

Review of Previous Research on the Role of Metacognitive Beliefs and Metacognitive Therapies in Schizophrenic Patients

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Abstract

Present research reviews previous studies on metacognitive beliefs and the role of metacognitive therapies in the treatment of the patients suffering from Schizophrenia which is one of the most important psychological disorders. Patients suffering from schizophrenia have shown a serious change in perception, emotion, cognition, thinking, and also behavior. Harmful metacognitive beliefs, cognitive biases, inability to perceive other people's points of view, repetitive and dysfunctional thinking processes, etc. are just a few drawbacks of Schizophrenia. Additionally, some studies have shown more specific metacognitive beliefs in schizophrenic patients, however, there were differences between the results of various studies. This research highlights the results of some previous studies on metacognitive beliefs and the effect of metacognitive therapies in the treatment of patients being subjected to schizophrenia disorders. This may be a sparkle of hope in diagnosing psychological conditions affecting schizophrenia, and also paves the way to effective psychological therapies for schizophrenic patients. It should be emphasized that the diversity of the results from previous researches in this field was probably due to the chronic, under-treated, acute status of the patients, the number of patients, culture role, the degree of the resilience, and so on.

Keywords: Schizophrenia, metacognitive beliefs, metacognitive therapies

Öz

Şizofreni Hastalarında Üstbilişsel İnançlar ve Metakognitif Terapilerin Rolü Üzerine Yapılmış Önceki Araştırmaların İncelemesi

Bu araştırma, en önemli psikolojik bozukluklardan biri olan şizofreniden mustarip hastaların tedavisinde üstbilişsel inançlar ve metakognitif terapiler üzerine yapılmış önceki çalışmaları gözden geçirmektedir. Şizofreni hastaları, algılama, duygulanım, biliş, düşünme ve davranış alanlarında önemli değişiklikler göstermiştir. Zararlı üstbilişsel inançlar, bilişsel önyargılar, başkalarının bakış açısını algılayamama, tekrarlayıcı ve işlevsiz düşünme süreci vb., şizofreninin kişi için oluşturduğu zorluklardan sadece birkaçıdır. Bunlara ek olarak bazı çalışmalar şizofreni hastalarında daha spesifik üstbilişsel inançlar olduğunu göstermektedir ancak çeşitli çalışmaların sonuçları arasında farklılıklar bulunmaktadır. Bu araştırma, üstbilişsel inançlar ve şizofreni hastalarının tedavisinde metakognitif terapilerin etkisi üzerine yapılmış çalışmaların sonuçlarını vurgulamaktadır. Bu bulgular şizofreniyi etkileyen psikolojik durumları teşhis etmede bir umut ışığı olabileceği gibi şizofreni hastaları için etkili psikoterapilerin yolunu da açabilir. Bu alanda önceki araştırmalardan elde edilen sonuçların çeşitliliğinin hastalığın kronik oluşu, yetersiz tedavi, hastanın akut durumu, hasatların sayısı, kültürel etkiler, hastanın direnç seviyesi vb. gibi etkenlerden kaynaklanıyor olabileceği vurgulanmalıdır.

Anahtar Kelimeler: Şizofreni, üstbilişsel inançlar, metakognitif terapiler

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INTRODUCTION

Schizophrenia is one of the most common, controversial and multifaceted psychological disorders which has not been fully studied. This study was conducted to clarify this

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disorder's metacognitive dimensions, and of course, to investigate the differences and commonalities between schizophrenic patients in their metacognitive beliefs and the aftereffects of metacognitive therapies in the above-mentioned disorders. Further, it was to find whether each of the particular metacognitive beliefs was related to schizophrenia (five types of metacognitive beliefs) and if any relation or differentiation exists in the subscales.

Today, the importance of fundamental research in science and research method is obvious. Since therapeutic approaches require accurate recognition of the causes and factors of each disorder. This study was done in order to review the role of thinking, metacognition, and also psychological processes on the etiologies of schizophrenia. Investigation on Metacognitive beliefs in schizophrenic patients was performed so as to first, understand the underlying mental and metacognitive foundations in schizophrenia and second, create a metacognitive therapeutic approach, based on the patient's thinking process. Questions and hypotheses of the research were as following:

1. Is there any similarity or common beliefs between schizophrenic patients in the subscales of metacognitive beliefs?
2. Do schizophrenic patients comparing to other psychological patients, have their own specific metacognitive beliefs? In other words, are there any differences between schizophrenic patients and other psychological patients in their metacognitive beliefs?

Baker & Morrison (1998) declared that patients experiencing hallucinations were found to score higher than the other two control groups on metacognitive beliefs about uncontrollability and danger of thoughts and positive beliefs about worry. Also, a logistic regression analysis showed that beliefs about uncontrollability and danger of thoughts were predictive of whether or not subjects experienced auditory hallucinations.

Larøi & Van der Linden (2005) in a study titled "Metacognition in proneness towards hallucinations and delusions", eventually, came to the conclusion that, "multiple regression analyses revealed that positive and negative metacognitive beliefs were good predictors of proneness towards hallucinations and delusions."

Moritz & Woodward (2007) in a study titled "Metacognitive training in schizophrenia: from basic research to knowledge translation and intervention" stated that MCT objective is

to acuminate the subjects' awareness of their cognitive biases and to bring this awareness to their daily life application. They further added that the utility of MCT as a stand-alone program was supported by the preliminary data, but lifelong maintenance of these effects is yet to be well-established. Considering the high rates of relapse and noncompliance under neuroleptic medication along with the feasibility and emerging evidence for positive effects of cognitive intervention in schizophrenia, cognitive techniques should increasingly be incorporated into standard treatment programs for schizophrenia. Nevertheless, in spite of developing evidence for the feasibility and efficacy of metacognitive training as a stand-alone program, its most powerful application may be in combination with individual cognitive-behavioral therapy.

Further, it has been shown that deficits in social cognition and metacognition represented different forms of dysfunction in schizophrenia (Lysaker et al., 2013).

The results from a later study suggested that metacognition, independent of concurrent impairments in neurocognition, may be associated with the insight in people suffering from schizophrenia. They further claimed that metacognition was playing an important role in the development and treatment of delusions and hallucinations (Lysaker et al., 2011b).

The question which arose here was: what does metacognition possibly mean? So as to find the answer to the question, many studies were reviewed and the findings indicated that MCT is an effective treatment for a range of psychological complaints, where the strongest evidence exists for anxiety and depression. Current results suggested that MCT may be superior to other psychotherapies, including cognitive-behavioral interventions. Our results indicated that MCT was effective in alleviating psychological symptomatology as well as maladaptive metacognition. However, more trials with a larger number of participants are needed in order to draw firm conclusions (Norman & Morina, 2018).

The results of a study conducted by Tas, Brown, Esen-Danaci, Lysaker, & Brüne (2012) showed that there was a significant correlation between metacognition and subdomains of intrinsic motivation. Patients with higher intrinsic motivation and preserved metacognition were found to be more improved in the learning paradigm comparing to poorly motivated patients and patients with reduced metacognitive abilities. Above all, "mastery" was

found out to be a self-sufficient predictor of learning potential. Also, motivation and metacognition are important predictors of learning in schizophrenia. Psychological interventions in schizophrenia may, therefore, consider incorporating techniques to stimulate metacognitive and motivational abilities as well as developing individualized training programs.

LITERATURE REVIEW

Definition of Metacognition

Metacognition has been defined as “cognition about cognition” or “thinking about thinking.” Metacognition plays an important role in how someone cognizes, what he pays attention to, or how he controls the appraisals and influences behind the types of strategies that are applied to regulate his thoughts and behaviors (Wells, 2009; Quoted from BATMAZ, 2014). On the other hand, unregulating thoughts and behaviors are schizophrenic patients’ or psychosis’ characteristics.

Schizophrenia

Schizophrenia is a disorder with different symptoms and signs, as well as disturbance perceptions (Including hallucinations, illusions), emotion, cognition, thinking, and behavior. These manifestations vary across patients and over time, but the impact of the illness is always severe and is usually long-lasting. It includes patients whose clinical presentations, treatment responses, and courses of illness, is variable (Kaplan & Sadock, 1988).

Relationship Between Metacognitive Beliefs and Schizophrenia Disorder:

In order to further elaborate the relationship between metacognitive beliefs and schizophrenia disorders, it has been revealed that patients with hallucinations, delusions, panic disorders compared to a healthy group showed that psychotic patients with auditory hallucination experience, tended to show higher levels of metacognitive beliefs than other patients. They obtained significantly higher scores than, at least, two groups from the three control groups about positive beliefs, worries, negative beliefs, —in the case of uncontrollability and danger of thought—cognitive certainty and negative beliefs included superstition, punishment, and responsibility (Morrison & Wells, 2003).

A comparative study on metacognitive beliefs in schizophrenic patients, general anxiety disorders and normal people was conducted by Abolghasemi, Kayamarzi, and Iranpour (2005). The results revealed that there is a significant difference between the mean scores of metacognitive beliefs in schizophrenic patients, general anxiety disorders and normal individuals. Mean scores of metacognitive beliefs in schizophrenic patients were significantly higher than people with general anxiety disorders, scores were also significantly higher in patients with a general anxiety disorder ($P < 0/01$).

Abolqasemi (2007) investigated the relationship between metacognitive beliefs and positive as well as negative symptoms of schizophrenia. The findings confirmed that metacognitive beliefs, with positive and negative symptoms of schizophrenic patients, were positively correlated. Besides, in patients with delusions, the components of negative beliefs about the uncontrollability of thoughts; in patients with hallucination the components of positive beliefs about worry; and in patients with delusions-hallucinations, the components of cognitive self-awareness along with the beliefs about the need to control thoughts and positive beliefs about worry were indexes, respectively. While, in patients without delusion, positive beliefs about worries, were the strongest predictor of positive symptoms of schizophrenia. In patients with delusions and hallucinations beliefs about the need for thought control, and the components of positive beliefs about worry, and low cognitive confidence were the strongest predictors for the negative symptoms of schizophrenia.

In a further comparative investigation run by Yoosefi, Aghdamjangi, Sivanizade, & Adhamian (2008) metacognition in patients with schizophrenia, anxiety disorder, and control group was taken into consideration. They concluded that maladaptive metacognitive beliefs had a higher and more significant correlation with schizophrenia, and in this regard, anxiety was ranked second.

Moreover, the results of a later study suggested a relative support for the hypothesis which claimed various metacognitive abilities –nonpathological metacognitive– may be related to different functionalities of schizophrenia (Lysaker et al., 2008) researchers added: “executive functions are the high-level cognitive processes that facilitate new ways of behaving and optimize one’s approach to unfamiliar circumstances” (Gilbert & Burgess, 2008). Also, it has been shown that metacognitive patterns are mediators of neurological influence on the functioning of schizophrenia (Lysaker et al., 2010b).

What's more, the metacognitive domain, independent of neurological signs; claimed to be related to social recognition (Lysaker et al., 2010a).

Elsewhere, another study confirmed both groups of patients (obsessive, schizophrenia), in all metacognitive subscales, obtained higher scores than the healthy control group –except “positive beliefs about worries.” (Moritz, Peters, Larøi, & Lincoln, 2010). On top of that, the notion that defect in metacognition was a permanent feature of schizophrenia, was consistent with the allegation which former had claimed so (Lysaker et al., 2011 c).

In a study performed by Nicolò et al. (2012), it was illustrated that the sum of metacognitive functions was generally associated with negative and neuropsychological symptoms of schizophrenia.

Bruno, Sachs, Demily, Franck, & Pacherie (2012) declared that metacognitive disorders played an important role in the maintenance of delusional beliefs.

In a Comparative analysis of metacognitive beliefs in schizophrenia, depression and normal group, metacognitive beliefs' mean scores and their components –except cognitive self-awareness– were significantly higher than that of patients with depression and/or normal ones (Sadati, 2012).

In a metacognitive beliefs' meta-analysis on clinical psychiatric patients, the results suggested that psychotic's higher scores were related to higher scores in metacognitive beliefs. Meanwhile, psychotic patients were compared to patients with affective disorders they showed higher scores in “positive beliefs about worry, likewise.” (Sellers, Varese, Wells, & Morrison, 2016).

In similar research, it was claimed that metacognitive beliefs were unique and independent predictors of anxiety and depression in psychotic individuals. However, they were less positively correlated with the topological features of positive psychotic symptoms (hallucinations and delusions). Their findings showed that metacognition was a more important determinant of negative psychotic symptoms than positive symptoms (Sellers, Gawęda, Wells, & Morrison, 2016).

According to the findings of a study done by Van Kleef, Van Donkersgoed, & de Jong (2015) cognition, social function, and metacognition were not correlated. Therefore, a model that considered metacognition as a link between cognition and social functioning in schizophrenia patients was not approved.

Another way around, Hagen, Solem, Opstad, Hansen, & Hagen (2017) compared the role of metacognitive beliefs and obsessive-compulsive symptoms in psychosis. They concluded that metacognitive beliefs had a highly positive correlation with all measured symptoms (obsession, depression, anxiety, hallucinations, and paranoia).

Another study has evaluated the role of metacognitive beliefs by controlling other confounding factors. It affirmed weak social performance can increase the risk of psychosis. They emphasized that this was the first study to find more metacognitive beliefs about uncontrollability and thought risk predicted lower social functioning and that perception of the danger of thoughts, in particular, was of substantial importance (Bright et al., 2018).

Furthermore, schizophrenia has shown that poor insight is the result of several factors. These factors jeopardize the ability of individuals to integrate information flow into one's own awareness of psychiatric challenges and adaptive responses. This model assumes that the metacognitive deficits and the difficulty in forming a complex and integrated understanding of self and others, and the influence of insight, irrespective of root causes such as clinical profile are the cause of the problems (Lysaker et al., 2018).

In a study conducted by Aydin, Lysaker, Balıkçı, Ünal-Aydin, & Esen-Danaci (2018) plasma levels of oxytocin, and vasopressin with neurological function, social cognition, and metacognitive in schizophrenia were investigated. Groups were compared which revealed that blood plasma oxytocin (OT) level was lower in the schizophrenic group. The results also showed that the disorder in the OT is associated with a defect in metacognition. It may also interfere with other forms of cognitive impairment, impeding one's ability to form a complex and integrated sense of self and others.

The Effect of Metacognitive Therapy in Psychotic Disorders

“MCT is based on the following two fundamental components. The first is knowledge translation. Current research findings on cognitive biases and their link to schizophrenia/delusions are explained comprehensibly to patients and illustrated by multiple examples. The second is a demonstration of the negative consequences of cognitive biases. Exercises targeting each bias individually demonstrate the fallibility of human cognition in general, with an explicit focus on thinking biases that are important in schizophrenia.

Personal examples of these biases expressed by MCT participants, and discussion of ways to counter them, serve to provide corrective experiences in a fun and supportive atmosphere, yielding obvious advantages over mere lecturing. Patients are taught to recognize and counter thinking biases that are important in schizophrenia, and they are offered alternative strategies allowing them to arrive at more appropriate inferences, thus avoiding automatic ‘cognitive traps’ (Moritz & Woodward, 2007).

A later review of psychological treatment confirmed that there are certain cognitive biases in schizophrenia, and metacognitive therapy has evolved as a practical and effective complementary therapy for standard psychiatric treatments (Moritz, Vitzthum, Randjbar, Veckenstedt, & Woodward, 2010). They also believed that the study introduces new evidence of cognitive biases involved in the pathology of schizophrenia and shows how metacognitive therapy increases the awareness of patients in identifying and destroying such “cognitive traps.” In the end, they have provided a model of metacognitive therapy, tailored to the patient’s delusional ideas. The experimental results summarized in their research are in favor of the feasibility and effectiveness of metacognitive therapy.

Moritz et al. (2011) in a study titled “Further evidence for the efficacy of a metacognitive group training in schizophrenia”, revealed that group MCT showed significantly greater improvement in parameters comparative to the control group, including delusion distress, memory and social quality of life. In the MCT group, the rate of jumping to conclusions bias was reduced after training. They explained their study confirms prior reports that MCT exerts beneficial effects on some cognitive and symptomatic parameters.

Upon an increase in self-reliance capacity using fictional concepts in psychotherapy, a group of researchers addressed metacognitive capacity for self-reflection in the psychotherapy in schizophrenia. They designed targeted interventions based on the capacity of schizophrenic patients who helped them think about their thoughts. It can help clients over time to move toward creating more ability to engage in complex, reflective behaviors. They conclude that: Individual psychotherapy can be modified to help people with schizophrenia to move toward self-retrieval and redevelopment. It may lead to patients with more thorough experience of themselves, as existing as in the world, with a richer personality narrative and coherent (Lysaker et al., 2011a).

Meanwhile, another experiment on metacognitive intervention for schizophrenia patients run by Moritz, Veckenstedt, Randjbar, Vitzthum, & Woodward (2011) has approved antipsychotic drugs are still selective treatment for schizophrenia. Nevertheless, their visible effects on psychotic symptoms have only mediocrity effects. At least 50% of the patients discontinue medications during treatment. Hence, clinical researchers are heavily looking for complementary treatment. Metacognitive training for schizophrenic patients is a group intervention that seeks to remit the knowledge of schizophrenic patients about cognitive bias (eg, jumping to conclusions), which seems to be the background for the formation and maintenance of delusions. The researchers had a combination of metacognitive therapy with an individual cognitive-behavioral therapy—compared to an active control group—based on individual metacognitive therapy for psychosis. 48 schizophrenic patients were randomly selected. Two treatment methods were assigned: metacognitive therapy and cognitive therapy. Double-blind interventions were performed in both groups, at the baseline, four weeks later. Pathology was evaluated using the “Positive and Negative Symptom Scale”, and the “Psychotic Symptoms Scale.” The cognitive disturbance of jumping to the conclusion was measured using a kind of small task (beads task). The severe delusions decreased significantly in metacognitive therapy, compared to the control group. Delusional beliefs as well as jumping to the result showed a significant improvement in the group. According to this study, adherence to treatment and mental effectiveness for MCT was excellent. This result had shown that the combination of the cognitive approach, and a symptom-based approach, improved psychotic symptoms, and cognitive bias. It suggested a promising complementary treatment for schizophrenia.

In a further experiment on complementary group Metacognitive Training (MCT), it has been shown that the reduction in clinical symptoms, using antipsychotic drugs, for most of the schizophrenic patients was incomplete. Therefore, in order to increase the outcomes of the therapy, researchers are increasingly using cognitive approaches as complementary interventions. Their objective was to determine the effectiveness of MCT in order to investigate the cognitive biases involved in the delusions’ pathology. A total of 150 schizophrenic patients (according to the American Psychiatric Association (APA)) were included in a randomized double-blind controlled study. They were divided into two groups: metacognitive/cognitive training and control group. All patients received anti-psychotic drugs at the same time. The evaluation was accomplished at the beginning

of the treatment, four weeks and six months later. Follow up treatment and take medications, in the follow-up were 86%. After treatment and follow up, improvement of the positive signs of the delusion scale, was positively associated with attending psychotherapy sessions. There were not any changes in the other pathological syndromes. In general, the research showed that MCT, with the aim of developing a patient's awareness (exposed to paranoia) from cognitive biases, was a low-intensity exercise. It also leads to an improvement in delusional symptoms compared to the control group with high control over antipsychotic drugs. Yet, the patients' status in the metacognitive training group was stable in the follow-up (Moritz et al., 2013).

Yet, in another investigation on MCT in schizophrenic patients, considering preliminary evidence for a targeted, single-module program, 28 schizophrenic patients, with mild delusion for which were receiving a popular medication, were selected. Patients were divided into control groups (14 people) and the experimental group (14 people). The pilot group received one-hour training program, in a meeting, targeted MCT. Finally, all patients were evaluated using clinical trials: "general measurement of positive symptoms", "delusional belief", "life quality and insight" and two tasks were evaluated to indicate "perception disturbance of control biases." Two weeks after treatment, the experimental group patients had a significant decrease in the intensity of delusion beliefs and conviction. Interestingly, the improvement of clinical insight and improvement in the tasks of cognitive biases showed respect to the control group, with normal treatment. They stated that improving performance in the tasks of cognitive biases is significantly associated with the reduction observed in the general and positive symptoms of schizophrenia. Patients also assessed the training positively. Although the interpretation of these results was limited, because of the lack of a controlled experiment of random and a small sample; nevertheless, the results were hopeful and required more research, on the targeted program of metacognitive training (Balzan, Delfabbro, Galletly, & Woodward, 2014).

A critical review on MCT in psychosis has compared previous researches done on the impact of metacognitive therapy in psychiatric disorders along with medication therapy. The clinical trials confirmed moderate effectiveness for metacognitive therapy. It has also been shown in a study that its effect is maintained even three years after treatment. They claimed that the patients' confidence and their elevated self-esteem, in cognitive errors, can also be reduced through antipsychotics drugs. They concluded

that metacognitive therapy is a promising approach in the intervention research that can complete standard treatment methods (Schneider & Andreou, 2014).

In a randomized-controlled study about the sustained antipsychotic effect of metacognitive training in psychosis, 52 schizophrenic patients (schizoaffective, resistant delusions) were examined. They applied the diagnostic criteria questionnaire, the rating scale of the psychiatric symptoms, and the scale of positive signs. All patients received antipsychotic drugs and were randomly divided into two groups: A group with the conventional treatment (They only received medication.), and another group, in addition to the conventional treatment, received the metacognition therapy, in eight one-hour sessions. The participants were evaluated (using blind assay) in 8 weeks and 6 months later. The difference between the experimental groups on the pre-test and post-treatment tests was statistically significant and in favor of metacognition. The results of the study revealed that the training of metacognition had an antipsychotic effect on patients with the schizophrenic spectrum which only represents a relative response to antipsychotic medicinal cures. The influence of therapeutic metacognition continued for at least 6 months after the intervention (Favrod et al., 2014).

Moreover, a later study about metacognition in early-phase psychosis on understanding neural substrates, researchers investigated neural layers of psychosis and their relevance with metacognition capacity. The brain structure of 25 patients in the early stages of psychosis, together with their communication with metacognition showed that there was a significant positive correlation between the density of the middle prefrontal layers and the metacognitive scores of these individuals. In other words, higher metacognition scores were associated with higher cell density in these areas. They pointed out that the relationship between these regions and the metacognition processes, in recent studies, has been confirmed as the role of beliefs in the aforementioned brain regions. In their opinion, these findings raise the status of metacognition therapy as a primary intervention in the early stages of psychosis (Vohs et al., 2015).

A randomized clinical trial has also confirmed that even short-term metacognitive therapy could significantly improve psychotic symptoms. Even follow-ups of six months later showed that the delusional symptoms were improving (Balzan, MATTISKE, Delfabbro, Liu, & Galletly, 2018). Each of these studies has supported different dimensions and aspects of metacognition and its relation to schizophrenia disorders.

CONCLUSIONS

Although in this present study it was not possible to cover all previous research on the role and impact of metacognition on schizophrenic patients, some of the most important ones were reviewed. They all came to the consensus about the role and impact of metacognitive beliefs on thinking and reducing positive/negative symptoms of schizophrenia. They also confirmed the effect of metacognitive therapy on the reduction of psychotic symptoms, delusions, as well as the increase in the effects of traditional treatments, and even the regular use of the drug by schizophrenic patients. Therefore, future research should focus more on the interventional effects of cognitive and metacognitive therapies. Considering the questions and hypotheses of this study, it should be noted that, in general, the results of most previous studies have confirmed a significant relationship between different metacognitive components and schizophrenic disorders. Although there is not a consensus on which component is of paramount importance in the explanation of schizophrenia, and various studies have yielded different results, but this difference in results may be due to the number of participants, their culture, chronicity or severity of their disorders, the effect of their previous treatments, and their level of education and information.

1. It is suggested that a future study examine the interaction of each of the five components of metacognitive beliefs, with each of the symptoms and symptoms of schizophrenia (including positive and negative symptoms) so as to statistically analyze and examine the model and pattern of the effects.
2. It is also suggested that the future study examine the effects of metacognitive therapy on the reduction of each of the psychotic symptoms and signs, separately.

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