Health Survey* (SF-12) is applied. This scale arose from a more extended version (SF-36) and was developed to explore a multitude of chronic diseases, with amongst others mental health (Ware & Sherbourne, 1992).

Within this study the scale assesses health in a general sense and serves as a crucial factor that represents well-being by means of a single extracted item of the measure.

One simple reason argues for this methodological procedure. The aim is to finally figure out the contribution which can be made by the Flourishing scale to explain general health status above and beyond mental illness.

Thus, the last step of validation work within the study implies the assessment of the *incremental validity* of the Flourishing Scale. By the application of this kind of assessment, the practical value of the Flourishing Scale in the context of psychodiagnostics and health testing can be determined. The question whether the scale represents a serious alternative to predict general health in the context of clinical psychology is pursued.
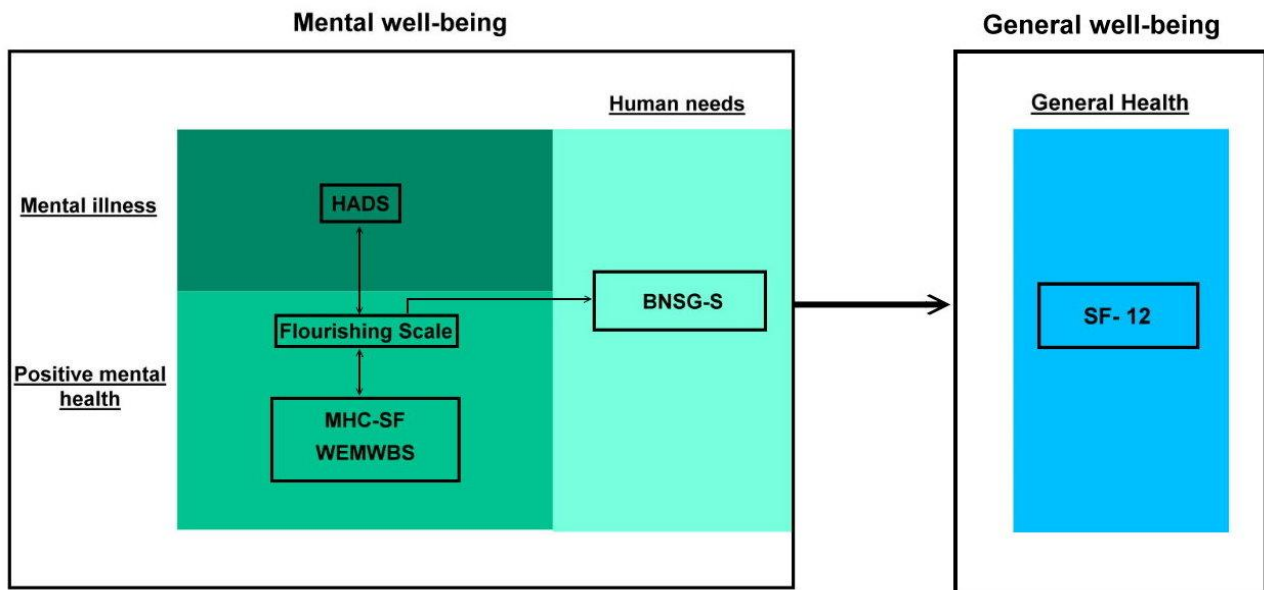
Fig. 2 *examined relations among the well-being scales in this study*

Note. MHC-SF= Mental Health Continuum- Short Form, WEMWBS= Warwick-Edinburg Mental Health Questionnaire

FS= Flourishing Scale, SF-12= 12-Item Short Form Survey

HADS= Hospital Anxiety and Depression Scale (with two separate sub-dimensions Depression and Anxiety)

1.3. The goals of the research

This study aims to examine and validate the *Flourishing Scale* in several ways. At first, it is investigated if the scale is measuring one single component of positive mental health. After that, the scope is broadened and the exploration of three positive mental health scales (*Flourishing Scale*, *WEMWBS*, and *MHC-SF*) is applied. More precisely, it is checked if these scales share a mutually underlying component.

Besides this, the study focuses on the two dimensions of psychopathology and positive mental health. The fact that these dimensions can be regarded as separate concepts helps to assign the Flourishing Scale adequately to the branch of positive mental health.

Additionally, it is examined to what extent the items of the *Flourishing Scale,* which aim to reflect social-psychological prosperity, are congruent with the degree of personal social need satisfaction. The *Basic Needs Satisfaction in General Scale* (BNSG-S) is used as a criterion and external measure here.

Finally, it is the goal to find out if the Flourishing Scale as a quite new measuring instrument is able to serve as an additional and valuable predictor of general health above psychopathology measures.

The entire empirical goals are translated into specific research questions as follows:

<u>Research questions</u>

RQ1: Does the Flourishing Scale measure a single dimension of positive mental health?

RQ2: Are there discriminable underlying factors of the three examined positive mental health scales?

RQ3: Does the distinction of the Two-continua model indicate that the Flourishing Scale can be regarded as positive mental health scale?

RQ4: How are the Flourishing Scale and the measure of basic social-psychological needs related?

RQ5 : Does the Flourishing Scale provide additional value above and beyond the mental illness in explaining health in general?

2. Methods

2.1. Respondents and setting

The collected data were generated by means of a cross-sectional survey research that included, besides some demographic items, 11 self-report questionnaires. 423 participants (65.2 % female, 34.2 % male), with most of them residentiary in the Netherlands, were gathered between the years 2012 and 2014. Due to the fact that the individuals were recruited via the World Wide Web, no controlled setting had been set up. Typically, people were assumed to complete the survey at home using their personal computers.

There was no restriction to age, origin or educational background. Nevertheless, demographic information like sex, socioeconomic status, birth date, or education was asked. Furthermore, it was required that the participants understood Dutch language because the questionnaire was set up in Dutch. The mean age of the respondents was 29 years with a standard deviation of 18.

2.2. Recruitment and procedure

Participants were consulted via convenience sampling. A URL redirecting to the questionnaires was sent out by means of different communication channels. Social networks and e-mail were used to reach the target group. The estimated duration to complete the questionnaire was 30 minutes. At first, the participants received some instructions on the survey with regard to the questionnaire and the scales themselves. Participants were asked to indicate the contact person who approached them. Besides this, they were instructed to answer the questions as precisely as possible in case they would feel unsure about some responses.

2.3. Measures

At first, demographic data had to be filled in. For example, the cultural, financial and educational backgrounds of the respondents were inquired. As a matter of course, the most important and more basic information like sex and age had to be indicated.

Several questionnaires were provided which related to basic need fulfillment, positive mental health, mental illness/psychopathology, or general health. At this point, the six scales of interest are presented more extensively. The Cronbach´s alpha values mentioned relate to the present study.

Positive mental health measures

Flourishing Scale

The Flourishing scale is regarded as a complement measure to assess subjective well-being and individually perceived social-psychological prosperity (Diener et al, 2009). The scale consists of eight items (α = .85) which describe essential aspects of human functioning with regard to individual fulfilment or self-actualization. Several aspects of life, like personal relations, self-esteem, aims in life, and the degree of optimism are taken as a basis for this measure. Participants are requested to answer on a 7-points scale to what extent they agree (7) or disagree (1) with each presented statement. The total score is calculated by adding up the scores the participants assigned to the single items. Thus, the range of the total score ranges from 8 (worst state of positive mental health) to 56 (best state of positive mental health). High scores suggest a positive self-perception of the respondent, regarding positive psychological functioning across diverse domains that are covered here. Diener et al. (2010) certified both good psychomatric properties of this scale and a high reliability.

Mental Health Continuum- Short Form (MHC-SF)

The Mental Health Continuum-Short Form assesses positive mental health (Lamers et al., 2011). It consists of three core concepts of well-being, i.e. emotional, psychological, and social well-being. Those concepts represent the total degree of positive mental health within this measure. Emotional well-being is related to the degree of individual and positive feelings like joy, interest, and happiness which a person is perceiving during one´s life (Westerhof & Keyes, 2010).

Psychological and social well-being both are referring to the optimal functioning of people. The mere difference between the two constructs is the fact that social well-being is defined by the optimal level of functioning within society and psychological well-being is representing the personal functioning of an individual (Lamers et al., 2011). The three concepts are measured by means of 14 items (α = .90) on a 6-points Likert scale. The items refer to the respondent´s personal

feelings that were perceived during the last month and the scale ranges from "never" (1) to "every day" (6).

Warwick-Edinburgh Mental Well-Being Scale (WEMWBS)

The Warwick-Edinburgh Mental Well-Being Scale (Tennant et al., 2007) is a Scottish measure assessing mental well-being by applying 14 positively worded items (α = .89). Respondents are asked to indicate how they felt during the last two weeks. The five response categories range from "never" (1) to "all the time" (5). Scores are summed up, whereby the lowest possible score is 14 and the highest possible score is 70. Hence, a higher score represents a higher degree of mental well-being. The items are related to different contributors of well-being, like social (e.g. "I´ve been feeling close to other people") or personal-emotional aspects (e.g. "I´ve been feeling good about myself"). The Scale has been translated into Dutch language by Ikink (2012), who showed that the translation of the WEMWBS is valid for measuring well-being.

The mental illness measure

Hospital Anxiety and Depression Scale (HADS)

The Hospital Anxiety and Depression Scale (HADS) is a scale developed by Zigmond and Snaith (1983) is designed to assess anxiety disorders and depression among patients in non-psychiatric hospitals. The validated Dutch version (Spinhoven, 1997) of the scale is used in this study.

Therein, the two dimensions of depression and anxiety are measured separately. Thus, the scale is divided into a sub-scale anxiety (HADS-A, α = .79) and a sub-scale depression (HADS-D, α = .72), with each of them comprising seven items.

The overall 14 items (α = .83) which exclusively relate to the test taker´s personal feelings are scored on a 4-points-Likert scale with changing response categories. A reverse scoring of eight items was applied to enable a statistical analysis for this scale. The subscale score for depression and anxiety can range from 0 to 21 respectively, with a higher score indicating a higher number of symptoms. A high score may refer to the participant´s serious condition of an anxiety disorder and/or a depression (Bjelland et al., 2002).

The general health measure

Medical Outcomes Study 12-Item Short Form Health Survey (SF-12)

The Medical Outcomes Study 12-Item Short Form Health Survey (SF-12) is a multidimensional measure of health status that has been developed for a vast number of chronic diseases (Ware & Sherbourne, 1992). The test was originally designed in English language and takes the WHO

definition of health as its initial point. This definition uses three dimensions of health: physical, mental, and social health. The SF-12 measures a person´s quality of life on the basis of six questions that relate to the functional status, which covers physical and social functioning, as well as physical and emotional role restrictions. Four items address the well-being, which contains mental health, vitality, and bodily pain. Within our study, though, only the two remaining items were included. Those items assess the general evaluation of one´s health (Ware, Kosinski & Keller, 1998). The first question (´How would you describe your health status in general?´) consists of a 5-point Likert scale which can be scored from *very good* (1) to (5) *very bad*. In this study only this first item is used for analysis.

The measure of human needs

Basic Needs Satisfaction in General Scale (BNSG-S)

The Basic Needs Satisfaction in General Scale *(BNSG-S)* is a scale which assesses the satisfaction of basic needs in due consideration of the sub-scales *autonomy*, *competence*, and *relatedness* (Gagné, 2003). The items focus on the feelings and opinions people may have with regard to need satisfaction. The BNSG-S measures this satisfaction by means of a 5-points Likert scale with 21 items (α = .78). Participants are instructed to indicate how true they felt each statement was of their life and respond on a scale of *not at all true* (1) to *very true* (5). Seven questions relate to autonomy, six relate to competency and eight to relatedness (Johnston & Finney, 2010). A Dutch version of the BNSG-S was translated by Harbers (2013) who validated it for a mentally delayed population. This version is applied within the present study.

3. Data analysis

For all statistical analyses, the software Statistical Program for Social Sciences (SPSS, version 22.0) was used.

3.1. Unidimensionality and dimensions of positive mental health

First, to assess the internal validity of the *Flourishing Scale* and its different components of well-being in our present context, *Principal Component Analysis* was applied. This technique comparable to factor analysis aims to examine the underlying factors of a set of items. At this first analytic stage of the study, only the Flourishing Scale items were included within the analysis. A single factor was expected to explain the variation in the scale´s variables for the most part.

Next, all the items of the three positive mental health scales *Flourishing Scale*,*WEMWBS*, and *MHC-SF* were included in a separate factor analysis to examine mutual dimensions that may be assessed by all of the three scales. In order to reduce the multitude of constructs to a smaller number of latent variables, the new factors were assumed to provide information that allows conclusions with regard to possible underlying dimensions of the scales. The deployment of factor analysis provides insights into the variables that are measured within the three scales. An *exploratory factor analysis* (EFA) with Principal Axis factoring without rotation was used in this case. This is expected to offer insights into the interrelationships among the items of all scales and allows it to group items that are part of unified new concepts.

3.2. Convergent and concurrent validity

Moreover, the convergent validity of the applied positive mental health scales (Flourishing Scale, WEMWBS, MHC-SF) was analyzed. It was hypothesized that the three measures should correlate strongly ($r \geq 0.5$). Another focus of the convergent validity test included all the scales that adress well-being or health in different ways (WEMWBS, MHC-SF, HADS, FS, SF-12). The weakest correlations were expected for the SF-12, the scale which aims to assess health in general.

With regard to the concurrent validity, the two dimensions of the mental illness scale (HADS) were suggested to correlate somewhat weaker but still moderate ($0.3 \leq r \leq 0.5$) with the three positive mental health scales.

Spearman correlation coefficients were calculated to estimate concurrent and convergent validity by comparing the sample´s mean scores of the included scales.

3.3. Correlation of two social dimensions

Next, as a means to examine the social component of the *Flourishing Scale,* a new variable that only included the items that exclusively relate to social flourishing was computed ($\alpha = .73$).

Likewise, the items of the *Basic Needs Satisfaction in General Scale* which address the need for *relatedness* were compounded to form a new variable as well ($\alpha = .80$). In this case, the scores of the three negative items had to be reversed. Subsequently, the two mean scores that were generated by means of the social-psychological items of the *Flourishing Scale* and the *BNSG-S* could be compared with the help of bivariate correlation analysis. Spearman´s correlation coefficient was assumed to be at least moderate ($r \geq 0.3$) in this case.

3.4. Incremental validity

Finally, the incremental validity of the *Flourishing Scale* in terms of its predictive power for general health was tested. Therefore, the total score of the *HADS* (anxiety & depression) was used as a separate variable in hierarchical linear regression analyses. In step 1, this mental illness variable was added as first independent factor to the multiple regression analysis. In step 2, the total score of the *Flourishing Scale* was added to the model,so that it could serve as an additional predictor. Incremental validity was assumed when the Flourishing Scale would add a significant ($p< .05$) value of additional variance (R^2) above and beyond the HADS measure as a predictor of general health in linear regression analysis. The score of the SF-12 item which refers to the general health status (´How would you describe your health status in general?´) served as the dependent variable in this analysis.

4. Results

4.1. Unidimensionalities of the Flourishing Scale

The eight items of the Flourishing Scale were included in the principal component analysis to figure out the underlying factors of the measure. The Kaiser-Meyer-Olkin measure of sampling adequacy had a value of .86, showing that the sample was well-suited and meritorious for factor analysis (Black & Porter, 1996). Only one component reached an eigenvalue above 1 (λ = 3.99). This component included all items of the Flourishing Scale and explained about half of the total variance (R^2= .50). The scree plot revealed a strong decrease of eigenvalue by comparing the first and second most relevant factors. This indicates the existence of a single component of well-being that is assessed by the Flourishing Scale and all of its items. Additionally, all of the factor loadings were quite high with a minimum value of .64 and a maximum value of .79 (see Table 1).

Table 1. *Factor loadings resulting from the principal component analysis of the Flourishing Scale items*

Flourishing Scale item	Factor loading
Ik leid een doelbewust en zinvol leven.	.71
Mijn sociale relaties geven steun en voldoening.	.70
Ik ben betrokken en geïnteresseerd in mijn dagelijkse activiteiten.	.79
Ik draag actief bij aan het geluk van anderen.	.66
Ik ben competent en bekwaam in de activiteiten die belangrijk voor me zijn.	.70
Ik ben een goed mens en leef een goed leven.	.72
Ik ben optimistisch over mijn toekomst.	.72
Mensen respecteren me.	.64
R^2	**.50**

4.2. Components of positive mental health

The exploratory factor analysis included the items of the three positive mental health scales. The Kaiser-Guttman criterion considered the extraction of seven factors with eigenvalues larger than 1. The Kaiser-Meyer-Olkin Measure showed an outstanding value (.92) which indicated that the sample was highly adequate for factor analysis (Field, 2005). Bartlett´s test of sphericity was significant ($\chi2$ (595) = 5489.89, p <.01).

Field (2005) set a limit of a bare minimum of KMO values of .50 for individual items in the factor analysis. Therefore, items that fell below this cut-off score were excluded. The scree plot illustrated the fact that there was a sharp drop in eigenvalue magnitude after component 1.
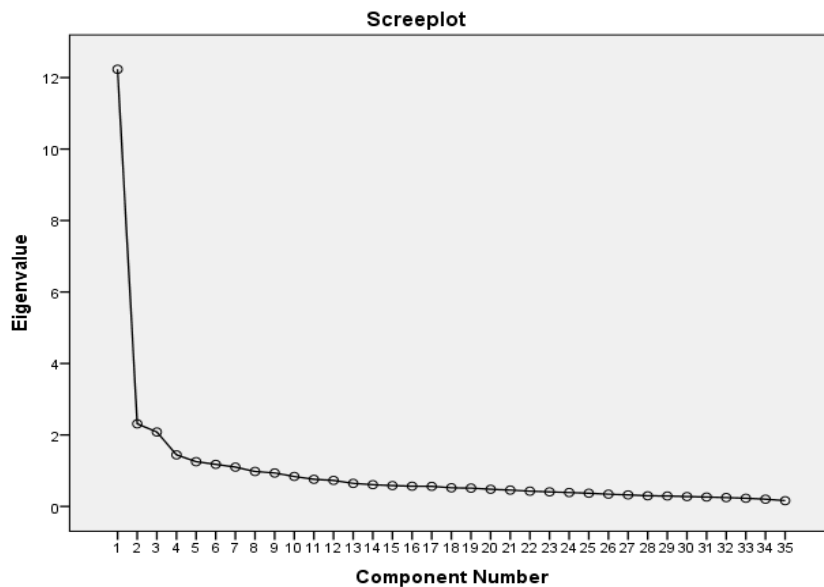
Fig. 3 *Screeplot of the positive mental health scales items with a clear transition between component 1 and 2*

Although 7 factors reached an Eigenvalue above 1, the plotted graph (see figure 3) marked a clear drop-off with an abrupt transition from a vertical to a horizontal trend. The criterion of Cattel (1966) suggests to retain the components above the "elbow" of the plot, so only Component 1 was retained for the final analysis. Beyond that, Slocum (2005) presented the ratio-of-first-to-second-eigenvalues-greater-than-four-rule as being a good indicator of unidimensionality. In fact, this ratio was 5.2 for Component 1 and thus above the proposed threshold.

Therefore, a solution which contains one single component or factor seemed to be most appropriate here. However, this factor explained only 35.0 % of the common variance and included 25 (of 36 total) items. Those items items showed a high Cronbach´s Alpha of .94. An overview of the exploratory factor analysis with all of the three positive mental health scales is provided in table 2. The extracted component included four items of the Flourishing Scale (50% of the scale´s total number of items), nine items (64%) of the MHC-SF, and twelve items (85%) of the WEMWBS. The items of Component 1 are presented in Table 2.

Table 2. *Summary of exploratory factor analysis results for the three positive mental health scales*

Scale	Item	Factor Loadings for Component 1
FS	Ik leid een doelbewust en zinvol leven.	.59
FS	Ik ben betrokken en geïnteresseerd in mijn dagelijkse activiteiten.	.54
FS	Ik ben een goed mens en leef een goed leven.	.52
FS	Ik ben optimistisch over mijn toekomst.	.61
MHC-SF	Hoe vaak had u dat gevoel gedurende afgelopen week dat u gelukkig was?	.69
MHC-SF	Hoe vaak had u dat gevoel gedurende afgelopen week dat u geïnteresseerd was in het leven?	.70
MHC-SF	Hoe vaak had u dat gevoel gedurende afgelopen week dat u tevreden was?	.67
MHC-SF	Hoe vaak had u dat gevoel gedurende afgelopen week dat u iets belangrijks hebt bijgedragen aan de samenleving?	.59
MHC-SF	Hoe vaak had u dat gevoel gedurende afgelopen week dat u de meeste aspecten van uw persoonlijkheid graag mocht?	.68
MHC-SF	Hoe vaak had u dat gevoel gedurende afgelopen week dat u goed kon omgaan met uw alledaagse verantwoordelijkheden?	.61
MHC-SF	Hoe vaak had u dat gevoel gedurende afgelopen week dat u warme en vertrouwde relaties met anderen had?	.64
MHC-SF	Hoe vaak had u dat gevoel gedurende afgelopen week dat u zelfverzekerd uw eigen ideeën en meningen gedacht en geuit hebt?	.63
MHC-SF	Hoe vaak had u dat gevoel gedurende afgelopen week dat uw leven een richting of zin heeft?	.74
WEMWBS	Ik was optimistisch over de toekomst.	.64
WEMWBS	Ik voelde me nuttig.	.70
WEMWBS	Ik voelde me ontspannen.	.56
WEMWBS	Ik had genoeg energie.	.59
WEMWBS	Ik kon goed omgaan met probleem.	.58
WEMWBS	Ik kon helder denken.	.56
WEMWBS	Ik voelde me goed over mezelf.	.72
WEMWBS	Ik voelde een hechte band met andere mensen.	.50
WEMWBS	Ik voelde me zelfverzekerd.	.64
WEMWBS	Ik voelde me geliefd.	.57
WEMWBS	Ik was geïnteresseerd in nieuwe dingen.	.59
WEMWBS	Ik voelde me vrolijk.	.62
Eigenvalue		**12.44**
% of variance (R^2)		**34.57**
α		**.94**

Note. MHC= Mental Health Continuum- Short Form. WEMWBS= Warwick-Edinburg Mental Health Questionnaire

FS= Flourishing Scale

Interestingly, the items of the Flourishing scale that directly relate to *social* flourishing (´*My social relationships are supportive and rewarding*´, `*I actively contribute to the happiness and well-being of others*´, and `*People respect me*´), and one item that addresses competence (´*I am competent and capable in the activities that are important to me.*´) were not part of the single calculated component.

4.3. The comparison of the well-being scales

Correlation analyses with regard to the positive mental health scales (MHC-SF, WEMWBS, Flourishing Scale), and the mental illness scale HADS with its separate sub-dimensions anxiety (HADS-A) and depression (HADS-D) showed a range of correlations *r* from .58 to .72 among the positive mental health scales. As expected, the Flourishing Scale correlated strongly (r ≥ .58) with the other two positive mental health scales.

On the other hand, the mental illness sub-scales achieved a maximum (negative) correlation coefficient of .56 (HADS-A & WEMWBS) with the positive mental health scales. In three cases the mental illness measures correlated higher than expected with the positive mental health measures. The dimension of the HADS measuring depression correlated strongly with the WEMWBS (r= -.56) and the Flourishing Scale (r= -.52), and the dimension measuring anxiety correlated strongly with the WEMWBS (r= -.51).

Thus, the MHC-SF (weak correlation with the MHC-SF) and the Flourishing Scale (strong correlation with HADS-D) met all expectations but one, and the WEMWBS met all but two of them (strong correlation with HADS-A & HADS-D). Table 4 shows all the scales´ correlations.

Table 4. *Correlations of all applied scales assessing well-being. *= p<.05*

Correlations

	MHC-SF	WEMWBS	FS	SF-12	HADS-D	HADS-A
MHC-SF	1					
WEMWBS	.74*	1				
FS	.58*	.66*	1			
SF-12	-.27*	-.42*	-.28*	1		
HADS-D	-.42*	-.56*	-.52*	.36*	1	
HADS-A	-.29*	-.51*	-.36*	.28*	.47*	1

Note. MHC-SF= Mental Health Continuum- Short Form, WEMWBS= Warwick-Edinburg Mental Health Questionnaire

FS= Flourishing Scale, SF-12= 12-Item Short Form Survey

HADS= Hospital Anxiety and Depression Scale (with two separate sub-dimensions Depression and Anxiety)

The range of correlation coefficients with inclusion of all well-being scales was .27 < r > .74 where the SF-12 was the scale with the lowest correlation coefficients (r < .43) respectively. The MHC-SF and WEMWBS showed the highest correlation (r = .74), and the Flourishing Scale correlated strongly (r ≥ .58) with these two other positive mental health scales.

4.4. The congruence of social needs and social flourishing

Bivariate correlation analysis with regard to the social components of BNSG-S and Flourishing Scale showed a correlation coefficient of .48 (p < 0.01). As hypothesized, this value corresponds to a moderate, significant correlation of the social components of the two scales.

Table 5. Items of the Flourishing Scale and the Basic Needs Satisfaction in General Scale which address relatedness and social flourishing respectively

Scale	Items	Correlation r
Basic Needs Satisfaction in General Scale	I relly like people I interact with.	
	I get along with people I come into contact with.	
	I pretty much keep to myself and don´t have a lot of social contacts.	
	I consider the people I regularly interact with to be my friends.	
	People in my life care about me.	
	There are not many people that I am close to.	0.48
	The people I interact with regularly do not seem to like me much.	
	People are generally pretty friendly towards me.	
Flourishing Scale	My social relationships are supportive and rewarding.	
	I actively contribute to the happiness and well-being of others.	
	People respect me.	

4.5. The incremental validity of the Flourishing Scale

With regard to the incremental validity of the Flourishing Scale, Table 3 depicts that the Flourishing Scale accounted for additional 1.1 % of unique variance in general health status over and above the 13.2 % of the variance explained by the Hospital Anxiety and Depression Scale. This 1.1 % incremental variance was statistically significant ($p < .05$).

Table 3. *Hierarchical Linear Regressions: Hospital Anxiety and Depression Scale and Flourishing Scale as Predictors of General Health.*= p<.05*

Variable	Standardized Beta Coefficient (*β*)	R Square	Adjusted R Square	R Square Change
Model 1 HADS	*.36**	*.13*	*.13*	
Model 2 HADS	*.30**			
Flourishing Scale	*-.13**	*.14*	*.14*	*.01**

Note. HADS= Hospital Anxiety and Depression Scale

5. Discussion

Results of this study showed that the Flourishing Scale is a unidimensional measure with adequate construct validity and incremental validity. This instrument is a serious alternative to other positive mental health scales which proved to be valid in past studies. Not least because of the mutual underlying dimension that could be figured out, the congruence with similar scales became obvious. This study additionally provided evidence of the distinction of mental illness and positive mental health and helped to categorize the Flourishing Scale. Moreover, a significant correlation of social needs fulfillment and social flourishing was detected and the Flourishing Scale was able to provide additional value above and beyond the mental illness measure in explaining general health.

The unidimensionality of the Flourishing Scale

The principal component analysis proved that the quite new Flourishing Scale is assessing one single dimension of positive mental health. This result confirms previous studies (e.g. Diener et al., 2009). The Flourishing Scale appears to have a high internal construct validity because of its unidimensionality. Steenkamp and van Trijp (1991) determined the existence of only one latent variable in a scale as an important indicator for this kind of validity. It can be stated that this positive mental health scale reliably measures a single aspect of mental well-being. Hattie (1985) stated "That a set of items forming an instrument all measure just one thing in common is a most critical and basic assumption of measurement theory" (p. 149). With regard to the present sample population, the Flourishing Scale emerged as a valid instrument to assess positive mental health with the help of one single score.

One single component of well-being

The exploratory factor analysis with involvement of three positive mental health scales showed that one single construct underlies most items of the three measures of well-being (WEMWBS, MHC-SF & Flourishing Scale). Cattel´s (1966) advice to proceed in accordance with the scree plot was followed up.

In total, 25 items constituted the chosen factor. This relatively high number of included items accounts for about two thirds of the total number of items. The further examination of the other factors did not allow a very clear interpretation. The high item ratio complicated the extraction of a single concept that was clearly measured by all of the items. Of course, all the items related to positive aspects of life. Nevertheless, a common label was hard to find. Some items related to psychophysical perceptions (e.g. `I've had energy to spare´), while other items covered social well-

being (e.g. ´How often did you have the feeling that you had warm and trusting relationships with others?´) or more general views of life (e.g. ´I lead a purposeful and meaningful life.´).

Yet, it was striking that none of the social flourishing items of the Flourishing Scale were contributing to the single component that was extracted by means of the EFA. A possible conclusion to this finding could be that social flourishing, at least to some extent, may be incongruent with other components of the positive mental health scales that were used here. Several studies from the past suggest that there may be some disturbing variables to the personal evaluation of relationships and social life. Umberson, Slaten, Hopkins, House & Chen (1996) pointed out that there are some gender differences regarding the personal value of relationships and how they affect subjective well-being. Different degrees of emotional involvement or self-evaluated functionality are just two aspects that may influence the impact of social flourishing on mental health. Additionally, Pinquart and Sörensen (2000) evoked another assumption why social flourishing may serve as a distinct component within the context of positive mental health. Following the *Basic Needs Satisfaction in General Scale,* these researchers made a difference between the human needs *autonomy*, *competence*, and *relatedness*. They found that *competence* influences the maintenance of *autonomy* (e.g. expanded competence allows individuals to fill the day with meaningful activities), while *relatedness* as the social component of flourishing was regarded as a construct that is less influential to the two other ones. Future research could offer valuable clues to the possible dinstinction of social fulfillment and the other aspects that contribute to mental well-being.

Overall, it can be conclued that there seems to exist one comprehensive component of well-being that is assessed by all of the three positive mental health scales that were used. However, it is difficult to put an exact label to this factor which covers all items. Nevertheless, the three positive mental health scales address one mutual dimension of mental well-being.

Positive mental health and mental illness as distinct dimensions

Next, the examination of the concurrent validity of positive mental health scales and the mental illness scales showed an obvious statistical difference of these two kinds of scales. It was suggested that mental illness is distinguishable from positive mental health.

The lowest correlation of two positive mental health scales was respectively still higher than the highest correlation of every scale pair with a different origin (positive mental health or mental illness). This supports the recent assumption that positive mental health is more, or at least something different than the absence of mental illness. It is an approach which has been promoted in several papers during the last years (e.g. Gilmour, 2014; Westerhof & Keyes, 2010).

Yet, the lowest difference among the paired correlations of positive mental health and mental illness

scales was only very small and most likely below a value that indicates significance.

There was no analysis proving that these overall differences were empirically unambiguous because correlation analyses did not reveal the significances of the differences respectively. Conclusions have solely been made on the basis of the bare numbers. In future studies, it can be useful to use statistical confidence intervals to compare coefficients for concurrent validity (Raykov, 2011). A more elaborate empirical approach to these exact differences of the scales would be interesting in additional research.

Social needs and social flourishing

With regard to the congruence of psychosocial parts of the BNSG-S and the Flourishing Scale, a moderate (and nearly strong) significant relationship was detected. The correlation was expected to be that high; the value was acceptable to label the two scales a being congruent to a great extent. Although this finding indicates an association between (social) flourishing and fulfillment of social needs, the question of causation remains. Is the fulfillment of needs causing social human flourishing or does the reverse case apply here? By all means, there is no doubt that the satisfaction of social needs is important for subjective well-being (Steverink & Lindenberg, 2006). Ward and Stewart (2003) put it even more drastically as they asserted that any kind of flourishing life can only be achieved in a social context. Hence, according to the authors social needs fulfillment is a necessary precondition for a state of high positive mental health.

Human flourishing and general health

The examination of the incremental validity of the Flourishing Scale to predict general health, along with the mental illness measure, provided an insightful value. A surplus of 1.1 % of explained variance could be regarded as being meaningful because of its statistical significance. The conclusion is that human flourishing at least partially explains general health status above and beyond mentall illness. It has to be remarked that the dependent variable was just a single item of the SF-12 (´What is your health status in general´?). Therefore, the finding is prone to a lack of reliability and may thus hold a severe limitation.

Yet, Fuchs (2009) stated that the use of a single-item measure for a focal construct is acceptable given the research purpose and setting at hand. Still, a difficulty facing the use of a single-item variable is the question if it sufficiently represents the desired construct (Fuchs, p. 207). For example, human flourishing is not necessarily connected to physical handicap which, amongst others, surely influences the personal evaluation of general health. The type of decisions that are made with the help of incremental validity should always be based on on the relative costs of the

predictor and the importance of the criterion influence (Haynes & Lench, 2003). Nevertheless, Hu, Stewart-brown, Twigg and Weich (2007) found that a general health questionnaire can be used to measure positive mental health in population-based research. It can be assumed that the concepts of general health and human flourishing are somehow connected. Additional research could be insightful to point out conditions and limitations of this interdependence. It is advisable to use a complete general health scale with a multiple item set within future studies.

The common denominator of health

The convergent validity from another perspective, namely with the inclusion of all the well-being measures (HADS, MHC-SF, WEMWBS, Flourishing Scale, SF-12) revealed a upper weak to upper strong correlation coefficient range. Although some interrelations only were weak, it can be stated that convergent validity is given here to some extent. It was assumed that all the scales aim to assess well-being in a certain sense. Some kind of congruence can be assumed to be given because all the correlations were at least very close to being moderate.

Although mental health and general health status are closely related (e.g. Goldberg, 2010), the distinction between physical and mental health should always be kept in mind. Furthermore, it has to be taken into account that in the general opinion, the term „health" is perhaps more closely related to physical health, than to mental health. This may be due to the circumstance that public emphasis on mental illness only accounts for a small fraction, compared to physical diseases. This is represented by the small amount of financial support for mental health care which is granted by governmental services (Schlipfenbacher & Jacobi, 2014). Nevertheless, the common understanding of the relationship between mental and physical health is rapidly increasing (WHO, 2001).

Final conclusion

This quite extensive examination and validation of the Flourishing Scale suggests that it is a new and useful tool to assess mental health. While the scale´s focus shifts away from mental illness, personal growth or flourishing becomes important to address the personal state of mental well-being. Flourishing can be regarded as a complementary element to predict general health. It comprises the fulfillment of human needs and the appreciation of positive life aspects.

The elements of the scale may serve as an inducement to strive for an adequate compliance of personal goals which correspond to one´s individual values. After all, subjective well-being is not only defined by the presence of physical health or the absence of mental illness, but also to a not inconsiderable extent by the way how positively reinforcing behaviors are implemented.

The examination and validation process contained several steps of emprical investigation. Finally, a

validation process may always contain numerous tests and examination efforts before a final evaluation can be made. In many cases, it takes an educated guess to declare a measuring instrument as valid. In the case of the Flourishing Scale, the conclusions that came up with the empirical examinations argue for the presence of a valid instrument.

It can be stated that the Flourishing Scale has been validated for the present Dutch sample with a wide demographic range. Clearly, the method of convenience sampling leads to the assumption that the sample is unlikely to be representative for the whole population being studied. In fact, some of these kinds of bias are hard to avoid. Nevertheless, an application of the scale in a clinical context with mentally restricted people would be of high value because this target group is most likely in need of psychological testing and treatment.

To confirm its validity with another approach, the study allowed the Flourishing Scale to be ranked among other validated positive mental health scales with the help of scale correlations. Besides this, additional value of flourishing to traditional measures of mental illness was demonstrated as it proved to have the ability to explain general health above and beyond mental illness.

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