



## Clinical determinants of life satisfaction in chronic schizophrenia: Data from the CATIE study

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### ABSTRACT

**Objective:** Quality of life is seen as an important outcome variable for patients with schizophrenia. However, the precise definition of this construct varies and has often been used to define health-related domains. The present study sought to focus on global life satisfaction as a key subjective domain and determine its relationship with clinical variables.

**Method:** The study sample included 1437 patients with chronic schizophrenia who participated in the Clinical Antipsychotic Trial of Intervention Effectiveness (CATIE) study. Patients were evaluated with a comprehensive battery of assessments capturing symptoms, cognition and medication side effects, among other variables. Life satisfaction was evaluated with a global self-report item.

**Results:** Greater depressive symptoms were the most robust indicator of worse life satisfaction. Lower life satisfaction was also associated with poorer psychosocial functioning, greater symptoms of anxiety, apathy and more negative attitudes toward medication. Taken together, these variables explained 20% of the variance in life satisfaction scores. Positive symptoms and other medication side effects also negatively influenced life satisfaction scores.

**Conclusions:** These results affirm that clinical variables have an adverse effect on the overall subjective well-being of patients with schizophrenia. The relatively small amount of variance explained, though, argues for a better understanding of those other variables that contribute to life satisfaction.

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### 1. Introduction

In 1948 the World Health Organization defined health as not only the absence of disease, but also the presence of physical, mental and social well-being (World Health Organization, 1948). Since, most branches of medicine began systematically assessing patients' subjective views of illness and symptoms (Guyatt et al., 1989), and from this the construct of quality of life (QoL) emerged as a promising clinical domain (Testa and Simonson, 1996; Gladis et al., 1999). While there is still debate as to the definition of this construct and what it encompasses (Vaillant, 2003; Awad and Voruganti, 2012), indicators of QoL routinely include satisfaction with life/happiness (SWL), subjective evaluations of specific living conditions and objective assessments of functioning (Katschnig, 1997; Gladis et al., 1999). As a result, QoL is often conflated with subjective evaluation of 'health status' (Guyatt et al., 1989), while the construct of SWL has received comparatively little attention in its own

right. Indeed, this important global domain is often lost in the focus on QoL.

The concept of SWL differs from subjective quality of life or satisfaction with aspects of treatment as assessed by scales such as the Drug Attitudes Inventory (Hogan et al., 1983). These latter concepts assess subjective reactions to objective conditions (e.g. satisfaction with housing and subjective experience of treatment). In contrast, SWL involves a global subjective assessment of all aspects of an individual's life and is, by definition, agnostic to objective conditions, although such conditions may potentially influence overall SWL (Shin and Johnson, 1978; Lehman, 1983; Diener, 1984; Gill and Feinstein, 1994). The construction of a global SWL estimate is inherently personal, influenced by individual values and goals, and not simply a composite of subjective evaluations regarding objective life conditions. Life satisfaction or level of happiness has been argued by some to be the highest human achievement as it is a core component of a person's life (Shin and Johnson, 1978; Diener, 1984), although some have argued for the existence of different flavors of happiness (Wilson, 1967; Seligman, 2002). Conversely, impoverished SWL represents a diminished sense of being and can pose a risk for serious adverse long-term outcomes such as suicide (Koivumaa-Honkanen et al., 2001).

There have been several examinations of the clinical correlates of SWL among individuals with schizophrenia, reflecting the shift toward

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a more comprehensive model of outcome evaluation that includes improved functioning and well-being (Remington et al., 2010). Many of these studies have demonstrated the adverse impact depressive and anxiety symptoms on SWL, as well as the deleterious effect of medication-related side effects (Mechanic et al., 1994; Awad et al., 1997; Heslegrave et al., 1997; Packer et al., 1997; Dickerson et al., 1998; Bengtsson-Tops and Hansson, 1999; Koivumaa-Honkanen et al., 1999; Fitzgerald et al., 2001; Huppert et al., 2001; Reine et al., 2003; Hofer et al., 2004; Melle et al., 2005; Narvaez et al., 2008; Saarni et al., 2010; Agid et al., 2012). To this point, a recent meta-analytic study found that general psychopathology symptoms (which include depression and anxiety) were associated with worse global well-being (Eack and Newhill, 2007). These studies have unquestionably advanced our knowledge of the clinical variables affecting the overall well-being of patients with schizophrenia, as well as the differential impact of each of these clinical variables on SWL. However, these studies have some limitations that preclude generalization to a larger group of patients. The majority of these studies included a modest number of patients who experienced mild–moderate levels of symptoms. Differences in such sample characteristics across studies may account for the differential weighting that various studies give to different clinical variables. Another salient limitation is the frequent exclusion of patients who have comorbid psychiatric diagnoses apart from schizophrenia, which again limits the generalizability of findings. Finally, many previous studies have not included comprehensive evaluations of clinical variables; several studies did not concurrently assess the influence of insight or cognition, but did nevertheless conjecture these variables to have an influence on SWL.

In the present study we examined the relationship between a comprehensive set of clinical variables and SWL using a large and heterogeneous sample of patients with chronic schizophrenia. We hypothesized we would replicate previous findings demonstrating a negative link between SWL and depression, anxiety and akathisia, and also that we would uncover relationships between certain clinical variables and SWL that are of a smaller magnitude than that of depression. We are positioned to uncover such potential relationships due to increased statistical power afforded by including a large number of patients.

## 2. Material and methods

### 2.1. Study design and participants

Data were drawn from the baseline visit of the Clinical Antipsychotic Trial of Intervention Effectiveness (CATIE) study. Details of the study design and rationale (Stroup et al., 2003), as well as primary findings (Lieberman et al., 2005), have been presented elsewhere. The primary purpose of the CATIE study was to compare the effectiveness of atypical and conventional antipsychotic medications through a randomized controlled trial conducted at 57 sites in the United States (16 university clinics, 10 state mental health agencies, 7 Veterans Affairs medical centers, 6 private nonprofit agencies, 4 private-practice sites, and 14 mixed-system sites).

The study inclusion criteria have as well been reported previously (Stroup et al., 2003). Briefly, participants were eligible if they were between the ages of 18 and 65 years and had a diagnosis of schizophrenia confirmed using the Structured Clinical Interview for DSM-IV Axis I Disorders (First, 1997). Participants were excluded from the study if they had a diagnosis of schizoaffective disorder, mental retardation, or other cognitive disorders; if they had only one episode of schizophrenia; were pregnant or breast-feeding; or had a serious and unstable medical condition.

The study was approved by the institutional (ethics) review board at each site, and written informed consent was obtained from the patients or their legal guardians.

### 2.2. Outcome measures

The primary measure of interest in the present study was the self-rated SWL score. SWL was rated using a single item from the Lehman Quality of Life Interview (Lehman, 1988) that asks the patient to rate their overall SWL on a scale from 1 (terrible) to 7 (delighted). The specific prompt is: “How do you feel about your life in general?” (Lehman, 1988). Such a global measure is widely used as an indicator of general SWL (Gurin et al., 1960; Cantril, 1965; Andrews and Withey, 1976; Campbell et al., 1976; Gill and Feinstein, 1994; Myers and Diener, 1996; Saarni et al., 2010), and has been shown to be reliable in patients with schizophrenia (Voruganti et al., 1998).

Data were available for 1460 participants at baseline; however, 23 individuals were missing SWL scores at baseline and were therefore excluded from our analyses. The final sample included 1437 participants.

Other measures of interest included the current study included the Clinical Global Impressions – Severity scale (CGI-S) to assess overall impression of clinical severity (Guy, 1976), Positive and Negative Syndrome Scale (PANSS) to assess psychopathology (Kay et al., 1987), Calgary Depression Scale for Schizophrenia (CDSS) to assess depressive symptoms (Addington et al., 1990), Heinrichs–Carpenter Quality of Life Scale (QLS) to assess psychosocial functioning (Heinrichs et al., 1984), Drug Attitudes Inventory (DAI) to assess patient's attitudes toward medication (Hogan et al., 1983), Abnormal Involuntary Movement Scale (AIMS) to assess dyskinesias (Guy, 1976), Simpson–Angus Scale (SAS) to assess extrapyramidal symptoms (Simpson and Angus, 1970), Barnes Akathisia Rating Scale (BARS) to assess akathisia (Barnes, 1989), and the Insight into Treatment Attitude Questionnaire (ITAQ) to assess clinical insight (McEvoy et al., 1989). Other medication side effects were also systematically assessed by a physician and rated according to clinical severity. Neurocognition was also assessed using a battery of assessments as described in a previous report (Keefe et al., 2003). Social cognition was also measured using the Facial Emotion Discrimination Task (FEDT) (Kerr and Neale, 1993; Keefe et al., 2003); however, in an effort to reduce skew (Keefe et al., 2006), scores less than 15 (i.e. values less than 3 standard deviations from the mean) were re-coded as scores of 15.

### 2.3. Statistical analyses

Bivariate relationships were examined using Pearson's product-moment correlation coefficients. Variables that demonstrated significant zero-order correlations with SWL were entered into a stepwise multiple regression model in sequential order based on the magnitude of the correlation coefficient. A 2-sided *P* value of less than 0.05 was considered statistically significant; however, owing to the number of comparisons, tests with an associated *P* value less than 0.001 are emphasized. Statistical analyses were carried out using SPSS version 20 (IBM Corporation, Armonk, NY).

## 3. Results

### 3.1. Patient characteristics

Baseline demographic and clinical characteristics of the sample are presented in Table 1. The median level of SWL was reported as ‘mixed’ (i.e. neither satisfied nor dissatisfied with life in general), and the median level of clinical severity of the sample as measured on the CGI-S was ‘moderately ill’.

### 3.2. Bivariate correlations with SWL

The bivariate relationships between SWL and a host of clinical variables are presented in Table 2. Exploratory bivariate relationships between SWL and individual PANSS items are presented in Table 3. Sociodemographic variables such as age, sex, years of education,

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