

Caso clinico

Cooperation in psychotherapy increases metacognitive abilities: a single-case study

La cooperazione in psicoterapia incrementa le abilità metacognitive: studio di un caso singolo

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SUMMARY. Introduction. Both clinical observations and empirical data suggest that the ability to think about the mental states of themselves and others (i.e., metacognition) is a crucial factor strongly associated to the outcome of individual psychotherapies. Although it has been hypothesized that the activation of cooperation between patient and psychotherapist within psychotherapy sessions may increase metacognitive abilities, few data is still available to support this hypothesis. **Methods.** We explore the association between cooperation of patient and psychotherapist and the modifications of metacognition abilities along five sessions of a patient with a personality disorder using the Assessing Interpersonal Motivations in Transcripts method (AIMIT) and the Metacognition Assessment Scale (MAS). **Results.** Our data showed that the activation of cooperation was positively associated with both the MAS total scores and all MAS sub-scales. **Discussion and Conclusion.** Our results demonstrate that the activation of the cooperation within therapeutic relationship can increase patient's metacognition and its subsystem (e.g. self-monitoring).

KEY WORDS: interpersonal motivational systems, metacognition, AIMIT, evolutionary psychotherapy, cooperation.

RIASSUNTO. Introduzione. Sia osservazioni cliniche sia dati empirici suggeriscono che l'abilità di riflettere sui propri e gli altrui stati mentali (metacognizione) sia un fattore cruciale fortemente associato all'outcome delle psicoterapie individuali. Sebbene sia stato ipotizzato che l'attivazione della cooperazione tra paziente e terapeuta all'interno delle sedute di psicoterapia possa incrementare le abilità metacognitive, pochi dati sono ancora disponibili. **Metodo.** Nel presente studio, abbiamo esplorato l'associazione tra la cooperazione paziente-terapeuta e le modificazioni delle abilità metacognitive in cinque sedute di psicoterapia con un paziente con un disturbo di personalità usando il metodo dell'Assessing Interpersonal Motivations in Transcripts (AIMIT) e la Metacognition Assessment Scale (MAS). **Risultati.** I nostri dati hanno mostrato che l'attivazione della cooperazione era positivamente associata sia con il punteggio totale della MAS sia con tutte le sottoscale. **Discussione e conclusione.** Questi risultati suggeriscono che l'attivazione della cooperazione all'interno della relazione terapeutica possa incrementare la metacognizione del paziente e i suoi sottosistemi, come la capacità di automonitoraggio.

PAROLE CHIAVE: sistemi motivazionali interpersonali, AIMIT, cooperazione, metacognizione, psicoterapia cognitivo-evoluzionista.

INTRODUCTION

Patients with severe forms of psychopathology, such as personality disorders, are often unable to talk about themselves and others in terms of the mental states that they and others experience: a set of mental abilities named mentalization or metacognition¹⁻⁵. Accordingly, it has been suggested and partially demonstrated a close relationship between these abilities impairment and increased degree of general psychopathology regardless a specific diagnosis^{6,7}.

The construct of mentalization was introduced in the last decades by Fonagy and coworkers to better understand the core features of borderline personality disorders (BPD) according to a psychoanalytic theoretical framework⁸⁻¹². Different definitions of mentalization exist and other similar constructs, such as metacognition, overlap with it¹³. Although metacognition and mentalization share a focus on how people think about mental states, according to Semerari et al.^{5,14}, they differ in some aspects. For example, metacognition ability, but not mentalization, includes mastery, that is the ability

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to form adaptive coping strategies fueled by a mentalistic understanding of personal suffering and social difficulties.

Regardless of these terminological aspects, both clinical observations and empirical data suggest that the ability to think about the mental states of themselves and others is a crucial factor strongly associated to the outcome of individual psychotherapies¹⁵.

On the other hand, according to evolutionary psychology, human minds developed to improve social attunement through different innate motivations (i.e., interpersonal motivational systems - IMS) for achieving specific social goals and forming particular types of relationship: care seeking and care giving systems for attachment relationships, rank system for the definition of dominance or submission, sexual mating and the cooperation^{16,17}. Liotti and Gilbert argued that «the evolution of mentalization in human phylogeny may be developed through different types of social relating, and in turn influence a range of social relationship forming abilities»¹⁸.

It has been suggested, but never demonstrated by empirical research, that these social motivations may differently affect metacognitive abilities^{2,18}. This multi-motivational approach of human relatedness can be also observed within the therapeutic relationship¹⁹. For example, it has been proposed that shifting from one motivational system to another within the therapeutic relationship (e.g. from dominance or submission to cooperation) could improve the patient's metacognitive ability and foster therapeutic alliance¹⁸. This is consistent with evolutionary research evidence according to which the development of sophisticated mental functions in humans such as metacognition is due to promote cooperative behaviours^{5,20}.

Due to the importance of the relationship between motivational system activated within psychotherapy and metacognitive abilities for the treatment outcomes, it could be useful for both clinical practice and research, the development of new methods in order to monitor them and their mutual correlation within the psychotherapy sessions. Therefore, on the basis of the above considerations, the aim of the present study was to explore the association between IMS, especially the cooperative system, and the modifications of metacognitive abilities in a patient with a personality disorder. We hypothesized that the cooperative system improves metacognitive abilities more than others IMS.

CASE ILLUSTRATION

Client description

Anna (a pseudonym) was a 32-year-old Caucasian-Italian female who presented for psychological treatment for the first time. Anna was raised by her single mother and had never met her father. She had one older brother, who still lived at home with her mother. She lived with her partner and worked full-time in a college as a secretary.

She expressed interest in receiving psychological treatment for anxiety related to interpersonal difficulties mainly with her partner. Anna self-report several anxiety symptoms (e.g., rumination, worries, heart palpitations, nervousness, agitation, underlying fear) especially when her partner is away from her.

During her intake, the Brief Psychiatric Rating Scale 4.0²¹ and the Structured Clinical Interview for DSM-5 Personality Disorders²² have been administered.

Anna was assigned a principal (most severe and interfering) diagnosis of Dependent Personality Disorder according to the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5)²³. No other relevant psychiatric disorders have been detected although significantly anxiety symptoms were observed on the Brief Psychiatric Rating Scale 4.0.

Course of treatment

The psychotherapy lasted about eight month. Anna received 24 psychotherapy sessions. Psychotherapy was performed in private practice with weekly sessions of about 50 minutes each. All 24 psychotherapy sessions were recorded and transcribed. Anna was always on time to her scheduled appointments. New or worsening symptoms (e.g., depressive symptoms) were not observed during psychotherapy. Anna received no psychopharmacological treatment during psychotherapy. The therapist (AC) was a cognitive-behavioural and psychodynamic oriented therapist with more than five years of professional experience.

MATERIALS AND METHODS

In order to explore the association between patient's IMS and the modifications of metacognitive abilities the Assessing Interpersonal Motivations in Transcripts (AIMIT) method²⁴ and the Metacognition Assessment Scale (MAS)¹⁴ have been used. The relationships between metacognitive values (according to the MAS) and the activation of patient's IMS in the five psychotherapy sessions (according to the AIMIT methods) were computed through Spearman's *rho* correlation coefficients using SPSS 19.0 statistical package for the social sciences (IBM, Armonk, NY, USA).

Among the 24 psychotherapy sessions' transcripts, five were chosen in order to well represented the whole psychotherapy duration: the first two sessions, the last two sessions, and a central session transcript (session #11).

The Assessing Interpersonal Motivations in Transcripts

The AIMIT²⁴ method assesses the activation of IMS in the transcripts of psychotherapy sessions as well as in any kind of human verbal interaction. According to a multi-motivational approach of human relatedness, which has been developed on the basis of attachment theory, IMS include five basic motivational systems that regulate social interactions in mammals¹⁶: care seeking and care giving systems for attachment relationships, rank system for the definition of dominance or submission, sexual mating and the cooperative system. The AIMIT method allows the evaluation of the interpersonal styles of both the patient and the therapist as well as their interactions in sessions. It is considered to be a useful instrument for exploring the relational context, especially in the ruptures and repairs of the therapeutic alliance, where

IMS are typically either improper or not synchronized²⁵. It also enables to distinguish the IMS referred to an extra-therapy episode narrated by the speaker from the IMS that are activated inside the clinical dialogue concerning the relationship between therapist and patient. The main IMS that are identifiable inside the psychotherapy sessions through the AIMIT method are related to the request of help and support (*attachment system*), the offer of help, benevolent understanding and support (*caregiving*), the affirmation of superiority or inferiority to the other party (*agonistic or rank system*), the interactions that aim to an erotic encounter (*sexual system*) and those that aim to pursue a shared goal (*cooperative system*). The transcript is divided into units (coding units) each of which is represented by the speaker location and the interlocutor reply. One or more IMS may be detected within the same coding unit, based on the language indicators^{19,25}. Previous studies reported that AIMIT has good inter-rater/intra-rater reliability as well as content validity^{19,25,26}. In the present study, the coding units related to patient IMS were assessed. The selected transcripts were then analysed according to Fassone et al.²⁵.

The Metacognition Assessment Scale

The MAS is a 29-item instrument used to assess the metacognitive abilities as manifested in an individual's verbalizations¹⁴. It focuses on metacognitive functions rather than metacognitive contents and conceptualizes metacognition as a set of abilities that allow us to understand mental phenomena in order to tackle tasks and master distress. MAS considers metacognition as composed by different e relatively independent sub-functions^{4,5,27}: a) Monitoring is the ability to identify and define the components that make up an inner state in terms of thoughts, images, and emotions (Identification) and the variables related to them (Relating Variable); b) Differentiation is the ability to differentiate between different classes of representation (e.g. dreams, fantasies, beliefs) and between representations and reality, recognising their subjectivity; c) Integration is the ability to reflect on different mental states and give a complete and coherent description of their components, with their evolution over time. It also relates to the ability to form a coherent narrative; d) Decentration, that captures one's ability to define others' mental states by forming hypotheses independent of (his or her) their own perspective, mental functioning or involvement in the relationship, recognising their subjectivity. Through the MAS, a trained rater indicates whether and how the participant has successfully used a particular metacognitive function. For each sub-scales the interviewer will assign a score ranging from one to five, on the basis of the Likert scale, to describe how well the client employed that aspect of metacognitive function in respect to the assessed unit. A score of one stands for "very poor functioning", while a score of five stands for "very well-functioning".

RESULTS

AIMIT and MAS coding were carried out in a double-blind procedure by different and trained independent coders. Inter-rater reliability was significant for both AIMIT ($r=0.67$; $p<0.01$) and MAS total score ($r=0.89$; $p<0.01$). In the five considered psychotherapy sessions 586 patient's coding units were detected. The most IMS activated was the cooperative

system (28.5%), followed by the agonistic rank system (1.7%) and the attachment system (1.7%).

Detailed correlations between metacognition values and patient's ISM in all psychotherapy sessions are reported in table 1. The activation of cooperative system was positively associated with the MAS total scores ($\rho=0.46$; $p<0.001$) as well as with all MAS sub-scales ($\rho \geq 0.28$; $p<0.001$). A significant negative correlation was also observed between the rank system and the differentiation sub-scale ($\rho=-0.10$; $p<0.05$). Finally, a significant positive correlation was reported between the sexuality system and the self-monitoring sub-scale ($\rho=0.08$; $p<0.05$).

DISCUSSION

The aim of the present study was to explore, during psychotherapy sessions, the association between the activation of IMS, especially the cooperative system, and the modifications of metacognitive abilities in a patient with a personality disorder.

As hypothesized, our results showed that the activation of cooperative system was positively associated with the MAS total scores as well as with all MAS sub-scales. Consistently, the rank system was also inversely correlated with differentiation MAS sub-scale suggesting that, during an interpersonal conflict, the contenders may have some difficulties in understanding inner mental states in oneself and others. Finally, a positive correlation was reported between the sexuality system and the self-monitoring sub-scale. Sexual motivations «require an ability to notice, track, and process specific signals that indicate social opportunities»²⁸. Therefore its activation, during psychotherapy sessions, may increase the ability to identify and define the components that make up an inner state in terms of thoughts, images, and emotions and the variables related to them.

It is interesting to underline that we did not observe the activation of the caregiving system during the 5 psychotherapy session. Generally, this IMS is organized «within a goal-corrected behavioral system that is reciprocal to attachment in order to provide care and protection»²⁹. However, in order to not reinforce patient's dysfunctional schemas (who received a diagnosis of Dependent Personality Disorder), the therapist could consciously activate other IMS (i.e., the cooperative one) when Anna's attachment system is aroused.

Our data are in accordance with both clinical observations and empirical data^{2,18} suggesting that the activation of the patient's cooperative system within psychotherapy sessions increase metacognition and all its sub-function. Moreover, cooperation between patient and therapist is demonstrated one of the best predictor of outcome in psychotherapy¹⁵. This is also in line with an evolutionary perspective: it has been suggested³⁰ that cooperative system is crucial for the development of the ability to think about the mental states of themselves, because shared caring of infants put an evolutionary pressure for the development of attention and evaluations to new and different individuals. That is also in accordance with recent ethological and anthropological studies indicating that cooperative behaviours are crucial evolution drive for social species²⁰.

The ability to think about the mental states of themselves and others develops in the first 4 to 5 years of life and it is fa-

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Table 1. Values of Spearman's *rho* correlation coefficient between metacognition values and the activation of patient's IMS in all five sessions (N=586). Significant correlations are indicated by stars (*).

	Attachment	Caregiving	Ranking	Sexuality	Cooperation
Metacognition Total scores	0.01	-	-0.07	0.06	0.46***
Self-monitoring	0.03	-	-0.06	0.08*	0.45***
Differentiation	0.03	-	-0.10*	0.05	0.35***
Integration	0.01	-	-0.05	0.05	0.29***
Decentralization	-0.07	-	0.01	-0.02	0.28***

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

cilitated by secure attachment relationships, which through an emotional mirroring process, promote a child's development of higher order mental representations of his or her internal states and provide the basis for the infant's emerging capacity to reason about and to regulate his/her own affect⁸. A dysfunctional affect mirroring response may compromise some of an infant's social cognitive capacities, especially the regulation of affect⁸ by altering the brain region involved in top-down cognitive control^{8,31}. This lack of top-down control may produce the different psychopathological manifestations observed in BPD and in other personality disorders (i.e., impulsivity, acting out, affect dysregulation).

Although our data are promising, there are some limitations in generalizing our results that must be considered. First, this is a case report, therefore the association between the activation of the cooperative system and the increase of metacognitive abilities during psychotherapy sessions should be carefully investigated by future studies in patients with severe metacognitive dysfunctions, such as BPD, psychosis and patients with psychiatric comorbidities.

Second, we have not assessed the long-term association (i.e., follow-up sessions) association between the activation of ISM and the modifications of metacognitive abilities.

Despite this, our results suggest the need to extend these preliminary evidences with other empirical data in order to confirm the positive association between cooperative system and metacognitive abilities within the therapeutic relationship.

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REFERENCES

- Dimaggio G, Lysaker PH. Metacognition and mentalizing in the psychotherapy of patients with psychosis and personality disorders. *J Clin Psychol* 2015; 71: 117-24.
- Allen JG, Fonagy P, Bateman AW. *Mentalizing in Clinical Practice*. Washington, DC: American Psychiatric Publishing, 2008.
- Fonagy P, Allison E. The role of mentalizing and epistemic trust in the therapeutic relationship. *Psychotherapy (Chic)* 2014; 51: 372-80.
- Dimaggio G, Carcione A, Nicolò G, et al. Impaired decentration in personality disorder: a series of single cases analysed with the Metacognition Assessment Scale. *Clin Psychol Psychother* 2009; 16: 450-62.
- Semerari A, Carcione A, Dimaggio G, Nicolò G, Procacci M. Understanding minds: different functions and different disorders? The contribution of psychotherapy research. *Psychother Res* 2007; 17: 106-19.
- Semerari A, Colle L, Pellicchia G, et al. Metacognitive dysfunctions in personality disorders: correlations with disorder severity and personality styles. *J Pers Disord* 2014; 28: 751-66.
- Pellicchia G, Moroni F, Colle L, et al. Avoidant personality disorder and social phobia: Does mindreading make the difference? *Compr Psychiatry* 2018; 80: 163-9.
- Fonagy P, Gergely G, Jurist EL, Target M. *Affect regulation, mentalization, and the development of the Self*. New York: Other Press, 2002.
- Fonagy P, Bateman A. The development of borderline personality disorder: a mentalizing model. *J Pers Disord* 2008; 22: 4-21.
- Fonagy P, Luyten P. A developmental, mentalization-based approach to the understanding and treatment of borderline personality disorder. *Dev Psychopathol* 2009; 21: 1355-81.
- Bateman A, Fonagy P. *Psychotherapy for borderline personality disorder: mentalization-based treatment*. Oxford, UK: Oxford University Press, 2004.
- Fonagy P. Thinking about thinking: some clinical and theoretical considerations in the treatment of a borderline patient. *Int J Psychoanal* 1991; 72 (Pt 4): 639-56.
- Choi-Kain LW, Gunderson JG. Mentalization: ontogeny, assessment, and application in the treatment of borderline personality disorder. *Am J Psychiatry* 2008; 165: 1127-35.
- Semerari A, Carcione A, Dimaggio G, et al. How to evaluate metacognitive functioning in psychotherapy? The metacognition assessment scale and its applications. *Clin Psychol Psychother* 2003; 10: 238-61.
- Laska KM, Gurman AS, Wampold BE. Expanding the lens of evidence-based practice in psychotherapy: a common factors perspective. *Psychotherapy (Chic)* 2014; 51: 467-81.
- Liotti G. Attachment disorganization and the controlling strategies: an illustration of the contributions of attachment theory to developmental psychopathology and to psychotherapy integration. *J Psychother Integr* 2011; 21: 232-52.
- Gilbert P. *Human nature and suffering*. Hove, UK: Lawrence Erlbaum, 1989.
- Liotti G, Gilbert P. Mentalizing, motivation, and social mentalities: theoretical considerations and implications for psychotherapy. *Psychol Psychother* 2011; 84: 9-25; discussion 98-110.
- Fassone G, Lo Reto F, Foggetti P, et al. A content validity study of AIMIT (Assessing Interpersonal Motivation in Transcripts). *Clin Psychol Psychother* 2016; 23: 319-28.
- Fox KCR, Muthukrishna M, Shultz S. The social and cultural roots of whale and dolphin brains. *Nat Ecol Evol* 2017; 1: 1699-705.
- Ventura J, Green M, Shaner A, Liberman RP. Training and qual-

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- ity assurance on the BPRS: "the drift busters". *Int J Methods Psychiatr Res* 1993; 3: 221-6.
22. First MB, Williams JBW, Smith Benjamin L, Spitzer RL. Structured Clinical Interview for DSM-5® Personality Disorders (SCID-5-PD). Washington, DC: American Psychiatric Publishing, 2016.
23. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5). Washington, DC: American Psychiatric Publishing, 2013.
24. Liotti G, Monticelli F. I sistemi motivazionali nel dialogo clinico: Il manuale AIMIT. Milano: Raffaello Cortina Editore, 2008.
25. Fassone G, Valcella F, Pallini S, et al. Assessment of Interpersonal Motivation in Transcripts (AIMIT): an inter- and intra-rater reliability study of a new method of detection of interpersonal motivational systems in psychotherapy. *Clin Psychol Psychother* 2012; 19: 224-34.
26. Farina B, Monticelli F, Mantione MG, et al. Harmony of transitions in Assessing Interpersonal Motivations in Transcripts analysis can discriminate between Adult Attachment Interview secure and disorganized individuals. *Riv Psichiatri* 2017; 52: 117-9.
27. Semerari A, Carcione A, Dimaggio G, Nicoló G, Pedone R, Procacci M. Metarepresentative functions in borderline personality disorder. *J Pers Disord* 2005; 19: 690-710.
28. Gilbert P. The origins and nature of compassion focused therapy. *Br J Clin Psychol* 2014; 53: 6-41.
29. Solomon J, George C. Defining the caregiving system: toward a theory of caregiving. *Infant Ment Health J* 1996; 17: 183-97.
30. Hrdy S. Mothers and others: the evolutionary origins of mutual understanding. Cambridge, MA: Belknap/Harvard, 2009.
31. Brendel GR, Stern E, Silbersweig DA. Defining the neurocircuitry of borderline personality disorder: functional neuroimaging approaches. *Dev Psychopathol* 2005; 17: 1197-206.