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The relationship between experiential deficits of negative symptoms and subjective quality of life in schizophrenia

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ABSTRACT

Understanding the link between quality of life and symptoms in schizophrenia is important in enhancing the prospect of patient recovery. Only weak associations have been found between subjective quality of life (SQOL) and negative symptoms. However, this may be because many existing symptom assessment scales inadequately assess the experiential deficits of negative symptoms. This study aimed to re-evaluate these findings using the Clinical Assessment Interview for Negative Symptoms (CAINS), which as been designed to capture both the expressive and experiential subdomains of negative symptoms as separate constructs. In this observational study 275 participants with at least moderate negative symptoms were assessed three times over nine months using the CAINS, the Positive and Negative Syndrome Scale (PANSS), and the Manchester Short Assessment of Quality of Life (MANSA). A significant negative association between SQOL and the CAINS experiential subscale was found in the cross-sectional analysis (adj. B = −0.28, 95% CI = −0.44 to −0.12, P = 0.001), and in the change scores (adj. B = −0.13, 95% CI = −0.26 to −0.01, P = 0.032). No associations between SQOL and expressive symptoms, or negative symptoms measured using the PANSS were detected in the multivariable models. These findings suggest that the association between negative symptoms and SQOL is related primarily to experiential deficits, and highlights the importance of measuring the separate subdomains of negative symptoms as distinct constructs. The findings also highlight the impact of negative symptoms and experiential deficits in particular on social outcomes, further emphasising the need to develop new treatments for these symptoms.

1. Introduction

For decades there has been a consensus that improving symptoms alone is not a sufficient treatment outcome in schizophrenia, with improvements in quality of life seen as central to the concept of recovery (Liberman et al., 2002; Priebe, 2007). Lower quality of life has consistently been associated with higher negative symptoms of schizophrenia, rather than positive symptoms (Ho et al., 1998), however the relationship appears complex.

Quality of life is recognised to comprise of objective components such as daily life functioning and external resources, and subjective components such as wellbeing and satisfaction with life (Katschnig, 2000; Lehman et al., 1982; Priebe, 2007). While there evidence of a strong association between negative symptoms and objective quality of life (OQOL) (Ho et al., 1998; Hunter and Barry, 2012; Milev et al., 2005; Whitty et al., 2008), only a weak association between negative symptoms and subjective quality of life (SQOL) has previously been found (Eack and Newhill, 2007; Fitzgerald et al., 2001; Narvaez et al., 2008; Priebe et al., 2011). This may be because SQOL is determined by multiple processes, including the comparison between expectations and aspirations, a comparison with others, and adaptation over time, all of which may result in a less negative appraisal by individuals with chronic schizophrenia (Priebe, 2007). However, it may also be because the relationship has been under-reported due to how negative symptoms have been assessed.

Negative symptoms include expressive deficits such as blunted affect and alogia, and experiential deficits such as asociality, anhedonia and amotivation. There is evidence to to suggest that older scales are associated more with expressive deficits (Horan et al., 2011), which may be attributable to the fact that such tools rely largely on behavioural referents to measure different negative symptoms (Blanchard et al., 2011). One advantage of the newly developed CAINS is that experiential and expressive symptoms are separated into distinct subdomains, with a focus on subjective experiences of negative symptoms in addition to observed and reported behaviours.

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With this in mind, this study aimed to re-evaluate the link between negative symptoms and SQOL using data from one of the largest trials to use the CAINS to date (Priebe et al., 2013). We tested the hypothesis that the association between negative symptoms and SQOL will relate exclusvely to experiential deficits, both cross sectionally and over time. We hypothesised that this relationship would remain after controlling for depressive symptoms, which is important given the association between low mood and SQOL (Eack and Newhill, 2007; Priebe et al., 2011). With evidence to suggest that the relationship between SQOL and symptoms may be different between men and women (Röder-Wanner and Priebe, 1998), and between those with a long and short illness duration (Priebe et al., 2000), a comparison between these groups was also considered.

2. Method

2.1. Design

This is a secondary analysis of data from the NESS Study (ICTRN842165587); a randomised controlled trial evaluating the effectiveness of body psychotherapy for schizophrenia. In the study participants were randomised to receive either a 20 session Pilates class or body psychotherapy group. Assessments were conducted at three timepoints; baseline, end of treatment approximately 3 months later, and then six months after treatment end. At each stage the CAINS (Horan et al., 2011), PANSS (Kay et al., 1987), Manchester Short Assessment of Quality of Life scale (MANSA) (Priebe et al., 1999), and Calgary Depression Scale (Addington et al., 1993) were completed.

2.2. Sample

Participants were outpatients with schizophrenia (F20.0-F20.9), presenting with at a score of at least 18 on the PANSS negative subscale. Further details of the study are described elsewhere (Priebe et al., 2013).

2.3. Assessment tools

The CAINS (Horan et al., 2011) is a scale designed to address the limitations inherent to previous assessment tools used to measure negative symptoms (Blanchard et al., 2011). Although the scale can provide a single summary score, the authors recommend reporting the emotional experience and emotional expression subscales seperately given the evidence that they are measuring distinct constructs (Kring et al., 2013). The scale comprises of 13 items, rated from 0 (no impairment) to 4 (severe impairment). The first nine items relate to experential deficits, assessing the motivation, anticipation and experience of pleasure in occupational and recreational actvities, and social contacts with partners, friends and family. The last four items relate to expressive deficits, assessing both vocal and gestural features. Evaluations of the tool suggest excellent divergent and convergent validity (Kring et al., 2013).

The PANSS (Kay et al., 1987) is a 30-item semi-structured interview designed to provide an overall measure of the symptoms of schizophrenia. Sixteen of the items measure general psychopathology, seven positive symptoms of schizophrenia such as hallucinations and delusions, and seven negative symptoms. Each item is rated from 1 to 7, resulting in a range of 7–49 for positive and negative symptoms, and 16–112 for general symptoms. In this study the Marder factor solution of the PANSS negative subscale was adopted (Marder et al., 1997) which exludes the abstract thinking and stereotypical thinking items given they are understood to relate to cognitive deficits (Bryson et al., 1999). Instead, the active social withdrawal and motor retardation items are included.

Subjective quality of life was measured by the MANSA (Priebe et al., 1999). The questionnaire consists of 16 items; 12 subjective and four objective. The 12 subjective items cover self-rated satisfaction of employment, finances, recreational activities, friendships, safety, housing, health, sex-life, family and overall life satisfaction; scores range from 1 (couldn't be worse) to 7 (couldn't be better). The four objective items are rated as yes or no, and cover whether they have been a victim of a crime, been accused of crime, have anyone they consider a close friend, or have seen a friend in the past seven days. A mean total of the 12 subjective items were calculated to create a summary score.

Depressive symptoms were assessed using the Calgary Depression Scale (Addington et al., 1993), which a scale designed specifically for schizophrenia populations. The questionnaire comprises of nine items, rated from 0 to 2, with a higher score indicating higher depressive symptoms.

2.4. Analysis

In stage 1 the association between SQOL and expressive deficits, experiential deficits, depression, and a summary of the overall negative symptom construct was examined in a univariable regression analysis. Any predictors approaching significance ($P < 0.10$) were included in a multivariable regression model. This analysis was replicated using the three month and nine month follow up data. To assess whether there were any differences in the relationship between negative symptoms and SQOL between men and women, an interaction term between gender and any significant negative symptom variable was added to the multivariable model. To determine whether the relationship is different in participants with a long and short duration of illness, a median split of the sample by length of illness was performed. An interaction effect between illness duration and any significant negative symptom score was then added to the multivariable model.

In stage 2, longitudinal modelling was used to explore the association between the change in negative symptoms and SQOL over time. Symptom change scores were calculated by subtracting i) nine month follow up scores (T3) from the three month follow up scores (T2), and ii) three month follow up scores (T2) from the baseline scores (T1), resulting in two panels of change-score data. The associations between the change scores in SQOL and different measures of negative symptoms were then evaluated by way of multi-level modelling, with each change score nested within participants, included as a random effect. Significant univariate associations were then analysed in a multivariable model, including the change scores of the Calgary scale to control for the association between depression and SQOL. Finally, an interaction effect between therapy group allocation and negative symptom change was added to the multivariable model where any type of negative symptom change was found to be significantly associated to SQOL change. Analyses were conducted using STATA version 11.0 (StataCorp, 2009).

3. Results

Participants were mostly men (73.8%), with a mean age of 42.2 years ($SD = 10.65$) and a long history of illness (mean = 13.6 years, $SD = 9.1$). At baseline participants reported low depressive symptoms (Calgary mean = 4.70, $SD = 4.37$), and moderate negative symptoms (PANSS Marder negative mean = 22.1, $SD = 4.8$). A total of 275 participants completed the baseline assessment, and 255 the final assessment, resulting in a rentention rate of 92.7%. No significant differences were detected between completers and drop-outs in the MANSA, CAINS, or PANSS Marder subcales at baseline. The inter-rater reliability between the assessors in the CAINS and PANSS was high (PANSS ICC = 0.85; CAINS total ICC = 0.80).

Mean values of the CAINS subscales, the PANSS Marder negative subscale and the MANSA are presented in Table 1. A small, significant reduction over time was detected in the CAINS expression subscales, and the PANSS Marder negative subscale. A slight improvement in SQOL over time was also detected, however this was not significant.

The associations between negative symptoms and SQOL are reported in Table 2. At baseline a significant negative association was found between SQOL and the CAINS experiental subscale, explaining 8.3% of the variance ($B = -0.43$, 95% CI = −0.62 to −0.25, $P < 0.001$. $R^2 =$

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