

Recovery from mood and anxiety disorders: The influence of positive mental  
health

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### Abstract

**Background:** Mood and anxiety disorders are associated with growing burden of disease. Recent evidence shows that monitoring and enhancing positive mental health might be one direction to reduce this burden. The aim was to determine whether positive mental health predict recovery from mental disorders. **Methods:** The study population consisted of 414 participants with a 12-month disorder from the representative general population Netherlands Mental Health Survey and Incidence Study-2. Independent positive mental health indicators were mental well-being, its subscales emotional, social and psychological well-being and the category flourishing mental health. Recovery was defined as no longer fulfilling DSM-IV criteria of the index disorder 3 years later. **Results:** Despite meeting the criteria of a 12-month mental disorder, 19% with anxiety disorder were flourishing and 14% with mood disorder. Logistic regression analyses controlled for sociodemographics, physical health, life-events, service use, psychotropic medication, comorbidity and clinical severity showed that positive mental health positively influenced recovery from anxiety disorder (mainly by emotional and psychological well-being) and did not influence recovery from mood disorder. **Limitations:** The results are not generalizable to psychiatric patients in treatment settings and might differ for specific disorders within each DSM-IV category. **Conclusions:** Clinicians are encouraged to measure positive mental health in their patients and to improve positive mental health particularly in people with an anxiety disorder. The non-significant relation between positive mental health and recovery from mood disorder warrants further research, for example through using more in-depth assessment of positive mental health components and by investigating recovery from less severe mood disorders.

*Keywords:* mental health recovery; longitudinal survey; mental well-being; mood disorder; anxiety disorder

## **Introduction**

The burden of disease attributable to mental disorders has increased by almost 38% between 1990 and 2010 (Whiteford et al., 2013). Of these disorders, mood disorders and anxiety disorders are associated with the largest worldwide proportion of disease burden of 40.5% and 14.6%, respectively (Whiteford et al., 2013). In addition, major depression has been found to be a leading cause of years lived with disability (YLD) globally in both 1990 and 2013, while anxiety disorders have been in the top 10 causes of global YLDs (Vos et al., 2015).

## **The Two Continua Model of Mental Health**

In an attempt to reduce the burden associated with common mental disorders, a novel line of research suggests that it might be fruitful to monitor and promote positive mental health in people with a mental disorder as a complement to monitoring and treating clinical symptoms (Bolier et al., 2013b; Hendriks et al., Submitted; Jeste et al., 2015; Johnson and Wood, 2017; Keyes, 2002; Keyes, 2007; Kobau et al., 2011). The two continua model of mental health postulates that mental illness and positive mental health are two related but independent continua (Keyes, 2007; Lamers et al., 2015; Weich et al., 2011; Westerhof and Keyes, 2010). This means that a person can have a full-blown mental disorder in combination with a low level of positive mental health, but it can also mean that a person with a full-blown mental disorder has an above average level of positive mental health (Bergsma et al., 2010; Brandel et al., 2017; Keyes, 2005; McGaffin et al., 2015; Schotanus-Dijkstra et al., 2017b; Westerhof and Keyes, 2010). For example, a general population study revealed that 68.4% of the subjects with a diagnosed mood, anxiety or substance use disorder reported to have felt often, usually or always happy in the past 4 weeks (Bergsma et al., 2010).

Positive mental health comprises feeling happy (i.e. emotional well-being), but also doing well in terms of socially contributing to society (i.e. social well-being) and pursuing personal growth through self-acceptance, positive relations with others and a purpose in life to

name a few (i.e. psychological well-being) (Keyes, 2005; Ryff, 1989). In parallel with the mental illness continuum, which runs from none or a few clinical symptoms to a full-blown mental disorder, the two ends of the positive mental health continuum consist of languishing mental health and flourishing mental health. People who are flourishing have a high level of emotional well-being as well as a high level of social and psychological well-being (Keyes, 2002; Schotanus-Dijkstra et al., 2016). Interestingly, recent evidence from representative population studies demonstrate that flourishing is associated with lower prevalence and incidence of anxiety and depressive disorders over a 3-year and 10-year timespan (Keyes et al., 2010; Schotanus-Dijkstra et al., 2017b). This raises the question; can positive mental health also predict a more favorable course of mental disorders?

### **Positive Mental Health as Predictor of Recovery**

Several studies have identified predictors of relapse or recurrence of mental disorders in both clinical and general population samples (e.g. Hardeveld et al., 2010; Ten Have et al., 2018), but less is known about predictors of recovery from a mental disorder (e.g. Agosti, 2014; Bruce et al., 2005). Three recent studies used a representative sample of young women from the Dresden Predictor Study, and identified predictors of recovery. Their findings showed that positive mental health was the most important predictor of recovery from an axis I disorder, social phobia and specific phobia (Lukat et al., 2017; Trumpf et al., 2009; Vriends et al., 2007). In addition, the level of positive mental health before the start of exposure therapy for patients with an anxiety disorder was the most important predictor of recovery from this disorder directly after treatment (Teismann et al., 2018). However, these studies included relatively small samples, included only or mainly subjects or patients with an anxiety disorder and had a relatively brief follow-up period of 6 months in the clinical study and between 7 and 30 months (mean of 17 months) in the representative sample. Also, the representative sample was conducted in 1996-1997, while research on what positive mental

health is and how it should be measured and enhanced has increased exponentially after the year 1998 (Huta and Waterman, 2013).

### **The Present Study**

In the present study, we examine whether positive mental health influences naturalistic recovery from mood and anxiety disorders using a large representative population sample. We test the hypothesis whether subjects with a diagnosed DSM-IV disorder in the past 12 months, who have a higher level of positive mental health, recover three years later more often from their disorder compared to those with a lower level of positive mental health, when taking sociodemographics, physical health, life-events, service use, psychotropic medication, comorbidity and clinical severity into account. We test this hypothesis for overall mental well-being and for emotional well-being, social well-being and psychological well-being separately, as well as for flourishing mental health which indicates the highest level on the positive mental health continuum.

## **Method**

### **Design and Sample**

We used data of the first three waves of the Netherlands Mental Health Survey and Incidence Study-2 (NEMESIS-2). In this study, adults aged 18-64 at baseline were interviewed face-to-face in three waves (T0 = 2007-2009; T1 = 2010-2012; T2 = 2013-2015). At baseline, respondents were recruited through a multistage, stratified, random sampling procedure of households, of which one respondent per household was randomly selected. A medical ethics committee (the Medical Ethics Review Committee for Institutions on Mental Health Care, METIGG) approved the study. After having been informed about the study aims, respondents provided written informed consent at each wave. A more comprehensive description of the design is provided in De Graaf et al. (2010). At baseline (T0), a representative sample of

6,646 respondents were interviewed (response rate 65.1%) of which younger adults were somewhat underrepresented (2010). At T1, 80.4% of the respondents were re-interviewed (N = 5,303). The face-to-face interviews were conducted by trained professional interviewers. Interviewers were selected on their experience with systematic face-to-face data collection, experience with sensitive topics and ability to achieve a good response in other studies. Fieldwork was monitored over the entire data collection period by the NEMESIS-investigators and the fieldwork agency (for more information on quality checks of the data, see de Graaf et al., 2010). At the second wave, respondents were as much as possible re-interviewed by the same interviewer as at the first wave.

Attrition between T0 and T1 was not significantly associated with baseline psychopathology, controlling for sociodemographics (de Graaf et al., 2013). At T2, 87.8% of the T1 respondents were re-interviewed (N = 4,618). After adjustment for sociodemographics, attrition between T1 and T2 was only significantly associated with alcohol and drug dependence at T1 (de Graaf et al., 2015). For the current paper, all participants who had any 12-month anxiety or mood disorder at T1 and also participated in the third wave of the study (T2) were selected, resulting in a total sample of 414 participants. The T1 and T2 waves were selected because positive mental health was measured at T1 for the first time.

## **Measures**

### *DSM-IV Diagnoses*

The fully structured Composite International Diagnostic Interview (CIDI) 3.0 was used to assess DSM-IV disorders (Kessler and Ustun, 2004). The common mental disorders considered here include mood (major depression, dysthymia and bipolar disorder) and anxiety disorders (panic disorder, agoraphobia, social phobia, specific phobia and generalized anxiety disorder). The 12-month prevalence at T1 and T2 were used in the present study. Clinical calibration studies in various countries (Haro et al., 2006) found that the CIDI 3.0 assesses

these common mental disorders with generally good validity compared to blinded clinical reappraisal interviews. Recovery from mood or anxiety disorders was defined as no longer fulfilling the DSM-IV criteria for this disorder at the 12 months prior to T2.

### *Positive Mental Health*

The 14-item Mental Health Continuum-Short Form (MHC-SF) was used to assess the continuous level of mental well-being and the positive mental health categories during the past 4 weeks as measured at T1 (Keyes et al., 2008; Lamers et al., 2011). The first 3 items assess emotional well-being (e.g. “In the past month, how often did you feel happy?”). Five items measure social well-being (e.g. “In the past month, how often did you feel that our society is becoming a better place for people?”) and the remaining 6 items measure psychological well-being (e.g. “In the past month, how often did you feel that you have experiences that challenge you to grow and become a better person?”). Each item was rated on a scale from 0 (*never*) to 5 (*almost always*), of which the labels slightly differed from the original scale to make the scale easier to use in a face-to-face interview (Schotanus-Dijkstra et al., 2017b). Higher average scores indicate higher levels of mental well-being over the past 4 weeks. An advantage of using the MHC-SF is that it is possible to classify people in one of the three exclusive positive mental health categories: flourishing mental health, moderate mental health and languishing mental health. Flourishing mental health is defined as a high score (score 4 or 5) on at least 1 item from the emotional well-being scale in combination with a high score on at least 6 items from the social and psychological subscales. Languishing is defined as a low score (score 0 or 1) on at least 1 item from the emotional well-being scale in combination with a low score on at least 6 items from the social and psychological subscales. The remaining respondents were classified as having moderate mental health (Keyes et al., 2008). Missing data on the MHC-SF at T1 (0.7%; 38 items of 24 respondents)

were imputed using Hotdeck Imputation with gender, age categories and educational attainment as predictors. Reliability of the MHC-SF in the current sample was good ( $\alpha = .87$ ).

### *Potential Confounds*

*Sociodemographics, Physical Health and Life-Events.* Potential sociodemographic confounds were measured at T0 (age, gender, educational attainment) or T1 (partner status, employment status). Furthermore, the presence of physical disorders at T1 (1 = *at least one*; 0 = *none*) was assessed with a standard checklist of chronic physical disorders which had been treated or monitored by a medical doctor in the past 12 months (i.e. asthma, chronic obstructive pulmonary disease, severe heart disease or heart attack, hypertension, stroke, stomach or intestinal ulcers, severe intestinal disorders like irritable bowel syndrome, diabetes, thyroid abnormality, chronic back pain, joint wear, arthritis, migraine, cancer, impaired vision, impaired hearing). The presence of another physical disorder could be added as an open answer if the complaints were chronic in nature. Number of major negative life-events ( $\geq 1$  of 9, such as death of relative or friend, divorce) and the number of major positive life-events ( $\geq 1$  of 6, such as birth of (grand)child, finding a new partner) during the 12 months prior to T1 were measured with a scale based on the Brugha Life-events Section (Brugha et al., 1985).

*Service use and psychotropic medication.* Service use refers to at least one contact made in general medical or mental health care for emotional or alcohol or drugs problems in the 12 months prior to T1. Respondents were asked whether they visited general medical professionals (i.e. general practitioners, mental health nurses, company doctors, social work, home care or district nurses, physiotherapists or haptonomists, medical specialists or other professionals working within this care sector) and mental health services (i.e. psychiatrists, psychologists, psychotherapists, part-time or full-time psychiatric treatment). In addition, respondents were asked whether they received psychotropic medication for emotional or



alcohol or drugs problems in the 12 months prior to T1, prescribed by a mental health professional.

*Comorbidity and Clinical Severity:* Psychiatric comorbidity for respondents with mood disorder was defined as the presence of a 12-month anxiety at T1 as assessed with the CIDI. Similarly, comorbidity for respondents with anxiety was based on presence of mood disorder. For each specific mood or anxiety disorder, role-impairment was measured on four domains (home, work, social, close relationships) using the Sheehan Disability Scales (SDS) (Leon et al., 1997). Scores range from 0-10, where 7-10 was considered as severe, 4-6 as moderate and 0-3 as mild role-impairment. A *severe* clinical disorder at T1 was defined as having severe self-reported impaired functioning in at least two of the four domains for the index disorder. To be classified as *moderate*, a respondent did not meet the criteria for severe impairment, but reported only one severe role-impairment or reported at least one moderate role-impairment in any domain of the SDS. All other respondents with a 12-month DSM-IV disorder were classified as *mild*. Severity within a diagnostic group (mood or anxiety disorder) was determined as the most severe impairment of the disorders within the group.

### **Statistical Analyses**

All analyses were conducted using two-tailed tests ( $p < .05$ ) in SPSS, version 25. The data were weighted to correct for differences in response rates in several sociodemographic groups and in probability of selection of respondents within households at baseline. Summary statistics (% or means and standard deviations) per disorder category (mood, anxiety and substance use disorder) were obtained for mental well-being and its subscales emotional, social and psychological well-being. The prevalence of flourishing, moderate and languishing mental health per disorder category were also calculated. Next, the recovery rates per main category of disorder at T2 were calculated by dividing the number of respondents who recovered by the number still experiencing the index disorder. Finally, logistic regression

analyses were performed to examine whether positive mental health at T1 was associated with recovery at T2 in respondents with a 12-month disorder at T1. Preliminary analyses revealed that presence of at least one physical disorder and number of positive life-events were not significantly associated with recovery at T2 for any disorder category (see Supplemental Table). Therefore, the final models were adjusted for sociodemographics (model 1) and for sociodemographics, number of negative life-events, service use, psychotropic medication, psychiatric comorbidity and clinical severity (model 2). Education and clinical severity were included as continuous variables. Separate logistic regression analyses were performed for each positive mental health indicator: mental well-being, each subscale (emotional, social and psychological well-being) and the dummy-coded positive mental health category of flourishing mental health (1 = *flourishing*, 0 = *not flourishing*). The category *not flourishing* consists of those respondents categorized as moderate mental health or languishing mental health. This dichotomous outcome of flourishing versus not flourishing was chosen because the focus of the current study lies on a higher level of positive mental health and analyses using the three mutually exclusive categories of positive mental health revealed the same conclusions.

## Results

The mean age of the 414 respondents who had a 12-month mood or anxiety disorder at T1 was 40.6 years (SD = 12.46). The majority was female (67%), higher educated (64.4% finished at least higher secondary education), living with a partner (54.9%) and in paid employment (69.3%). Almost half of the respondents reported any physical disorder (48.6%). Table 1 shows the sociodemographics per DSM-IV category. Respondents with mood disorder reported the highest mean number of life-events (negative life-events: M = 1.01, SD = .98; positive life-events: M = .92, SD = .93) and they used general medical care (64.4%),

mental health care (50.4%) and psychotropic medication (38.3%) more often compared to respondents with anxiety disorder (44.6%, 34.2%, 25.6% respectively). Just over half of those with mood disorder were classified as severe (55.7%), while most people with anxiety disorder (44.4%) showed mild severity.

The level of mental well-being ranged from 2.5 (SD = .82) for mood disorder to 2.6 (SD = .77) for anxiety disorder (see Table 1). The level of emotional, social and psychological well-being were somewhat higher for anxiety disorder than for mood disorder. Consequently, the highest prevalence of flourishing mental health was found among people with anxiety disorder (18.9%) compared to people with mood disorder (14.4%). Languishing mental health was least common, with percentages that ranged from 6.4% for anxiety disorder to 11.7% for mood disorder. Three years after T1, 69.3% of the respondents who had a 12-month mood disorder at T1 did not fulfill the DSM-IV criteria. A similar recovery rate was found for anxiety disorder (70.3%), indicating that most respondents had recovered from their disorder within a 3-year timespan.

**Table 1.** Descriptives of sociodemographics, physical health, life-events, service use, clinical characteristics and positive mental health for each DSM-IV category at T1 ( $N = 414$ ).

	Any mood disorder ( $n = 224$ )		Any anxiety disorder ( $n = 264$ )	
	<i>n</i>	% or mean (SD)	<i>n</i>	% or mean (SD)
Age	224	40.13 (12.66)	264	41.08 (12.61)
Female gender	150	70.5	191	67.4
Education				
Primary education	13	12.9	15	13.8
Lower secondary education	59	25.1	74	24.0
Higher secondary education	94	44.1	99	41.3
Higher professional education,	58	17.9	76	20.8
University				
Living with partner	120	52.7	145	53.5
Paid employment	139	64.0	166	68.3
Any physical disorder	118	48.1	141	49.2
Number of negative life-events	224	1.01 (.98)	264	.92 (1.00)
Number of positive life-events	224	.92 (.93)	264	.76 (.89)

Service use for mental health problems				
General medical care	155	64.4	122	44.6
Mental health care	116	50.4	92	34.2
Psychotropic Medication	87	38.3	73	25.6
Comorbidity				
Mood	-	-	74	29.1
Anxiety	74	34.5	-	-
Clinical severity				
Mild	11	3.8	104	44.4
Moderate	80	40.5	89	30.0
Severe	133	55.7	71	25.6
<i>Positive mental health</i>				
Mental well-being	224	2.47 (.82)	264	2.63 (.77)
Emotional well-being	224	2.74 (1.12)	264	3.04 (.99)
Social well-being	224	1.98 (.86)	264	2.08 (.94)
Psychological well-being	224	2.75 (.92)	264	2.89 (.87)
Positive mental health categories				
Flourishing mental health	33	14.4	47	18.9
Moderate mental health	164	73.9	197	74.7
Languishing mental health	27	11.7	20	6.4

### Recovery from mood disorder

Logistic regression analyses (Table 2) demonstrated that no significant association was found between mental well-being and recovery from mood disorder, after adjustment for sociodemographics, negative life-events, service use, psychotropic medication, psychiatric comorbidity and clinical severity ( $p_{model1} = .587$ ;  $p_{model2} = .954$ ). Recovery from mood disorder was also not predicted by emotional well-being ( $p_{model1} = .878$ ,  $p_{model2} = .667$ ), social well-being ( $p_{model1} = .965$ ,  $p_{model2} = .775$ ) and psychological well-being ( $p_{model1} = .294$ ,  $p_{model2} = .539$ ). Not surprisingly, flourishers were not statistically more likely than not-flourishers to have recovered from mood disorder ( $p_{model1} = .218$ ,  $p_{model2} = .406$ ). In each of these analyses, psychotropic medication (adjusted  $OR_{model2} = .45$ , 95% CI = .22 – .91,  $p = .027$ ), comorbid anxiety disorder (adjusted  $OR_{model2} = 2.01$ , 95% CI = 1.03 – 3.95,  $p = .042$ ), and clinical severity (adjusted  $OR_{model2} = .54$ , 95% CI = .29 – 1.01,  $p = .053$ ) were the only significant

confounds, indicating that respondents with less psychotropic medication, not also having an anxiety disorder and with moderate or mild mood disorder at T1 were more likely to have recovered from this disorder.

### **Recovery from anxiety disorder**

A higher level of mental well-being during a 12-month anxiety disorder was positively associated with a favorable course of this anxiety disorder (adjusted  $OR_{model2} = 1.89$ , 95% CI = 1.23 – 2.93,  $p = .004$ ). The adjusted odds ratio for recovery from anxiety disorder was largest for psychological well-being (adjusted  $OR_{model2} = 1.78$ , 95% CI = 1.24 – 2.55,  $p = .002$ ), followed by emotional well-being (adjusted  $OR_{model2} = 1.42$ , 95% CI = 1.04 – 1.94,  $p = .026$ ). A marginal significant association and a non-significant association were found for flourishing ( $p_{model2} = .069$ ) and social well-being ( $p_{model2} = .155$ ) respectively. Furthermore, respondents with anxiety disorder were more likely to have recovered from their anxiety disorder three years later when they were living with a partner (adjusted  $OR_{model2} = 1.84$ , 95% CI = 1.01 – 3.05,  $p = .047$ ), in paid employment (adjusted  $OR_{model2} = 2.45$ , 95% CI = 1.28 – 4.63,  $p = .007$ ), reported fewer negative life-events (adjusted  $OR_{model2} = .66$ , 95% CI = .50 – .87,  $p = .003$ ), used more general medical or mental health care (adjusted  $OR_{model2} = 2.38$ , 95% CI = 1.10 – 5.15,  $p = .028$ ; adjusted  $OR_{model2} = 3.72$ , 95% CI = 1.52 – 9.07,  $p = .004$  respectively), and used no psychotropic medication (adjusted  $OR_{model2} = .41$ , 95% CI = .17 – 1.00,  $p = .049$ ).

**Table 2.** Logistic regression analyses for each indicator of positive mental health at T1 (separate analyses per indicator) and recovery from a 12-month common mental disorder at T2, for each DSM-IV category ( $N = 414$ ).

<i>Predictor at T1</i>	<b>Recovery from any mood disorder</b> ( $n = 224$ )						<b>Recovery from any anxiety disorder</b> ( $n = 264$ )					
	Model 1			Model 2			Model 1			Model 2		
	b	Adj. OR (95% CI)	<i>p</i>	b	Adj. OR (95% CI)	<i>p</i>	b	Adj. OR (95% CI)	<i>p</i>	b	Adj. OR (95% CI)	<i>p</i>
Mental well-being	.10	1.10 (.77 – 1.58)	.587	.01	1.01 (.69 – 1.49)	.954	.53	1.70 (1.17 – 2.47)	.006	.64	1.89 (1.23 – 2.93)	.004
Emotional well-being	.02	1.02 (.79 – 1.32)	.878	-.06	.94 (.73 – 1.23)	.667	.32	1.38 (1.05 – 1.82)	.022	.35	1.42 (1.04 – 1.94)	.026
Social well-being	-.01	.99 (.71 – 1.39)	.965	-.05	.95 (.66 – 1.37)	.775	.23	1.26 (.92 – 1.73)	.152	.25	1.28 (.91 – 1.81)	.155
Psychological well-being	.17	1.18 (.86 – 1.62)	.294	.11	1.11 (.79 – 1.56)	.539	.47	1.60 (1.17 – 2.19)	.003	.58	1.78 (1.24 – 2.55)	.002
Flourishing mental health	.55	1.74 (.72 – 4.19)	.218	.38	1.47 (.59 – 3.63)	.406	.74	2.10 (.91 – 4.86)	.084	.82	2.28 (.94 – 5.53)	.069

*Note.* Adj. OR = adjusted odds ratios; CI = confidence interval. Model 1 = positive mental health indicator and sociodemographics. Model 2 = positive mental health indicator, sociodemographics, number of negative life-events, service use, psychotropic medication, psychiatric comorbidity and clinical severity.

## Discussion

The aim of this study was to examine whether positive mental health has a positive influence on the natural course of diagnosed mental disorders, controlled for sociodemographics, physical health, life-events, service use, psychotropic medication, comorbidity and clinical severity. The results indicate that positive mental health was positively associated with recovery from anxiety disorder, but not significantly associated with recovery from mood disorder. In line with the two continua model of mental health (Bergsma et al., 2010; Keyes, 2007; Westerhof and Keyes, 2010), data from the current longitudinal and representative general population study, confirms that it is possible to flourish despite meeting the criteria of a 12-month DSM-IV disorder. The prevalence rates of flourishing ranged from 19% for anxiety disorders to 14% for mood disorders. However, echoing the general Dutch population, most respondents with a 12-month mood or anxiety disorder could be categorized as having moderate mental health while languishing mental health was least common. In comparison with the few clinical samples wherein the presence of positive mental health categories are investigated, in eating disorders patients or substance use disorder patients, the current sample showed similar prevalence rates of flourishing but lower prevalence rates of languishing mental health (de Vos et al., 2018; McGaffin et al., 2015).

### **Key Findings on Recovery from Mood and Anxiety Disorder**

To our knowledge, this is the first study focusing on several positive mental health indicators as predictor of recovery from mood and anxiety disorders. We found that higher levels of positive mental health, especially higher levels of emotional and psychological well-being, predicted the likelihood of recovery from anxiety disorder. This means that adults with anxiety disorder who felt good about their life and who were functioning well in terms of self-acceptance, purpose, autonomy and positive relations were more likely to have recovered

from their disorder. This finding underscores prior evidence wherein this association was also found in both a community sample of young women and in a clinical sample (Teismann et al., 2018; Trumpf et al., 2009; Vriends et al., 2007). Flourishing mental health was a marginal significant predictor, which can be explained by the relatively low absolute number of respondents diagnosed with anxiety disorder who also met criteria of flourishing mental health ( $n = 47$ ; 18.9%). Our non-significant results on predicting recovery from mood disorders by positive mental health could not be directly compared to prior studies, although positive mental health was a significant predictor of recovery from any Axis I disorder in a representative community sample of young women (Lukat et al., 2017). However, most of these Axis I disorders were anxiety disorders.

The discrepancy in findings for mood and anxiety disorder might be partly explained by the fact that emotional well-being items seem to resemble the opposite of some diagnostic criteria for mood (i.e. interest in life versus loss of interest in life; feeling happy versus feeling depressed), suggesting that the two continua model fits less well with mood disorders (Johnson and Wood, 2017). However, we used a broad framework to measure mental well-being, and social and psychological well-being also resulted in non-significant findings. At the same time, the MHC-SF might not be sensitive enough to detect positive mental health in respondents with more severe clinical symptomatology because each component of emotional, social and psychological well-being is assessed with one item. A next step in longitudinal research might be to assess each construct included in the MHC-SF more in depth—for example by using Ryff's Scales of Psychological Well-being (Ryff, 1989)—as well as to assess other components of positive mental health, such as hope, optimism and self-compassion. This information can be used to identify which components are most beneficial for recovery and, hence, could be included in clinical treatment.



A more plausible explanation for the discrepancy in findings for mood and anxiety might stem from the severity of the disorder. Our results demonstrated that nearly 60% of the respondents with any mood disorder were classified as severely impaired and only 4% displayed mild limitations. For comparison, respondents with an anxiety disorder were mainly classified as mild or moderately impaired and only 26% reported severe impairment. In addition, the use of general medical care, mental health care and psychotropic medication were greater for mood disorder than for anxiety disorder. The impact of severity of mood disorder on recovery was also more visible in the regression findings, demonstrating that those who used more psychotropic medication, who also had a comorbid anxiety disorder and who reported more clinical severity were less likely to have recovered. Thus, there was less variation in severity of mood disorders and this level of severity seem to have been decisive in the natural course of the disorder.

An interesting direction for future research could be to examine the influence of positive mental health on people with subclinical mood disorder who have mild or moderate clinical severity. Especially because intervention research suggests that well-being therapy is effective in reducing depressive symptomatology in general population samples (Bohlmeijer et al., 2015; Schotanus-Dijkstra et al., 2017a) and clinical samples (Chaves et al., 2016; Ruini et al., 2014). Furthermore, the present study suggests that it might be more worthwhile to measure anxiety within well-being research and to enhance positive mental health in people with mild to severe symptoms of anxiety. Interestingly, anxiety is an understudied topic within well-being research, wherein a strong focus lies on targeting depressive symptoms through positive psychology interventions (Bolier et al., 2013a; Chakhssi et al., 2018; Hendriks et al., Submitted; Weiss et al., 2016). Taken together, our results indicate that recovery from anxiety disorder is best predicted by positive mental health, while clinical

characteristics seem to have an independent impact on predicting recovery from mood disorder.

### **Strengths and Limitations**

Major strengths of the present study include the use of a large representative sample (NEMESIS-2) and the use of the CIDI 3.0 to reliably and validly assess DSM-IV disorders. Another advantage is the use of the MHC-SF which is a reliable and valid tool to assess the three components of mental well-being and at the same time can be used to classify people who are flourishing. Despite these major strengths, there are also some caveats.

People who are institutionalized for a long time are underrepresented in this general population sample, just as people who insufficiently master the Dutch language or do not live at a fixed address. Therefore, the conclusions drawn from this paper are not generalizable to these underrepresented populations or to, for example, treatment settings. Another limitation is that only diagnostic categories could be used instead of specific diagnoses as a result of attrition at follow-up, a common problem in longitudinal studies. A final limitation is that we used 12-month mental disorder diagnoses while positive mental health was measured over the past 4 weeks. This means that a respondent might have met the diagnostic criteria several months before mental well-being was measured, suggesting that in some cases recovery might have preceded higher positive mental health and that the magnitude of the odds ratios in fact is stronger than was found here.

### **Conclusion**

The present study supports prior evidence about the importance of measuring and improving mental well-being and flourishing mental health in a variety of populations (Fava et al., 2007; Jeste et al., 2015; Johnson and Wood, 2017; Keyes and Simoes, 2012; Keyes et al., 2010; Schotanus-Dijkstra et al., 2017a; Schotanus-Dijkstra et al., 2017b; Wood and Tarrrier, 2010). The findings of the current study strongly advocate structural monitoring of

positive mental health in order to reach a more favorable course of diagnostic disorders which, in turn, could benefit the burden of these disorders. Importantly, the findings of our study should be taken into account when health-care professionals want to inform their patients about the most optimal way to recovery. More precisely, improving positive mental health seems particularly relevant for anxiety disorder patients, while reducing clinical severity might be more important for mood disorder patients to reach recovery.

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### **Statement of Ethics**

The authors have no ethical conflicts to disclose.

### **Disclosure Statement**

The authors declare that they have no competing interests.

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### **Author Contribution**

MtH and RdG are the principal investigators of NEMESIS-2. MSD, MtH and RdG devised the research questions. MSD and MtH undertook the analyses. MSD drafted the manuscript. All authors contributed to its revisions and approved the final version of the manuscript.

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