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# Wellness within illness: Happiness in schizophrenia

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## Abstract

Schizophrenia is typically a chronic disorder and among the most severe forms of serious mental illnesses in terms of adverse impact on quality of life. Yet, there have been suggestions that some people with schizophrenia can experience an overall sense of happiness in their lives. We investigated happiness among 72 outpatients with non-remitted chronic schizophrenia with a mean duration of illness of 24.4 years, and 64 healthy comparison subjects (HCs). Despite continued treatment with antipsychotic medications, the individuals with schizophrenia manifested a mild to moderate level of psychopathology. People with schizophrenia reported lower mean levels of happiness than HCs, but there was substantial heterogeneity within the schizophrenia group. Level of happiness in persons with schizophrenia was significantly correlated with higher mental health-related quality of life, and several positive psychosocial factors (lower perceived stress, and higher levels of resilience, optimism, and personal mastery). However, level of happiness was not related to sociodemographic characteristics, duration of illness, severity of positive or negative symptoms, physical function, medical comorbidity, or cognitive functioning. Except for an absence of an association with resilience, the pattern of correlations of happiness with other variables seen among HCs was similar to that in individuals with schizophrenia. Although happiness may be harder to achieve in the context of a serious mental illness, it nonetheless appears to be a viable treatment goal in schizophrenia. Psychotherapies targeting positive coping factors such as resilience, optimism, and personal mastery warrant further investigation.

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**Contributors**

Barton W. Palmer was involved in literature review, study design, data analysis, data interpretation, and writing of this report.
Averria Sirkin Martin was involved in literature review, and writing of this report.
Colin A. Depp was involved in literature review, data interpretation, and writing of this report.
Danielle K. Glorioso was involved in oversight of data collection and writing of this report.
Dilip V. Jeste was involved in study design, data interpretation, and writing of this report.

**Conflicts of interest**

All authors declare that they have no conflicts of interest.

**Keywords**

Well-being; Positive psychology; Optimism; Resilience; Depression; Comorbidity; Recovery

## 1. Introduction

The United Nations recognized pursuit of happiness as a fundamental human goal (UN News Centre, 2011). But is happiness a viable goal in the context of schizophrenia? Schizophrenia has been likened to a cancer of the mind (Sheldon, 1988), characterized not only by psycho-pathologic symptoms, but also medical comorbidity, accelerated aging, shortened lifespan, cognitive impairment, and psychosocial disability (Kirkpatrick et al., 2008; Meyer and Nasrallah, 2009; Palmer et al., 2009). Because of suffering and disability caused by schizophrenia, most attention has been directed toward understanding and reducing its negative effects. Yet, mental health is characterized not only by the absence of dysfunction, but also by the presence of positive mental states and outcomes (Seligman and Csikszentmihalyi, 2000; Jeste and Palmer, 2013).

Although there has been growing empirical attention to broad positive constructs such as quality of life, satisfaction with life, and subjective well-being in schizophrenia (Schrank et al., 2013), we found only two published studies focused on happiness in schizophrenia. Buckland et al. (2013) conducted a qualitative study of happiness among 13 younger adults with schizophrenia, and Agid et al. (2012) found that people with schizophrenia's happiness levels are equivalent to healthy comparison subjects (HCs) on a four-item happiness scale. However, the latter patient sample was restricted to 31 people with remitted first-episode schizophrenia. We found no published studies assessing happiness among people with chronic non-remitted schizophrenia, even though a chronic non-remitted state characterizes a majority of those with this disorder (an der Heiden and Häfner, 2000).

There is no consensus definition, but the term happiness connotes an immediate (affective) positive emotion and a more enduring mood or disposition (De Prycker, 2010). Some authors distinguish hedonic (positive emotions) and eudaimonic (such as self-actualization and meaning) happiness (Delle Fave et al., 2011). Lyubomirsky and Dickerhoorf (2010) contrast "bottom-up" models whereby happiness is determined by circumstances versus "top-down" models which view happiness as resulting from personality/temperament. Lyubomirsky and Dickerhoorf proposed a third possibility that the effects of circumstances on happiness are modulated by how the circumstances are construed, i.e., "people are happier when they interpret their life circumstances in an optimistic 'glass is half full' fashion …and this is true regardless of how 'ideal' their circumstances may actually be" (p. 231). Under the "bottom up" model one might predict that people with schizophrenia have lower happiness than HCs; under a "top down" model, schizophrenia may be unrelated to happiness. Under the construal model, one would expect people with schizophrenia to have lower levels of happiness overall, yet also find heterogeneity in happiness in this group, with positive psychological traits such as optimism promoting higher levels. Outside the context of schizophrenia research, commonly reported correlates of happiness include optimism, resilience, spirituality, positive social relationships, and physical and mental health (Dember

and Brooks, 1989; Rim, 1993; Affleck et al., 2001; Abdel-Khalek, 2006; Cohn et al., 2009; Holder and Coleman, 2009; Holder et al., 2010).

We conducted a study of happiness among community-dwelling adults with chronic schizophrenia compared to HCs, as well as its associations with demographic, illness-related, and psychosocial factors. In accord with the notion that life circumstances affect levels of happiness, we hypothesized that relative to HCs, people with schizophrenia would have lower levels of happiness, and that level of happiness would be negatively correlated with duration of illness and severity of psychopathology but positively correlated with level of education, physical health, and cognitive functioning. Additionally, in accord with the construal model of happiness, we hypothesized that happiness would be correlated with positive psychosocial factors—i.e., resilience, optimism, social support, personal mastery, positive attitudes toward own aging, and spirituality.

## 2. Methods

### 2.1. Subjects

Participants included 72 outpatients with schizophrenia (including 12 with schizoaffective disorder) and 64 HCs recruited as part of an ongoing study of aging in schizophrenia at the University of California, San Diego (UCSD) Center for Healthy Aging and Stein Institute for Research on Aging. Inclusion criteria were: (a) age > 21 years (observed range 23–70 years), (b) DSM-IV-TR diagnosis of schizophrenia or schizoaffective disorder or, for HCs, absence of major neuropsychiatric disorders, (c) outpatient status, and (d) English fluency. Exclusion criteria were: (a) alcohol or substance abuse or dependence in the 3 months preceding enrollment, (b) diagnosis of dementia or other conditions known to affect neurocognition, and (c) medical problems that would interfere with participant's ability to complete study assessments. The protocol was approved by the UCSD Human Research Protections Program; all the subjects provided written informed consent for participation.

Participants with schizophrenia were recruited through UCSD outpatient psychiatry services, San Diego County Adult and Older Adult Mental Health Services, and San Diego Board-and-Care facilities (adult residential facilities that provide meals and shelter). The HCs were recruited with flyers in the community, advertisements in local media, word of mouth, and a registry of non-patients from an ongoing study of successful aging (Jeste et al., 2013).

Antipsychotic medications (mean [SD] daily dose) included: risperidone ($n$ = 17; 6.6 [4.2] mg), clozapine ($n$ = 15; 350.0 [243.0] mg), aripiprazole ($n$ = 15; 18.8 [6.5] mg), quetiapine ($n$ = 11; 530.0 [254.1] mg), olanzapine ($n$ = 11; 23.0 [12.4] mg), perphenazine ($n$ = 5; 2.5 [7.0]), and other ($n$ = 24). Nine individuals with schizophrenia/schizoaffective disorder (12.5%) were not on any antipsychotic medication; 24 (33.3%) were on >1 antipsychotic.

### 2.2. Measures

Participants were evaluated in person and completed a survey packet developed for our Successful AGing Evaluation (SAGE) study (Jeste et al., 2013). The persons with

schizophrenia and most HCs completed the survey with a research assistant who was available to help read or clarify survey instructions; the rest completed it at home.

**2.2.1. Sociodemographic characteristics and medication status—**Age, education, gender, race/ethnic background, age of onset and duration of illness, living situation, and medications were determined via interview and review of available medical records.

**2.2.2. Happiness—**Happiness was measured with four items from the Center for Epidemiologic Studies Depression (CES-D; Radloff, 1977) scale rated in reference to the preceding week: “I felt hopeful about the future,” “I was happy,” “I enjoyed life,” and “I felt that I was just as good as other people.” Each item was rated from 0 = “Rarely or None of the Time (less than one day)”, to 3 = “Most or All of the Time (5–7 days).” Total scores range from 0 to 12; higher scores reflect more happiness. Fowler and Christakis (2008) established that these four items load on a separate factor that can be employed as a happiness scale (CESD-H); in their maximum-likelihood factor analysis of the full CES-D these four items formed Factor 3 with loadings from −.465 (“I felt that I was just as good as other people”) to −.727 (“I enjoyed life”).

**2.2.3. Severity of psychopathology—**Psychopathologic symptoms were assessed through interview with the Scales for Assessment of Positive and Negative Symptoms (SAPS and SANS; Andreasen and Olsen, 1982). Subjects also completed the Brief Symptom Inventory—Anxiety subscale (BSI-A; Derogatis and Melisaratos, 1983). Mental health related quality of life was assessed with the Mental Health Component from the MOS Study 36-Item Short-Form (SF-36; Ware and Sherbourne, 1992).

**2.2.4. Physical heath—**Physical functioning was assessed with the SF-36 Physical Component score. Medical comorbidity was assessed with the number of categories endorsed and severity index from the Cumulative Illness Rating Scale for Geriatrics (CIRS-G; Parmelee et al., 1995). Weight and height were measured to calculate Body Mass Index (BMI).

**2.2.5. Psychosocial factors—**Objective and perceived stress were measured with the Life Events Scale (Berkman and Syme, 1979) and the Perceived Stress Scale (Cohen et al., 1983), respectively. Trait and event-related resilience were evaluated with the Connor–Davidson Resilience Scale—10 item version (CDR-10; Campbell-Sills and Stein, 2007), and Hardy–Gill Resilience Scale (HGRS; Hardy et al., 2004), respectively. Optimism was assessed with the Life Orientation Test—Revised (LOT-R; Scheier et al., 1994). Participants also completed the Duke Social Support Index (DSSI)—social interaction subscale (Blazer et al., 1990) and the Personal Mastery Scale (PMS; Pearlin et al., 1990). Attitude toward aging was measured with the Philadelphia Geriatric Center (PGC) Morale Scale (Liang and Bollen, 1983). Participants also completed the Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS) Index of Daily Spiritual Experience (Idler et al., 2003).

**2.2.6. Cognitive functioning—**Cognitive functioning was assessed with the Telephone Interview for Cognitive Status—Modified (TICS-M; Welsh et al., 1993) and selected

subtests from the Delis–Kaplan Executive Function System (D-KEFS; Delis et al., 2001). For the present study the TICS-M was administered in person rather than by phone. As executive functioning may be particularly important and vulnerable to progressive decline in schizophrenia (Fucetola et al., 2000; Palmer and Heaton, 2000; Wobrock et al., 2008), several D-KEFS subtests were included: Trail Making Letter–Number Sequencing, Color Word Inhibition (Switching), and the Letter Fluency (FAS total). Using the SPSS 21 normal rank function, D-KEFS raw scores were converted to z-scores (coded so higher scores represented better performance). The mean z-score was used as an Executive Functioning Composite.

### 2.3. Analyses

Due to significant skew or kurtosis in either group, Mann–Whitney *U*s were employed to compare education, CEDS-H, SAPS, SANS, BSI-A, SF-36 Mental Health and Physical Components, CIRS-G, BMI, Life Events Scale, PGC Geriatric Morale Scale, and TICS-M. Differences on other continuous variables were evaluated with independent *t*-tests. Differences in categorical variables were analyzed with Pearson's Chi-square. Within each group we examined Spearman's ($r_s$) bivariate intercorrelations among the CESD-H items, and between overall happiness (CESD-H total) with sociodemographic factors, physical health, psychosocial factors, and cognitive functioning. Due to elevated risk of Type 1 error from multiple comparisons, significance was defined with a more stringent criterion of $p < .001$ (two-tailed).

## 3. Results

### 3.1. Sample characteristics

There were no significant differences between the schizophrenia and HC groups in age or gender (Table 1). The HC group had higher education, and the schizophrenia group had significantly worse scores on psychopathologic symptom measures.

### 3.2. CESD-H item intercorrelations

All bivariate intercorrelations ($r_s$) among the four CESD-H items were statistically significant (all *p*-values <.001). The HCs' mean inter-item correlation was $r_s = .627$ (SD = .13). The schizophrenia groups mean inter-item correlation was $r_s = .692$ (SD = .10).

### 3.3. Comparison of happiness between groups

Relative to HCs, the schizophrenia group reported lower happiness (Table 1). When happiness scores were categorized as Low (0–3), Intermediate (4–9), or High (10–12), 37.5% of people with schizophrenia had high range scores (vs. 82.8% of HCs), and 15.3% of people with schizophrenia had low range scores (vs. 0.0% of the HCs).

### 3.4. Relationship of key variables to happiness

There were no significant correlations of happiness with age, education, or duration of illness. In the schizophrenia group there were no significant correlations between happiness and positive, negative, or anxiety symptoms, nor physical health or cognitive functioning

measures. Conversely, there were a number of significant correlations between happiness and positive psychosocial factors among both groups (Table 2). Happiness was significantly correlated with the SF-36 Mental Health Component in each group. Among people with schizophrenia the other significant correlates of happiness included lower perceived stress, and higher levels of trait resilience, event resilience, optimism, and personal mastery (all *p*-values <.001). Patterns of associations of happiness among HCs and individuals with schizophrenia were generally similar except that among HCs neither measure of resilience was significantly correlated with happiness.

## 4. Discussion

Consistent with our hypotheses, relative to HCs, the schizophrenia group had lower mean levels of happiness. However, there was considerable heterogeneity in levels of happiness among people with schizophrenia. Happiness was significantly associated with higher mental health-related quality of life, and several positive psychosocial factors (lower perceived stress, higher resilience and optimism, and higher personal mastery), but not with age, education, duration of illness, severity of positive or negative symptoms (in the schizophrenia group), physical health, or cognitive functioning.

We endeavored to mitigate concern of inflated Type 1 error from multiple comparisons by using a more conservative alpha level, but results of any individual bivariate correlation should be interpreted cautiously. However, the overall pattern across the correlations was consistent, with an absence of significant correlations between happiness and sociodemographic characteristics, psychopathology, physical health, and cognitive function, contrasted by strong correlations with positive psychosocial factors.

The present study has potential limitations. The CESD-H consists of four items which permitted us to evaluate happiness with a range of other constructs, while minimizing participant burden (Jeste et al., 2013). These four items have been used in a number of prior reports of happiness or “positive affect” (Ostir et al., 2000, 2001; Moskowitz, 2003; Fowler and Christakis, 2008). Furthermore, use of four items or less has strong precedent in research on happiness (Lepper, 1998; Lyubomirsky and Lepper, 1999; Abdel-Khalek, 2006; Yang, 2008), and such measures have shown good correlations with lengthier scales. Abdel-Khalek (2006) found that a single item “Do you feel happy in general?” had a median correlation of r = .63 with the 29-item Oxford Happiness Scale (Hills and Argyle, 1998). Lyubomirsky and Lepper (1999) found a median correlation of r = .62 between the four-item Subjective Happiness Scale and a 10-item Affect-Balance Scale (Bradburn, 1969) and correlations ranging from r = .61 to r = .72 with a 5-item Satisfaction with Life Scale (Diener et al., 1985). The CESD-H was useful in the context of the present study in establishing that happiness is affected by, but not incompatible with, chronic schizophrenia, and is strongly correlated with a number of positive psychosocial traits or factors. Nonetheless, further research with lengthier scales could help determine nuances of happiness, e.g., hedonic versus eudaimonic components, and in determining the degree to which the pattern of findings generalizes across the different measures.

Given that participants were asked to rate CESD-H items in reference to the preceding week, it may be conceptualized as measure of happiness as a form of mood. Asking respondents to rate happiness over several visits could help establish the degree of happiness as a disposition/trait. Conversely, Ecological Momentary Assessment technologies could be employed to determine short-term fluctuations in happiness (cf. Steptoe et al., 2011).

Happiness is an inherently subjective internal experience. Given that happiness measures require comprehension of item content and self-reflection, impairments in cognition or insight could affect validity of happiness reports. There is also some empirical literature on potential disturbances in subjective experiences of self among people with schizophrenia (Park and Nasrallah, 2014). The implications for such disturbances on the experience of happiness among people with schizophrenia warrant further research. However, the overall pattern of happiness correlations was very similar in the two study groups, suggesting that the CESD-H measured the same construct in each group. Also, while self-reports from people with schizophrenia, particularly those with insight deficits, may underestimate social functioning impairments (Bell et al., 2007), several studies support the validity of self-reports for internal constructs such as subjective quality of life in schizophrenia (Voruganti et al., 1998; Khatri et al., 2001; Bell et al., 2007). There is also increasing recognition of the importance of considering patient reported outcomes (Basch, 2010; Riley et al., 2011), including in research and treatment for schizophrenia (McCabe et al., 2007).

Given that people in the schizophrenia group were community-dwelling outpatients, our results may not generalize to inpatient, chronically institutionalized, or incarcerated settings. Conversely, 59% of the schizophrenia sample lived in residential facilities. Social support and social interactions could be more strongly associated with happiness among people living independently or with family/friends. It would also be of interest to compare happiness levels among those with chronic non-remitting schizophrenia, such as examined in the present study, to people who experience sustained remission (cf. Vaillant, 1978; Doraiswamy et al., 2001). The ultimate goal in management of schizophrenia should be recovery accompanied by happiness and other positive psychosocial outcomes (Nasrallah and Dursun, 2006).

As the first study focused on happiness among people with non-remitted chronic schizophrenia, our results have several important implications. The lower mean levels of happiness in the schizophrenia group illustrate the suffering caused by this disorder. Yet, 37.5% of people with schizophrenia scored in the high/happy range of the CESD-H. The latter should not be misinterpreted as diminishing the public health and personal impact of this disorder. But it suggests reason for hope that happiness may be a viable goal for many individuals with this disorder. An important follow-up question is whether happiness among people with schizophrenia can be improved through intervention.

Empirical studies suggest that up to 50% of the variance in happiness or subjective well-being may be attributable to genetic factors (Lykken and Tellegen, 1996; Roysamb et al., 2003; Nes et al., 2006). However, even if highly heritable, there is also emerging empirical evidence that individuals' happiness may be raised through interventions such as structured activities to promote setting and pursuing of personal goals, cognitive reframing, grateful

thinking, and mindfulness training (Lyubomirsky et al., 2005; Diener et al., 2009; Giannopoulos and Vella-Brodrick, 2011; Tay and Kuykendall, 2013). The positive associations between happiness and various positive psychosocial constructs are also of relevance, in that there are existing empirically based psychotherapies for stress reduction (Chiesa and Serretti, 2009; Van Daele et al., 2012), enhancing resilience (Burton et al., 2010; Loprinzi et al., 2011; Griffith and West, 2013), and increasing optimism (Riskind et al., 1996; Fresco et al., 2009).

In conclusion, the present study suggests expanding the scope of research and clinical care for schizophrenia beyond management of the psychotic, negative, and cognitive symptoms. Schizophrenia adversely impacts happiness, but happiness may still be an achievable goal for people with this disorder. This finding affirms Saks's (2013) comment that people with schizophrenia can find "wellness within illness." The value of positive psychological traits such as resilience and optimism for improving health and well-being has been documented in the broader population (Peterson and Bossio, 2001; Tugade et al., 2004; Jeste et al., 2013), but has not been systematically evaluated among those with schizophrenia or other serious mental illnesses. An important avenue for future clinical research is to examine the feasibility and effectiveness of psychotherapies targeting these factors among people with schizophrenia.

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## References

Abdel-Khalek AM. Measuring happiness with a single-item scale. Soc Behav Pers. 2006; 34(2):139–150.

Affleck, G.; Tennen, H.; Apter, A. Optimism, pessimism, and daily life with chronic illness. In: Chang, EC., editor. Optimism & Pessimism: Implications for Theory, Research, and Practice. American Psychological Association; Washington DC: 2001. p. 147-168.

Agid O, McDonald K, Siu C, Tsoutsoulas C, Wass C, Zipursky RB, Foussias G, Remington G. Happiness in first-episode schizophrenia. Schizophr Res. 2012; 141(1):98–103. [PubMed: 22901593]

an der Heiden W, Häfner H. The epidemiology of onset and course of schizophrenia. Eur Arch Psychiatry Clin Neurosci. 2000; 250(6):292–303. [PubMed: 11153964]

Andreasen NC, Olsen S. Negative v positive schizophrenia. Definition and validation. Arch Gen Psychiatry. 1982; 39(7):789–794. [PubMed: 7165478]

Basch E. The missing voice of patients in drug-safety reporting. N Engl J Med. 2010; 362(10):865–869. [PubMed: 20220181]

Bell M, Fiszdon J, Richardson R, Lysaker P, Bryson G. Are self-reports valid for schizophrenia patients with poor insight? Relationship of unawareness of illness to psychological self-report instruments. Psychiatry Res. 2007; 151(1–2):37–46. [PubMed: 17343920]

Berkman LF, Syme SL. Social networks, host resistance, and mortality: a nine-year follow-up study of Alameda county residents. Am J Epidemiol. 1979; 109(2):186–204. [PubMed: 425958]

Blazer, D.; Hybels, C.; Hughes, D. Duke Social Support Index. Educational Testing Service; Princeton, NJ: 1990.

Bradburn, NM. The Structure of Psychological Well-Being. Alpine; Chicago, IL: 1969.

Buckland HT, Schepp KG, Crusoe K. Defining happiness for young adults with schizophrenia: a building block for recovery. Arch Psychiatr Nurs. 2013; 27(5):235–240. [PubMed: 24070992]

Burton NW, Pakenham KI, Brown WJ. Feasibility and effectiveness of psychosocial resilience training: a pilot study of the ready program. Psychol Health Med. 2010; 15(3):266–277. [PubMed: 20480432]

Campbell-Sills L, Stein MB. Psychometric analysis and refinement of the Connor–Davidson Resilience Scale (CD-RISC): validation of a 10-item measure of resilience. J Trauma Stress. 2007; 20(6):1019–1028. [PubMed: 18157881]

Chiesa A, Serretti A. Mindfulness-based stress reduction for stress management in healthy people: a review and meta-analysis. J Altern Complement Med. 2009; 15(5):593–600. [PubMed: 19432513]

Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. J Health Soc Behav. 1983; 24(4):385–396. [PubMed: 6668417]

Cohn MA, Fredrickson BL, Brown SL, Mikels JA, Conway AM. Happiness unpacked: positive emotions increase life satisfaction by building resilience. Emotion. 2009; 9(3):361–368. [PubMed: 19485613]

De Prycker V. Happiness on the political agenda? Pros and cons. J Happiness Stud. 2010; 11(5):585–603.

Delis, D.; Kaplan, E.; Kramer, J. Delis–Kaplan Executive Function System (D-KEFS): Examiner's Manual. The Psychological Corporation; San Antonio, TX: 2001.

Delle Fave A, Brdar I, Freire T, Vella-Brodrick D, Wissing M. The eudaimonic and hedonic components of happiness: qualitative and quantitative findings. Soc Indic Res. 2011; 100(2):185–207.

Dember WN, Brooks J. A new instrument for measuring optimism and pessimism: test–retest reliability and relations with happiness and religious commitment. Bull Psychon Soc. 1989; 27(4): 365–366.

Derogatis LR, Melisaratos N. The Brief Symptom Inventory: an introductory report. Psychol Med. 1983; 13(3):595–605. [PubMed: 6622612]

Diener E, Emmons RA, Larsen RJ, Griffin S. The Satisfaction with Life Scale. J Pers Assess. 1985; 49(1):71–75. [PubMed: 16367493]

Diener, E.; Kesebir, P.; Tov, W. Happiness. In: Leary, M.; Hoyle, R., editors. Handbook of Individual Differences in Social Behavior. Guilford Press; New York: 2009. p. 147-160.

Doraiswamy PM, Khan ZM, Donahue RM, Richard NE. Quality of life in geriatric depression: a comparison of remitters, partial responders, and nonresponders. Am J Geriatr Psychiatry. 2001; 9(4):423–428. [PubMed: 11739069]

Fowler JH, Christakis NA. Dynamic spread of happiness in a large social network: longitudinal analysis over 20 years in the Framingham heart study. BMJ. 2008; 337:a2338. [PubMed: 19056788]

Fresco DM, Moore MT, Walt L, Craighead LW. Self-administered optimism training: mechanisms of change in a minimally supervised psychoeducational intervention. J Cogn Psychother. 2009; 23(4): 350–367.

Fucetola R, Seidman LJ, Kremen WS, Faraone SV, Goldstein JM, Tsuang MT. Age and neuropsychologic function in schizophrenia: a decline in executive abilities beyond that observed in healthy volunteers. Biol Psychiatry. 2000; 48(2):137–146. [PubMed: 10903410]

Giannopoulos VL, Vella-Brodrick DA. Effects of positive interventions and orientations to happiness on subjective well-being. J Posit Psychol. 2011; 6(2):95–105.

Griffith J, West C. Master resilience training and its relationship to individual well-being and stress buffering among army national guard soldiers. J Behav Health Serv Res. 2013; 40(2):140–155. [PubMed: 23494766]

Hardy SE, Concato J, Gill TM. Resilience of community-dwelling older persons. J Am Geriatr Soc. 2004; 52(2):257–262. [PubMed: 14728637]

Hills P, Argyle M. Positive moods derived from leisure and their relationship to happiness and personality. Pers Individ Differ. 1998; 25:523–535.

Holder M, Coleman B. The contribution of social relationships to children's happiness. J Happiness Stud. 2009; 10(3):329–349.

Holder M, Coleman B, Wallace J. Spirituality, religiousness, and happiness in children aged 8–12 years. J Happiness Stud. 2010; 11(2):131–150.

Idler EL, Musick MA, Ellison CG, George LK, Krause N, Ory MG, Pargament KI, Powell LH, Underwood LG, Williams DR. Measuring multiple dimensions of religion and spirituality for health research: conceptual background and findings from the 1998 General Social Survey. Res Aging. 2003; 25(4):327–365.

Jeste DV, Palmer BW. A call for a new positive psychiatry of ageing. Br J Psychiatry. 2013; 202(2):81–83. [PubMed: 23377203]

Jeste DV, Savla GN, Thompson WK, Vahia IV, Glorioso DK, Martin AS, Palmer BW, Rock D, Golshan S, Kraemer HC, Depp CA. Association between older age and more successful aging: critical role of resilience and depression. Am J Psychiatry. 2013; 170(2):188–196. [PubMed: 23223917]

Khatri N, Romney DM, Pelletier G. Validity of self-reports about quality of life among patients with schizophrenia. Psychiatr Serv. 2001; 52(4):534–535. [PubMed: 11274504]

Kirkpatrick B, Messias E, Harvey PD, Fernandez-Egea E, Bowie CR. Is schizophrenia a syndrome of accelerated aging? Schizophr Bull. 2008; 34(6):1024–1032. [PubMed: 18156637]

Lepper HS. Use of other-reports to validate subjective well-being measures. Soc Indic Res. 1998; 44:367–379.

Liang J, Bollen KA. The structure of the Philadelphia Geriatric Center Morale Scale: a reinterpretation. J Gerontol. 1983; 38(2):181–189. [PubMed: 6827034]

Loprinzi CE, Prasad K, Schroeder DR, Sood A. Stress Management and Resilience Training (SMART) program to decrease stress and enhance resilience among breast cancer survivors: a pilot randomized clinical trial. Clin Breast Cancer. 2011; 11(6):364–368. [PubMed: 21831722]

Lykken D, Tellegen A. Happiness is a stochastic phenomenon. Psychol Sci. 1996; 7(3):186–189.

Lyubomirsky, S.; Dickerhoorf, R. A construal approach to increasing happiness. In: Maddux, JE.; Tangney, JP., editors. Social Psychological Foundations of Clinical Psychology. Guilford Press; New York: 2010. p. 229-244.

Lyubomirsky S, Lepper HS. A measure of subjective happiness: preliminary reliability and construct validation. Soc Indic Res. 1999; 46(2):137–155.

Lyubomirsky S, Sheldon KM, Schkade D. Pursuing happiness: the architecture of sustainable change. Rev Gen Psychol. 2005; 9(2):111–131.

McCabe R, Saidi M, Priebe S. Patient-reported outcomes in schizophrenia. Br J Psychiatry Suppl. 2007; 50:s21–s28. [PubMed: 18019040]

Meyer, JM.; Nasrallah, HA. Medical Illness and Schizophrenia. 2. American Psychiatric Publishing, Inc; Arlington, VA: 2009.

Moskowitz JT. Positive affect predicts lower risk of aids mortality. Psychosom Med. 2003; 65(4):620–626. [PubMed: 12883113]

Nasrallah HA, Dursun SM. Raising the bar for treatment expectations in schizophrenia: achieving remission as a routine goal of antipsychotic pharmacotherapy. J Psychopharmacol. 2006; 20(6 Suppl):3–5. [PubMed: 17046983]

Nes RB, Roysamb E, Tambs K, Harris JR, Reichborn-Kjennerud T. Subjective well-being: genetic and environmental contributions to stability and change. Psychol Med. 2006; 36(7):1033–1042. [PubMed: 16749947]

Ostir GV, Markides KS, Black SA, Goodwin JS. Emotional well-being predicts subsequent functional independence and survival. J Am Geriatr Soc. 2000; 48(5):473–478. [PubMed: 10811538]

Ostir GV, Markides KS, Peek MK, Goodwin JS. The association between emotional well-being and the incidence of stroke in older adults. Psychosom Med. 2001; 63(2):210–215. [PubMed: 11292267]

Palmer, BW.; Heaton, RK. Executive dysfunction in schizophrenia. In: Sharma, T.; Harvey, P., editors. Cognition in Schizophrenia: Impairments, Importance and Treatment Strategies. Oxford University Press; New York: 2000. p. 52-72.

Palmer BW, Dawes SE, Heaton RK. What do we know about neuropsychological aspects of schizophrenia? Neuropsychol Rev. 2009; 19(3):365–384. [PubMed: 19639412]

Park S, Nasrallah HA. The varieties of anomalous self experiences in schizophrenia: splitting of the mind at a crossroad. Schizophr Res. 2014; 152(1):1–4. [PubMed: 24332407]

Parmelee PA, Thuras PD, Katz IR, Lawton MP. Validation of the Cumulative Illness Rating Scale in a geriatric residential population. J Am Geriatr Soc. 1995; 43(2):130–137. [PubMed: 7836636]

Pearlin LI, Mullan JT, Semple SJ, Skaff MM. Caregiving and the stress process: an overview of concepts and their measures. Gerontologist. 1990; 30(5):583–594. [PubMed: 2276631]

Peterson, C.; Bossio, LM. Optimism and physical well-being. In: Chang, EC., editor. Optimism & Pessimism: Implications for Theory. American Psychological Association; Washington DC: 2001. p. 127-145.

Radloff LS. The CES-D scale: a self-report depression scale for research in the general population. Appl Psychol Meas. 1977; 1(3):385–401.

Riley WT, Pilkonis P, Cella D. Application of the National Institutes of Health Patient Reported Outcome Measurement Information System (PROMIS) to mental health research. J Ment Health Policy Econ. 2011; 14(4):201–208. [PubMed: 22345362]

Rim Y. Happiness and coping styles. Personality Individ Differ. 1993; 14(4):617–618.

Riskind JH, Sarampote CS, Mercier MA. For every malady a sovereign cure: optimism training. J Cogn Psychother. 1996; 10(2):105–117.

Roysamb E, Tambs K, Reichborn-Kjennerud T, Neale MC, Harris JR. Happiness and health: environmental and genetic contributions to the relationship between subjective well-being, perceived health, and somatic illness. J Pers Soc Psychol. 2003; 85(6):1136–1146. [PubMed: 14674819]

Saks, ER. [Accessed July 31, 2014] Successful and schizophrenic…Finding “the wellness within the illness”… should be a therapeutic goal. The New York Times. 2013 Jan 27. Retrieved from: http://www.thedailysteak.com/content/successful-and-schizophrenicfinding-%E2%80%9C-wellness-within-illnessshould-be-therapeutic-goal

Scheier MF, Carver CS, Bridges MW. Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): a reevaluation of the Life Orientation Test. J Pers Soc Psychol. 1994; 67(6):1063–1078. [PubMed: 7815302]

Schrank B, Bird V, Tylee A, Coggins T, Rashid T, Slade M. Conceptualising and measuring the well-being of people with psychosis: systematic review and narrative synthesis. Soc Sci Med. 2013; 92:9–21. [PubMed: 23849274]

Seligman ME, Csikszentmihalyi M. Positive psychology. An introduction Am Psychol. 2000; 55(1):5–14. [PubMed: 11392865]

Sheldon, H. Boyd’s Introduction to the Study of Disease. 10. Lea & Febiger; Philadelphia, PA: 1988.

Steptoe A, Leigh ES, Kumari M. Positive affect and distressed affect over the day in older people. Psychol Aging. 2011; 26(4):956–965. [PubMed: 21517182]

Tay L, Kuykendall L. Promoting happiness: the malleability of individual and societal subjective wellbeing. Int J Psychol. 2013; 48(3):159–176. [PubMed: 23551025]

Tugade MM, Fredrickson BL, Feldman Barrett L. Psychological resilience and positive emotional granularity: examining the benefits of positive emotions on coping and health. J Pers. 2004; 72(6): 1161–1190. [PubMed: 15509280]

UN News Centre. [Access July 31, 2014] Happiness should have greater role in development policy – UN Member States UN Daily News. 2011 Jul 19. Retrieved from: http://www.un.org/apps/news/story.asp?NewsID=39084#.U9qdVeNdV8F

Vaillant GE. A 10-year followup of remitting schizophrenics. Schizophr Bull. 1978; 4(1):78–85. [PubMed: 746364]

Van Daele T, Hermans D, Van Audenhove C, Van den Bergh O. Stress reduction through psychoeducation: a meta-analytic review. Health Educ Behav. 2012; 39(4):474–485. [PubMed: 21986242]

Voruganti L, Heslegrave R, Awad AG, Seeman MV. Quality of life measurement in schizophrenia: reconciling the quest for subjectivity with the question of reliability. Psychol Med. 1998; 28(1): 165–172. [PubMed: 9483693]

Ware JE, Sherbourne CD. The MOS 36-item Short Form Health Survey (SF-36) I Conceptual framework and item selection. Med Care. 1992; 30(6):473–483. [PubMed: 1593914]

Welsh KA, Breitner JC, Magruder-Habib KM. Detection of dementia in the elderly using telephone screening of cognitive status. Neuropsychiatr Neuropsychol Behav Neurol. 1993; 6(2):103–110.

Wobrock T, Ecker UK, Scherk H, Schneider-Axmann T, Falkai P, Gruber O. Cognitive impairment of executive function as a core symptom of schizophrenia. World J Biol Psychiatry. 2008:1–10.

Yang Y. Social inequalities in happiness in the United States, 1972 to 2004: an age–period–cohort analysis. Am Sociol Rev. 2008; 73(2):204–226.

**Table 1**

Comparison of healthy comparison and schizophrenia groups.

| | Healthy comparison ($n$ = 64) | Schizophrenia ($n$ = 72) | $t$, $Z^a$, or $X^2$ | $df$ or $N^c$ | $p$-value |
|---|---|---|---|---|---|
| *Sociodemographic* | | | | | |
| Age (years) | 50.7 (11.6) | 50.1 (10.5) | 0.32 | 134.0 | .752 |
| Education (years)[b] | 14.8 (2.2) | 12.2 (1.7) | 7.11 | 136 | <.001 |
| Gender (% women) | 62.5% | 54.2% | 0.97 | 1 | .326 |
| Race/ethnicity | | | 9.28 | 3 | .026 |
| Caucasian | 68.8% | 51.4% | | | |
| African American | 6.3% | 23.6% | | | |
| Latino | 14.1% | 18.1% | | | |
| Other | 10.9% | 6.9% | | | |
| Age of onset of schizophrenia (years) | – | 25.8 (12.2) | | | |
| Duration of illness (years) | – | 24.4 (13.2) | | | |
| *Living situation* | | | | | |
| Alone in house or apartment | 21.9% | 9.9% | | | |
| With someone in house or apartment | 78.2% | 25.4% | | | |
| Board & care facility | 0.0% | 59.2% | | | |
| Other | 0.0% | 5.6% | | | |
| *Happiness* (CESD-H)[b] | 11.0 (1.9) | 7.7 (3.6) | 5.76 | 136 | <.001 |
| *Psychopathology* | | | | | |
| Severity of positive symptoms (SAPS total)[b] | 0.2 (0.6) | 6.2 (4.4) | 8.41 | 127 | <.001 |
| Severity of negative symptoms (SANS total)[b] | 1.0 (1.5) | 6.2 (4.4) | 8.09 | 127 | <.001 |
| Anxiety (BSI-A)[b] | 1.2 (1.5) | 7.3 (6.5) | 5.93 | 136 | <.001 |
| SF-36 Mental Health Component[b] | 54.7 (5.5) | 45.7 (10.8) | 5.38 | 136 | <.001 |
| *Physical health* | | | | | |
| SF-36 Physical Component[b] | 50.9 (9.7) | 43.4 (9.8) | 4.67 | 136 | <.001 |
| CIRS-G number categories endorsed[b] | 2.0 (2.0) | 4.8 (3.0) | 5.62 | 132 | <.001 |
| CIRS-G Severity Index[b] | 0.9 (0.7) | 1.4 (0.5) | 4.68 | 132 | <.001 |
| Body Mass Index (BMI)[b] | 27.4 (8.9) | 30.5 (9.1) | 2.64 | 99 | .008 |

| | Healthy comparison ($n$ = 64) | Schizophrenia ($n$ = 72) | $t$, $Z^a$, or $X^2$ | $df$ or $N^c$ | $p$-value |
|---|---|---|---|---|---|
| *Psychosocial factors* | | | | | |
| Life Events Scale[b] | 3.2 (3.0) | 5.3 (5.4) | 3.13 | 135 | .033 |
| Perceived Stress (PSS) | 11.3 (5.7) | 18.0 (6.7) | 6.31 | 134.0 | <.001 |
| Trait Resilience (CDR-10) | 32.3 (.9) | 22.9 (8.3) | 7.66 | 128.3 | <.001 |
| Event Resilience (HGRS) | 12.0 (3.4) | 10.7 (4.2) | 1.90 | 111.0 | .060 |
| Optimism (LOT-R) | 23.8 (4.0) | 19.4 (3.5) | 6.97 | 134.0 | <.001 |
| Social support (DSSI) | 8.7 (1.7) | 7.8 (1.7) | 2.92 | 115.0 | .004 |
| Personal Mastery Scale[d] | 11.8 (3.6) | 16.1 (3.0) | 7.47 | 123.3 | <.001 |
| Attitude toward aging (PGC Morale scale)[b] | 4.1 (1.3) | 3.1 (1.6) | 3.66 | 116 | <.001 |
| Spirituality (BMMRS) | 22.0 (7.6) | 18.8 (8.8) | 2.23 | 133 | .028 |
| *Cognitive functioning* | | | | | |
| Overall (TICS-M)[b] | 38.3 (4.1) | 30.5 (5.0) | 7.52 | 123 | <.001 |
| Executive functioning composite | 0.56 (057) | −0.51 (0.66) | 9.74 | 125.0 | <.001 |

CESD-H = Center for Epidemiologic Studies Depression—Happiness scale; SAPS = Scales for the Assessment of Positive Symptoms; SANS = Scale for the Assessment of Negative Symptoms; BSI-A = Brief Symptom Inventory—Anxiety subscale; SF-36 = Medical Outcomes Study 36-Item Short-Form; CIRS-G = Cumulative Illness Rating Scale—Geriatrics; BMI = Body Mass Index; PSS = Perceived Stress Scale; CDR-10 = Connor-Davidson Resilience Scale—10 item version; HGRS = Hardy Gill Resilience Scale; LOT-R = Life Orientation Test—Revised; DSSI = Duke Social Support Index—social interaction subscale; PGC Morale scale = Philadelphia Geriatric Center Morale Scale; BMMRS = Brief Multidimensional Measure of Religiousness/Spirituality; TICS-M = Telephone Interview for Cognitive Status—Modified.

[a] $z$-values from Mann–Whitney $U$ test.

[b] Mann–Whitney $U$ test employed instead of $t$-test due to skewed distribution in one or both subgroups.

[c] $N$ reported instead of degrees of freedom for Mann–Whitney $U$ tests.

[d] Higher scores on Personal Master Scale indicate lower sense of personal mastery.

## Table 2

Spearman correlations with happiness (CESD-H total score).

| | Healthy comparison (*n* = 64) | Schizophrenia (*n* = 72) |
|---|---|---|
| *Socio-demographic* | | |
| Age (years) | −.003 | .089 |
| Education (years) | −.050 | −.036 |
| Duration of illness (years) | n/a | .165 |
| *Psychopathology* | | |
| Severity of positive symptoms (SAPS total) | n/a | −.157 |
| Severity of negative symptoms (SANS total) | n/a | −.266 |
| Anxiety (BSI-A) | −.497* | −.379 |
| SF-36 Mental Health Component | .438* | .663* |
| *Physical health* | | |
| SF-36 Physical Component | .305 | .142 |
| CIRS-G Number of categories endorsed | −.131 | −.026 |
| CIRS-G Severity Index | −.142 | .097 |
| Body Mass Index (BMI) | −.221 | −.142 |
| *Psychosocial factors* | | |
| Life Events Scale | −.039 | −.270 |
| Perceived Stress Scale (PSS) | −.501* | −.513* |
| Trait Resilience (CDR-10) | .385 | .592* |
| Event Resilience (HGRS) | .094 | .563* |
| Optimism (LOT-R) | .453* | .494* |
| Social support (DSSI) | .339 | .159 |
| Personal Mastery Scale[a] | −.424* | −.399* |
| Attitude toward aging (PGC Morale scale) | .448* | .357 |
| Spirituality (BMMRS) | −.152 | −.220 |
| *Cognitive functioning* | | |
| Overall (TICS-M) | .114 | .157 |
| Executive functioning composite | .000 | −.083 |

SAPS = Scale for the Assessment of Positive Symptoms; SANS = Scale for the Assessment of Negative Symptoms; BSI-A = Brief Symptom Index—Anxiety subscale; SF-36 - = Medical Outcomes Study 36-Item Short-Form; CIRS-G = Cumulative Illness Rating Scale—Geriatrics; BMI = Body Mass Index; PSS = Perceived Stress Scale; CDR-10 = Connor-Davidson Resilience Scale—10 item version; HGRS = Hardy Gill Resilience Scale; LOT-R = Life Orientation Test—Revised; DSSI = Duke Social Support Index—social interaction subscale; PGC Morale scale = Philadelphia Geriatric Center Morale Scale; BMMRS = Brief Multidimensional Measure of Religiousness/Spirituality; TICS-M = Telephone Interview for Cognitive Status—Modified.

*$p < .001$.

[a]Higher scores on Personal Master Scale indicate lower sense of personal mastery.