Differential relationships in the association of the Big Five personality traits with positive mental health and psychopathology

Sanne M.A. Lamers a,*, Gerben J. Westerhof a, Viktória Kovács b, Ernst T. Bohlmeijer a

Abstract

According to the two continua model of mental health, psychopathology and positive mental health (emotional, psychological, and social well-being) are related but distinct continua. This study investigates the two continua model by examining whether psychopathology and positive mental health show differential associations with the Big Five personality traits. The paper draws on data of the representative LISS panel (CentERdata). Participants (N = 1161; age 18–88) filled out questionnaires on personality, psychopathology, and positive mental health. Personality traits were differentially related to psychopathology and positive mental health, supporting the two continua model. Emotional stability (reversed neuroticism) is the main correlate of psychopathology, whereas the personality traits extraversion and agreeableness are uniquely associated with positive mental health.

1. Introduction

Mental health is not only defined as the absence of psychopathological symptoms, but also as the presence of feelings of well-being. Both perspectives were traditionally seen as opposites, with high levels of psychopathology automatically indicating a poor positive mental health, but recent views on mental health emphasize that the two perspectives are complementary (Keyes, 2002). According to the two continua model of mental health, psychopathology and positive mental health are related but distinct dimensions (Keyes, 2002, 2005; Westerhof & Keyes, 2010). Individuals experiencing psychopathological symptoms may experience a poor positive mental health, but may also experience high levels of well-being. This is for example reflected in recovery approaches in people with chronic psychiatric disabilities, showing that not all psychopathological symptoms have to disappear to lead a meaningful and pleasant life (Davidson, Drake, Schmutte, Dinzeo, & Andres-Hyman, 2009). Moreover, not everyone with a low well-being experiences psychopathology (Keyes, 2005). The two continua of psychopathology and mental health are validated in several studies, including some with confirmatory factor analyses (Greenough & Saklofske, 2001; Keyes et al., 2008; Lamers, Westerhof, Bohlmeijer, ten Klooster, & Keyes, 2011; Suldo & Shaffer, 2008), and are even found at the genetic level (Kendler, Myers, Maes, & Keyes, 2011). Furthermore, psychopathology and positive mental health show differential associations with, for example, health care consumption and work performance (Keyes & Grzywacz, 2005).

To date, several meta-analyses have emphasized the importance of personality traits in understanding individual differences in psychopathology (Kotov, Gamez, Schmidt, & Watson, 2010; Malouff, Thorsteinssoon, & Schutte, 2005) and well-being (DeNeve & Cooper, 1998; Steel, Schmidt, & Shultz, 2008). However, with psychopathology and positive mental health reflecting two distinct dimensions of mental health, the question emerges whether the Big Five personality traits (Goldberg, 1990; McCrae & Costa, 1987) are differentially related to both mental health dimensions. Which personality traits are related to individual differences in psychopathology, and which traits to positive mental health? In this study, we investigated the two continua model by directly comparing the unique association of the Big Five personality traits with psychopathology, i.e., controlling for levels of positive mental health, to the unique association of the personality traits with positive mental health including multiple dimensions of well-being, controlling for levels of psychopathology. The study uses a large sample covering the adult lifespan.

1.1. Positive mental health

Current research on positive mental health follows two traditions: the hedonic and the eudaimonic tradition. The hedonic tradition pertains to happiness and defines well-being in terms of pleasure attainment and pain avoidance, whereas the eudaimonic tradition focuses on meaning and self-realization and defines well-being in terms of the degree to which a person is optimally
functioning (Deci & Ryan, 2008; Ryan & Deci, 2001; Waterman, 1993). In line with these traditions, three components of well-being can be distinguished. The first component, emotional well-being, includes a balance of positive over negative emotions and the presence of life satisfaction, in accordance with the hedonic tradition in well-being research (Diener, Suh, Lucas, & Smith, 1999). The second component, psychological well-being, follows the eudaimonic tradition in well-being. In this approach, individuals are mentally healthy when they are fully functioning in life, as reflected by their experiencing self-acceptance, personal growth, autonomy, purpose in life, a sense of mastery, and positive relations with important others (Ryff, 1989). The third component, social well-being, also follows the eudaimonic tradition. Since individuals are embedded in social structures and communities, effective functioning can only be fully understood when optimal functioning in community life is included (Keyes, 1998). Social well-being defines individuals as mentally healthy when they experience that they belong and contribute to society, that they understand how society functions, and believe that society evolves in a positive direction (Keyes, 1998).

Although the experience of positive relations with others originally is a dimension of psychological well-being, others argue that it is a dimension of social well-being rather than psychological well-being (Gallagher, Lopez, & Preacher, 2009). Since factor analyses in the Dutch population showed that the dimension of positive relations with others fits better to psychological well-being than to social well-being, we adhere to the traditional model (Lamers et al., 2011).

There is also some debate on the distinctiveness of both traditions. Kashdan, Biswas-Diener, and King (2008) recently argued that hedonic and eudaimonic well-being show conceptual as well as empirical overlap. Others have emphasized points of divergence and argued that both perspectives on well-being complement each other (Deci & Ryan, 2008; Waterman, Schwartz, & Conti, 2008). In our view, hedonic and eudaimonic components belong to the same overarching concept. Emotional, psychological, and social well-being together make up the definition of positive mental health. This is in line with the definition of the World Health Organization (2005) which considers an individual mentally healthy when experiencing feelings of well-being (emotional well-being), and when functioning effectively in both private (psychological well-being) and social life (social well-being). However, hedonic well-being is also distinguishable from eudaimonic well-being. Hedonic well-being is mainly focused on emotional functioning, whereas eudaimonic well-being focuses mainly on motivational and social aspects of functioning. Several studies show that both perspectives are indeed complementary (e.g., King, Hicks, Krull, & Del Gaiso, 2006; Peterson, Park, & Seligman, 2005). Confirmatory factor analyses have validated that emotional, psychological, and social well-being are empirically distinct (Gallagher et al., 2009; Keyes et al., 2008; Lamers et al., 2011). Finally, studies revealed that hedonic and eudaimonic well-being show different relations to other psychological phenomena. For example, activities that focus on pleasure and happiness are stronger related to hedonic well-being, whereas more complex activities aimed at achieving personally relevant long-term goals are related to eudaimonic well-being (Delle Fave & Massimini, 2005; Huta, 2005; Vitterso, Oelmann, & Wang, 2009; Waterman, 1993; Waterman et al., 2008). In this study, we examined whether personality traits are differentially related to emotional (i.e., hedonic well-being) and to psychological and social well-being (i.e., eudaimonic well-being).

1.2. Mechanisms relating personality traits to mental health

There is no general model that describes how personality traits may influence levels of mental health. However, several mechanisms have been proposed to explain associations of personality traits with mental health, focusing mainly on neuroticism and extraversion in relation to hedonic components of mental health. The proposed mechanisms include both biological and behavioral pathways.

First, personality and mental health may involve common biological components. Gray’s (1990) reinforcement sensitivity theory distinguishes the Behavioral Inhibition System (BIS) and the Behavioral Approach System (BAS), comprised of several brain areas and circuits that are connected to both personality and well-being (Elliot & Thrash, 2002). The BIS is associated with behavioral inhibition and avoidance in the face of danger and conflict, with a primary emotional linkage to anxiety. The BAS regulates positive approach behavior by motivating behavior aimed at achieving goals and obtaining positive emotional rewards. The personality traits neuroticism and extraversion reflect trait-like individual differences in the functioning of the BIS and BAS, whereas negative and positive emotions reflect state-like differences in the BIS and BAS. Although there is some debate on the BIS and BAS, several studies show that neuroticism and psychopathology on the one hand and extraversion and positive mental health on the other share common physiological bases (Smits & Boeck, 2006). For example, neurotransmitters related to the BIS and BAS exhibit important connections to both personality and mental health. Serotonin is associated with both neuroticism and psychopathology, whereas dopamine is related to extraversion and positive affect (e.g., Costa & McCrae, 1992; Depue & Collins, 1999; Lasky-Su, Faraone, Glatt, & Tsuang, 2005).

Besides these biological pathways, personality may facilitate life events and create conditions that promote mental health through behavioral pathways (Ozer & Benet-Martinez, 2006). Neurotic people are more sensitive to negative affect, generally experiencing more negative life events, which are interpreted in more negative terms, and their negative feelings tend to spill over from one life area to another. This is described as the neurotic cascade (Suls & Martin, 2005). Extraverted people generally experience more positive life events (Magnus, Diener, Fujita, & Pavot, 1993), experience higher levels of positive emotions in social situations (Pavot, Diener, & Fujita, 1999), and engage more in social situations which help to increase their level of positive emotions (Watson, Clark, Mclntyre, & Hamaker, 1992).

In sum, neuroticism and extraversion seem to influence the affective components of mental illness and mental health through both biological and behavioral mechanisms. The mechanisms involved in psychopathology differ from those in positive mental health so that the association of personality traits with psychopathology will differ from the association with positive mental health. However, the described mechanisms have been studied mainly for neuroticism and extraversion in relation to psychopathology and hedonic aspects of positive mental health. For other traits (agreeableness, conscientiousness, and openness to experience) mechanisms are largely unknown. For the eudaimonic aspects of positive mental health (psychological and social well-being), Ozer and Benet-Martinez (2006) showed in their review that the five personality traits are related to behavioral functioning, such as personal virtues, positive relationships, and community involvement. These may function as unique behavioral mechanisms between personality traits and eudaimonic well-being. Although mechanisms are not always known, significant relations have been found between all five personality traits and all aspects of mental illness and mental health. We will discuss what is presently known on these relations in the following.

1.3. Personality traits in relation to mental health

Earlier studies on the relation of personality traits to mental health mainly examined psychopathology, and in particular neg-
tive emotions. These studies showed that neuroticism is strongly associated with the experience of negative emotions (e.g., Costa & McCrae, 1980; Emmons & Diener, 1985; Pavot et al., 1990; Steel et al., 2008, provide a meta-analysis). Malouff and colleagues (2005) showed in a meta-analysis that high neuroticism, low conscientiousness, low agreeableness and low extraversion is the typical pattern of personality traits associated with mental disorders. Of the five personality traits, neuroticism is the most consistent and strongest predictor of psychopathology (Kotov et al., 2010).

With respect to the relation of personality traits to mental health, studies have mainly assessed emotional (hedonic) well-being, like positive affect and life satisfaction. Personality traits are strong and consistent predictors of emotional well-being (Die

ner et al., 1999). In general, extraversion is related to higher levels of emotional well-being, and neuroticism to lower levels (e.g., Argyle & Lu, 1990; Costa & McCrae, 1980; Lu & Snih, 1997; Pavot et al., 1990; Steel et al., 2008). The Big Five personality traits agreeableness, conscientiousness and openness to experience show smaller but positive correlations to emotional well-being (DeNeve & Cooper, 1998; McCrae & Costa, 1991; Steel et al., 2008). Steel and colleagues (2008) conclude in their meta-analysis that the five personality factors can even account for 39–63% of the variance in emotional well-being.

The relation of personality traits to eudaimonic (psychological and social) well-being is less clear. Schmutte and Ryff (1997) found that psychological well-being was negatively related to neuroticism, positively to extraversion, agreeableness and conscientiousness, and not related to openness to experience. Another study showed that personality traits differentiated individuals with various levels of emotional and psychological well-being (Keyes, Shmotkin, & Ryff, 2002). For example, individuals with high psychological and low emotional well-being were distinguished from individuals with low psychological and high emotional well-being by their high levels of openness to experience. Only one study measured overall levels of positive mental health, including emotional, psychological, and social well-being, and showed that neuroticism, extraversion, agreeableness and conscientiousness, but not openness to experience, discriminated among low, moderate and high levels of positive mental health (Joshanloo & Nosratabadi, 2009). Although these studies show several relations between the Big Five personality traits and positive mental health, studies directly investigating and comparing the unique relation of personality to the three separate components of positive mental health are currently lacking.

1.4. Present study

This study directly compares the relationship of personality traits with psychopathology and positive mental health, while also investigating separate components of positive mental health. First, we examined the relation of the Big Five personality traits to psychopathology and overall levels of positive mental health. A major strength of the present study is that it examines the unique associations of personality traits with psychopathology and positive mental health, while controlling for the other mental health dimension. In line with earlier studies, we expected neuroticism to be more strongly related to psychopathology than to positive mental health, and extraversion, agreeableness, conscientiousness and openness to experience more strongly to positive mental health than to psychopathology. Second, we examined and compared the relation of the five personality traits to emotional, psychological, and social well-being. For neuroticism and extraversion, we expected a stronger relationship with emotional (hedonic) well-being, in line with earlier studies. For openness to experience, agreeableness, and conscientiousness we hypothesized stronger relationships to the eudaimonic components of well-being: psychological and social well-being.

2. Method

2.1. Participants

A sample of 1161 Dutch participants between the ages of 18 and 88 participated in this study. The sample was stratified by gender, age group, and migratory status (native Dutch versus being born abroad or having at least one parent born abroad). Of the respondents, 50% (N = 575) were male, 21% (N = 239) were aged 18–29 years, 26% (N = 304) 30–49 years, 27% (N = 317) 50–64 years, and 26% (N = 301) were aged 65 years and over. The mean age was 49.6 (SD = 18.0). Of the respondents, 83% (N = 967) were Dutch, and 17% (N = 194) were born abroad or had at least one parent born abroad. With respect to educational level, 10.9% (N = 126) had primary education, 26.5% (N = 308) lower vocational, 11.9% (N = 138) secondary, 21.4% (N = 249) middle vocational, 21.2% (N = 246) higher vocational, and 8.1% (N = 94) had university education. Half of the respondents (52%; N = 607) were married.

2.2. Procedure

This paper draws on data of the LISS panel of CentERdata, a representative internet panel for Longitudinal Internet Studies in the Social Sciences, managed by CentERdata in Tilburg, the Netherlands. The LISS panel consists of 5000 households, which are randomly selected from the municipal registers in the Netherlands. Household members are invited to fill out online questionnaires every month and households are provided with Internet access or a Personal Computer when necessary. Compared to national statistics the LISS panel shows a small underrepresentation of elderly persons, single persons, widowers, and immigrants (Knoef & De Vos, in preparation). In one-third of the households, one member was selected by CentERdata to fill out a module on mental health in June 2008. 1243 respondents (64%) filled out this module that included measures of positive mental health and psychopathology. A month earlier, in May 2008, a core module on personality was administered by CentERdata. 1161 respondents (60%) filled out both the mental health module and the core module on personality.

2.3. Measurements

2.3.1. Demographics

Questions were asked about age, gender, marital status, educational level and migration status.

Personality was measured using 50 items from the International Personality Item Pool (IPIP) (Goldberg, 1992, 1999; Goldberg et al., 2006). The items were designed to capture the Big Five broad domains extraversion, agreeableness, conscientiousness, emotional stability (reversed neuroticism), and openness to experience, by 10 items per subscale that contained statements describing people’s behaviors. Respondents were asked to rate how accurately the statements described them as they generally were now, on a 5-point scale from totally disagree (1) to totally agree (5). Example items were ‘Get stressed out easily’ (reversed emotional stability) and ‘I feel comfortable around people’ (extraversion). For each personality trait a total score was computed (10–50), with higher scores indicating higher levels of the personality trait. The English items were translated to Dutch by two researchers independently, and back to English by two other researchers. For each item, the translation that was most consistent with the original item was selected. Disagreements between the four researchers were solved.
by consensus. This procedure was carried out by CentERdata (Tilburg, the Netherlands). Cronbach's alpha in the present study was .84 for extraversion, .78 for agreeableness, .77 for conscientiousness, .87 for emotional stability, and .76 for openness to experience.

Psychopathology was assessed by the Brief Symptom Inventory (BSI; Dutch version: De Beurs & Zitman, 2006) which is among the most commonly used instruments for screening and assessing psychopathology in mental health services in the United States. Respondents indicated the degree to which they were distressed or bothered by 53 psychological symptoms in the past week including today, ranging from not at all (0) to a lot (4). An example item was 'During the past seven days, how much were you dis- troubled by nervousness or shakiness inside'. Higher average scores indicated higher levels of psychopathological symptoms. Cronbach's alpha was .95 in the present study.

Positive mental health was measured using the Mental Health Continuum-Short Form (MHC-SF; Keyes et al., 2008; Lamers et al., 2011), consisting of 14 items which represent the theoretically derived feelings of well-being. Respondents rated the frequency of each feeling in the past month on a Likert scale from never (1) to every day (6). The MHC-SF is multidimensional and contains three items of emotional well-being, six items of psychological well-being and five items of social well-being. We computed a mean score, with higher scores indicating higher levels of emotional well-being, psychological well-being, social well-being, and overall positive mental health. The Dutch version of the MHC-SF has shown good psychometric properties (Lamers et al., 2011) and stability over time (Lamers, Glas, Westerhof, & Bohlmeijer, in press). Moreover, confirmatory factor analyses confirmed the three-factor structure in emotional, psychological, and social well-being (Lamers et al., 2011). In the present study, Cronbach's alpha was .88 for emotional well-being, .78 for social well-being, .85 for psychological well-being, and .91 for overall positive mental health.

In line with the two-continua model, psychopathology and positive mental health were treated as two related but distinct indicators of mental health. This two-continua model was validated by confirmatory factor analyses (Lamers et al., 2011). In the present study, psychopathology showed low to moderate and negative correlations to overall positive mental health. For extraversion, r = −.29; p < .001, emotional well-being (r = −.42; p < .001), psychological well-being (r = −.19; p < .001), and social well-being (r = −.21; p < .001). The three subscales of positive mental health were interrelated, with correlations of .58 (emotional and psychological well-being; p < .001), .50 (emotional and social well-being; p < .001), and .70 (psychological and social well-being; p < .001).

2.4. Analyses

To examine the association of personality traits to psychopathology and positive mental health, we first computed Pearson correlation coefficients between personality traits and psychopathology, positive mental health, emotional, psychological and social well-being, and between demographics and mental health. Second, we conducted hierarchical regression analyses on psychopathology, positive mental health, emotional well-being, psychological well-being, and social well-being, where we entered variables in three blocks: block (1) positive mental health or psychopathology, respectively, to investigate the unique relation of personality traits to psychopathology and positive mental health; block (2) age, gender, marital status, educational level and migratory status, since these were significantly related to psychopathology or positive mental health (p < .001); and block (3) the five personality traits emotional stability, extraversion, agreeableness, conscientiousness, and openness to experience, to control for the interrelations between personality traits. We applied an alpha of .001 because of the large sample size. Standardized beta weights were reported for the hierarchical regression analyses.

Since positive mental health is a multifaceted construct, the subscales emotional, psychological, and social well-being are conceptually interrelated (Chen, Hayes, Carver, Laurenceau, & Zhang, 2012). Within each participant, there may be a relation between the levels of emotional, psychological, and social well-being, as well as with the level of psychopathology (a within-subjects effect). To control for these within-subjects correlations, we conducted a repeated measures MANOVA with psychopathology (reversed, with higher scores indicating less psychopathology), emotional, psychological, and social well-being as levels of a within-subjects factor. An advantage of this analysis is that posteriori contrasts can be used to compare each level of the repeated measure with the average of the remaining levels of the within-subjects factor. Here, we applied Helmert contrasts, which compared the relation of personality traits to (a) psychopathology (level 1) versus overall positive mental health (i.e., levels 2, 3 and 4: emotional, psychological and social well-being together), (b) hedonic (emotional) well-being (level 2) versus eudaimonic (psychological and social) well-being (levels 3 and 4), and (c) psychological well-being (level 3) versus social well-being (level 4). See Armitage (2005) for an example of Helmert contrasts. An alpha of .001 was applied.

3. Results

Table 1 shows the means, standard deviations, and correlations between personality traits, psychopathology, and positive mental health. The five personality traits were significantly interrelated with correlations varying from .09 to .33, with two exceptions: there was no significant relation between extraversion and conscientiousness, nor between agreeableness and emotional stability. In further analyses, we controlled for these interrelations. The five personality traits were related to psychopathology and positive mental health, as well as to the subscales emotional, psychological and social well-being, with one exception: agreeableness was unrelated to psychopathology.

To investigate our first research question, we first examined the relation of personality traits to psychopathology, controlling for positive mental health (block 1), demographics (block 2), and interrelations between personality traits (block 3). Table 2 shows the standardized beta weights of the hierarchical regression analysis. In agreement with our expectations, emotional stability was uniquely related to lower levels of psychopathology when controlling for positive mental health, demographic characteristics and the other four traits. Personality traits explained 19% of the variance in psychopathology on top of positive mental health and demographics. In total, positive mental health, demographics, and personality traits explained 33% of the variance.

Next we examined the association of personality traits with positive mental health (Table 2). When controlling for psychopathology (block 1), demographics (block 2), and other traits (block 3), we found that agreeableness and extraversion were uniquely related to positive mental health. The traits contributed 9% to the explained variance in positive mental health on top of psychopathology and demographics. In total, 20% of the variance was explained by psychopathology, demographics, and personality traits.

To answer our second research question, we examined the relation of the Big Five personality traits to the three subscales emotional, psychological, and social well-being. The final block of the three hierarchical regression analyses is shown in Table 3. In agreement with our expectations, emotional stability was significantly and uniquely related to higher levels of emotional well-being,
and not related to psychological and social well-being when controlling for psychopathology, demographics, and other traits. Unexpectedly, extraversion was unrelated to emotional well-being but showed significant and unique contributions to both psychological and social well-being. Moreover, openness to experience was uniquely related to psychological but not to emotional and social well-being. Although we hypothesized significant contributions of agreeableness to psychological and social well-being, agreeableness showed unique relations to emotional and social well-being. Conscientiousness was unrelated to the three components of well-being. There were no differences in conscientiousness and extraversion and agreeableness were differentially associated with psychopathology and positive mental health (p < .001).

We expected personality traits to be differentially related to psychopathology, overall positive mental health, emotional, psychological, and social well-being. Having seen some differences in the relations of Big Five traits to psychopathology, positive mental health, as well as to the three components of positive mental health, we subsequently conducted a repeated measures analysis to assess whether these relations were significantly different. Multivariate analyses showed that emotional stability (F(3,1153) = 16.91; p < .001), extraversion (F(3,1153) = 9.34; p < .001), agreeableness (F(3,1153) = 11.95; p < .001), and openness to experience (F(3,1153) = 15.54; p < .001) were differentially associated with psychopathology, emotional, psychological, and social well-being. There were no differences in conscientiousness (p > .001). Helmert contrasts (see superscripts in Table 2) revealed that extraversion and agreeableness showed significantly stronger relations to positive mental health than to psychopathology. Whereas agreeableness and extraversion were important correlates of positive mental health, emotional stability was the only personality trait related to psychopathology. Helmert contrasts (see superscripts in Table 3) revealed that the association of the personality trait emotional stability was stronger with hedonic than with eudaimonic well-being, whereas extraversion was more strongly associated with eudaimonic well-being (i.e. psychological and social) than with hedonic (i.e. emotional) well-being. The differences in the relation of the personality traits with psychological versus social well-being were nonsignificant (p > .001), indicating that emotional stability, extraversion, agreeableness, conscientiousness, and not related to psychological and social well-being when controlling for psychopathology, demographics, and other traits. Unexpectedly, extraversion was unrelated to emotional well-being but showed significant and unique contributions to both psychological and social well-being. Moreover, openness to experience was uniquely related to psychological but not to emotional and social well-being. Although we hypothesized significant contributions of agreeableness to psychological and social well-being, agreeableness showed unique relations to emotional and social well-being. Conscientiousness was unrelated to the three components of well-being when controlling for psychopathology, demographics, and the other four traits. On top of psychopathology and demographics, the personality traits explained 5% (emotional well-being), 8% (psychological well-being), and 7% (social well-being) of the variance. These results showed that four of the five personality traits were related to at least one of the three subscales of positive mental health.

Table 1
Means, standard deviations and correlations between psychopathology, positive mental health, and personality traits.

<table>
<thead>
<tr>
<th>Personality trait</th>
<th>Psychopathology</th>
<th>Emotional stability</th>
<th>Extraversion</th>
<th>Agreeableness</th>
<th>Conscientiousness</th>
<th>Openness to experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychopathology</td>
<td>0.34 (0.35)</td>
<td>-.52*</td>
<td>-.17*</td>
<td>-.04</td>
<td>-.12*</td>
<td>-.06</td>
</tr>
<tr>
<td>Positive mental health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive mental health</td>
<td>3.9 (0.9)</td>
<td>.24*</td>
<td>.27*</td>
<td>.23*</td>
<td>.15*</td>
<td>.23*</td>
</tr>
<tr>
<td>Emotional well-being</td>
<td>4.6 (1.0)</td>
<td>.32*</td>
<td>.17*</td>
<td>.20*</td>
<td>.16*</td>
<td>.09</td>
</tr>
<tr>
<td>Psychological well-being</td>
<td>4.1 (1.0)</td>
<td>.18*</td>
<td>.27*</td>
<td>.20*</td>
<td>.13*</td>
<td>.25*</td>
</tr>
<tr>
<td>Social well-being</td>
<td>3.3 (1.0)</td>
<td>.16*</td>
<td>.24*</td>
<td>.20*</td>
<td>.10*</td>
<td>.20*</td>
</tr>
</tbody>
</table>

Table 2
Hierarchical regression analysis (standardized beta weights) of personality traits in relation to psychopathology and positive mental health, controlled for mental health and demographics.

<table>
<thead>
<tr>
<th></th>
<th>Psychopathology</th>
<th>Positive mental health</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Block 1</td>
<td>Block 2</td>
</tr>
<tr>
<td>Mental health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive mental health Psychopathology</td>
<td>-.29*</td>
<td>-.31*</td>
</tr>
<tr>
<td>Demographics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.16*</td>
<td>-.12*</td>
</tr>
<tr>
<td>Gender</td>
<td>-.05</td>
<td>.02</td>
</tr>
<tr>
<td>Marital status</td>
<td>-.07</td>
<td>-.06</td>
</tr>
<tr>
<td>Educational level</td>
<td>-.08</td>
<td>-.03</td>
</tr>
<tr>
<td>Migratory status</td>
<td>-.15*</td>
<td>-.11*</td>
</tr>
<tr>
<td>Personality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional stability</td>
<td>-.46*</td>
<td>.04</td>
</tr>
<tr>
<td>Extraversion*</td>
<td>-.03</td>
<td>.12*</td>
</tr>
<tr>
<td>Agreeableness*</td>
<td>.05</td>
<td>.14*</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>.04</td>
<td>.06</td>
</tr>
<tr>
<td>Openness to experience</td>
<td>.04</td>
<td>.10</td>
</tr>
</tbody>
</table>

Note. Psychopathology: $R^2 = .08$ for Block 1 ($F(1,1159) = 103.08; p < .001$); $\Delta R^2 = .07$ for Block 2 ($F(\text{change}(5,1154) = 19.03; p < .001$); $\Delta R^2 = .19$ for Block 3 ($F(\text{change}(5,1149) = 64.12; p < .001$). Positive mental health: $R^2 = .08$ for Block 1 ($F(1,1159) = 103.08; p < .001$); $\Delta R^2 = .04$ for Block 2 ($F(\text{change}(5,1154) = 11.04; p < .001$); $\Delta R^2 = .09$ for Block 3 ($F(\text{change}(5,1149) = 24.58; p < .001$).

* The personality trait was differentially associated with psychopathology and positive mental health (p < .001).

.05 .03 .00 .04 .04 .06 .10 p < .001.
tiousness, and openness to experience were similarly associated with both components of eudaimonic well-being.

4. Discussion

This study directly compared the association of the Big Five personality traits (neuroticism, extraversion, agreeableness, conscientiousness, and openness to experience) with psychopathology to their association with positive mental health. A major strength of the present study is that it examines the unique associations of personality traits with psychopathology and positive mental health, while controlling for the other mental health dimension. In addition, it investigated the relations of these traits to three components of positive mental health: emotional, psychological, and social well-being. The main finding is that personality traits have a different association with psychopathology than with positive mental health. Although psychopathology and positive mental health are related to each other, they are differentially related to personality traits. This supports the two continua model of mental health.

In agreement with our expectations, emotional stability (reversed neuroticism) is significantly associated with psychopathology, whereas the personality traits extraversion and agreeableness are significant contributors to positive mental health. Personality traits account for a substantial part of the variance in psychopathology (19%) and positive mental health (9%), controlling for each other and for demographic characteristics. Although one personality trait is significantly and uniquely related to psychopathology and two personality traits to positive mental health, our study shows that the explained variance by personality traits is higher in psychopathology than in positive mental health. The percentages of explained variance are somewhat lower than in DeNeve and Cooper (1998), who report that personality traits explained 20–33% of the variance in well-being. Steel and colleagues (2008) report an even higher explained variance for personality traits of 39–63% when controlling for measurement differences across studies in their meta-analysis. One reason for the differences in explained variance, is that the present study examined the unique association of personality traits with psychopathology or positive mental health while controlling for the other mental health construct. This leads to more balanced indicators of the explained variance in mental health. The differences in explained variance between our study and earlier studies (DeNeve & Cooper, 1998; Steel et al., 2008), suggest that further research should take the relation between psychopathology and positive mental health into account. A second reason for the differences may be the use of the questionnaire to measure personality traits. This measure was not included in either meta-analysis.

With respect to the components of positive mental health, personality traits explain between 5% (emotional well-being) and 8% (psychological well-being) of the variance, on top of psychopathology and demographics. Different personality traits contribute to emotional (hedonic) well-being than to psychological and social (eudaimonic) well-being. In agreement with our expectations, emotional stability (reversed neuroticism) is a more important and significant contributor to emotional well-being, whereas extraversion is more strongly and significantly related to psychological and social well-being. These findings underline the distinctness in the hedonic and eudaimonic tradition of well-being, since personality traits have a significantly different relation with emotional than with psychological and social well-being. As stated in the Introduction, there is some conceptual overlap between psychological and social well-being. Psychological well-being includes an item on positive relations with others which theoretically fits in with social well-being as well (Gallagher et al., 2009). In the present study, personality traits were similarly related to psychological and social well-being. This may indicate that there is a distinction between hedonic and eudaimonic well-being, but not between the components of eudaimonic well-being. Future research is necessary to investigate the multidimensionality of mental health.

Although earlier studies on openness to experience were mixed (Joshi & Nosratabadi, 2009; Ozer & Benet-Martinez, 2006; Schmutte & Ryff, 1997), we found a positive relation to psychological well-being. Individuals with high levels of openness to experience are more willing to accept new ideas, to perform new behaviors, or to change habits, which may improve their functioning in individual life. Unexpectedly, the personality trait extraversion was not related to emotional well-being, but to psychological and social well-being. This might be the consequence of the personality questionnaire used in this study. Although the IPIP is designed to broadly capture the Big Five domains (Goldberg, 1992; Goldberg et al., 2006), the IPIP subscale of extraversion is mainly directed at assertiveness, whereas other personality questionnaires

Table 3
Hierarchical regression analysis (standardized beta weights) of personality traits in relation to emotional, psychological and social well-being, controlled for psychopathology and demographics.

<table>
<thead>
<tr>
<th></th>
<th>Emotional well-being</th>
<th>Psychological well-being</th>
<th>Social well-being</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental health</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Psychopathology</td>
<td>-.37*</td>
<td>-20*</td>
<td>-17*</td>
</tr>
<tr>
<td>Demographics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.10*</td>
<td>-.19*</td>
<td>-.14*</td>
</tr>
<tr>
<td>Gender</td>
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<td>0.02</td>
<td>0.06</td>
</tr>
<tr>
<td>Marital status</td>
<td>0.09</td>
<td>0.02</td>
<td>0.00</td>
</tr>
<tr>
<td>Educational level</td>
<td>-.11*</td>
<td>-.02</td>
<td>-.00</td>
</tr>
<tr>
<td>Migratory status</td>
<td>-.04</td>
<td>-.08</td>
<td>-.09</td>
</tr>
<tr>
<td>Personality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional stability*</td>
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<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td>Extraversion*</td>
<td>0.01</td>
<td>0.14*</td>
<td>0.12*</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>0.15</td>
<td>0.09</td>
<td>0.15*</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>0.04</td>
<td>0.07</td>
<td>0.04</td>
</tr>
<tr>
<td>Openness to experience</td>
<td>.02</td>
<td>.13*</td>
<td>.08</td>
</tr>
</tbody>
</table>

Note. Emotional well-being: R² = .18 for Block 1 (F(1,1159) = 251.26; p < .001); ΔR² = .02 for Block 2 (F(Change(5,1154) = 6.83; p < .001); ΔR² = .06 for Block 3 (F(Change(5,1149) = 13.79; p < .001). Psychological well-being: R² = .03 for Block 1 (F(1,1159) = 55.70; p < .001); ΔR² = .06 for Block 2 (F(Change(5,1154) = 14.14; p < .001); ΔR² = .08 for Block 3 (F(Change(5,1149) = 22.54; p < .001). Social well-being: R² = .03 for Block 1 (F(1,1159) = 41.58; p < .001); ΔR² = .04 for Block 2 (F(Change(5,1154) = 8.01; p < .001); ΔR² = .07 for Block 3 (F(Change(5,1149) = 18.20; p < .001).

* The personality trait was differentially associated with hedonic (emotional) well-being and eudaimonic (psychological and social) well-being (p < .001).

p < .001.
also include excitement-seeking, cheerfulness and friendliness (e.g., NEO-FFI; Costa & McCrae, 1992). Facets such as cheerfulness and friendliness might be more highly correlated to emotional well-being than the assertiveness facet. Assertiveness focuses more strongly on an aspect of behavioral functioning that is apparently more strongly related to eudaimonic well-being. With respect to the Big Five domains, the IPIP includes similar aspects as the NEO (Costa & McCrae, 1992).

There are some limitations that need to be considered. First, we merely examined the relations between personality traits and mental health and cannot draw any causal inferences, although mental health was measured one month after personality traits. Second, the moderate response rate (64%) indicates that the study sample may be a selective sample of motivated respondents. Johnson (2005) shows that response inconsistency was related to higher neuroticism and lower openness to experience. Similarly, attrition in the sample may have produced bias that directly impacts the study results. For example, respondents that participated in the study may be more conscientious or experience less psychopathology than respondents that did not participate. Third, the IPIP personality questionnaire is rarely used as compared to other personality questionnaires, making comparisons with earlier studies somewhat difficult. The mean correlation of .73 between the 30 facet scales of the often used NEO-PI-R and the corresponding IPIP scales indicates a high agreement between both questionnaires (Goldberg et al., 2006). Nevertheless, our findings on extraversion indicate that it is worthwhile to study relations of personality traits with mental illness and health at the level of facets as well. Fourth, we combined a total score approach (by using overall positive mental health) and an individual score approach (by examining the three subscales emotional, psychological, and social well-being separately, as well as by comparing the mental health constructs in a repeated measures analyses using Helmert contrasts). Although it is an advantage to combine these approaches, they both have limitations in interpreting the results. A bifactor model (i.e., a nested model) may lead to greater conceptual clarity and interpretation of the results (Chen et al., 2012).

Last, we have no information on the simultaneous presence of psychopathology and mental health since the measures are retrospective and investigate summary statements over the past week or month, respectively. Fourth, there is item overlap and an indistinct relation between personality and mental health. For example, some items measuring emotional stability (reversed neuroticism) resemble items of psychopathology. However, we are convinced that the present findings are not a result of mere item overlap. Not only was psychopathology measured one month after personality traits, there is also a substantial difference between questionnaire on personality and on psychopathology since personality items measure general behavioral patterns, whereas psychopathology items measure symptoms in the past week. Furthermore, the correlations between the personality and mental health variables are moderate and of similar magnitudes as the interrelations between the Big Five personality traits. Moreover, emotional stability (neuroticism) was uniquely related to emotional well-being, when controlling for levels of psychopathology (beta = .12), which underlines the distinction between emotional stability and psychopathology. Steel and colleagues (2008) additionally show that criterion contamination is not a significant issue. For example, the strong relation between neuroticism and negative affect remains after dropping potentially overlapping facets on depression and anxiety.

In conclusion, personality traits are important correlates of both psychopathology and the components of positive mental health. Most important, the Big Five personality traits are differentially associated with psychopathology and positive mental health, supporting the two continua model of mental health. This underlines the importance for mental health care to promote individuals’ mental health in addition to the treatment of psychopathology. Emotional stability is more important for symptoms of psychopathology, whereas extraversion and agreeableness are more important for positive mental health. This indicated that interventions that aim at alleviating psychopathology may have to focus on different processes than interventions that aim at enhancing positive mental health. This is reflected by the positive psychology movement, were many new interventions have been developed to enhance positive mental health in addition to the existing interventions that reduce psychopathology (Duckworth, Steen, & Seligman, 2005; Sin & Lyubomirsky, 2009).

References


