



Research report

The absence of positive psychological (eudemonic) well-being as a risk factor for depression: A ten year cohort study

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ABSTRACT

Background: Previous research in psychiatry has focused on how negative personality traits and impaired well-being form risk factors for depression. This study presents the first longitudinal test of whether the absence of positive well-being forms an additional unique risk factor for depression.

Methods: A large cohort of 5566 people completed a survey at two time points, aged 51–56 at Time 1 and 63–67 at Time 2. Positive psychological well-being included measures self-acceptance, autonomy, purpose in life, positive relationships with others, environmental mastery, and personal growth. Personality was measured as extraversion, neuroticism, agreeableness, conscientiousness, and openness to experience. Depression was measured with the CES-D scale.

Results: People with low positive well-being were 7.16 times more likely to be depressed 10-years later. After controlling for personality, negative functioning, prior depression, demographic, economic, and physical health variables, people with low positive well-being were still over twice as likely to be depressed.

Limitations: All measures were self-report, rather than based on peer-report or physician diagnosis. An aging population was studied; replication is needed in younger populations.

Conclusions: The absence of positive well-being forms a substantial risk factor for depression, independent of the presence of negative functioning and impaired physical health. Older people with low PWB are very likely to become depressed over 10 years, and preventative intervention and monitoring of these individuals are indicated.

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The influential positive psychology movement has recently drawn attention to how the positive aspects of life have been neglected by mainstream psychology and psychiatry (Seligman and Csikszentmihalyi, 2000). Within clinical psychology, in addition to studying the effects of negative life events and negative personal characteristics, there is increasing interest on how the absence of positive characteristics and life circumstances may be implicated in a variety of mental disorders (Duckworth et al., 2005; Seligman et al., 2006).

A conceptual distinction has been made between subjective (or “hedonic”) well-being (SWB) and psychological

(or “eudemonic”) well-being (PWB) (Ryan and Deci, 2001). SWB encompasses emotional functioning and an individual’s subjective evaluation of their life (Diener, 1984). SWB is operationalized as involving high positive affect, low negative affect, and high satisfaction with life (Diener, 1984). In contrast, PWB focuses on more existential concerns, and the way in which an individual interacts with the world. PWB can be operationalized in various ways, depending on which aspects of life are the focus of theoretical interest (Kashdan et al., 2008). Ryff (1989b) provides a widely used taxonomy of PWB, comprising self-acceptance, autonomy, purpose in life, positive relationships with others, environmental mastery, and personal growth (Ryff and Keyes, 1995).

A substantial number of studies have empirically dissociated PWB and SWB (Ryan and Deci, 2001). For example,

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the PWB and SWB load on correlated but separate factors (Keyes et al., 2002; McGregor and Little, 1998; Ryff and Keyes, 1995), and have different patterns of psychological (Waterman, 1993) and biological (Ryff et al., 2006) correlates. PWB and SWB can also be dissociated on the individual level; about 45% of people are “off diagonal”, scoring high on PWB and low on SWB, or vice versa (Keyes et al., 2002). PWB has been described as incorporating inherently positive psychological concepts (Ryan and Deci, 2001; Ryff, 1989b; Ryff et al., 2006) (Riediger and Freund, 2004), as the constructs involve a life lived to the full, which is conducted in a socially constructive manner, and in line with a person’s basic needs.

Variables within the PWB construct have traditionally been considered important by various counseling psychology perspectives (Maslow, 1970; Rogers, 1959, 1964; Yalom, 1980). However, research in psychology and psychiatry has almost exclusively focused on SWB, and related personality traits (trait positive and negative affects are respectively represented within extroversion and neuroticism). For example, depression has been prospectively linked to extroversion and neuroticism (Barnett and Gotlib, 1988), and negative life evaluations (e.g., Evans et al., 2005). However, the dissociation between PWB and SWB suggests that PWB may be able to predict additional variance in clinical functioning above the positive and negative functioning represented in extroversion and neuroticism.

PWB has only recently attracted sustained empirical attention and has become the focus of clinical treatments (Ryan and Deci, 2001). Indeed, PWB is strongly correlated with depression (Ryff, 1989a; Ryff and Keyes, 1995; Ryff et al., 1994), suggesting that people who are low in PWB may be at risk of developing the disorder. On this basis, interventions to increase PWB are rapidly being developed, both for the prevention and treatment of depression (Fava, 1999; Fava et al., 1998; Seligman et al., 2005). Increasingly, these interventions are being used in mainstream clinical practice (Duckworth et al., 2005).

Despite the increasing influence of positive psychology on clinical practice, some basic questions remain unanswered. It is not clear whether the absence of positive well-being can predict the clinically relevant levels of depression, or simply predict variance in sub-clinical melancholia. Additionally, most of the research has been cross-sectional (Lazarus, 2003). This raises the possibility that impaired PWB is simply a consequence of depression, rather than implicated in the disorders etiology (Barnett and Gotlib, 1988).

The current study tests for the first time whether people low in PWB are at risk for having clinically elevated levels of depression ten years later. This study uses a large cohort sample of people initially aged 51–56, who completed measures again aged 63–67. If people low in PWB are shown to be more likely to be depressed in later life, then this would indicate the early intervention for these individuals as a preventative measure.

1. Method

We used data from the Wisconsin Longitudinal Survey, a cohort survey which began in 1957 with a random sample of men and women graduating from Wisconsin high schools (Wisconsin Longitudinal Study, 2006). In 1992–1993 surviving participants were recontacted, and 6875 people completed an

extensive mail questionnaire (Time 1). Ten years later, attempts were made to recontact participants. It was not possible to contact 469 participants (6.8%) primarily due to mortality ($N=406$; 86.56%). Questionnaires were sent out to the remaining 6406 participants, of which 5778 provided responses (90.2%). A further 212 participants (3.3%) were excluded as their responses contained substantial amounts of missing data (if participants had omitted only a few items on a given questionnaire, then the data was inputted based on their answers to the remaining items). This left 5566 participants completing measures at both time points, representing an overall retention rate of 81.0%. The end sample comprised 54.7% women, who were aged between 51 and 56 at the Time 1, and 63 and 67 at Time 2, with a Time 1 mean household income of US\$67,194 ($SD=\$45,544$) and assets of US\$229,549 ($SD=\$27,6440$). Home ownership was 91.2%, and vehicle ownership at 97.2%. Most of the samples were married (84.5%) and employed (65.7%), and 11.7% were retired.

Participants completed the Centre for Epidemiologic Studies Depression (CES-D) measure at both time points (Radloff, 1977). The CES-D assesses the presence of current depression by asking participants to rate how frequently in the last seven days they have experienced 20 symptoms of depression (e.g., “have crying spells”). Responses range from 0 (“zero days”) to 7 (“seven days”). Responses are recoded 0 (<1 day), 1 (1–2 days), 2 (3–4 days), or 3 (5–7 days), and the overall score ranges from 0 to 60. The CES-D was originally developed for screening for depression in population surveys (Radloff, 1977), and is one of the five most widely used scales in both basic science and treatment outcome research (Santor et al., 2006). At a cut-off value of 16, the CES-D has a very high level of convergence with clinician ratings of depression (McDowell and Kristjansson, 1996), demonstrating a sensitivity of 100% and a specificity of 88% in older populations (Beekman et al., 1997).

At Time 1 (T1) participants also completed the 18-item version of the Scales of Psychological Well-being (Ryff and Keyes, 1995), which provides an overall PWB score, as well as six sub-scales comprising self-acceptance, autonomy, purpose in life, positive relationships with others, environmental mastery, and personal growth. The independence of these sub-scales has been questioned (Springer and Hauser, 2006), however five recent factor analysis studies have supported the six factor structure of the Scales of Psychological Well-being (Ryff and Singer, 2006). Several studies have shown that a single higher order PWB factor exists above the sub-scales (e.g., Keyes et al., 2002; Ryff and Keyes, 1995), and previous research has either used the sub-scales individually (e.g., McGregor and Little, 1998; Ryff et al., 2006; Wood et al., 2009) or as a total PWB score (Marmot et al., 1997; Riediger and Freund, 2004; Taylor et al., 2003). In the current study we conducted analysis at both the total and individual PWB level.

Various demographic, economic, health, and personality variables were also included at T1 for use as covariates. Demographic and economic measures included sex, marriage, years of education, economic status (household assets, combined personal and partner income, home ownership, and motor vehicle ownership), current employment, and retirement. Personality was measured with reference to the Big Five model of personality (Watson et al., 1994). In this model, all personality traits are represented at the broadest level of abstraction with the five traits of extraversion, agreeableness, conscientiousness,

neuroticism, and openness. The Big Five provide the dominant model of personality within psychology, and the primacy of these traits has been supported by a large number of factor analytical studies using all of the traits listed in comprehensive dictionaries in several languages (McCrae and Costa, 1987; Watson et al., 1994). These traits were measured with the 44-item Big Five Inventory (John and Srivastava, 1999), which asks participants to rate a series of statements about their personality on a 1 (“agree strongly”) to 6 (“disagree strongly”) scale. Previous research has demonstrated high test–retest reliability ($r = .80$ to $.90$ over three months), good convergence with other measures of the Big Five (corrected $r = .83$ – $.99$), and external correlations with peer ratings (John and Srivastava, 1999).

Participants were also asked whether they had been diagnosed by a medical professional as having one of 16 health conditions (anemia, asthma, arthritis, bronchitis/emphysema, cancer, chronic liver trouble, diabetes, serious back trouble, heart trouble, high blood pressure, circulation problems, kidney or bladder problems, ulcer, allergies, multiple sclerosis, and colitis). Each participant was questioned separately about each condition and additionally asked whether they had an illness not mentioned (only 31 participants listed a separate illness, suggesting the list of illnesses were comprehensive).

The analysis was designed to test whether people who were low in PWB when aged 51–56 were more at risk of being depressed when aged 63–67. In all analysis, T2 CES-D scores were dichotomized into 0 “not depressed” or 1 “depressed” based on the clinical cut-off score of 16. Responses to the scales of PWB were split into tertiles. The highest tertile was designated normal functioning, with the medium tertiles indicating slightly impaired PWB, and the lowest tertile indicating low PWB. Several logistic regressions were performed with the normal level of PWB designated as the reference category. Each of these logistic regressions was designed to test whether people with low PWB at Time 1 were more at risk of being depressed at Time 2. The several logistic regressions differed based on whether T1 depression was being predicted from an overall PWB score or one of the sub-scales, and whether or not covariates were included in the model. Covariates included all of the demographic, medical, and economic variables detailed above, as well as T1 levels of depression. T1 depression was included as a continuous variable to fully control for variation in how close participants were to meeting the criteria for depression at T1 (how close they were to the cut-off point on the CES-D). This analysis had two purposes (a) to control for prior levels of depression, and (b) to control for the relationship between T1 depression and T1 PWB. With T1 depression controlled, any prediction of T2 depression from T1 PWB must be due to the variance in T1 PWB which is not shared with T1 depression. This rules out the possibility that any relationship between T1 PWB and T2 depression is simply due to shared variance between PWB and depression (or similar explanations such as overlapping item content) (see Zapf et al., 1996).

2. Results

Overall, 12.98% of the sample was depressed at T2. The first logistic regression predicted T2 depression from T1 overall PWB. Of people in the normal PWB tertile, 85 were depressed

at T2, compared to 177 in the impaired tertile, and 466 in the low tertile. People with low PWB were 7.16 (95% CI 5.63–9.12) times more likely to be depressed ($p < .001$). Consistently, people with slightly impaired PWB were 2.30 (95% CI 1.75–2.99) times more likely to be depressed ($p < .001$). This analysis suggests that people with impaired PWB are substantially more likely to be depressed 10 years later.

The second logistic regression predicted T2 depression from T1 overall PWB, including all demographic, health, and personality variables as covariates, as well as T1 levels of depression. These results are presented in Table 1. Even though the effect sizes were considerably attenuated when including the covariates, low PWB at T1 still remained a substantial predictor of depression at T2, with people having low PWB being more than twice as likely to be depressed as non-impaired individuals. Several of the medical disorders were also significant risk factors for depression, including serious back trouble, and circulation problems (OR 1.58–1.58); interestingly having low levels of PWB was a greater risk factor for depression than these disorders. Low levels of PWB were a greater risk factor than being a standard deviation

Table 1

Logistic regression predicting Time 2 depression from baseline levels of total PWB, depression, personality, demographic, economic, and health characteristics.

	OR	95.0% CI	
		Lower	Upper
Positive well-being (lowest tertile)	2.23	1.58	3.15
Positive well-being (middle tertile)	1.58	1.15	2.18
T1 depression	2.16	1.95	2.39
Extraversion	1.00	0.90	1.12
Agreeableness	0.92	0.83	1.02
Conscientiousness	1.02	0.92	1.13
Neuroticism	1.29	1.15	1.45
Openness	1.03	0.92	1.15
Female	0.75	0.60	0.92
Married	0.91	0.70	1.20
Years of education	0.96	0.91	1.01
Employed	1.06	0.80	1.42
Retired	1.26	0.95	1.68
Household assets	0.82	0.70	0.95
Household income	0.92	0.80	1.07
Home ownership	1.00	0.71	1.41
Motor ownership	1.54	0.81	2.95
Anemia	1.17	0.70	1.96
Asthma	0.76	0.47	1.22
Arthritis	1.04	0.83	1.29
Bronchitis/emphysema	1.45	0.90	2.33
Cancer	1.53	0.82	2.85
Chronic liver trouble	1.49	0.46	4.81
Diabetes	1.54	0.99	2.39
Serious back trouble	1.48	1.10	1.99
Heart trouble	1.27	0.85	1.90
High blood pressure	1.04	0.83	1.30
Circulation problems	1.58	1.08	2.30
Kidney bladder problems	0.78	0.51	1.20
Ulcer	1.56	1.00	2.46
Allergies	1.29	0.99	1.67
Multiple sclerosis	1.58	0.45	5.57
Colitis	0.44	0.21	0.90
Other illness	1.11	0.40	3.05
Constant	1.370		

Note: Results in bold significant at $p < .05$. OR = odds ratio; T1 depression and the Big Five are z-scored (odds ratio represents a one standard deviation increase in these variables).

higher on T1 depression or any personality trait (including neuroticism).

Twelve more logistic regressions were performed, respectively regressing T2 separately on each of the six sub-scales of PWB at T1, with and without covariates. (T2 depression was not regressed jointly on all PWB sub-scales as substantial inter-correlations between the sub-scales introduced multicollinearity, thus violating the assumptions of logistic regression.) Summary results are presented in Table 2. Without accounting for covariates, people with low levels of self-acceptance, autonomy, purpose in life, positive relationships with others, environmental mastery, and personal growth were substantially more at risk for being depressed (OR 2.95–7.09). People with slightly impaired levels of these variables were also at risk (OR 1.40–2.39). After including all prior demographic, economic, personality, health, and depression statuses as covariates, people with low levels of each of the PWB dimensions remained at a heightened risk of being depressed (OR 1.32–2.08), although personal growth narrowly missed significance. People with slightly impaired levels of self-acceptance, autonomy, and purpose in life, and positive relationships were at a higher risk of depression (OR 1.36–1.61) with a full set of covariates.

3. Discussion

The results suggest that people with low levels of positive well-being are at a substantially higher risk from being depressed 10 years later. Previous work in psychiatry has focused almost exclusively on how the presence of negative well-being forms a risk factor for depression (Barnett and Gotlib, 1988; Duckworth et al., 2005). Whilst replicating these results, the current study shows that the absence of positive well-being also strongly predicts depression, even after controlling for the presence of neuroticism, medical conditions, and economic status. It was also notable that PWB predicted depression above the personality trait of agreeableness. As agreeableness includes trait differences in

positive affect, this suggests the effects of PWB are due to the specific aspects of these variables, rather than the habitual experiencing of positive moods.

This is the first study to suggest that PWB predicts future depression. People with lower PWB were at risk of being depressed regardless of whether PWB is assessed as a global construct, or separately as self-acceptance, autonomy, purpose in life, positive relationships with others, environmental mastery, and personal growth. This provides support for the positive clinical psychology movement (Duckworth et al., 2005), which suggests that aspects of positive psychological well-being are important to understanding disorder, and supports the interventions which are being developed to increase PWB as a means of preventing and treating depression.

The results suggest the relevance of the concept of PWB to psychiatry and medicine. The size of the odds ratios was striking. People low in PWB were over seven times more likely to be more depressed ten years later. Even after controlling for prior levels of depression, personality, demographics, and medical conditions, people with low PWB were still over twice as likely to be depressed in the future. This suggests that the improvement of PWB may be a legitimate public policy aim, and of medical significance in that it may prevent depression. This finding bolsters calls for a focus on developing PWB within the populations, such as within school settings (Ruini et al., 2006).

The study had a couple of key limitations. First, the study relied on self-report, rather than physician ratings of depression. However, the CES-D depression has previously been shown to substantially converge with physician ratings in older populations (at a sensitivity of 100% and a specificity of 88%) (Beekman et al., 1997). Second, the study examined a single cohort of people initially aged mid-50s, with a 10 year follow-up. More research is needed to show these findings generalize to other age groups, particularly if interventions to develop PWB are aimed at particular age groups (such as within schools).

Table 2

Summary of six logistic regressions predicting Time 2 depression from baseline levels of six aspects of PWB.

	Zero-order			Adjusted			
	No. of people depressed at T2	OR	95.0% CI	OR	95.0% CI		
Low self-acceptance	467	7.09	5.55	9.07	2.08	1.51	2.87
Impaired self-acceptance	183	2.39	1.83	3.13	1.61	1.17	2.20
Normal self-acceptance	81	1.00					
Low autonomy	402	3.45	2.77	4.31	1.58	1.18	2.11
Impaired autonomy	225	1.82	1.44	2.31	1.44	1.08	1.91
Normal self-acceptance	111	1.00					
Low purpose in life	445	6.05	4.72	7.76	1.85	1.33	2.57
Impaired purpose in life	206	2.34	1.79	3.06	1.69	1.23	2.31
Normal self-acceptance	80	1.00					
Low positive relationships	431	4.26	3.42	5.32	1.96	1.45	2.65
Impaired positive relationships	191	1.70	1.33	2.16	1.36	1.01	1.81
Normal self-acceptance	110	1.00					
Low environmental mastery	482	5.92	4.71	7.45	1.74	1.28	2.37
Impaired environmental mastery	160	1.88	1.45	2.44	1.29	0.95	1.75
Normal self-acceptance	96	1.00					
Low personal growth	397	2.95	2.40	3.61	1.32	0.99	1.76
Impaired personal growth	200	1.40	1.12	1.75	1.06	0.80	1.40
Normal personal growth	140	1.00					

Note: results in bold significant at $p < .05$; df varies slightly due to missing data. The Normal tertile was specified as the reference category. Adjusted odd ratios include all covariates listed in Table 1 (including T1 depression, personality, demographic variables, and physical health).

The study provides the first test of whether low PWB is a risk factor for future depression. The results suggest that in addition to having negative characteristics, the absence of positive characteristics forms an additional (and substantial) risk factor for depression. This suggests that the alleviation of low PWB can be a preventative measure for depression, and alleviating low PWB in psychiatric practice could potentially form an innovative new cure for depression. In primary care, older people with low PWB should be seen as highly at risk of being depressed over a ten year period.

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Conflict of interest

The authors do not have any conflicts of interest.

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