



Stability of cognition across wakefulness and dreams in psychotic major depression



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ABSTRACT

Cognitive bizarreness has been shown to be equally elevated in the dream and waking mentation of acutely symptomatic inpatients diagnosed with affective and non-affective psychoses. Although some studies have reported on dream content in non-psychotic depression, no study has previously measured this formal aspect of cognition in patients hospitalized for Psychotic Major Depression (PMD). Sixty-five dreams and 154 waking fantasy reports were collected from 11 PMD inpatients and 11 age- and sex-matched healthy controls. All narrative reports were scored by judges blind to diagnosis in terms of formal aspects of cognition (Bizarreness). Dream content was also scored (Hall/Van de Castle scoring system).

Unlike controls, PMD patients had similar levels of cognitive bizarreness in their dream and waking mentation. Dreams of PMD patients also differed from those of controls in terms of content variables. In particular, Happiness, Apprehension and Dynamism were found to differ between the two groups. Whereas dream content reflects a sharp discontinuity with the depressive state, cognitive bizarreness adequately measures the stability of cognition across dreams and wakefulness in PMD inpatients.

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1. Introduction

1.1. Cognitive bizarreness in dreams and psychosis

Most of the founders of contemporary psychiatry observed significant similarities between dreams and the subjective experience of psychosis (Kraepelin, 1906; Bleuler 1966). In both conditions, subjects fail to recognize the internal origin of perceived stimuli that are interpreted as coming from the external environment; heightened and often incongruous emotions are coupled with a decrease in ego functions which ultimately leads to instinctual behaviours and severe impairment in reality testing (Hobson, 2009). The progression from salience attributed to irrelevant stimuli to a new, highly relevant meaning that occurs in psychosis can also be observed in dreams, where a single hallucinatory image can convey “an immediate emotionally compelling meaning that is not related to the image in any obvious way” (Feinberg, 2011). Of course, several differences can also be observed between the two states. First of all, dreaming occurs in the context of sleep when the subject is detached from the environment. In the course of so-called functional (i.e. non-

organic) psychoses, symptoms occur in clear consciousness and patients tend to maintain a valid contact with the external world. Second, the hallucinatory product of the dreaming brain is primarily visual whereas psychosis in psychiatric patients is usually characterized by auditory hallucinations. Current research in the phenomenology and neurobiology of dreams has proved a fertile ground for a reanalysis of this relationship, and several hypotheses binding these phenomena have been proposed (Hobson, 2004; Gottesmann, 2006; Feinberg, 2011). However, the scientific validity and meaning of the dream/psychosis relationship is yet to be fully understood.

Cognitive bizarreness, a measurable aspect of the formal organization of dream mentation, has been shown to be equally elevated in the dreams and waking fantasies of acutely symptomatic inpatients diagnosed with either Schizophrenia or the manic phase of Bipolar Disorder (Scarone et al., 2008; Limosani et al., 2011). Our group hypothesized these findings could provide evidence of shared cognitive patterns in dreams and psychosis independent of the disorder within which symptoms emerge (D'Agostino et al., 2012). To the best of our knowledge, no similar data have been collected in patients with psychotic symptoms in the context of a depressive episode. Unipolar Major Depression with Psychotic Features, or Psychotic Major Depression (PMD), can be diagnosed in up to 19% of all subjects with an episode of unipolar depression (Ohayon and Schatzberg, 2002). Delusions and/or

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hallucinations in these patients are associated with less responsiveness to medication, worse prognosis and higher rates of neurobiological and neuropsychological abnormalities (Hill et al., 2004). The widespread clinical assumption that psychotic symptoms in PMD depend on the severity of a depressive episode has not been confirmed by recent research, which seems to bind this clinical phenomenon to a biological and/or psychosocial individual susceptibility (Forty et al., 2009).

1.2. Known peculiarities of dream content in depressed patients

Although several previous studies assessed the dreams of depressed patients, none have reported on those of PMD patients. Dreams of inpatients with severe unipolar depression have been found to be less bizarre but more mundane and flat in terms of affective content when compared to those of a control population (Beauchemin and Hays, 1996). Dream reports have been found to be shorter during depressive episodes (Barrett and Loeffler, 1992; Fonzi et al., 2006) and content variables such as emotional tone and anxiety levels have been correlated to clinical progression and outcome in several studies. In general, dream emotion appears to reflect predominant waking emotion, so that negatively toned and anxious dreams are more common in patients who report high levels of anxiety and depressed affect than in the general population (Cartwright and Lloyd, 1994; Beauchemin and Hays, 1996; Cartwright et al., 1998; Bilici et al., 2002). Improvement in clinical symptoms was also associated to a progressive normalization of the emotional tone observed in dream reports (Fonzi et al., 2006; Schredl et al., 2009).

1.3. Study objectives

Main objectives of this study were (1) to evaluate cognitive bizarreness in the dreams and waking fantasies of PMD inpatients compared to a normal control population and (2) to identify similarities and differences in dream content in the same sample. We hypothesized that the waking cognition of these subjects would yield similarly elevated levels of cognitive bizarreness to those found in dreams, whereas no specific prediction was made in terms of dream content variables.

2. Methods

2.1. Patients

Patients were recruited from the psychiatric ward of the San Paolo Hospital Department of Mental Health. Participants were male or female inpatients of at least 18 years of age, who met the DSM-IV-TR criteria for an Axis I diagnosis of Major Depressive Episode with Psychotic Symptoms (APA, 2000). All patients' diagnoses were assessed by means of the criteria of the Structured Clinical Interview for DSM-IV Axis I Disorders (First et al., 1997). Eleven patients (three M, eight F; mean age 53.64 ± 12) completed the experimental protocol, so a group of 11 subjects matched in terms of sex and age (three M, eight F; mean age 53.36 ± 11.27) were chosen from the general population as control sample. Exclusion criteria for both groups were alcohol and psychoactive substance abuse and a present or past history of any serious medical or neurological condition, including perinatal injury, cranial trauma, mental retardation and parasomnias. Patients who met diagnostic criteria for any other Axis I or Axis II disorder were excluded, so none of the patients enrolled had ever received a diagnosis of Bipolar Disorder. Control subjects were unpaid volunteers recruited by word of mouth among the general population. They were only enrolled if history of clinically relevant depression or psychosis could be ruled out with certainty after a clinical interview carried out by a certified psychiatrist.

2.2. Clinical assessment

Clinical assessment was performed by one expert psychiatrist using the 21-item Hamilton Depression Rating Scale—HAM-D-21 (Hamilton, 1967) and 18-item Brief Psychiatric Rating Scale—BPRS (Overall & Gorham, 1962). The scales were

administered before significant remission of symptoms, during the week in which patients were asked to keep a dream diary, which usually began upon admission. The mean score obtained in HAM-D (27 ± 5.74) suggests severe depression in our sample. All patients scored between 5 and 7 on the "unusual thought content" item of the BPRS and presented with guilt, persecution, ruin and somatic delusions.

2.3. Pharmacotherapy

None of the patients included in the study were drug-naïve; administration of treatment began at the moment of admission to our unit as prescribed by the assigned physician. Various combinations of antidepressants (all patients were treated with SSRIs), antipsychotics and benzodiazepines were administered to all patients during the week in which the material for the study was collected.

2.4. Study design

All participants were asked to sign an informed consent to take part in the study. During the first week of hospitalization, patients were instructed to keep a dream diary where they could report each morning the dream they had had the night before. As instruction, participants were asked to report the whole development of the dream plot whenever possible. The material was always collected during the first week of hospitalization, before significant remission of the psychotic symptoms, whereas the control population completed dream diaries in their home setting.

Subjects who successfully reported at least one dream were then administered a projective test used to elicit fantasy stories. The Thematic Apperception Test (TAT) consists of a broad set of figures, differentiated into groups of 20 according to sex and age (Murray, 1943). Seven figures chosen progressively from the full set were used in this study according to a previously published scheme (Scarone et al., 2008; Limosani et al., 2011; D'Agostino et al., 2012). Given that several authors have questioned the reliability and validity of the test's psychometric properties (Cramer, 1999), the TAT was only used in this study design to elicit waking fantasies from a standardized set of stimuli. All participants were asked to create a fantasy story that clearly contained a beginning, a plot development and an end based on the visualized figure after having eliminated the stimulus; the narratives created in response to the fixed stimulus were tape-recorded and then transcribed.

2.5. Formal analysis of narratives

A total of 65 dream reports (25 belonging to depressed patients and 40 belonging to the control group) and 168 waking fantasy reports (84 for each group) were collected for analysis. The material was equally divided and randomly assigned to two judges who had no acquaintance with the study participants and were blind to the diagnosis and to the origin of the narrative transcripts. The Dream Bizarreness scale (Hobson et al., 1987) was used to score the material as described elsewhere (Scarone et al., 2008; Limosani et al., 2011). The following indices were calculated for each dream and TAT response: bizarreness intensity (BI), calculated as the number of bizarre events in the domains of plot, cognition, and affect, and bizarreness density (BD), calculated by dividing BI by the report word count. The following indices were then calculated for each subject, yielding normally distributed data: Bizarreness Density Index for dreams (BDI), calculated as the mean of the dream BD indices, and Bizarreness Density Index for TAT tables (BDI), calculated as the mean of the TAT table BD indices.

2.6. Dream content analysis

The Hall/Van de Castle scoring system was used to analyse dream contents (Hall, Van de Castle, 1966). This scale is considered to be the most comprehensive and used empirical system for dream content analysis, with several nominal categories reflecting characters, aggressiveness, social interactions, emotions, etc. within the dream report (Domhoff, 1996). According to a previously published method, each content category was represented by a number reflecting the frequency of a given content within a dream report. An average index was developed for each participant based on the number of reported dreams. Scoring was undergone by one group-blind judge who was adequately trained in the use of the scale (Scarone et al., 2008; Limosani et al., 2011).

2.7. Statistical analyses

All data analyses were performed with SPSS version 19.0 (IBM, 2010). Two-way Analysis of Variance (ANOVA) for repeated measures was applied to assess the effect of diagnosis and experimental study conditions (TAT stories and dream reports) on cognitive bizarreness. Pearson's correlation coefficient was used to measure the strength of the linear relationship between HAM-D-21 total score and BDI scores in the patient sample. Analysis of Variance (ANOVA) was applied to assess the effect of diagnosis on the content scored in dream reports using the Hall/

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