



THE TWO CONTINUA MODEL OF MENTAL HEALTH AND MENTAL ILLNESS IN A CLINICAL ADULT POPULATION

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ABSTRACT (EN)

Background. Positive psychiatry strives for shifting the focus in the mental health care from the purely symptom-focused approach to the promotion of well-being. It is based on the two continua model of mental health and mental illness, holding that well-being and psychopathology are two related but distinct factors. This has been supported by accumulating research on the general population. The present study analyzes the relation of well-being and psychopathology in a clinical population and the four subgroups of mental disorders mood disorders, anxiety disorders, personality disorders and developmental disorders.

Methods. Well-being (MHC-SF) and psychopathology (OQ-45) were measured in a Dutch adult sample with cross-sectional design. To measure the relation between the two constructs correlation analyses, factor analyses and crosstab analyses were conducted for the complete sample as well as for the four subgroups of mental disorders.

Results. Well-being and psychopathology were moderately negatively correlated in the complete sample ($r = -.67, p > .01$) as well as in the four subgroups mood disorders ($r = -.77, p > .01$), anxiety disorders ($r = -.56, p > .01$), personality disorders ($r = -.53, p > .05$) and developmental disorders ($r = -.89, p > .05$). Factor analyses found for the complete sample as well as for the group of personality disorders two factors representing psychopathology and well-being.

Conclusion. The results confirm, though with a stronger relation compared to the general population, that the two continua model can be applied in the clinical population. Moreover, differences between subgroups were found with most convincing results for the group of personality disorders and least convincing support for the group of developmental disorders. It gets clear that, as positive psychiatry already stresses, the promotion of well-being needs to be integrated into routine clinical practice.

Keywords. Two-continua model, psychopathology, well-being, clinical population, positive psychiatry.

ABSTRACT (NL)

Achtergrond. De positieve psychiatrie streeft na om de focus in de geestelijke gezondheidszorg van de puur klachtgerichte aanpak naar de bevordering van welbevinden te verschuiven. Dit is gebaseerd op het twee continua model van geestelijke gezondheid en geestelijke ziekte dat stelt dat welbevinden en psychopathologie twee gerelateerde maar separate factoren zijn. Dit wordt ondersteund door wetenschappelijk onderzoek in de algemene bevolking. Deze studie analyseert de relatie tussen welbevinden en psychopathologie in de klinische populatie en in de vier groepen van mentale stoornissen: stemmingsstoornissen, angststoornissen, persoonlijkheidsstoornissen en ontwikkelingsstoornissen.

Methoden. Welbevinden (MHC-SF) en psychopathologie (OQ-45) werden gemeten in een steekproef met Nederlandse volwassenen met een cross-sectioneel design. Om de relatie tussen de twee constructen te meten werden correlatieanalyses, factoranalyses en kruistabellen voor zowel de hele klinische steekproef als ook de subgroepen uitgevoerd.

Resultaten. Welbevinden en psychopathologie waren matig negatief gecorreleerd in zowel de hele klinische steekproef ($r = -.67, p < .01$) als ook in de vier groepen (stemmingsstoornissen ($r = -.77, p < .01$), angststoornissen ($r = -.56, p < .01$), persoonlijkheidsstoornissen ($r = -.53, p < .05$) en ontwikkelingsstoornissen ($r = -.89, p < .05$)). Factor analyses vonden voor de hele klinische steekproef en voor de groep van persoonlijkheidsstoornissen twee factoren die de twee concepten psychopathologie en welbevinden representeren.

Conclusie. De resultaten bevestigen, met een sterkere relatie dan in de algemene bevolking, de applicatie van het twee continua model in de klinische populatie. Er bestaan verschillen tussen groepen met het meest overtuigend bewijs voor de groep van persoonlijkheidsstoornissen en de minst duidelijke resultaten voor de groep van ontwikkelingsstoornissen. Het wordt duidelijk dat, zoals de positieve psychiatrie het aanstreept, de bevordering van welbevinden geïntegreerd moet worden in de klinische praktijk.

Sleutelwoorden. Twee continua model, psychopathologie, welbevinden, klinische populatie, positieve psychiatrie.

INTRODUCTION

Positive psychiatry

Traditional psychiatry focuses on the prevention and treatment of mental disorders. They can be defined as “socially inappropriate psychological dysfunctions, which either emerge independently of social stressors or persist with disproportionate severity and duration after the stressors that gave rise to them have disappeared” (p. 36; Horwitz, 2002). In the treatment of such disorders, the traditional psychiatry focuses on reducing the symptoms and disabilities which come along with psychopathology. This purely symptom-focused approach of psychiatry is preoccupied with pathology, suffering and deficient functioning. The problem is that it stimulates the illusion that life free of symptoms is the norm (Delleman, 2014), thus that it is possible for everyone to be free of any symptoms.

Acknowledging this problem, the field of positive psychiatry has emerged in recent years. Broadly spoken, it concentrates on the promotion of the individuals’ effective functioning on an emotional, psychological and social level, instead of focusing exclusively on the alleviation of psychological symptoms (Delleman, 2014; Jeste, Palmer, Rettew, & Boardman, 2015). More detailed, positive psychiatry can be defined as “the science and practice of psychiatry that seeks to understand and promote well-being through assessment and interventions aimed at enhancing behavioral and mental wellness” (Jeste et al., 2015, p. 675). This new field of psychiatry has emerged recently because of accumulating research indicating the importance of improving well-being and focusing on the client (Delleman, 2014). On this topic, Slade (2010) has already earlier stressed the need to especially concentrate on the individual goals and strengths of the client. The goal of positive psychiatry is to bring a counterbalance in the traditional psychiatry with its preoccupation on the alleviation of symptoms (Delleman, 2014) and to promote well-being into routine clinical practice.

This has important implications for the practice of today’s psychiatry. Until today, most research on the promotion of PMH has only examined the general population, mainly focusing on individuals without psychological disorders or with only mild or moderate mental disorders. In a clinical population, mental disorders are more persistent and severe (Delleman, 2014), which results in lower levels of mental health. As their initial levels of mental health are lower, they have more potential for an improvement of their mental health. Therefore, the impact of promoting PMH in a clinical population might be even bigger than for healthy individuals.

Another implication might be valid on the level of the community. The promotion of well-being was found to have a positive impact on mental health, especially in the general population (Bolier et al., 2013) and also in some clinical populations (eg. Moeenizadeh & Kumar, 2010). If effective interventions on the promotion of well-being were provided to all mentally ill individuals, one could see a significant increase in the mental health levels. On the long run, the practice of positive psychiatry might therefore decrease the negative consequences of a poor mental health for the population at large (Jeste et al., 2015). These are important reasons why further fundamental research with clinical populations is needed.

The concept of positive mental health

The focus on symptoms and their reduction can not only be seen in the traditional psychiatry, but also in the traditional understanding of mental health. The concept of mental health has long been defined as the absence of psychopathology. However, this traditional definition of mental health is too limited and narrow because it focuses primarily on deficient functioning rather than on promoting strength and effective functioning. In 2005, the World Health Organization (WHO) has defined mental health as “a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community” (World Health Organization, 2005, p. 2). This definition contains a positive perspective of mental health represented in the three core concepts of emotional well-being, the individuals’ effective functioning and the individuals’ effective functioning in the community.

Those core concepts of the definition match the concepts of well-being in the psychological literature: emotional well-being, psychological well-being and social well-being. The first core concept is emotional well-being, also called subjective well-being (eg. Diener, 1984). It is composed of the three concepts life satisfaction, the presence of pleasant affects and the absence of unpleasant affects (Diener, 1984; Diener, Suh, Lucas, & Smith, 1999, see Tabel 1). In other words, emotional well-being is the individuals’ well-being, consisting of the interest and pleasure in life and of positive emotions such as joy or happiness. Emotional well-being can be found in the WHO definition in the first core concept of well-being.

To continue, psychological well-being can be defined as effective functioning in an individuals’ life (Huppert, 2009; Ryff & Keyes, 1995) wherein self-realization is of fundamental relevance. Furthermore, research shows that psychological well-being is composed of the six elements (1) self-acceptance, (2) positive relations with others, (3) autonomy, (4) environmental mastery, (5) personal growth, and (6) purpose in life (Ryff,

1989; Ryff & Keyes, 1995, see Table 1). In line with the definition by the WHO, it represents the second core concept of the individuals' effective functioning.

Last, social well-being stands for positive societal functioning in the community (Huppert & Whittington, 2003; Ryff, 1989). Keyes (1998) found five criteria for an optimally functioning person in society which basically describe a person who simultaneously has a positive view of others, believes in the progress of the community, understands and participates in the community and feels comfortable in it (see Table 1). Finally, social well-being represents the third core concept of the WHO's definition, which is the individuals' effective functioning in the community.

Looking at the three different kinds of well-being, Keyes (2005, 2007) puts that emotional, psychological and social well-being together form the concept of PMH. Individuals who experience high levels of emotional, psychological and social well-being are described by Keyes as flourishing. If the opposite is the case, thus when an individual experiences low levels of well-being, it is called languishing. As stated earlier, this concept of PMH is a key concept of the positive psychiatry and in the view of positive psychiatrists it is seen as a key concept of mental health.

Table 1

The Dimensions of Emotional Well-being (based on: Diener et al., 1999), Psychological Well-being (based on: Ryff, 1989) and Social Well-being (based on: Keyes, 1998)

Criteria	Description
<i>Emotional well-being</i>	
Life satisfaction	Feeling satisfied with one's life or with specific areas in one's life
Pleasant affect	Moods or emotions such as joy, happiness, or pride
Absence of negative affect	Moods or emotions such as depression, stress or sadness
<i>Psychological well-being</i>	
Self-acceptance	A positive and acceptant attitude towards the self in the past and present
Positive relations with others	Having satisfying, trusting relationships with others in which empathy, intimacy and affection are expressed
Autonomy	Self-determinant and independent as guided by one's own socially accepted internal standards
Environmental mastery	The capability to manage the complex environment according to one's own needs
Personal growth	The insight into one's own potential for self-development
Purpose in life	Goals and beliefs that affirm a sense of direction and meaning in life
<i>Social well-being</i>	
Social coherence	Being able to make meaning of what is happening in society
Social acceptance	A positive attitude toward others while acknowledging their difficulties
Social actualization	The belief that the community has potential and can develop positively
Social integration	A sense of belonging to a community
Social contribution	The feeling that one's activities are valued by and contribute to the society

The two continua model of mental health and mental illness

Now that the concept of PMH has been clarified, the question arises how PMH and psychopathology are related. The notion that mental health is not merely the absence of pathology but also the presence of PMH is a central point in the two continua model of mental health and mental illness, in the further shortly called two continua model. It implies that mental health does not consist of one single continuum with PMH and psychopathology as endpoints, but that PMH and psychopathology are two complementary continua. Research on the general population shows that the two concepts are correlated but distinct factors (Huppert & Whittington, 2003; Keyes, 2005, 2007; Lamers, 2012; Westerhof & Keyes, 2008, 2010). Even though a person with high levels of PMH has higher chances to experience low levels of psychopathology and vice versa, this does not always apply. It is possible that mentally ill individuals flourish and mentally healthy individuals have low levels of PMH. This is significant because it shows that the traditional focus in the mental health care on the pure alleviation of pathological symptoms is not enough. By now it has been proven that the two continua model is valid for a population with mild symptoms (eg. Keyes, 2005, 2007), which provides evidence for the importance of shifting the focus in the mental health care on PMH. It is interesting if this is also the case in a clinical population with more complex psychiatric disorders.

A broad body of research has been providing strong support for the two continua model in a cross-sectional design studying the general population and using a single measure occasion (Headey, Kelley, & Wearing, 1993; Keyes, 2005; Lamers, Westerhof, Bohlmeijer, & Keyes, 2013; Westerhof & Keyes, 2008, 2010). Research on the two continua model investigated individuals of the general population and their levels of psychopathology. For instance, Westerhof and Keyes (2008, 2010) investigated the level of psychopathology on individuals in the general population of a broad number of different mental disorders. Those were somatization, cognitive symptoms, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. A moderate significant correlation between PMH and psychopathology was found, approving the two continua model. Furthermore, Lamers, Westerhof, Glas, and Bohlmeijer (2015) found for the general population that changes in psychopathology predicted PMH later in time, as well as changes in PMH predicted psychopathology after that period. Their results show that well-being can be seen as a protective factor against psychopathology and vice versa.

Research was also conducted on individuals of the general population that specifically fulfill criteria of different mental disorders. Keyes (2005) looked at individuals from the

general population who showed significant symptoms of depression, generalized anxiety disorder, panic disorder and alcohol abuse and investigated the chances of being completely mentally ill or healthy. He found that 17% were flourishing and 18% were languishing. An estimate of 23% of the sample was found to have any of the four mental disorders, of which 7% were completely mentally ill, meaning that they were also languishing. Similar results were found by Keyes et al. (2008) who analyzed a student population, looking at similar symptoms of mental disorders. Furthermore, it was found that in the general population a change in PMH can predict the incidence and prevalence of a major depressive disorder, generalized anxiety disorder and panic disorder ten years later (Keyes, Dhingra, & Simoes, 2010). This is important as enhancing PMH might result in a lower prevalence of certain mental disorders.

Concluding, this field of research provides support for the two continua model and shows that it cannot only be applied for healthy individuals, but also for persons in the general population who meet the criteria of different mental disorders. Those mental disorders are overall of rather mild severity compared the clinical population (Delleman, 2014).

The two continua model in a clinical population

For now, research on the relation between PMH and psychopathology was mostly conducted on the general population. Does the two continua model also apply for a clinical population? This would be interesting as the conducted studies have the limitation that they mainly focused on people without mental or psychiatric disorders or on those with rather mild severity. It is important to also investigate clinical individuals who generally have more severe or persistent symptoms, which, as stated earlier, may bring them an even bigger advantage of focusing on well-being (Delleman, 2014).

In research on the two continua model, next to a few different mental disorders, depression and anxiety disorders have been on the focus of examination (eg. Beekman, Deeg, Braam, Smit, & Van Tilburg, 1997; De Beurs et al., 1999; Keyes, 2005; Keyes et al., 2008; Wells & Sherbourne, 1999). The reason might be that they are under the most frequent mental disorders (anxiety disorders 19.6%, mood disorders 20.1% in the Dutch population; De Graaf, Ten Have, & van Dorsselaer, 2010). However, the total spectrum of mental disorders has by far not been studied yet. This leads to the question if the two continua model is also applicable for other (groups of) mental disorders. Literature search showed that PMH, consisting of emotional, psychological and social well-being, has rarely been studied in a clinical population. However, different components of PMH, like psychological well-being or life

satisfaction, or broader concepts that include well-being, such as the quality of life, have been researched for a long time.

Having a look at *mood disorders*, impaired levels of components of well-being were found for a population with minor depression (Nierenberg et al., 2010), as well as for populations with both minor and major depression (Beekman et al., 1997; Wells & Sherbourne, 1999).

In the whole group of *anxiety disorders* Mendlowicz and Stein (2000) found impaired levels of well-being and functioning in their meta-study. Inspecting the anxiety disorders separately, low levels of components of well-being can be detected for example for panic disorders (eg. Candilis et al., 1999), social phobia (eg. Stein & Kean, 2000), and in clients with generalized anxiety disorder (Stein & Heimberg, 2004).

In contrast to anxiety disorders, little research on *personality disorders* and their level of well-being was found. Low levels of well-being were found in adults with borderline personality disorder (eg. Conklin, Bradley, & Westen, 2006; IsHak et al., 2013) as well as for most of the other personality disorders (eg. Cramer, Torgersen, & Kringlen, 2006; Eisen et al., 2006). Generally it can be said that the more criteria of a personality disorder are fulfilled, the poorer the quality of life, including emotional well-being and self-realization (Cramer et al., 2006; Soeteman, Verheul, & Busschbach, 2008).

Research on adults with *developmental disorders* and PMH has rarely been done. Anyways, low levels of well-being were found for individuals with autism spectrum disorder (eg. Mazurek, 2014). In addition, research on adults with the attention-deficit/hyperactive-disorder (ADHD) shows low levels of mental health (Adler et al., 2006) and limitations in the quality of life (including psychological health and relationships; Bueno et al., 2015) when compared with the general population.

It can be concluded that in the clinical population levels of well-being are overall lower than in the general population. Further, no study found higher levels of well-being for mentally ill people. This might be influenced by the fact that a psychiatric disorder is only diagnosed if someone is stuck in his or her life, which usually goes along with low levels of well-being. Anyways, it follows that there is a noticeably stronger relation between well-being and psychopathology in the clinical population compared to the general population.

Present study

The main aim of the present study is to examine the association between PMH and psychopathology in a clinical population. In this study deficient functioning is used as an indicator for psychopathology, consisting of the three dimensions symptom distress (SD),

interpersonal relations (IR) and social role performance (SR). As already mentioned above, a higher correlation between PMH and psychopathology seems likely, but are the two factors still distinct? Treatments on the promotion of well-being already assume that the two factors are distinct in the clinical population. Those kinds of treatments are already broadly practiced and interventions like the well-being therapy or the Acceptance and Commitment Therapy were found to be effective in improving well-being (Bolier et al., 2013). However, the relation between PMH and psychopathology for this target group is not even clear yet and also not if differences between groups of mental disorders exist. Further, it is still unknown if the level of symptoms or the level of well-being can be used as a predictive factor for the success of a particular treatment. Accordingly, it is questionable if it is possible to have insights in the effects of the treatments as to this point no fundamental research exists. This study provides essential insights in the two continua model for clinical individuals. Next, the present study will also add to the existing literature by investigating different groups of mental disorders. This may give important insights in the levels of PMH and the relation to psychopathology per group and possible differences between them. Eventually, results of this study might lead to broader consequences such as strong arguments for shifting the focus to PMH in the mental health care. Keyes et al. (2010) have already shown in the general population that the promotion of PMH results in less prevalence of psychopathology later in time, which may be even more relevant if it is also the case for clinical individuals. Next, further research can be conducted with this study as fundament, eventually helping to reduce morbidity and mortality and to improve health outcomes in the population at large (Jeste et al., 2015).

These considerations lead to the following research design, comparing the level of well-being and psychopathology within the four subgroups of mental disorders (1) mood disorders, (2) anxiety disorders, (3) personality disorders, and (4) developmental disorders. These groups were chosen because they cover a wide range of different mental disorders and make up a majority of the DSM-IV classification (20.1% mood disorder, 19.6% anxiety disorder, 2.9% ADHD (De Graaf et al., 2010), and 13.5% personality disorder (Landelijke Stuurgroep Multidisciplinaire Richtlijnontwikkeling, 2008) in the Dutch population).

Research question 1: To what extent can the two continua model of mental health and illness be applied in a clinical population?

Hypothesis 1: In a clinical population the two continua model can be applied with PMH and psychopathology still being distinct factors, but correlating higher than in the general population. For the general population, a moderate negative correlation was found ($r = .53$ ($p < .01$) by Keyes (2005) and $r = .32$ ($p < .01$) by Westerhof and Keyes (2008)).

Looking at the correlation of the two factors in a clinical population, it gets clear that low levels of well-being and psychopathology are stronger related than in the general population (eg. Adler et al., 2006; Cramer et al., 2006; Mendlowicz & Stein, 2000; Nierenberg et al., 2010). However, indicators exist that these two constructs can be seen as separate. Earlier research validated the two continua model in the general population, not only looking at healthy individuals but also at persons who fulfilled the criteria of several mental disorders, such as depression or anxiety disorders (eg. Keyes, 2005; Westerhof & Keyes, 2010). They confirmed the two continua model, which gives reason to expect that this is also the case for a clinical population.

Research question 2: To what extent differs the application of the two continua model for different groups of mental disorders?

Hypothesis 2: PMH and psychopathology are correlated but distinct factors in the four groups of mental disorders (mood disorders, anxiety disorders, personality disorders and developmental disorders). Further, it is hypothesized that the group of mood disorders has the highest correlation of well-being and psychopathology. This expectation is motivated with research by Schonfeld et al. (1997), who found that having a depression had a greater impact on functioning and well-being than anxiety disorders. For the group of personality disorders it is expected that the two constructs are most distinct. The reason is that research by Cramer et al. (2006) found a personality disorder where no limitation of well-being was found. As those findings do not reveal a clear and stable relation, they give reason to expect that PMH and psychopathology should be seen as distinct continua. For the groups of anxiety disorders and developmental disorders no particular results are expected.

METHODS

Participants and design

Initially, a clinical sample of 80 respondents between ages 14 and 59 participated in the study. Of those, two respondents were not diagnosed, which is the reason why their data were excluded. Additionally, the data of one respondent was discarded as the person was younger than 18 years. After exclusion the data of 77 respondents were used to answer research question one, of which 54.4% were female (see Table 2). Of these 77 respondents, four respondents could not be categorized into one of the four subgroups of mental disorders. Therefore, the total number of the 74 respondents was used for the analysis of research question two. The main diagnosis was a mood disorder for 32.5% of the respondents, an

anxiety disorder for 24.7%, a personality disorders for 20.8 % and for 18.2 % developmental disorders.

Table 2

Major Characteristics of Respondents Used for Analyses (N= 77)

Characteristic	Mood disorder (n = 25)	Anxiety disorder (n = 19)	Personality disorder (n = 16)	Developmental disorder (n = 14)	Total (N = 77)
<i>Gender n (%)</i>					
Male	12 (48.0)	6 (31.6)	5 (31.3)	9 (64.3)	35 (45.5)
Female	13 (52.0)	13 (68.4)	11 (68.8)	5 (35.7)	42 (54.4)
<i>Age n (%)</i>					
18 - 29	5 (20.0)	4 (21.1)	5 (31.3)	7 (50.0)	22 (28.6)
30 - 49	10 (40.0)	8 (42.1)	8 (50.0)	6 (42.9)	32 (41.6)
50 +	10 (40.0)	7 (36.8)	3 (18.7)	1 (7.1)	23 (29.8)
<i>Educational status n (%)</i>					
Low	19 (76.0)	12 (63.1)	9 (56.2)	5 (35.8)	38 (61.0)
Moderate	5 (20.0)	3 (15.8)	4 (25.0)	9 (64.2)	21 (27.3)
High	1 (4.0)	4 (21.1)	3 (18.8)	0 (0.0)	9 (11.7)

Procedure

The present study draws on data collected by GGNet, a Dutch organization primarily for complex psychiatry in the region of Gelderland, NL. The sample was part of the Routine Outcome Measurement where each client regularly fills in forms and questionnaires before the beginning of treatment. The outcomes of those questionnaires are used for an evaluation of treatment effects and possible adjustment in the treatment. The research data of the current study were gathered between 5 March and 8 April 2015 and are part of a bigger project.

Furthermore, the respondents have agreed with a passive consent that their anonymized data may be used for research. To guarantee only permitted people have access to the data, the data set was protected on a secured USB stick.

Measurements

PMH was measured with the Mental Health Continuum - Short Form (MHC-SF; Keyes et al., 2008) consisting of 14 items. It is a self-report questionnaire scored on a 6-point scale ranging from never (0) to every day (5). The three core concepts of well-being, which are emotional well-being (3 items), psychological well-being (6 items) and social well-being (5 items) are covered and were verified as subscales in confirmatory factor analysis. The MHC-SF has a good convergent validity and is validated in measuring the PMH in the Dutch population. Furthermore it can be seen as reliable, since the Cronbach's alpha for the total scale was .89, for the subscales emotional and psychological well-being .83, and for social well-being .74 (Lamers, Westerhof, Bohlmeijer, ten Klooster, & Keyes, 2011). In the present study, the reliability for the total scale was $\alpha = .86$, and for the subscales emotional well-being $\alpha = .86$, for psychological well-being $\alpha = .75$, and for social well-being $\alpha = .60$. Moreover, the test-retest reliability was found to be $\alpha = .65$ for the total scale (Lamers et al., 2015) which shows that the MHC-SF is stable over time.

The Outcome Questionnaire 45 (OQ-45; Lambert et al., 1996) was administered for a global assessment of the respondents' functioning. The self-report questionnaire consists of 45 items which are answered on a five-point-rating scale from never (0) to almost always (4). It is originally composed of the three subscales symptom distress (SD), interpersonal relations (IR), and social role (SR) performance. First, the SD scale (25 items) assesses symptoms associated with common disorders in the public mental health. Secondly, the IR scale (11 items) assesses the patients functioning in relation to partner, family and friends. Lastly, the functioning in school, work and leisure is assessed in the SR performance scale (9 items). In a study on the Dutch general population, De Jong et al. (2007) found a fourth significant factor, which they called anxiety and somatic distress (ASD). It assesses psychosomatic distress specifically associated with anxiety. Confirmatory factor analysis found the 4 constructs, but a high correlation was found for the factors ASD and SD ($r = .94$, $n = 2726$), since they are with regards to contents very similar (De Jong et al., 2007). However, in the present study, the factors ASD and SD had too high communalities, which is the reason why the factor ASD was excluded from the analyses. The psychometric quality of the instrument has great validity and reliability across different countries. Firstly, the OQ-45 has a moderate construct validity and a great criterion validity. Secondly, the instrument is reliable with a Cronbach's alpha for the total scale of .93 (IR: $\alpha = .80$, SD: $\alpha = .91$ and SR: $\alpha = .69$) and is stable over time as the test-retest reliability for the total scale shows ($\alpha = .79$; De Jong et al., 2007). In the

present study, the reliability for the total scale was $\alpha = .92$, (SD: $\alpha = .91$; IR: $\alpha = .76$; SR: $\alpha = .55$).

Statistical analysis

For the statistical analysis of the data the program IBM SPSS Statistics 20 was utilized. To begin with, the Kaiser-Meyer-Olkin (KMO; Kaiser, 1970) measure was used as an indicator for the sampling adequacy. It varied between 0 and 1, with a value of 1 indicating that factor analysis should yield reliable and distinct underlying factors as the correlations are relatively compact. The values were categorized into groups according to the five M's by Hutcheson and Sofroniou (1999): marvelous (values in the .90s), meritorious (values in the .80s), middling (values in the .70s), mediocre (values in the .60s), miserable (values in the .50s) and merde (values in the .50s). The sampling adequacy for the whole sample was found to be good, KMO = .81 ('meritorious' according to Hutcheson & Sofroniou, 1999). Looking at the subgroups, KMO was found to be adequate for the group of mood disorders, KMO = .84 ('meritorious' according to Hutcheson & Sofroniou, 1999). A 'medicore' value was found for the groups of personality disorders (KMO = .66) and for the group of developmental disorders (KMO = .61). The sampling adequacy for the group of anxiety disorders however did not verify sampling adequacy, KMO = .54 ('miserable' according to Hutcheson & Sofroniou, 1999).

To test if the two continua model is applicable in this population, the following analyses were conducted. First, correlation analyses were computed on the complete sample between the total scores of the questionnaires MHC-SF and OQ-45 and their subscales to explore the relation between PMH and psychopathology. In the analysis correlation coefficients under .3 were considered to be low, and above .9 considered to be high (Field, 2013). Second, principal axis factor analyses were carried out in order to explore the underlying factors and test the two continua model. Factor analyses were conducted for all six subscales with oblique rotation (direct oblimin). An initial analysis was run to obtain eigenvalues for each factor in the data and if needed, an additional factor analysis extracting two factors was conducted in order to explore if the two constructs psychopathology and PMH could be found. The factor pattern matrix of item loadings was examined. Last, cross tabulations, shortly called crosstabs, using the χ^2 -test, were conducted to compare the relationship between the two dimensions of the two continua model. For that purpose both PMH and psychopathology were split in two ranks, either indicating a low or a high level of each dimension. The same analyses were made per group of mental disorder for the exploration of research question two.

RESULTS

Correlation analysis

Regarding the correlation on the complete sample, a moderately negative correlation between psychopathology and PMH was found (see Table 3). This correlation indicates that a higher level of psychopathology is moderately correlated with a lower level of PMH and vice versa, which is in line with expectations. Further, predominantly moderate negative correlation coefficients were also found for the subscales of the two concepts. Only between the subscales social well-being and IR no significant correlation was detected.

A correlation analysis between psychopathology and PMH was also conducted for the four subgroups to find an answer for research question two. First, moderate negative correlations were found for all four groups of mental disorders. However, the correlation in the group of developmental disorders fell within the upper range of a moderate correlation ($r = -.89, p < .01$). This finding objects the expectation that the strongest correlation could be found in the group of mood disorders.

Having a closer look at the correlation coefficients in the subgroups, it can be said that higher negative correlations could be found for the groups of mood disorders and developmental disorders compared to the other two groups (see Table 3). In the latter group, even a high correlation of $r = -.90 (p < .01)$ was found between the subscales psychological well-being and total psychopathology, indicating a high negative relation.

For some subscales no significant correlations with the subscales of the other construct could be found for several groups (see Table 3). This especially concerns the subscale social well-being for the groups of mood disorders and anxiety disorders and partly the group of developmental disorders. In addition, it also concerns the correlation of the SR-subscale in the two groups of anxiety disorders and personality disorders. Lastly the subscale psychological well-being did not correlate with psychopathology subscales in the group of personality disorders.

Overall, it can be stated that correlations for the subgroups varied more than in the complete sample. Additionally, correlations differed per subscale, especially for the subscales social well-being and SR overall lower or no correlations could be found. Lastly, the correlations of the groups of developmental disorders and mood disorders were overall stronger than those of anxiety disorders and personality disorders.

Table 3

Correlations Between Subscales and Total Scores on the MHC-SF and the OQ-45 for the Complete Sample and Subgroups of Mental Disorders

THE TWO CONTINUA MODEL IN A CLINICAL POPULATION

Psychopathology	PMH			
	Emotional well-being	Psychological well-being	Social well-being	Total PMH
<i>Complete sample (N = 78)</i>				
SD	-.62**	-.65**	-.40**	-.66**
IR	-.31**	-.32**	-.15	-.31**
SR	-.53**	-.61**	-.44**	-.62**
Total psychopathology	-.59**	-.66**	-.44**	-.67**
<i>Mood disorders (n = 25)</i>				
SD	-.65**	-.77**	-.36	-.72**
IR	-.69**	-.74**	-.37	-.73**
SR	-.38	-.48*	-.14	-.40*
Total psychopathology	-.71**	-.82**	-.37	-.77**
<i>Anxiety disorders (n = 19)</i>				
SD	-.25	-.51*	-.351	-.54*
IR	-.49*	-.63**	-.05	-.53*
SR	-.33	-.06	-.13	-.23
Total psychopathology	-.37	-.54*	-.27	-.56*
<i>Personality disorders (n = 14)</i>				
SD	-.55*	-.48	-.63**	-.59*
IR	-.46	-.42	-.53*	-.51*
SR	-.05	-.07	-.12	-.03
Total psychopathology	-.48*	-.45	-.54*	-.53*
<i>Developmental disorders (n = 14)</i>				
SD	-.70**	-.88**	-.34	-.81**
IR	-.51	-.63**	-.70**	-.71**
SR	-.75**	-.68**	-.37	-.72**
Total psychopathology	-.77**	-.90**	-.51	-.89**

Note. PMH = positive mental health; SD = symptom distress; IR = interpersonal relations; SR = social role acceptance.

* $p < .05$, two-tailed

** $p < .01$, two-tailed

Exploratory factor analysis

To begin, an initial principal axis factor analysis was conducted on the whole sample to find an answer for research question one (see Table 4). One factor was found obtaining an eigenvalue over Kaiser's criterion of 1 and explained 51.2% of the variance. The factor loaded negatively on the psychopathology scales and positively on the PMH scales. When extracting two factors, the factor loadings for all three PMH scales were high, especially on psychological well-being (1.01), and negative on the IR-scale. The second factor loaded positively on all three psychopathology scales. Furthermore after rotation, both factors could explain an almost even variance (factor 1 = 48.8%; factor 2 = 44.8%), providing support for the two dimensions in the concept of mental health. Regarding the pattern of the factor loadings, factor 1 illustrates PMH and factor 2 represents psychopathology.

Table 4

Principal Axis Facto Analysis with Oblimin Direct Rotation of Subscales of the MHC-SF and the OQ-45 for the Complete Sample (N = 77)

Subscales	Based on		
	eigenvalue	Extract 2 factors	
	Factor 1	Factor 1	Factor 2
Social distress	-.79		1.06
Interpersonal relationships	-.81	-.38	.47
Social role	-.41		.39
Emotional well-being	.76	.73	
Psychological well-being	.86	1.01	
Social well-being	.56	.55	
% explained variance	51.2	48.8	44.8

Note. PMH= positive mental health; factor loadings < .2 are suppressed.

A clear finding as the one on the complete sample could also be found for the group of personality disorders (see Table 5). Initial factor analysis found two factors that together explained 84.47% of the variance. Factor 1 loaded positively on all three PMH scales, and negatively on the psychopathology scales. For the second factor, a cluster of positive factor loadings for the three scales of psychopathology was found. In line with expectations for this group, the items that cluster on the same factor suggest that factor 1 represents PMH and that factor 2 represents psychopathology.

Table 5

Principal Axis Factor Analysis with Oblimin Direct Rotation of Subscales of the MHC-SF and the OQ-45 for Personality Disorders (n = 16)

Subscales	Based on eigenvalue	
	Factor 1	Factor 2
Symptom distress	-.51	.62
Interpersonal relationships	-.37	.77
Social role	-.24	.81
Emotional well-being	.87	
Psychological well-being	.80	
Social well-being	.99	
% explained variance	51.7	32.8

Note. PMH= positive mental health; factor loadings < .2 are suppressed.

An initial factor analysis on eigenvalues for the group of mood disorders found one factor that fulfilled Kaiser’s criterion of 1 and together explained 55.7% of the variance (see Table 6). The factor loadings of all psychopathology scales were negatively and PMH scales were positively loaded. Conducting an additional factor analysis and allowing extracting two factors, together a variance of 80.3% could be explained. The first factor had positive factor loadings on the psychopathology scales SD and IR, and negative on all three well-being scales. Factor 2 only had one significant factor loading on the SR scale and could therefore be seen as irrelevant regarding the two dimensions of mental health.

Table 6

Principal Axis Factor Analysis with Oblimin Direct Rotation of Subscales of the MHC-SF and the OQ-45 for Mood Disorders (n = 25)

Subscales	Based on eigenvalue		Extract 2 factors	
	Factor 1	Factor 1	Factor 2	Factor 2
Symptom distress	-.86	.80		
Interpersonal relationships	-.84	.91		
Social role	-.45			.75
Emotional well-being	.79	-.73		
Psychological well-being	.93	-.82		
Social well-being	.47	-.52		
% explained variance	55.7	55.0		25.8

Note. PMH= positive mental health; factor loadings < .2 are suppressed.

Further, principal axis factor analysis for the group of anxiety disorders found two factors (see Table 7). Together they explained 61.5% of the total variance. The first factor showed positive factor loadings on all three psychopathology scales and negative factor loadings for the two PMH-scales psychological well-being and emotional well-being. However, factor 2 did not reveal an obvious pattern of factor loading. Additionally, the IR-scale and SD-scale were double loaded on both factors.

Table 7

Factor Loadings Based on a Principal Axis Factor Analysis with Oblimin Direct Rotation of Subscales of the MHC-SF and the OQ-45 for Anxiety Disorders (n=19)

Subscales	Based on eigenvalue	
	Factor 1	Factor 2
Symptom distress	.45	.77
Interpersonal relationships	.74	.32
Social role	.32	
Emotional well-being	-.89	.37
Psychological well-being	-.67	
Social well-being		-.38
% explained variance	39.1	22.3

Note. PMH = positive mental health; factor loadings < .2 are suppressed.

Investigating the results of the principal axis factor analysis for the group of developmental disorders, two initial factors were found that meet the Kaiser’s criterion of 1 (see Table 8). The factor loading of the IR-scale was by far the highest (1.02). Yet, no obvious pattern of the factor loadings regarding the constructs PMH and psychopathology could be found.

Table 8

Principal Axis Factor Analysis with Oblimin Direct Rotation of Subscales of the MHC-SF and the OQ-45 for Developmental Disorders (n=14)

Subscales	Based on eigenvalue	
	Factor 1	Factor 2
Symptom distress	-.73	
Interpersonal relationships		1,02
Social role	-.88	
Emotional well-being	.88	
Psychological well-being	.83	-.21
Social well-being		-.63
% explained variance	57.8	43.5

Note. PMH= Positive Mental Health; Factor loadings < .2 are suppressed.

In short, the underlying factors for the distinction of the two continua psychopathology and PMH could be found for the whole sample and the group of personality disorders. However, for the other groups the subscales did not cluster as evidently on one of the factors and no obvious pattern could be recognized.

Cross tabulations

The third type of analysis was crosstabs with the two dimensions the two continua model (see Table 9). First, the complete sample was investigated to find support for the first hypothesis. The chi-square test was significant, ($X^2(1) = 9.48; p = .02$, two-tailed), indicating significant differences between dimensions. Regarding the totals of each dimension, the levels of psychopathology and PMH were equally distributed. More details can be seen in the inner cells of Table 9, which evidently show a pattern on the diagonal axis: Both low levels of PMH and high levels of psychopathology and vice versa occurred more than twice as much as the combination of high levels of PMH and low levels of psychopathology and vice versa. This

pattern provides support for the first hypothesis as it refers to a relative independence of the two dimensions.

Regarding analyses on the second research question, the chi-square test was only found significant for the group of anxiety disorders ($X^2(1) = 5.43; p = .02$; two-tailed). This indicates that in the current sample the relation between the two concepts is only significant for the group of anxiety disorders. Examining this group closer, it gets clear that a low level of psychopathology prevails, as well as a high level of PMH. Those tendencies might be influenced by the relative high number of respondents who scored low on psychopathology and high on PMH (see Table 9). Moreover, a slight diagonal pattern is visible, approving for the relative independence of the two concepts.

To conclude it can be said that the pattern of low psychopathology and high PMH and vice versa was not only found for the complete sample, but also for the group of anxiety disorders. Although no significant findings could be found for all subgroups, tendencies indicate the diagonal pattern of flourishers and languishers for the other groups as well.

Table 9

Distribution of Psychopathology and Positive Mental Health for the Complete Sample and Subgroups

Psychopathology	PMH					
	Low		High		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
<i>Complete sample (N = 78)</i>						
Low	12	15.6	26	33.8	38	49.4
High	26	33.8	13	16.9	39	50.6
Total	38	49.4	39	50.6	77	100.0
<i>Mood disorders (n = 25)</i>						
Low	5	20.0	5	20.0	10	40.0
High	12	48.0	3	12.0	15	60.0
Total	17	68.0	8	32.0	25	100.0
<i>Anxiety disorders (n = 19)</i>						
Low	1	5.3	11	57.9	12	63.2
High	4	21.1	3	15.8	7	36.8
Total	5	26.3	14	73.7	19	100.0
<i>Personality disorders (n = 16)</i>						
Low	2	12.5	5	31.2	7	43.8
High	5	31.2	4	25.0	9	56.2
Total	7	43.8	8	56.2	16	100.0
<i>Developmental disorders (n = 14)</i>						
Low	3	21.4	5	35.7	8	57.1
High	4	28.6	2	14.3	6	42.1
Total	7	50.0	7	50.0	14	100.0

Note: PMH = positive mental health; Complete sample: $X^2(1) = 11.58$; $p = .001$, two-tailed; mood disorders: $X^2(1) = 2.48$; $p = .115$, two-tailed; anxiety disorders: $X^2(1) = 5.43$; $p = .02$, two-tailed; personality disorders: $X^2(1) = 1.17$; $p = .280$, two-tailed; developmental disorders: $X^2(1) = 1.17$; $p = .280$, two-tailed

DISCUSSION

The aim of the present study was to clarify the relation between PMH (emotional, psychological and social well-being) and psychopathology in a clinical adult population. The study is new in several ways: it is the first study testing the two continua model in a clinical population. Additionally, the differences in the relationship of the two constructs in four groups of mental disorders are investigated. On the basis of this information, the focus in the mental health care could be adjusted and also treatments or diagnoses could be made more specific and reliable.

With respect to the first hypothesis, findings provide support that the two constructs are correlated but distinct in the complete clinical population. As hypothesized, a moderate negative correlation between PMH and psychopathology was found. This indicates that the two constructs should not be seen as the endpoints of one single continuum (as a perfect correlation would demonstrate), but as two separate but correlated continua. As further expected, the two concepts were stronger correlated in the clinical sample than in the general population (e.g. Keyes, 2005; Westerhof & Keyes, 2008). This is conform with research indicating lower levels of well-being in clinical populations compared to the general population (Adler et al., 2006; Cramer et al., 2006; Mendlowicz & Stein, 2000; Nierenberg et al., 2010). Support for the two continua model was also provided by factor analysis finding the two underlying factors PMH and psychopathology. Lastly, crosstabs analysis showed the relative independence of the two continua. If PMH and psychopathology would be the endpoints of one continuum, one would expect an almost perfect pattern on the diagonal axis of low PMH and high psychopathology and vice versa. However, the fact that a relatively big group deviates from this diagonal pattern maintains the assumption that the two dimensions can be seen as independent from each other. This trend is in agreement with other research studying the general population (Keyes, 2005, 2007; Westerhof & Keyes, 2008). Although no research on the two continua model has studied a clinical population yet, mentally ill individuals in the general population have been studied before, finding support for the two continua model (Huppert & Whittington, 2003; Keyes, 2005; Keyes et al., 2008; Lamers et al., 2015; Westerhof & Keyes, 2008). The present study provides support that the two continua model can also be applied in a clinical population.

The second hypothesis that the two constructs PMH and psychopathology are distinct but correlated factors in the four subgroups received partial support in the current study. The different analyses were not as clear for each subgroup as for the complete sample.

On the subject of the correlation analysis, significant results could not be found between some subscales and the subscales of the other construct of mental health. This concerned especially the subscales social well-being and SR. One reason might be that the Cronbachs' alphas for those two subscales were relatively low. This indicates that the subscales do not exactly measure the construct that they are supposed to measure (supposedly PMH or deficient functioning) and therefore do not add as much value to the measurement compared to higher values of alpha that can be found for the other subscales. However, in the remaining groups significant negative correlations for those subscales were found.

Further, no distinct results of the factor analysis were found for three out of the four groups of mental disorders. A possible reason for the indistinct results might be the sampling-adequacy. Next to the varying KMO-indicator (ranging from 'meritorious' to 'miserable'), the overall sample size might also have had a negative impact. Comrey and Lee (1992) recommend an overall sample size of $N = 300$ to yield adequate results in any exploratory factor analysis. A bigger sample size might therefore have yielded more reliable and distinct results.

The results of the crosstabs were difficult to compare with those of other studies, for example by Keyes (2005) or by Westerhof and Keyes (2008). One reason might be that different populations and mental disorders were studied. Another reason is that they handle different criteria to split the population in levels of PMH. Other studies used explicit criteria based on the items of the MHC-SF, splitting it in to three groups of low (languishers), moderate and high (flourishers) PMH. However, this would not have been advisable for the present sample because of its small sample size. As the groups in the inner cells would have been too small, only weak conclusions over the (sub)groups could have been made.

In the following, the results for each group of mental disorders are discussed separately. Regarding the rather high correlation between the two constructs in the group of developmental disorders, it is discussable if the two continua model is applicable for this group. Based on Hinkle, Wiersma, and Jurs (2003), who handle a correlation between $.70 < r < .90$ as strong, the correlation for the group of developmental disorders could also have been interpreted that PMH and psychopathology are to be seen as one continuum. This demonstrates that the line between moderate and high correlations in this study is rather mild. In the case that a milder correlation coefficient would have been sufficient for a strong correlation, another conclusion over the two continua model in the group of developmental disorders would have followed. Anyways, a reason for the strong correlation in this group might lie in the early onset of developmental disorders, where an average starting age of 7

years was found by De Ridder, Bruffaerts, Danckaerts, Bonnewyn, and Demyttenaere (2008). This stands in contrast to other mental disorders that usually evolve in adulthood. Panic disorders for instance begin in average with 24 years of age, agoraphobia with 28 years (Schneider & Margraf, 1998), or depression between 18 and 25 (Hautzinger, 1998). Consequently, individuals with developmental disorders are accompanied by their psychopathology for almost their whole life since the disorder is already evident in early childhood. On the long run, this might have negative influence on the level of PMH, resulting in a strong relation between the two continua. However, the tendency in the crosstabs indicates a relative independence of the two continua as relatively large groups diverge from the diagonal pattern. It remains unclear if the two continua model can be applied for this group, but there is a trend favoring the application.

Inspecting the group of mood disorders, crosstabs and correlation analyses support the application of the two continua model. The expectation that this group would have the strongest correlation of the two constructs cannot be confirmed, even though it was stronger than the one in the anxiety disorders group (in line with research by Schonfeld et al. (1997)), the correlation in the group of developmental disorders was even higher. One reason might be, as already mentioned above, that developmental disorders evolve earlier than mood and other mental disorders (De Ridder et al., 2008; Hautzinger, 1998), resulting in lower levels of well-being.

Looking at the group of anxiety disorders, both correlation analyses and crosstabs provide support for the relative independence of the two continua. With regard to the distribution in the crosstabs, it is striking that 70% of the respondents were in the category high on PMH and low on psychopathology and only a small percentage of the overall low level of PMH. These findings contradict research by Keyes (2005, 2007), who investigated individuals in the general population that fulfilled the criteria of a panic disorder or a generalized anxiety disorder. He found a reversed pattern to the one of the current study. Several possible reasons might account for these differences. First, comorbidity, which is especially high in this group (44.1% have also an personality disorder diagnosis), might have had an effect on the level of well-being (eg. Cramer et al., 2006) and on blurring the distinction between the groups of mental disorders. Another reason might be that the two groups differ in terms of acceptance of the disorder (self-acceptance, psychological well-being) and in help seeking-behavior. This might result in higher levels of PMH for the group of clinical individuals compared to those studied in the general population.

Coming to the last group of personality disorders, favorable results of all three analyses were yielded for the application of the two continua model in this group. These results are in line with the expectation of yielding the most distinct results for this subgroup of mental disorders.

It can be concluded that overall in the complete clinical population, as well as in the clinical subgroups, PMH and psychopathology can be seen as correlated but distinct factors. Still, each group of mental disorders has to be investigated separately. The most convincing results for the application of the two continua model could be found for the group of personality disorders, whereas the results for the group of developmental disorders are least convincing.

Implications

Mental health should not merely be seen as the absence of psychopathology but also as effective functioning on an emotional, psychological and social level in the general population as well as in the clinical population. These findings provide essential support for the field of positive psychiatry. Herein the application of two continua model in a clinical population plays a central role and stresses the importance of promoting PMH in mentally ill individuals.

The current study has important implications. The first implication is on the subject of treatment of mentally ill individuals. As stated before, therapies focusing on the promotion of PMH, like the well-being therapy (Fava, Rafanelli, Cazzaro, Conti, & Grandi, 1998) or the Acceptance and Commitment Therapy (Bach, Gaudiano, Pankey, Herbert, & Hayes, 2006) are already broadly exercised in the clinical field. This study on a clinical population provides a fundament on which the effectiveness of these kinds of treatments for mentally ill can be better justified and understood. It offers an important argument in favor of the field of positive psychiatry, even though the results of the current study are not as clear as for the general population. A next step would be to investigate to which extent the treatments on the two continua model in the clinical population are effective.

Moreover, the findings implicate that an adequate treatment might be needed to be chosen specifically for each subgroup of mental disorder. This is based on the finding that differences between types of psychopathology may exist. As mental disorders differ greatly from each other, it is possible that a treatment focusing on the promotion of PMH might work for one group and may have opposing effects for another. Therefore, it is essential not to use treatments carelessly, but to test for each type of mental disorder if the two continua model can be applied and if the treatment is effective. This might be especially important for clinical individuals as their pathologies are more severe and persistent than in the general population.

Accordingly, as their treatment is generally longer and more expensive, financial factors or a possible reduced duration of the treatment underline the importance of this implication.

In addition, the present study may also have impact on the level of the individual mental health care. To consolidate the understanding of the two continua of mental health, the focus on PMH needs to be integrated in the process of the mental health care. Currently, based on the traditional view of mental health, clinical diagnostics mostly only assess the clients' psychopathology. To create a basis for the integration of the promotion of PMH in the mental health care, the clients' level of PMH needs to be assessed during clinical diagnostics as well. It is essential to have complete information of the level of mental health (including both continua) of each client in order to be able to help him or her the best possible way.

Limitations and further research

There are several potential limitations to the current study that might have influenced the results. Firstly, in the present study the OQ-45 was used as an indicator of psychopathology. However, narrowly inspected it measures deficient functioning instead of the concept of psychopathology. Deficient functioning can be seen as part of the concept of psychopathology, but symptoms are not specifically assessed. Other literature studying the two continua model usually used the BSI questionnaire as an indicator for psychopathology, assessing different kinds and symptoms (eg. Lamers et al., 2013; Westerhof & Keyes, 2008). The use of different measures for the same construct might have influenced the results which makes a comparison with other studies difficult.

Another limitation of the present study is the choice of conducting exploratory factor analyses. As the two continua model is used as a theoretical basis of the present study, it is clear that two underlying factors were expected. Therefore, it would have been statistically correct to implement a confirmatory factor analysis. Looking at other studies, Westerhof and Keyes (2008) also conducted an exploratory factor analysis in their study on the two continua model, reproducing the results of Keyes (2005) who initially used confirmatory factor analysis. Still, for further research it is advised to conduct a confirmatory factor analysis as it is based on the theoretical concept of the two constructs of the two continua model.

Findings have shown that it is also crucial which analyses are used. This can be seen in the varying results between analyses. Thus, if not all three kinds of analyses are conducted, the results might depict a distorted image. Further research would be well advised to find a way of combining the correlation analysis, factor analysis and crosstabs into a coherent frame.

Moreover, the distribution into four subgroups of psychopathology may be another reason for limited results. Grouping was based on the main diagnosis, although many

respondents in this sample had a comorbid diagnosis, for instance in the group of anxiety disorders. Cramer et al. (2006) showed that the more comorbidity on Axis 1 and Axis 2 mental disorders a client has, the more are the levels of well-being impaired. This might have had impact on the results in the way that the comorbid mental disorders influenced the scores on the questionnaires. Consequently, the distinction between the subgroups might not be as clear as they appear to be. Therefore, it is recommended for further research to categorize comorbidity separately.

As the results of this study indicate differences between types of mental disorders in their relation of the two continua, it is suggested that the whole spectrum of mental disorders is investigated in further research. Additionally, the question arises if different mental disorders in the subgroups are as similar in their relation of the two continua as it is assumed. In the present study similar kinds of mental disorders were grouped in subgroups on the assumption that they are likewise in their relation of the two continua. However, this does not actually have to be the case. This is especially questionable for the group of personality disorders, as they differ to a great extent from each other. Therefore, a recommendation for further research is to explore the differences of specific mental disorders within the groups of mental disorders.

In the case of finding more approving results of the application for the two continua model for different mental disorders, additional research is needed on the effectiveness of the treatments designed to promote well-being. This is of great importance in order to find the best and most effective treatment for every (type of) mental disorder.

Conclusion

This study provides an important argument for the application of the two continua model in the clinical population as it is central in the positive psychiatry. The results confirm, though with a stronger relation compared to the general population, that the two continua model can be applied in the clinical population. Regarding the groups of mental disorders, results also indicate the application of the two continua model, although they are less obvious than in the complete sample. Findings were most distinct for the group of personality disorders, whereas they were least clear for the group of developmental disorders. Although more research is needed on the two continua model for mentally ill individuals, the present study makes clear that the promotion of PMH needs to be integrated into clinical routine practice. Differences between groups of mental disorders need to be taken into account.

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