



Psychometric evaluation of the Subjective Well-being Under Neuroleptic Treatment Scale (SWN) in patients with schizophrenia, their relatives and controls

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ABSTRACT

The objective of this study was to evaluate the psychometric properties of the 20-item version of the Subjective Well-being Under Neuroleptic Treatment Scale (SWN) in patients, their siblings and parents and in healthy controls. In order to study heritability of subjective well-being, assessment in unaffected relatives and healthy controls is necessary. Data were obtained from the Dutch GROUP study (Genetic Risk and Outcome of Psychosis), a large cohort study on non-affective psychotic disorders incorporating patients, their relatives and healthy controls. The SWN scale and other relevant assessments were completed by 545 schizophrenia patients, 541 siblings, 75 parents, and 280 healthy controls. Reliability within the four groups ranged between Cronbach's alpha 0.88 and 0.92. Factor analysis indicated a single factor structure of the SWN scale, which makes only SWN total scores relevant. The WHO-Quality of Life psychological domain correlated highly with SWN total scores in all groups. Subclinical psychotic experiences were found to be associated with SWN total scores in relatives and healthy controls, supporting the psychosis continuum concept. The 20-item SWN scale is a reliable measure for subjective well-being that can also be used in relatives and healthy controls to investigate genetic and psychological dispositions of subjective well-being.

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1. Introduction

Recent research has provided evidence that psychotic phenomena are distributed throughout the general population. The hypothesis of a 'psychosis continuum' was based on findings of odd convictions and attenuated psychotic experiences in general population samples. These psychotic experiences were traditionally only recognized in severe form in patients fulfilling criteria of schizophrenia spectrum diagnoses. Levels of subclinical psychotic phenomena were found to be higher in at-risk populations, such as relatives of schizophrenia patients and subjects using cannabis (Johns and van Os, 2001; van Os

et al., 2009, 2010; Linscott and van Os, 2010; Binbay et al., 2011; Dominguez et al., 2011).

Based on this concept, it is relevant to investigate phenomena associated with schizophrenia in other populations, especially in relatives. One such related phenomenon is subjective wellbeing. Subjective wellbeing has been shown to be closely related to dopaminergic neuromodulation in the striatum (de Haan et al., 2000, 2003; Mizrahi et al., 2009). As all efficacious antipsychotic agents are dopamine antagonists, subjective well-being is influenced by antipsychotics, with higher dosage leading to a decrease in well-being. Subjective well-being of patients with schizophrenia is therefore relevant for medication adherence and recovery (Naber et al., 2001; Karow et al., 2007; Lambert et al., 2007). Early improvement of subjective well-being after the start of treatment has been shown to predict better clinical outcome in the long term (Kluge et al., 2005; van Nimwegen et al., 2008; de Haan et al., 2008; Lambert et al., 2009; Mizrahi et al., 2009; Schennach-Wolff

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et al., 2010; Kinon et al., 2010). Since subjective well-being is only moderately associated with psychopathology and clinicians' evaluation (Hunter and Barry, 2011; Karow et al., 2007, 2012; Chen et al., 2011; Maurino et al., 2012), it is considered an independent outcome domain.

The Subjective Well-being Under Neuroleptic Treatment Scale (SWN, Naber et al., 1994, 1995) is the most widely used self-rating scale in recent studies on subjective well-being in schizophrenia (Vothknecht et al., 2011). Originally, the SWN was developed to assess subjective experience in five subscales (Naber et al., 1994, 2001). However, this subscale structure was not confirmed in later research (Siamouli et al., 2009; Phillips et al., 2010). The psychometric properties are firmly established in schizophrenia patients (Naber, 1995; de Haan et al., 2002; Balestrieri et al., 2006; Siamouli et al., 2009). The SWN has been shown to be sensitive to treatment adherence, medication change and remission (Naber, 1995; Naber et al., 2005; de Haan et al., 2002). In neuroimaging studies the SWN was shown to be related to dopamine D₂ receptor blockade. Several studies have demonstrated that a striatal dopamine D₂ receptor occupancy between 60% and 70% correlates with positive subjective well-being of patients with schizophrenia. Higher occupancy of D₂ receptors was associated with lower subjective well-being (de Haan et al., 2000, 2003; Mizrahi et al., 2007, 2009). Therefore, a close relationship seems to exist between the psychological experience of subjective well-being as measured by the SWN and neurobiological mechanisms measured by differences in dopaminergic neurotransmission.

Although the importance of dopamine D₂ receptor occupancy has been stressed in relation to psychosis and antipsychotic medication, D₂ receptor density was also found to be associated with personality traits, attachment, social behavior and quality of life not only in patients with schizophrenia but also in healthy controls (Farde et al., 1997; Jönsson et al., 2003; Couture et al., 2007; Cervenka et al., 2010).

Recently, research on genetic dispositions of emotional states has been expanded, e.g. by the GENEQOL consortium, a worldwide network to study genetic factors of quality of life (Sprangers et al., 2009, 2010). From twin studies, the heritability of subjective well-being is estimated to be between 40% and 50% (Bartels and Boomsma, 2009). There is a large body of evidence indicating subjective well-being to be stable over the long term. This stability is mainly attributable to additive genetic factors, whereas susceptibility to change seems to be more related to temporary individual environmental factors (Nes et al., 2006). In a large study conducted by Bartels and Boomsma (2009), subjective well-being was assessed by measures of life satisfaction, happiness, quality of life and life fulfillment. They found that the four measures were explained by one underlying genetic factor. Therefore, distinct measures of subjective well-being are probably not distinct at a genetic level and represent overlapping constructs. They concluded that future research should focus on the complex interplay between genes and environment, regardless of which measure of subjective well-being is being used.

To determine hereditary aspects of subjective well-being and to facilitate future research into subjective well-being in non-clinical samples, the psychometric properties of the SWN scale in relatives of patients with psychotic disorders and in healthy controls need to be investigated.

Although the SWN was developed to address well-being under neuroleptic treatment in patients with psychosis (Naber et al., 1994, 1995; de Haan et al., 2002), it can be used as an instrument to measure subjective well-being independent of treatment-specific aspects (Wolters et al., 2006, 2009a). It contains several items referring to subjective well-being in general. Although some items of the SWN may seem to apply to clinical populations, we

hypothesized that we would find variations associated with sub-clinical psychotic phenomena and other subclinical psychopathology in non-clinical samples.

The content of the SWN was found to correlate highly with Quality of Life (QoL) scales (Wolters et al., 2006, 2009a). Therefore, we compared SWN measurements in non-clinical populations with the WHO-QoL Bref (The WHOQOL Group, 1998), a well-accepted standard of Quality of Life scales, as an indication of convergent validity.

1.1. Goal of the present study

The present study has two related objectives:

1. To investigate and compare the psychometric properties of the SWN 20-item scale in patients, their unaffected relatives and healthy controls in terms of factor structure, internal consistency and reliability.
2. To investigate the convergent validity of the SWN compared to the WHO-QoL Bref in patients, their unaffected relatives and healthy controls. We hypothesized that the SWN scale is a reliable and valid instrument for measuring subjective well-being in patients as well as in relatives and healthy controls.

2. Methods

2.1. Study design

We used data from the Genetic Risk and Outcome of Psychosis (GROUP) study in the Netherlands. The GROUP study is a cohort study with a 6-year follow-up of patients with non-affective psychotic disorders, their siblings, parents, and healthy controls. For a detailed description of the study design, sampling and inclusion criteria, see Korver et al. (Korver et al., 2011).

2.2. Sample

For this study, data were gathered from three academic centers (Amsterdam, Groningen and Utrecht) and their affiliated mental health care institutions. Of our sample consisting of 1569 subjects (600 patients, 594 siblings, 80 parents, 295 controls), 1441 (91.8%) completed the SWN scale and relevant other assessments: 545 patients, 541 unaffected siblings, 75 parents and 280 healthy controls. For 128 subjects SWN data were incomplete or missing. Assessments were checked by investigators and subjects were asked to fill in the scale completely as they failed to do so initially.

2.3. Clinical measures

2.3.1. SWN

The 20-item version of the Subjective Well-being Under Neuroleptic Treatment Scale (SWN-K) consists of 20 items in six-point Likert scales referring to the last 7 days. The total score ranges from a minimum of 20 (poor) to a maximum of 120 (excellent) (Naber et al., 1994, 2001; Naber, 1995). The 20 items are dual items, consisting of 10 positively and 10 negatively formulated items, describing each complaint in a positive and negative phrase (de Haan et al., 2002). The SWN measures subjective experience in five subscales: emotional regulation, self-control, mental functioning, social integration and physical functioning (Naber et al., 1994, 2001).

2.3.2. WHO-QoL

Quality of life was assessed with the 26-item World Health Organization Quality of Life-Bref (The WHOQOL Group, 1998). This self rating scale contains four major domains (physical health—seven items, psychological health—six items, social relationships—three items, environmental conditions—eight items), and two individual items on 'overall quality of life' and 'general health'. Scores on these two items and four domains construct an overall quality of life score (ranging from 26–130). In a Dutch psychiatric outpatient population the WHO-QoL Bref was demonstrated to be an adequate measure for assessing quality of life with high construct validity and reliability (Trompenaars et al., 2005).

2.3.3. PANSS

The Positive and Negative Syndrome Scale (PANSS) is currently the most widely used scale to assess symptoms in patients with schizophrenia (Kay et al., 1987).

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