

Evidence for the efficacy of a metacognitive and social cognition training program for outpatients with Schizophrenia

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1. Objective

Impairments in social cognition are a consistent finding in Schizophrenia. The most commonly affected domains are theory of mind, emotion recognition and social perception (Frith, 2004; Green et al., 2005, 2008). There is also a vast array of social cognitive bias that lead to failures in data acquisition and attribution of causes, including jumping to conclusions, self-serving bias, bias against disconfirmatory evidence, need for closure and liberal acceptance (Beck et al., 2009; Freeman, 2007; Garety & Freeman, 1999; Moritz et al., 2007). Social cognitive processes are unique determinants of functional outcome in schizophrenia (Couture, Penn, & Roberts, 2006). This influence is recognized in two directions. First, there is growing evidence that social cognition acts as a direct predictor of functional outcome and that has the potential to exert even more influence in community functioning than neurocognition (Fett et al., 2011). Second, social cognition has been found to mediate the relationship between basic neurocognition and functional outcome, making it more proximal to daily life functioning (Sergi et al., 2006, 2007; Vauth et al., 2004). Therefore, it should be looked carefully as an important target for intervention. Thus, the aim of this study was to develop and determine the effects of a metacognitive and social cognition training program in a group of outpatients with Schizophrenia.

2. Material and Methods

Participants

27 clinically stable outpatients with Schizophrenia from two social-occupational forums in the North of Portugal were assigned to a metacognitive and social cognition training program (n=14; 1 female) or to treatment as usual (TAU; n=13; 1 female). The mean age of the participants was 40,1 (SD=9,1) for the training program group and 36,1 (SD=9,7) for the TAU group. This difference was non-significant (t=-1,128; p=0,270).

Instruments

Participants completed pre and post-treatment assessments of cognitive flexibility, social cognition, functioning and symptoms. Measures correspond to domains relevant to schizophrenia: cognitive flexibility (*Trail Making Test B*), theory of mind (*Hinting Task*), jumping to conclusions bias (*Fish task-draws to decision*), emotional regulation (*MSCEIT Managing Emotions branch*), emotion recognition (*Facial Emotion Identification Test*), attributional bias (*Ambiguous Intentions Hostility Questionnaire / Ambiguous Situation*), functioning (*Life Skills Profile*), symptoms (*Positive and Negative Syndrome Scale*) and self-esteem (*Rosenberg Self-esteem Scale*).

Procedures

The participants on the experimental condition underwent a 10-week metacognitive and social cognition training underwent, designed to address social-cognitive biases (e.g., jumping to conclusions, self-serving bias, bias against disconfirmatory evidence, need for closure and liberal acceptance) and other aspects of social cognition (emotional recognition, theory of mind and social perception). For this purpose, the program consisted of parallel metacognitive psychoeducational sessions (in the first session of the week) and interactive social cognition sessions (in the second session of the week). Each metacognitive session was based on the MKT program (Moritz, Woodward, Rocha, & Queirós, 2010) and has an introduction, as well as multiple exercises, and concludes with learning highlights. Case examples and slides underlining the relevance of particular biases emphasize the relationship between the group exercises and social cognitive biases. The interactive social cognition sessions focused on the processing of emotional and social cues, the analyses of social situations, the understanding of non-literal speech or deception and the ability to take another's perspective. This was done by using group exercises (e.g., condensed messages), interactive didactic presentations (e.g., direct the attention to relevant facial features; use mimicry to potentiate the ability to recognize emotions), role-plays and homework. Table 1 presents some of the main objectives of each training component.

The dose and the type of the antipsychotic medication were not controlled in the study, but it was not qualitatively changed during the program. Pre and post-training scores were compared by paired samples t tests, using the program PASW Statistics 18.

Component	Objectives
Metacognitive psychoeducational sessions	<ul style="list-style-type: none"> - Differentiate external, internal and situational attributions - Understand that many factors can result in an incident - Find a variety of different explanations for various social and personal situations - Recognize the importance of avoiding the draw to conclusions based solely on first impressions - Understand that situations can change over time and that the increasing evidence should not be discarded - Adopt a style of mental flexibility that allows the revision of beliefs and the acceptance of contradictory evidence - Consider the contextual information, rather than particular details that are irrelevant to understand other people's mental states - Differentiate between the knowledge held by itself and the knowledge available to others - Recognize that even the memories that are believed to be irrevocable facts can be false memories - Encourage the search for further information when there is no clear recollection of a particular topic, principally in significant interpersonal situations - Accept the fact that in many situations it is not possible to get definitive explanations - Recognize that dysfunctional thinking styles can contribute to the formation and maintenance of low self-esteem
Interactive social cognition sessions	<ul style="list-style-type: none"> - Identify and define the basic emotions (happiness, sadness, anger, fear, surprise, disgust and shame) - Identify the key signs that distinguish the different facial expressions - Establish the connection between emotions and social situations of everyday life - Distinguish the emotions of the face when the expressions are more subtle - Improve the ability to take another's perspective by "pulling yourself in from another person's shoes" - Communicate effectively to get the message across to others clearly - Understand when others are using non-literal speech or deception in different social contexts - Implement social problem solving skills that can be applied in day-to-day situations

Table 1. Main objectives of each training component of the metacognitive and social cognition training program



Fig 1 and 2. Example of a presentation designed to direct the attention to the relevant features of the face and a morph sequence (presented sequentially to the participants) designed to train the emotion recognition when the expressions are more subtle. This is complemented and potentiated by mimicking the expressions.



Fig 3 and 4. Example of a metacognitive psychoeducational presentation, which combines an introduction to a social cognition bias and an exercise to illustrate it. In the picture it is possible to see two different animals. This task set demonstrates that hasty decisions might overlook important details and interpretations.

3. Results and conclusions

Variable	Group	Pre-Test Mean (SD)	Post-Test Mean (SD)	t	p
Trail Making Test B	Training	109,3 (66,9)	104,1 (73,2)	,798	,439
	TAU	163,1 (123,3)	148,4 (92,3)	,462	,652
Hinting Task	Training	15,4 (4,9)	17,6 (2,7)	-2,687	,019
	TAU	13,2 (4,9)	13,7 (5,7)	-,482	,639
Fish Task – draws to decision	Training	2,42 (1,9)	3,57 (3,0)	-1,560	,143
	TAU	2,0 (1,4)	2,3 (2,6)	-,547	,576
Social Perception Scale	Training	18,8 (8,3)	29,1 (9,6)	-3,339	,005
	TAU	19,8 (9,4)	22,0 (9,6)	-1,614	,132
MSCEIT Managing Emotions	Training	84,1 (10,6)	81,9 (7,7)	,801	,438
	TAU	79,8 (9,1)	79,1 (7,7)	,297	,772
Facial Emotion Identification Test	Training	11,0 (3,1)	14,1 (2,4)	-3,420	,005
	TAU	11,1 (3,7)	11,3 (3,6)	-,291	,776
Ambiguous Intentions Hostility Questionnaire	Training	9,9 (2,2)	9,1 (2,1)	,951	,359
	TAU	8,8 (2,8)	8,8 (1,9)	,000	1,000
Blame Bias	Training	16,1 (4,8)	14,9 (3,9)	,735	,476
	TAU	16,3 (3,4)	14,8 (3,4)	1,292	,221
Aggression Bias	Training	9,6 (2,0)	10,1 (2,21)	-,874	,398
	TAU	10,0 (1,6)	10,7 (2,5)	-,845	,415
Self-care	Training	31,6 (2,7)	32,5 (3,3)	-2,738	,017
	TAU	29,9 (5,5)	30,1 (6,3)	-,291	,776
Non-disturbance	Training	42,5 (5,8)	42,9 (5,5)	-1,161	,266
	TAU	44,2 (3,3)	44,5 (3,6)	-1,000	,337
Social contact	Training	13,4 (3,3)	14,6 (3,4)	-2,222	,045
	TAU	14,9 (4,0)	14,2 (5,0)	1,511	,157
Communication	Training	20,2 (2,7)	22,1 (1,7)	-3,553	,004
	TAU	19,8 (3,1)	19,1 (3,1)	1,737	,108
Responsibility	Training	18,4 (1,9)	18,8 (1,5)	-1,794	,096
	TAU	17,0 (2,3)	17,2 (2,4)	-1,477	,165
Positive Scale	Training	15,0 (3,9)	13,4 (3,1)	3,371	,005
	TAU	14,5 (5,0)	13,2 (4,7)	1,734	,109
Negative Scale	Training	21,8 (6,1)	20,2 (5,8)	1,924	,077
	TAU	21,9 (4,2)	21,6 (4,4)	,315	,758
Psychopathology Scale	Training	43,1 (9,4)	39,3 (8,5)	3,778	,002
	TAU	39,3 (10,0)	40,0 (8,9)	-,633	,539
Rosenberg Self-esteem Scale	Training	31,9 (5,4)	32,6 (4,0)	-,580	,572
	TAU	27,0 (3,3)	26,5 (3,1)	1,203	,252

Table 2. Pre and Post-treatment results by group (metacognition and social cognition training vs. TAU).

Following intervention, the metacognition and social cognition group showed improvements in different social cognition measures. The most outstanding improvements were on theory of mind, emotional recognition and social perception. There was also a trend to a reduction of the bias in the interpretation of ambiguous situations and in the need to have more draws before making a decision, which is an indicator of a decrease in jumping to conclusions. There was also a small but significant increase in the psychosocial functioning, specially on self care, social contact and communication. These are areas of functioning that are closely related to social cognition skills. The participation in this program also was accompanied by reductions in positive and general symptoms.

These results seem to be differentially grounded on the participation in the metacognition and social cognition training program, since there was no significant change in these variables in the TAU group.

The improvement of relevant skills to social interaction demonstrated by the participants in the experimental condition in this trial encourage the application of this treatment format in the context of the rehabilitation of outpatients with Schizophrenia.

4. Bibliography

- Beck, A., Rector, N., Stolar, N., & Grant, P. (2009). *Schizophrenia: Cognitive theory, research and therapy*. New York: The Guilford Press.

- Couture, S., Penn, D., & Roberts, D. (2006). The Functional Significance of Social Cognition in Schizophrenia: A Review. *Schizophrenia Bulletin*, 32(1), S44-S63.

- Fett, A., Veachbaer, W., Maria-de-Gracia Dominguez, Penn, D. L., Os, J., & Krabbedam, L. (2011). The relationship between neurocognition and social cognition with functional outcomes in schizophrenia: A meta-analysis. *Neuroscience and Biobehavioral Reviews*, 35, 573-588.

- Freeman, D. (2007). Suspicious minds: the psychology of persecutory delusions. *Clinical Psychology Review*, 27, 425-457.

- Frith, C. (2004). Schizophrenia and theory of mind. *Psychological Medicine*, 34, 385-389.

- Garety, P., & Freeman, D. (1999). Cognitive approaches to delusions: a critical review of theories and evidence. *British Journal of Clinical Psychology*, 38, 113-154.

- Green, M., Olivier, B., Crowley, J., Penn, D., & Silverstein, S. (2005). Social Cognition in Schizophrenia: Recommendations from the Measurement and Treatment Research to Improve Cognition in Schizophrenia New Approaches Conference. *Schizophrenia Bulletin*, 31(4), 882-887.

- Green, M., Penn, D., Berall, R., Carpenter, W., Gaebel, W., Gur, R., et al. (2008). Social Cognition in Schizophrenia: An NIMH Workshop on Definitions, Assessment, and Research Opportunities. *Schizophrenia Bulletin*, 34(6), 1211-1220.

- Moritz, S., Woodward, T., Burton, M., Braus, D., & Andresen, B. (2007). Attributional Style in Schizophrenia: Evidence for a Decreased Sense of Self-Causation in Currently Paranoid Patients. *Cognitive Therapy and Research*, 31(3), 371-383.

- Moritz, S., Woodward, T., Rocha, N., & Queirós, C. (2010). *Treino Metacognitivo para pacientes com Esquizofrenia (TMC) - Manual*. Hamburg: VanHam Campus Press.

- Sergi, M., Rassovsky, Y., Nuechterlein, K., & Green, M. (2006). Social Perception as a Mediator of the Influence of Early Visual Processing on Functional Status in Schizophrenia. *American Journal of Psychiatry*, 163, 448-454.

- Sergi, M., Rassovsky, Y., Widmark, C., Raist, C., Ehart, S., Braff, D., et al. (2007). Social cognition in schizophrenia: Relationships with neurocognition and negative symptoms. *Schizophrenia Research*, 90, 316-324.

- Vauth, R., Rusch, N., Wirtz, M., & Corrigan, P. (2004). Does social cognition influence the relation between neurocognitive deficits and vocational functioning in schizophrenia? *Psychiatry Research*, 128, 155- 165.

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