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# METACOGNITION-ORIENTED SOCIAL SKILLS TRAINING (MOSST): THEORETICAL FRAMEWORK, WORKING METHODOLOGY AND TREATMENT DESCRIPTION FOR PATIENTS WITH SCHIZOPHRENIA

Felix Inchausti<sup>1</sup>, Nancy V. García-Poveda<sup>2</sup>, Javier Prado-Abril<sup>3</sup>, Javier Ortuño-Sierra<sup>4</sup> y Ignacio Gáinza-Tejedor<sup>1</sup>

<sup>1</sup>Complejo Hospitalario de Navarra, CSM Ermitagaña. <sup>2</sup>Unidad de Psiquiatría, Hospital San Juan de Dios de Santurce.

<sup>3</sup>Complejo Hospitalario de Navarra, CSMIJ Natividad Zubieta. <sup>4</sup>Universidad de La Rioja

Los déficits en el funcionamiento social son un síntoma característico de la esquizofrenia y han sido ampliamente descritos en la literatura. Como resultado, el entrenamiento en habilidades sociales (EHS) se considera una parte esencial del tratamiento integral para la esquizofrenia y su inclusión se recomienda en diversas guías clínicas internacionales del trastorno. Sin embargo, diferentes estudios han revelado que los programas actuales de EHS tienen un efecto limitado en cuanto a sus beneficios potenciales sobre el funcionamiento psicosocial cotidiano de los pacientes. El presente trabajo tiene por objetivo presentar un nuevo marco de intervención que integra el entrenamiento metacognitivo y el EHS para pacientes con esquizofrenia: el entrenamiento en habilidades sociales orientado a la metacognición (MOSST). La justificación teórica de MOSST se sustenta en los recientes hallazgos que sugieren el papel central de los déficits metacognitivos en el funcionamiento psicosocial de estos pacientes. Por este motivo, MOSST pretende no solo entrenar las habilidades interpersonales sino también mejorar la comprensión de los estados mentales propios y ajenos, así como la relación entre estos y el comportamiento social efectivo. Para facilitar la descripción de MOSST, su implementación se ilustra a través de un paciente con esquizofrenia que finalizó con éxito el programa completo. Por último, se discuten las implicaciones clínicas de los resultados disponibles hasta la fecha con MOSST, sus limitaciones y las direcciones futuras de investigación.

**Palabras clave:** Entrenamiento en habilidades sociales, Metacognición, Esquizofrenia, Rehabilitación.

The presence of social deficits in schizophrenia has been widely described in the literature as well as the negative impact of these deficits on psychosocial functioning. As a result, social skills training (SST) has emerged as a well-validated intervention that is recommended in several treatment guidelines for schizophrenia. However, various studies have found that the effects and generalizability of current SST programmes are limited with regards to the potential benefits on the daily psychosocial functioning of these patients. This paper aims to describe a newly developed intervention model that integrates metacognitive remediation into SST for patients affected by schizophrenia: metacognition-oriented social skills training (MOSST). The theoretical model of MOSST is based on recent findings suggesting the central role of metacognitive deficits in successful psychosocial functioning with schizophrenia. Therefore, MOSST focuses not only on training interpersonal skills but also on improving the understanding of one's own mental states and those of others as well as the connection between mental states and effective social behaviour. In order to facilitate the treatment description, a case report is presented of an adult diagnosed with schizophrenia who successfully completed the programme. Finally, the clinical implications and limitations of the available evidence on MOSST are discussed, and future research directions with this programme are suggested.

**Key Words:** Social skills training, Metacognition, Schizophrenia, Rehabilitation.

Interpersonal difficulties have been widely described in individuals with psychosis spectrum disorders and, specifically, they are a major feature of schizophrenia (Bellack, Mueser, Gingerich, & Agresta, 2004). These difficulties include, for example, problems in conversing, managing conflict, or acting assertively with family, friends, community

members, or co-workers (Bellack et al., 2007). As a result, social skills training (SST) is considered an essential part of the schizophrenia treatment and its inclusion is recommended in multiple clinical guidelines for the disorder (Almerie et al., 2015; Dixon et al., 2010).

The main purpose of the present article is to present to clinical psychology professionals the Spanish adaptation of the Metacognition-Oriented SST program (MOSST) recently developed by Ottavi et al. (2014a). With this aim, the article is structured in five subsections. Firstly, the main intervention

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Correspondence: Felix Inchausti. Complejo Hospitalario de Navarra, CSM Ermitagaña. C/ Ermitagaña 20, Planta Baja. 31008 Pamplona, España. E-mail: felixinchausti@usal.es

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models currently available for SST in patients with schizophrenia are briefly reviewed. Secondly, the metacognition construct, the most representative findings in the field of schizophrenia, and the theoretical justification of the integration of metacognitive and social skills training proposed in MOSST for patients with schizophrenia are presented. Thirdly, a detailed description of the program is provided. Then we present below the case of a young man with schizophrenia who successfully completed the Spanish adaptation of the program. Finally, we discuss the clinical implications of the results available to date with the program, its practical limitations and future directions of research regarding MOSST.

### CURRENT MODELS OF IN SOCIAL SKILLS TRAINING FOR SCHIZOPHRENIA

The current treatments available for improving interpersonal functioning in schizophrenia can be divided into two groups: those derived from behaviorism and those based on the training of social cognition. The general objective of the first group of treatments is to improve the social functioning of patients through the systematic training of socially effective behaviors, following the theories of behavior modification (Bandura, 1969) and social learning (Bandura, 1977). Some studies support the effectiveness of such interventions in improving psychosocial functioning in patients with schizophrenia (Heinssen, Liberman, & Kopelowicz, 2000), and even in reducing psychotic symptoms, relapse rate, and hospitalizations (Benton & Schroeder, 1990; Dilk & Bond, 1996). However, more recent findings have indicated that their effects and capacity for generalization are limited (Tungpunkom, Maayan, & Soares-Weiser, 2012). For example, a meta-analysis conducted by Pilling et al. (2002) found no significant benefit in clinical trials with SST behavioral programs. Similarly, Kurtz and Mueser (2008) demonstrated that these interventions have a moderate effect on psychosocial functioning ( $d = 0.52$ ) and a small effect on relapse reduction ( $d = 0.23$ ). In the same vein, a recent Cochrane Collaborative Review (Almerie et al., 2015) has concluded that it is still unclear whether current SST programs produce results superior to conventional treatments. Due to the low impact of these programs, several authors have proposed some improvements to increase their efficacy. For instance, Granholm et al. (2014, 2013, 2007) have shown promising results combining SST with cognitive-behavioral therapy (CBT) in adults with schizophrenia.

The second group of treatments, more recently developed, focused on training different areas of social cognition in order to improve the interpersonal functioning of patients with schizophrenia (Moritz & Woodward, 2007; Penn, Roberts, Combs, & Sterne, 2007). In general, the term social cognition refers to the set of mental abilities that underlie effective social interactions. Those that have received the most interest in the field of schizophrenia are theory of mind (ToM), emotion recognition, and attribution styles (Kern, Glynn, Horan, & Marder, 2009; Nakagami, Hoe, & Brekke, 2010). One of the interventions that have raised the most interest has been the

Social Cognition and Interaction Training (SCIT) (Penn et al., 2007). There are data that support the efficacy of SCIT in patients with schizophrenia (Roberts et al., 2014) as well as other similar programs aimed at improving facial recognition of emotions, ToM or attribution styles (Horan et al., 2009; Roder, Mueller, & Schmidt, 2011). However, Kurtz and Richardson (2012) have found that these programs have an unequal impact on social cognition. It has been observed that their effects on the facial recognition of emotions are between moderate and high (identification,  $d = 0.71$  and discrimination,  $d = 1.01$ ), lower on ToM ( $d = 0.46$ ) and zero on social perception, attribution style, and positive and negative symptoms of schizophrenia. At the clinical level, the excessive use that this kind of program makes of computerized tasks for social training has also been questioned. It seems logical to assume that in order to effectively improve mental abilities that give meaning to social interactions, they must be practiced in real interpersonal contexts, similar to those experienced by patients on a daily basis (Combs, Drake, & Basso, 2014). On the other hand, at the theoretical level, there is abundant evidence that social deficits of schizophrenia are more consistently related to difficulties in understanding and integrating one's own and others' mental states in interpersonal situations with a high emotional content, and not so much with isolated neurocognitive deficits (James et al., 2016; Lysaker et al., 2015).

### METACOGNITIVE DEFICITS IN SCHIZOPHRENIA AND THEIR IMPLICATIONS FOR SOCIAL SKILLS TRAINING

In addition to presenting problems with certain specific social skills, patients with schizophrenia have significant difficulties in reflecting on their own and others' thoughts, emotions and intentions, as well as integrating this information into broad and complex representations of the self, others, and the world (Barbato et al., 2015; Brekke, Hoe, Long, & Green, 2007; Inchausti, Ortuño-Sierra, Garcia Poveda, & Ballesteros-Prados (2016); Lysaker et al., 2015). For this reason, patients with schizophrenia strive to make sense of life's challenges, to perceive themselves as active agents of the world, or to understand their social relationships in a broad and non-egocentric way (Harvey & Penn, 2010). The constructs of ToM (Brüne, 2005), social cognition (Pinkham, 2014) and metacognition (Semerari et al., 2003) have been used in the literature to refer to some of the mental processes that underlie this set of mental skills. In this article, the term metacognition is used broadly to refer to the simple mental processes in charge, for example, of identifying one's own desires, thoughts or emotions, as well as complex processes that allow us to integrate intersubjective information to create general representations about oneself, others and the world (Inchausti et al., 2016). As proposed by Lysaker et al. (2005), four broad abilities are included under the term of metacognition that are ordered hierarchically: (1) self-reflexivity or the capacity to think about one's own mental states; (2) differentiation or the ability to think about the mental states of others; (3) decentralization or the capacity to understand that one is not the center of the world

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and that there are different ways of understanding reality; and (4) dominion or the ability to integrate intersubjective information into broad definitions of problems that allow an adaptive response (see Table 1).

Metacognitive deficits are particularly relevant in schizophrenia since they have been consistently related to psychosocial functioning and psychotic symptoms, regardless of neurocognitive functioning (Macbeth et al., 2014; McLeod, Gumley, Macbeth, Schwannauer, & Lysaker, 2014). As a consequence, numerous treatments have been developed specifically in recent years aimed at training metacognitive abilities in psychosis. For example, psychotherapies have been proposed to develop the ability to reflect upon the self and others (Lysaker et al., 2011) and metacognitive training programs have emerged, aimed at improving the ability to identify and correct dysfunctional reasoning styles such as, for example, the tendency to jump to conclusions (Moritz & Woodward, 2007).

Under the prism of these findings, Ottavi et al. (2014a, 2014b) have developed the MOSST program. The objective of MOSST is not only to develop specific and effective social behaviors but

also to help patients better understand their own mental states and those of others. The social skills trained in MOSST are similar to those of other conventional SST programs (Bellack et al., 2004) and, like these, emphasize the essential role of modeling and generalization for learning. However, MOSST focuses specifically on participants' correct understanding of the mental processes underlying interpersonal scenarios in role plays and among the group members themselves, including therapists. MOSST also offers a unique approach to the development of self-reflexivity skills, enhancing the development of increasingly complex mental representations of the self, with one's own thoughts, intentions, emotions, and desires. This, in turn, allows the participants to understand that their own thoughts and subjective experiences are different from those of others and that their inner expectations do not have a direct effect on reality.

Unlike programs that combine SST with CBT (Granholm et al., 2013), MOSST aims to: (1) train the metacognitive function and not just change dysfunctional thoughts. In this sense, the confrontation of this type of thinking is often complex and even

**TABLE 1**  
**STRUCTURE OF THE METACOGNITIVE ASSESSMENT SCALE - ABBREVIATED (MAS-A; LYSAKER ET AL., 2005)**

Level	Self-reflexivity	Understanding other's mind	Decentration	Mastery
0	Total lack of awareness about one's own mental activity	Total lack of awareness about mental activity of others	Considering that one is the center of everything that happens	Lack of awareness of problems
1	Slight awareness of one's own mental activity	Slight awareness of mental activity of others	Recognizing that others have independent lives	Awareness of problems as unsolvable
2	Awareness that thoughts are one's own	Awareness that others have their own mental activity	Awareness that there are different ways of understanding the same event	Awareness of problems as solvable but with lack of response
3	Distinction of one's own different cognitive operations (thoughts, fantasies, memories...)	Distinction of different cognitive operations of others (thoughts, fantasies, memories...)	Awareness that events are the result of multiple and complex factors	Passive responses
4	Distinction of different emotional states	Recognizing different emotional states in others	—	Responses of seeking help
5	Recognizing that one's own thoughts are fallible	Plausible suppositions about the mental state of others	—	Responses with specific actions
6	Recognizing that a desire is not reality	Complete descriptions of the thought of others over time	—	Responses with changes
7	Integration of one's own thoughts and emotions in a narrative	Complete descriptions of the thought of others throughout their lives	—	Responses based on one's own knowledge
8	Integration of various narratives recognizing patterns over time	—	—	Responses based on knowledge of others
9	Recognizing connected thoughts and emotions through one's own life	—	—	Responses based on a broad understanding of life



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counterproductive in patients with delusional tendencies (Seikkula & Olson, 2003); (2) to enable participants to become aware of their own mental states (Caponigro, Moran, Kring, & Moskowitz, 2014) in order to give them greater access to their desires and needs and, therefore, to commit themselves to meaningful social environments aimed at achieving objectives; and finally, (3) to train both the therapist and the patients to constantly verbalize their mental functioning through the strategic use of metacommunication during interactions. This principle is essential and is based on findings that suggest that inter-subjective problems are more dependent on metacognitive deficits (Salvatore, Dimaggio, & Lysaker, 2007; Salvatore, Dimaggio, Popolo, & Lysaker, 2008; Stangellini & Lysaker, 2007) and not so much on isolated cognitive abilities that can be learned. In this line of study, as proposed by Ottavi et al. (2014a), the therapist should not simply tell a patient that they must smile more when they shake hands; rather it would be beneficial to use phrases with metacognitive content, such as: "I felt a little uneasy when we shook hands as I didn't know how you felt at that moment."

### DESCRIPTION OF THE MOSST PROGRAM

#### *Theoretical framework and previous considerations*

The MOSST program is based on a hierarchical model of metacognition in schizophrenia where individuals must be able to perform simple metacognitive tasks first (e.g., recognizing that thoughts are their own), before undertaking more complex tasks (e.g., recognizing that thoughts and emotions are connected in daily life) (Lysaker et al., 2005). As in other metacognitive-oriented psychotherapies (Dimaggio, Montano, Popolo, & Salvatore, 2015; Ribeiro, Ribeiro, Gonçalves, Horvath, & Stiles, 2013), MOSST is conceptualized as a treatment that progressively assists patients to acquire increasingly advanced metacognitive skills (Table 1).

In order to produce metacognitive growth, certain conditions are also required (Dimaggio et al., 2015). First, the group meetings must be held in a safe physical space, free of disruptive or unexpected interruptions from other patients. Second, therapists must promote a calm and adequate expression of emotions so as not to compromise the development of the metacognitive skills of the group members (Dimaggio et al., 2015). Any perception of insecurity, whether due to the physical environment or negative interactions between group members (e.g., criticism, disrespect or excessive emotionality) or with the therapists (e.g., using sarcasm or a provocative style of communication) will preclude metacognitive advancement (Fonagy, Luyten, & Bateman, 2015). Third, a validation attitude must be adopted that creates a secure environment (Linehan, 1997). Fourth, therapists must make strategic and structured use of self-disclosure, self-participation (Sturges, 2012) and metacommunication to help patients reflect on the therapeutic relationship and inter-subjectivity with the aim of developing a collaborative relationship and sense of belonging (Safran & Muran, 2000). For example, the therapist can normalize a patient's difficulties in receiving praise by indicating how embarrassed they felt in a similar personal situation (self-

disclosure). They can also openly report their own feelings towards a patient's attitude of distrust, stating that it bothers them or makes them feel tense and unmotivated to open up (self-participation). They can also emphasize a conflictive situation with a patient: "I have the feeling of being immersed in a tug of war where each of us is trying to impose our point of view on the other" (metacommunication). Fifth, communication must be clear and simple, avoiding the use of metaphors or irony, as these may be difficult for this type of patient to understand. In addition, the focus should be on metacognitive content as much as possible (Ottavi et al., 2014b). For example, if a patient asks to leave the group to smoke when a fellow group member is making an important disclosure, the therapist can respond: "I think your fellow group member and I might be offended if you leave the group now. I would prefer us all to end the meeting together and to listen to your opinion about what your fellow group member has told us. Moreover, I would be concerned not to be able to keep the whole group together and motivated" (p. 297). Finally, the playful nature of the treatment should be encouraged in order to foster the free reflection of the emotions and thoughts that emerge in situations of everyday life (Brown, Donelan-McCall, & Dunn, 1996; Fonagy, Bateman, & Bateman, 2011).

The use of these strategies ultimately aims (1) to enhance the use of appropriate metacognitive feedback on patient performance in role plays, (2) to strengthen the therapeutic alliance and (3) to increase the security, equality and cooperation in the relationship. This, in turn, has been shown to produce improvements in self-reflexivity skills and to provide an opportunity to understand the flow of thoughts and emotions of therapists and mimic their regulatory mechanisms.

MOSST sessions have a group format. In general, it is recommended that sessions are conducted by at least two psychotherapists who are experts in the management of SST groups and with specific training in metacognitive therapy for psychosis (van Donkersgoed, de Jong, & Pijnenborg, 2016). The meta-cognitive training should include methods to help patients produce narratives about significant interpersonal episodes they have experienced and to deduce the metacognitive skills they have used in these situations (Inchausti et al., 2016). The goal is for therapists to act as "metacognitive facilitators" (MF), especially with those participants who demonstrate significant difficulties in reflecting on their own mental states. This support must include adequate indications for developing metacognitive narratives about interpersonal episodes, both orally and in writing, providing clear feedback and using self-disclosures during the role play. The inclusion of the MF is motivated by the clinical observation that many patients present higher levels of metacognition in individual interactions than in group ones. Since, in addition, the participants are more likely to have different metacognitive abilities, the presence of the MF helps to achieve a more balanced learning pace and allows more intensive training in patients with greater cognitive and/or metacognitive difficulties.

The program is mainly aimed at outpatients with schizophrenia, with certain clinical stability and who present



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difficulties at the interpersonal level and/or a tendency to isolate themselves. General exclusion criteria include mental retardation, presence of neurological syndromes (e.g., dementia, epilepsy, etc.), affective psychoses, hallucinations or severe or extreme delusions, and severe autolytic or heteroaggressive ideation. The number of participants per group is flexible and can range from 5 to 10, depending on their profiles. The frequency of sessions is also flexible, although it is recommended for them to be at least weekly, with a duration of approximately 90 minutes. Before starting the group, it is necessary to hold two introductory individual sessions. In the first, it is recommended to evaluate the social skills that participants are able to put into action in their daily lives. In the second, a motivational session, the training and the potential advantages of successfully completing the program are described in more detail. In both of the initial sessions, it is also advisable to explore awareness of one's own thoughts and emotions, especially in those participants with poor self-reflection skills. After these individual sessions, group training sessions begin.

### General Structure of Sessions

The original protocol consists of a total of 16 sessions in which different social skills are trained in a specific way, one skill per session, following a criterion of ascending difficulty (Figure 1). The social skills trained in MOSST can be divided into 3 groups: (1) conversational skills, such as active listening, greeting others and initiating, maintaining and ending conversations; (2) assertiveness skills, such as making and rejecting requests, giving and receiving praise, asking for information, suggesting activities to others, and expressing unpleasant and positive feelings; (3) conflict management skills, such as commitment and negotiation, making productive complaints, responding to negative complaints and apologizing.

All of the sessions of the program are divided into two distinct parts, with independent reflection exercises. Two independent modules are included in the first part of the session: self-reflexivity (SR) and understanding other's minds (UOM) (see Figure 2). The aim of the first module is to increase the awareness of one's own mental states and, that of the second module is to enrich the participants' perspective on the mental functioning of others.

#### First part: Observation/Reflection

The self-reflexivity (SR) module aims to encourage patients to report a recent interpersonal episode in which they attempted to use the social skill corresponding to the session. The episode should include both positive and moderately negative emotions. MFs should guide the participants by asking specific questions about the episode that enhance their memory as well as the emotions, physical sensations or thoughts that appeared throughout it. MFs should also help them to write about and later share their experiences in the group. After this initial exercise (Fig. 2, Exercise 1: "Memory of an episode"), the first exercise of reflection begins (Fig. 2, Exercise 2: "Questions and

answers"). In this exercise, therapists ask questions with the aim of developing the subject's inner understanding of their own thoughts, emotions, physical states, and response tendencies before, during, and after the episode. Subsequently, the various episodes are discussed in a group and information is provided to examine the contents of the reflection exercise.

The understanding other's minds module (UOM) consists of observing a role-play scenario organized by therapists in which a daily situation is represented where the protagonist experiences a specific mental state. Next, the group members have to work to identify the mental state of the protagonist (Fig. 2, Exercise 3a: "Analysis of a scenario"). Alternatively, the task may include active listening to an episode narrated by therapists in which the different mental states presented by the main character of the story must be identified (Fig. 2, Exercise 3b: "Analysis of a narrative"). The complexity of the role play (Exercise 3a) and the narrative (Exercise 3b) should increase throughout the program so that the emotions experienced by the characters increase in number and difficulty.

After viewing the scenarios or listening to the narratives, the participants complete a worksheet with questions that inquire about the mental states and behaviors of the characters. On this point, MFs may work with patients again individually or in smaller groups to identify relevant mental states or to examine other metacognitive aspects presented in the module. For example, MFs can tailor questions to the level of patients' metacognitive skill. Once the questions have been answered in writing with the help of the MF, patients have to reflect again on the mental states present in role plays or narratives (Figure 2, Exercise 4: Questions and answers).

At the end of Exercises 1 and 3a or 3b, the therapists must encourage the participants to reflect on the autobiographical or interpersonal episodes they remembered or witnessed. Thus, the therapists ask questions about the relationship between emotions, thoughts, behaviors and events, or about the differences between the different mental states that appear in scenarios or narratives. These questions are intended to help patients identify mental states that can be directly deduced from observable behavior (e.g., emotions) and from contextual cues.

The usual questions of the SR and UOM modules stimulate the identification of the basic elements of mental activity, i.e., thoughts and emotions, as well as the understanding of the relationship between these elements and behavior. Patients, for example, are asked to identify emotions ("What emotion does X feel in that situation?" or "What did you feel in that situation?"), thoughts ("What do you think X thought?"), behaviors ("What was X's behavior during the event you just saw?"), as well as the relationship between them ("Which emotions could have caused the behavior of X?" or "What were you thinking when you acted like that?") In the SR module, the objective is to promote the ability to distinguish between different mental contents, for example: "Describe a project, a dream and a fantasy of your own", "What do you expect to happen in your work?" or "What do you hope to achieve with this therapy?" In more advanced stages, therapists should strive to stimulate the interpretation of

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more complex mental states, such as asking patients to describe a situation in which they have felt content and anxious at the same time.

In the UOM module, an additional question is asked: "How would you have felt in the situation of the main character of the story?" If a lack of understanding of one's internal experiences or those of others is deduced from the answers, the therapist initiates a dialogue with the patients to try to promote the metacognitive ability immediately above the level previously reached. For example, if the patient is unable to identify the emotions of others, the knowledge of verbal and non-verbal cues is promoted until an adequate understanding of the emotions and intentions of others is achieved. Feedback from other participants is important, to check whether the patients' conjectures coincide with the actual internal state of others.

Part 2: Roleplaying

The second part basically consists of working with role-play exercises similar to those included in other conventional SST programs. In this part, participants are asked to engage with therapists in role plays where they must assume different roles depending on the social skill to be learned. The exercises are usually based on the stories described in Exercise 1 of the SR

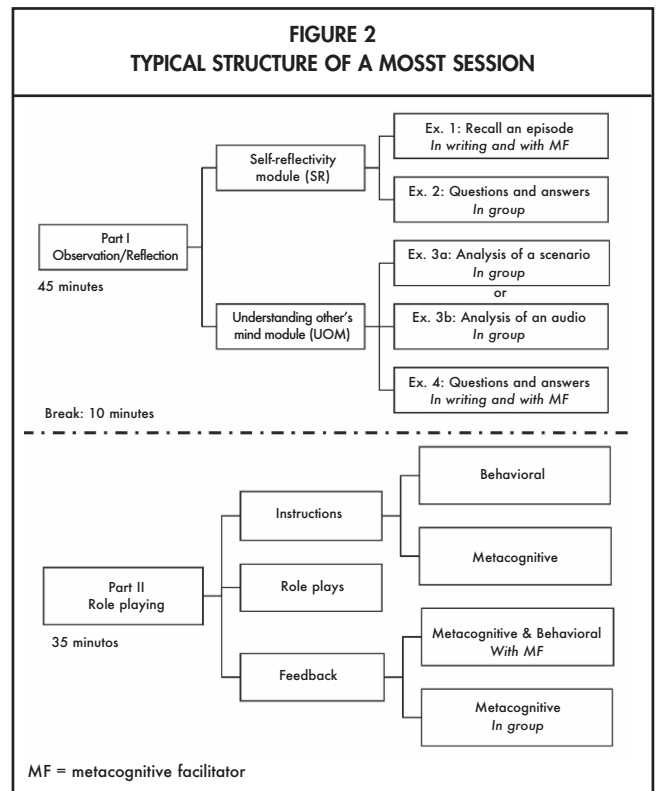
module. However, unlike conventional SST programs, MOSST not only practices observable behaviors that are intended to be acquired, but also provides detailed metacognitive information to achieve adequate behavior with the corresponding social skills. Therefore, before beginning with the role-plays, the therapists provide precise instructions on the social behavior to be practiced (e.g., greeting a friend) and on the mental states that underlie the successful behavior of the characters (e.g., desiring approval or fearing criticism). In addition to explicitly suggesting mental states in role-plays, therapists also invite participants to recall their own mental states in similar situations from their daily lives to those of the simulated scenario. Subsequently, a discussion is conducted on the mental states that emerged during the module to improve the understanding and processing of the contents presented.

In order to facilitate feedback during role plays, the MFs must structure and formalize it according to the MATER model, an acronym that stands for a sequence of feedback in 4 parts: the Marker or observable behavior of the patient; the Automatic Thoughts of the MF immediate to the patient's observable behavior; the Emotion or affective states of the MF associated with automatic thinking and observable behavior; and the potential Response of the environment in a real situation. The aim of the MATER model is to promote awareness of mental states through interpersonal interaction that (1) includes what is happening in the mind of the MF, (2) helps patients to become aware of the impact of their behavior on others, and (3) allows patients to anticipate the consequences more accurately in the

FIGURA 1  
LIST OF SOCIAL SKILLS TRAINED IN MOSST

1	• Greeting others
2	• Listening to others
3	• Asking for information
4	• Starting and ending conversations
5	• Holding conversations
6	• Receiving compliments
7	• Giving compliments
8	• Making requests
9	• Rejecting requests
10	• Compromising and negotiating
11	• Suggesting activities
12	• Giving constructive criticism
13	• Responding to negative criticism
14	• Apologizing
15	• Expressing unpleasant feelings
16	• Expressing positive feelings

FIGURE 2  
TYPICAL STRUCTURE OF A MOSST SESSION



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real world. An example of feedback following the MATER model may be as follows:

"Marcos, first of all I congratulate you on how you have performed the exercise despite feeling nervous, which, by the way, is completely understandable considering that I would have felt a bit embarrassed too (metacognitive feedback of validation)... I am going to comment on some things that I have seen and felt while we were doing the role play and then, please, tell me what you think. Bear in mind that what I am going to tell you refers to what you could have thought and felt in a real situation, when we tend not to be so aware of the tension and the situation... While you were expressing your joy, I realized that your gaze was directed upwards and that you were looking at me seriously (Marker). This confused me because I was expecting you to look me in the eye and smile at me. I had the feeling that you were not being honest. For a moment I even thought you were angry. You know, like when we have to pretend, out of necessity, that we are happy and instead we are annoyed (Automatic Thought). Of course, now I know you were tense and not annoyed. However, at the time, these thoughts made me feel uncomfortable, with a little anxiety, like when we cannot understand clearly what the other person really wants from us (Emotion). Probably, if it was a real situation and I did not know you at all, I would think that you were not interested in seeing me, and I would not feel very motivated to do it again."

#### CLINICAL ILLUSTRATION OF MOSST: THE CASE OF MARCOS

Marcos is a 24 year old man diagnosed with paranoid schizophrenia who is being monitored by the mental health services of Navarra. He has always lived with his parents and older brother. His first contact with mental healthcare was about 2 years ago, when he was assessed as an outpatient on his own initiative because he felt observed by others, he had the feeling that others could read his thoughts and that he himself had the ability to know what others think. Since then, Marcos has maintained an outpatient follow-up with little adherence to the prescribed pharmacological and psychotherapeutic treatments. He has a history of cannabis abuse since the age of 15, suffering from what, after a retrospective analysis, seems to be a first psychotic episode in the context of this consumption at the age of 18. He says he does not consume cannabis now. A social report describes a family situation characterized by a high level of expressed emotion, ranging from hostility and criticism to emotional over-involvement. He has been treated with several antipsychotics, namely Sulpiride, Pimozide, Risperidone, Olanzapine, Aripiprazole, Quetiapine and Asenapine.

#### Metacognitive profile

The clinical interview revealed that Marcos presented metacognitive deficits in self-reflexivity skills. He did not seem to be familiar with certain fundamental mental states (e.g., dreams: "I have never dreamed... Dreams do not exist") and he did not think he had desires, expectations or goals either. He also

manifested delirious phenomena of thought insertion and the idea that his actions and feelings were induced by his brother: "My brother manipulates my mind." Marcos was convinced that his brother controlled his mind and body. He had serious difficulties naming his own emotions: "I feel nothing in my body, and this makes me strong in front of others." On the other hand, he experienced difficulties in linking his behavior and his decisions to any tangible mental state: "I do not arrange to meet my friends because I do not need them; I live better alone." Marcos was virtually incapable of forming complex ideas about the mental states of the people around him. He also exhibited excessive personalization of the events around him and had serious difficulties in recognizing that others might have different perceptions of the world than his own. His ability to empathize was also limited, which was evidenced in behaviors such as repeated arguments with his parents and brother from whom he stole money to buy cigarettes, food or computer games without considering the consequences for his family, who were having a hard time financially.

#### First part: Self-reflexivity module

Marcos found it difficult to select emotionally relevant interpersonal episodes in the sessions because of his limited ability to identify and name his emotions. For this reason, it was necessary for the MFs to stimulate his autobiographical memory to remember fragments of previous episodes that occurred in the sessions: "When was the last time you felt that you were talking and joking with another person, as we saw last week? At the beginning of the session you did not feel like talking and you wanted to be alone. Do you remember if that has happened to you again this week?" This type of support allowed him to remember significant episodes, to describe in detail the circumstances in which they occurred and their associated mental states. Once the events were evoked and written, they were read out in a group. Marcos seemed happy to share his memories even though the process of remembering them was difficult. In addition, Marcos responded to numerous mentalistic questions posed by the therapist, such as: "What would you have preferred at that time?" and "What did you expect your brother to do?" When he tried to respond, the therapists encouraged Marcos's groupmates to come up with hypotheses about what he might have thought and felt during a particular event, while emphasizing the plausible but hypothetical nature of these considerations and emphasizing the need to consider only the information provided by Marcos.

#### Understanding others' minds module

Marcos was interested in the role plays performed by the therapists and he made numerous self-revelations, such as sharing his weekend plans with the group. With the help of the MFs, he was able to identify his own mental states in the worksheets, which he had not initially been able to do. He was able, for example, to identify the emotion of anger in a person who was furious because someone had cut in line at a bakery. In addition, thanks to the additional support of the MFs, Marcos



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was able to increase his understanding of more complex mental states. For example, a MF suggested to him that he spent most of his time doing nothing, just watching TV or lying on the sofa. The MF asked Marcos to “put himself in the character’s place” or to try to remember a similar situation of his own: “How would you feel in that situation?” and “What would you like to change about your state?” Finally, Marcos began to truly understand the importance of mental states in goal-directed behaviors, as well as the universality of certain mental states. For example, he was able to understand that the anger he feels when his mother shouts at him for not helping with household chores, is the same as she feels when she has to clean the living room while he watches TV. The exercises in this module were rather beneficial for Marcos, who had never before experienced a third-person perspective. Developing his skills to identify and name various emotions also helped him to establish relationships between his own experiences and those of others, as well as to understand that there were similarities between his own internal states and those of others.

### **Second part: Roleplaying**

At first, Marcos had difficulties in the role plays although he said he understood the objectives of the activity. As he progressed through the exercises in the first part, in which he systematically explored his own mental states and those of others and he reflected on his autobiographical memories, his performance in role plays improved to become more subtle and flexible. The following example illustrates the clear difference in Mark’s abilities in the role plays between a situation in which he performed social behavior without mentalization and another in which he referred to his own and others’ mental states after being guided metacognitively by the MFs.

Marcos asked to give a representation of a particularly delicate situation for him: he had to explain the reasons why he had forgotten to go with his brother to the doctor’s. In this case, the target social behaviors were “justify” and “give reasons”. Marcos was very motivated about the activity because he knew that that afternoon he was going to face that very situation: he would have to try to convince his brother and handle his probable disappointment or irritation due to the breach of their agreement. To fulfill his request, and after completing the modules of part one, the therapists went straight to the role-play proposed by Marcos without providing mentalization instructions. Thus, the therapists simply proceeded to describe, with the help of the group members, the steps necessary to carry out the skill (maintaining eye contact, adopting a “serious” tone of voice, justifying himself and explaining why he had not gone with him to the doctor’s) without activating the metacognitive function. Marcos himself was then asked to play his role in the role play. Although he was very motivated, Marcos had great difficulties in carrying out the exercise and he performed it mechanically, continuously reviewing the list of steps to be followed, described on the board, and with numerous pauses when he did not know what to say. Once

completed, Marcos said he was not satisfied with his performance and attributed his difficulties to being tired and generally “distracted”. In this context, the therapists decided to help him explore his brother’s possible mental states in that situation (e.g., disappointment and irritation, but also his willingness to accept Marcos’s excuses and improve their relationship) and his own possible mental states, (e.g., negative anticipations of an argument or non-acceptance of his excuses, or the more reasonable possibility that he would accept them if Marcos explained them correctly). MFs played a fundamental role in the exploration of possible mental states in this social interaction. Then the role play was repeated with the therapist initially verbalizing out loud the mental states present in both characters and later without this support. This time, Marcos became more actively involved in the role play; he did not use the list of steps and he even managed to successfully deal with unforeseen objections of the other actor. On this occasion, Marcos seemed to feel more comfortable in understanding the metacognitive aspects of the social situation. It is important to emphasize that he seemed to have created a different version of his own than the one proposed by the facilitators on how to handle the situation effectively. At the end of the role play, Marcos stated that he was satisfied with his performance and noted that his fear of this situation had diminished significantly, from an initial subjective assessment of 9 to a 3 after completing the exercise.

### **Social outcome**

In a pre-post MOSST comparison, the therapists noted that Marcos had markedly improved his conversational skills, in acting assertively and handling conflicts. Specifically, Marcos improved his active listening skills in conversations, self-presentation and presentation to others, in starting and ending conversations, participating in social activities, asking questions and asking for favors appropriately, giving and accepting compliments, and apologizing. As for his metacognitive ability, Marcos was able to identify that he had thoughts (“I thought that my relationship with my brother was not helping me”); he was able to name most of his basic emotions; he could understand the limited influence of his expectations and wishes on reality (e.g., he was able to joke about his wish to have a girlfriend) and could understand the multifaceted nature of different points of view (“most arguments with my brother are because we have different points of view about many things”). As a result of this greater capacity to understand his own and other people’s thoughts, Marcos developed his understanding of the impact of his behavior on his family and of explaining the behavior of others in mentalistic terms.

As a result of these advances, the level of social acceptability of Mark’s behavior improved while his disruptive behaviors (e.g., arguments, shouting or blackmailing his mother) significantly decreased, which substantially reduced the emotion expressed in the family nucleus, as reflected by the social worker who worked on this case in the follow-up notes.





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**CONCLUSIONS**

The objective of this work was to present to the professionals of clinical psychology the adaptation to Spanish of the MOSST program. This program was developed specifically to address the limitations detected in current SST programs and in the context of recent findings that suggest a relevant role of metacognitive deficits in effective psychosocial functioning in schizophrenia. In this perspective, MOSST is an SST program that includes both the prototypical role plays of SST behavioral programs and the structured training of metacognitive skills in real interpersonal contexts.

The integration of the two models is justified on the premise that an adaptive social functioning requires one firstly to have an adequate dominion of one's own mental states and those of others. Thus, the skills of understanding other's minds must be enhanced, in other words the ability to detect the intentions and needs of others, or emotional self-regulation in relevant interpersonal situations. At the same time, in order to understand others, it is necessary to share experiences in real interpersonal contexts, to understand and share the feelings of others –and not just to guess them– and to manage the resulting emotions. Improving metacognitive skills is essential in achieving optimal interpersonal functioning. With regard to self-reflexivity training, some authors have pointed out that patients with schizophrenia present exaggerated self-consciousness in times of crisis (or hyper-reflexivity) as a consequence of a decrease in the implicit sense of existing as an active agent with one's own awareness and affect (Sass & Parnas, 2003). In this sense, MOSST could be an effective tool for preventing this kind of pathognomonic phenomena associated with schizophrenia.

It is necessary to point out again the relevance of the "metacognitive facilitator" in MOSST. As described above, the MF is responsible for stimulating the participants' metacognitive skills by enhancing the use of intersubjective narratives in both oral and written sessions. This role is linked to the contributions of other psychotherapeutic models, such as narrative therapy, where the therapist encourages the patient to create vivid descriptions of relevant personal events from the past (Payne, 2002).

Due to the characteristics of the program, it can be assumed that MOSST is a first-line treatment to improve participants' metacognitive capacity and, in particular, self-reflexivity and differentiation skills. It is also expected that the improvement of these skills will translate into faster, more stable changes over time and more widespread social skills. The data obtained to date with MOSST are promising and point to its high degree of acceptability and efficacy in small groups of patients with early psychotic episodes and chronic schizophrenia (Ottavi et al., 2014b). A recent pilot study with the Spanish adaptation of the program in a sample of 10 patients with schizophrenia has demonstrated its potential acceptability and efficacy in the context of Spanish public healthcare (Inchausti et al., under review). Specifically, after completing the MOSST treatment, participants demonstrated a significant increase in habitual

interpersonal activities, improved social and personal relationships, and a decline in disruptive and/or aggressive social behaviors, on the basis of the scores obtained by blind evaluators with the Personal and Social Performance (PSP) scale (Apuian et al., 2009). At the metacognitive level, an increase in the abilities of self-reflexivity and decentralization evaluated with the Metacognition Assessment Scale - Abbreviated version (MAS-A) was also observed (Semerari et al., 2003). However, these findings, although promising, are methodologically insufficient to determine the efficacy of MOSST due to several reasons, including the small sample size and the absence of a control group (Inchausti et al., under review). For this reason, a randomized, single-blind clinical trial is currently underway where these preliminary results are reviewed with MOSST (trial reference for further information: ISRCTN10917911).

Once the efficacy of MOSST has been clarified, future research lines should analyze its combined effect with other metacognitive psychotherapies (de Jong, van Donkersgoed, Pijnenborg, & Lysaker, 2016). This type of research may help to clarify whether the different metacognitive domains are trained more effectively with one or another type of programs (individual, group, combined, etc.), or if MOSST and other therapies of the same approach act synergistically to improve the level of psychosocial functioning in patients with schizophrenia. In addition, due to the significant impact of neurocognitive deficits on social skills and functioning in schizophrenia (Lysaker et al., 2010), it is relevant to determine the potential effects of combining MOSST and neurocognitive rehabilitation, as noted by Ottavi et al. (2014a). It should be noted that the work approach proposed by MOSST can be generalized to the general rehabilitative treatment of other serious mental disorders, by applying its metacognitive principles to other psychosocial treatments. This would allow the creation of a "metacognitive environment" in the organizational structures of the therapeutic-rehabilitating centers which would stimulate the global recovery of the metacognitive functions affected in this group of disorders.

Finally, with regards to the limitations of MOSST it is necessary to point out that, from a practical point of view, the implementation of the program requires intensive training for the therapists. The lack of a program manual in Spanish and the costs of training the therapists in the metacognitive model are notable obstacles for the development of this type of intervention in Spain.

**CONFLICT OF INTERESTS**

The authors declare that they have no competing interests.

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