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The relationship between cognitive insight and depression in psychosis and schizophrenia: A review and meta-analysis

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ABSTRACT

Lack of insight is a commonly observed problem in patients with psychosis and schizophrenia. Clinical insight in patients has been associated with low mood. Cognitive insight is a recently defined concept, relating to the ability to self-reflect and the degree to which patients are over-confident regarding their interpretations of illness-related experiences, and is related to clinical insight. We therefore sought to investigate whether there is a positive relationship between cognitive insight and mood.

A literature search identified 17 relevant papers published between 2004 and 2014. Our analysis indicated that there was a small but significant positive correlation between the composite index (CI) of the Beck Cognitive Insight Scale (BCIS) and depression scores, but this was driven by a significant positive relationship between depression and the BCIS self-reflection (SR) sub-scale, where low mood was related to higher SR scores. There was no significant relationship between the self-certainty sub-scale and depression. Post-hoc analysis indicated that different depression scales did not significantly affect the relationship with SR.

Our results support the idea that cognitive insight is significantly related to mood in schizophrenia, and the effect size is similar to that between clinical insight and mood. Potential applications of this knowledge into treatment and rehabilitation are discussed and a model of cognitive insight is proposed.

1. Introduction

1.1. Background

Lack of insight is commonly observed in patients with psychosis and schizophrenia. The nature and degree of awareness that psychiatric patients have about their illness have important implications as poor insight can result in later detection of illness, poorer treatment adherence and outcome (Amador and David, 2004; Lincoln et al., 2007). Insight is normally conceptualised and measured in terms of awareness of the clinical aspects of the disease — such as awareness of having a mental disorder, of symptoms, or of the need for treatment. Closely related to clinical insight is the notion of cognitive insight – first promoted by Beck et al. (2004) – which, refers to a patient's ability to self-reflect (self-reflectiveness [SR]) and also the level of certainty (self-certainty [SC]) they feel in the interpretation they give to their unusual (illness-related) experiences. Thus, whilst clinical insight assesses patients' understanding that symptoms are a manifestation of mental illness, cognitive insight aims to assess the metacognitive processes involved in how self-relevant judgements about the self are made and maintained.

Cognitive insight has been shown to hold a moderate relationship with clinical insight scales — poor cognitive insight is correlated to poor clinical insight (Positive and Negative Symptoms Scale (PANSS) [Engh et al., 2007; Favrod et al., 2011], Birchwood Insight Scale (BIS) [Pedrelli et al., 2004]). Further, 'awareness of mental disorder' as measured on the Schedule for the assessment of Unawareness of Mental Disorder (SUMD; Amador et al., 1993), has been identified as a significant predictor of cognitive insight (Beck et al., 2004; Bora et al., 2007; Lepage et al., 2008) as has the delusions sub-scale (Beck et al., 2004). More specifically, increased self-reflection is positively correlated with awareness of delusions and negatively with delusion severity (Engh et al., 2010). Additionally, a positive relationship between delusion severity and self-certainty has been consistently reported (Warman et al., 2007; Engh et al., 2010; Ouzir et al., 2012). These studies demonstrate evidence of both overlap and distinctiveness between clinical and cognitive insight and this might have clinical implications (Beck et al., 2011; Pijnenborg et al., 2011; Pijnenborg et al., 2014).

Research aimed at investigating the foundation of clinical insight has attempted to establish the degree to which factors such as intellectual ability predicts level of insight. A meta-analysis by Nair et al. (2014), demonstrated that executive function was correlated positively with

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insight. It has since been proposed that metacognitive capacity may mediate the relationship between insight and executive functioning (Koren et al., 2004) whereby patients' judgements of executive performance held a stronger association with insight than performance itself.

Following this, findings regarding cognitive correlates of cognitive insight have been mixed, although a preliminary meta-analysis by Nair et al. (2014), demonstrated that BCIS sub-scales SR and SC, differ in what neurocognitive functions they are related to. The composite index was significantly associated with 'total cognition' and 'memory', driven mainly by the self-certainty scale, whereas self-reflection was not significantly correlated with any measure of neurocognition.

There is a body of literature linking the concept of 'metacognition', also referred to as thinking about thinking, and self-awareness as mediators of the specific deficit in clinical awareness observed in patients. Lysaker et al. (2010) carried out a principal components analysis to identify potentially separable factors of self- and other-awareness in patients with psychosis. The analysis identified a two-factor structure. The first, termed 'metacognitive awareness', comprised of two assessments measuring patients' 'ability to create representations of the self and others which integrate more discreet information' (i.e. the BCIS and the Metacognitive Assessment Scale) — which was significantly associated with negative symptoms. The second, termed 'social cognition', comprised of more experimentally based-tests of patients' ability to identify emotions and intentions of others. The factor analysis indicated that cognitive insight is associated with metacognitive processes as opposed to social cognition. Similarly Guerrero & Lysaker (2013) propose a pathway linking insight to symptom severity and distress that is moderated by what they termed socially naïve self-appraisal. Further work to include assessments of mood in such models of insight would be fruitful.

In addition to metacognition and neurocognition, mood is one of the more robust predictors of clinical insight, with lower mood tending to be related to better insight (see Amador and David, 2004 for review; Mintz et al., 2003). Similarly, abnormally elevated mood within psychosis or as a primary clinical problem (hypomania and mania) is strongly related to poor clinical insight (Sanz et al., 1998). Given that there is a moderate positive relationship between cognitive and clinical insight (Beck et al., 2004), it suggests that similar predictive factors may drive both.

The initial paper presenting the BCIS by Beck et al., (2004) demonstrated that there was no correlation between psychosis patients' depression scores and any BCIS sub scale. This finding was replicated by (Pedrelli et al., 2004), but since these initial studies, a review of subsequent work has shown different results (Riggs et al., 2012), with self-reflection at least showing a reliable relationship with mood.

1.2. Aims

The aim of this study was to collate data from all available papers that reported both cognitive insight and depression scores in patients with schizophrenia, and perform a meta-analysis to examine their relationship. Understanding cognitive insight and its relationship with mood, and clinical insight might have important clinical implications if, for example, insight could be improved (Pijnenborg et al., 2013) while avoiding detrimental change to mood. We anticipated an overall significant positive association between SR and higher levels of depression, but no significant association between SC and depression.

2. Method

2.1. Design

2.1.1. Systematic review and meta-analysis

Our study identification strategy had two phases. We searched databases PubMed and Web of Science for relevant papers using the search terms COGNITIVE INSIGHT or BCIS or "BECK COGNITIVE INSIGHT SCALE" combined with PSYCHOSIS or SCHIZOPHRENIA combined with DEPRESSION or MOOD or AFFECT. This generated 135 results from PubMed and 344 results from Web of Science. The returned papers were then screened using the following inclusion criteria: (1) correlations between BCIS and Depression (Hamilton Depression Scale [HDRS], Beck Depression Inventory [BDI-II], Calgary Depression Scale [CDS], Positive and Negative Symptom Scale (depression item) [PANSS]) were reported in the study or sufficient information was reported to enable us to compute effect sizes; (2) the sample comprised patient groups with a psychotic disorder (first-episode psychosis, schizophrenia, schizoaffective disorder), (3) the article had been published in a peer-reviewed English-language journal; and (4) the article had been published before March 2014. All articles citing the original Beck BCIS paper were also reviewed to ensure that no papers were missed.

Of the papers returned in the literature search, 21 met the inclusion criteria, 17 of which were included in our analysis; data from Lepage et al. (2008) were not available, however the authors made available a larger data set that was added to after the close of their 2008 study that has not yet been published, and is referred to as Lepage et al. (unpublished). Some of the studies identified in this literature search could not, unfortunately, be included (Penn et al., 2009; Buchy et al., 2010; Ekinci et al., 2012a; Ekinci and Ekinci, 2013; see Appendix 1 for list and details of each data set included in this analysis). This was due to a lack of reporting of specific mood/cognitive insight relationships. Despite our best efforts to obtain the information via email or phone not all sets of data were acquired. We also acknowledge that some relevant studies may, unfortunately, have been missed in the literature search where the data were part of a study whose focus was not insight.

Data from each paper were separated into the three sub categories of BCIS: self-reflection (SR), self-certainty (SC) and composite index (CI). A database was created in which all relevant characteristics of each included study: authors, publication year, sample size, mean sample age, sub-scales of BCIS used, measure of depression used (to potentially differentiate between effects of different scales), type of analysis run, p value, r value, group means and effect direction. If the effect size could not be determined by the information in the study then attempts were made to locate the primary author of the study and request the information.

2.2. Data analysis

All analyses were completed in Comprehensive Meta-analysis package version 2. We used correlation (r) or mean group data combined with sample size and effect direction to calculate the effect size for each study. After inputting relevant data for each study a combined effect weighted for sample size was calculated for the three BCIS measures (SR, SC and CI) separately. Z and p values provide an indication as to the statistical significance of the association. In order to account for the heterogeneity of measures, a random-effects model was used (Borenstein et al., 2010).

Publication bias was examined by using a funnel plot of standard error and Fisher Z score. Using the 'Duval and Tweedie's Trim and Fill' (Rothstein et al., 2005) procedure, putatively missing studies (as inferred from an asymmetric plot revealing bias due to small studies with positive correlations) were imputed and added to the funnel plot by an iterative procedure.

3. Results

16 studies were included in the current meta-analysis, while the number of patients included depended on the studies included in each analysis. The mean age across studies was 37.6 years (accounting for varying sample sizes); with an age range from 23 to 54.5 years, resulting in a range of 31.4 years. The smallest sample size was 29 (mean age 38.3), the largest was 164 (mean age 53.3).

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