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Original article

# Sustained antipsychotic effect of metacognitive training in psychosis: A randomized-controlled study



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## ARTICLE INFO

### Article history:

Received 11 April 2013

Received in revised form 4 July 2013

Accepted 26 August 2013

Available online 28 October 2013

### Keywords:

Psychosis

Schizophrenia

Cognitive biases

Randomized study

Metacognitive training

## ABSTRACT

Persistent psychotic symptoms represent a major challenge for psychiatric care. Basic research has shown that psychotic symptoms are associated with cognitive biases. Metacognitive training (MCT) aims at helping patients to become aware of these biases and to improve problem-solving. Fifty-two participants fulfilling diagnostic criteria of schizophrenia or schizoaffective disorders and persistent delusions and stabilized antipsychotic medication were enrolled in this study. Following baseline assessment patients were randomized either to treatment as usual (TAU) conditions or TAU + MCT. The intervention consisted of eight weekly 1-hour sessions (maximum: 8 hours). Participants were assessed at 8 weeks and 6-months later by blind assessors. Participants were assessed with the Psychotic Symptoms Rating Scales (PSYRATS) and the positive subscale of the PANSS. Between-group differences in post- and pre-test values were significant at a medium effect size in favor of the MCT for the PSYRATS delusion scale and the positive scale of the PANSS both at post and follow-up. The results of this study indicate that MCT training has a surplus antipsychotic effect for patients suffering from schizophrenia-related disorders who demonstrate only a partial response to antipsychotic treatment and that the effect of the intervention persists for at least 6 months after the intervention.

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## 1. Introduction

While antipsychotics agents are undisputedly effective in the treatment of schizophrenia [48], a significant percentage (30 to 40%) of patients experience only a partial response [57]. In addition, antipsychotics strongly reduce the reactions to psychotic symptoms and lead to emotional detachment, but often have limited impact on other aspects such as the contents of delusions and convictions herein as well as level of insight [28,29,52]. Persistent psychotic symptoms represent a major challenge in psychiatry as they are associated with an increased risk of hospitalization [20,49], and interfere with social [11,16] as well as with role functioning [19].

Accordingly, medication treatment is increasingly complemented by psychological treatment, whereby cognitive-behavioral therapy (CBT; [54,56]) and cognitive remediation treatment (CRT,

[55]) are to date most promising complementary strategies. A new trend in cognitive psychology which has evolved from these two traditions has highlighted the importance of cognitive biases for the understanding of schizophrenia positive symptoms [36]. Cognitive biases are preferences or responses tendencies in the processing of information which operate as triggers for delusional experience [46]. These will be summarized in the following as they are picked up by metacognitive training which lies at the core of the present study. Different definitions of metacognition exist. From a cognitive experimental viewpoint, metacognition refers to the general capacity to think about thinking which generally includes awareness of one's own mental processes, the fallibility of one's own thought, the ability to infer emotions from others faces and prosody, and the cognitive understanding of ideas, beliefs and intentions of other people [26].

A plethora of studies [14] found that 40 to 70% of individuals with schizophrenia arrive at strong conclusions relying on a small amount of information (i.e., jumping to conclusions). Interestingly, patients do not seem to be conscious of their hasty judgment and instead perceive themselves as rather indecisive and hesitant [15] speaking for problems with metacognitive awareness. Individuals

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with schizophrenia can also exhibit memory disturbance, manifested as a reduction of distinct autobiographical memories [44], increased confidence in false memories and reduced confidence in real memories [30,31]. This phenomenon of increased confidence coupled with vague memories is liable to lead an individual to an altered apprehension of reality. Incorrigeability is a main criterion of delusional ideas, but has also been shown to exist beyond delusional content. This cognitive distortion has been termed bias against disconfirmatory evidence is also linked with acute symptoms [10,53]. Numerous studies have demonstrated that psychosis involves severe deficits in social cognition [6,47] which includes theory of mind and attributional biases. Theory of mind is the ability to interpret an individual's speech and actions in terms of his or her intentions, knowledge, and beliefs. While alterations of theory of mind are generally accepted, their specific contribution to delusional ideas is not yet well understood. Individuals with schizophrenia have a tendency to externalize personal experiences, particularly for negative events, which may increase feelings of powerlessness or give rise to feelings of being controlled [25,34]. More recently, a study showed that in addition to a tendency to externalize attributions, there is an excess of monocausal inferences in patients with schizophrenia [42]. The underlying mechanisms of this style of external cognitive attribution have not yet been fully unveiled. Moreover, many patients suffer from poor self-esteem which is observed in 50 to 75% of all patients [5,37]. In essence, half of all individuals with schizophrenia experience concomitant affective troubles [7].

### 1.1. Metacognitive training in schizophrenia

In order to target the aforementioned biases, Moritz et al. [35] developed a program of metacognitive training which has been validated through various studies showing its safety, feasibility and partial effectiveness, particularly for jumping to conclusions and delusions [1,12,17,23,32,38,39]. In a pilot study based of the French version of the program, we showed that metacognitive training is easy to apply and that it contributes to a reduction of delusional ideas in a francophone context [12]. Therefore, it was predicted that 8 sessions of metacognitive training will reduce significantly delusional ideation compared to treatment as usual and maintain at 6 months follow-up.

## 2. Subjects and methods

This RCT compares metacognitive training (MCT) to treatment as usual (TAU). Participants were evaluated at baseline (T0), and then randomized either to TAU or TAU + MCT. Randomization was completed by groups of six, eight or ten participants depending on the number of available candidates as we aimed to keep the time period between the first evaluation and the start of the intervention short. The intervention consisted of eight weekly 1-hour sessions, for a maximum of 8 hours of metacognitive training. At the end of the intervention (i.e., 8 weeks later), participants were again assessed (T1) by raters who were unaware of group allocation. A third assessment (T2) was performed 6 months later in order to measure the stability of improvement.

### 2.1. Identification of patients and recruitment

Outpatients were recruited, in two centers, either in the foundation HorizonSud in the canton of Fribourg and at the General Psychiatry Service and the Community Psychiatry Service of the Department of Psychiatry at the University Hospital Centre in Lausanne (Switzerland). HorizonSud is a social institution offering sheltered accommodation and work to psychiatric patients from the Gruyère area of the Fribourg canton. The

foundation takes care of persons diagnosed with schizophrenia spectrum disorders. The General Psychiatry Service of the Department of Psychiatry is divided in specialized sections treating patients aged from 18 to 65 years according to specific diagnostic subgroups. Patients likely to fulfill diagnostic criteria for recruitment are treated in the E. Minkowski section (schizophrenia spectrum disorders) and in the rehabilitation unit of the Community Psychiatry Service. Potential participants were identified through systematic screening by the clinical teams. For newly admitted patients, the research coordinator attended weekly clinical meetings in each of these sections to identify patients fulfilling inclusion criteria (from case presentation of newly admitted patients or by reviewing the current cases with each treating clinical case manager). Inclusion criteria were a schizophrenia spectrum disorder (ICD diagnoses F20, F22, F25). The diagnosis was verified by an experienced clinician. Further criteria were: fluent command of the French language, age between 18 and 65 and partial response to antipsychotic medication. Partial response to antipsychotic medication was defined as a score higher than 2 on the P1 delusion item of the Positive and Negative Syndrome Scale (PANSS) and no increase in antipsychotic dosage or switch to clozapine during the 3 months prior to the study. The largest effect of antipsychotic agents is expected during the first 2 months of treatment [2].

For potential participants, an appointment was organized between patient, clinical case manager and research coordinator in order to explain the study. Each patient included was informed of the following: the aims of the study, the extent and the nature of their participation, including randomization, a description of the control and experimental interventions as well as the three evaluations (pre, post and follow-up). The patients included were also informed about the confidentiality of the data and their right to withdraw from participation at any time. They received a written description of the study.

Once the participant gave his/her consent, the understanding of the protocol of the study was verified with the university of California, San Diego Brief Assessment of Capacity to Consent (UBACC) a decisional capacity instrument [21]. In case of failure to clearly understand the study, patients were excluded. The study received approval by the ethics committee at the University of Lausanne with all participants signing an informed consent form.

Fig. 1 presents the CONSORT table indicating that 86 participants were interviewed to determine their eligibility for the trial. Twenty-three participants did not meet inclusion criteria. Five declined participation and six failed the *San Diego Brief Assessment of Capacity to Consent*.

Fifty-two participants were randomized into the two groups (i.e., TAU or TAU + MCT; screening-to-inclusion ratio: 60%), 26 in each group. Four participants later declined their participation. One participant in the TAU group left the region and could not then be evaluated at T2. This resulted in a drop-out rate of 9.6% for both groups. In the TAU + MCT group, 16 participants followed eight sessions, four followed seven sessions, three followed six sessions, one followed three sessions and one participant did not follow any sessions. On average, participant participated 87% of the sessions. The participant who followed three sessions and the participant who did not follow any session both left the study before T1.

### 2.2. Evaluation scales

At each time-point, participants were assessed using the Client Socio-Demographic and Service Receipt Inventory [8] which evaluates socio-demographic variables, prior contacts with mental health care services and medical treatments. Participants were assessed using the following instruments:

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