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Assessment

How to Evaluate Metacognitive Functioning in Psychotherapy? The Metacognition Assessment Scale and its Applications

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In this article the authors present a method and a scale for the evaluation of the metacognitive profiles of psychotherapy patients. There will be a description of the metacognitive function and of the alterations that occur to it during treatment. Various hypotheses will then be considered: (1) that the metacognitive function has a modular structure; (2) that for each type of psychopathological condition there is a different metacognitive deficit profile; (3) that to be successful psychotherapy needs to involve an improvement in any deficient metacognitive sub-function. There will then be a presentation of the Metacognition Assessment Scale (MAS) for the assessment of metacognitive deficits during psychotherapy. We shall then describe the first results we have on the application of the scale. Finally there will be an analysis of two patients suffering from Personality Disorders and a demonstration of what metacognitive deficit profile each one has and how it is modified over the course of psychotherapy treatment. The article ends with a discussion of the hypotheses made at the start in the light of the results that have emerged.

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INTRODUCTION

Living with other human beings involves knowing about one's own thoughts, feelings and desires and a comprehension of other people's mental states and intentions; it is upon these that our interaction with the environment is based. A malfunctioning in these abilities negatively affects the quality of life and personal well-being. It is also accompanied by severe pathological problems (Perris & Skagerlind, 1998).

Clinicians have always been interested in the difficulties their patients have in knowing and regulating their mental states and they all agree on one point: many patients present dysfunctions in the ability to act as *folk psychologists*, i.e. to reason through the use of mental states as subject matter for reflection. However, the abilities that clinicians describe as being dysfunctional appear to be very varied.

Sometimes they highlight a patient's difficulty in defining and recognizing their emotions, desires, and intentions and in expressing their thoughts. In patients suffering from psychosomatic disorders there is a focus on the alexithymical aspect (Taylor, Bagby, & Parker, 1997). In Narcissistic Personality Disorder a similar inability to access internal states, in particular emotions and the link between the trend in one's relationships and one's internal state, has been noted (Davis & Marsh, 1986; Dimaggio et al., 2002; Krystal, 1998), as it has in Avoidant Personality Disorder (Beck & Freeman, 1990; Millon & Davis, 1996; Procacci, Dimaggio, & Semerari, 2001). Kernberg (1975) attributes the inability to make a link between internal states and an interpersonal relationship situation to a borderline personality. It has also been noted that such patients shift between different and sometimes contradictory mental states. In fact they are unable to come to an integrative point of view and produce a coherent narrative (Dimaggio & Semerari, 2001; Kernberg, 1975; Ryle, 1997). Patients with Dissociative Disorders appear to suffer from this same deficit (Liotti, 1999). Borderline Patients have been also described as unable to regulate their emotional states (Linehan, 1993). A similar deficit in emotional regulation has been highlighted by Horowitz (1991) in his description of Histrionic Personality Disorder. The difficulties patients with Obsessive Compulsive Disorder have in managing intrusive thoughts and images (Salkovskis, Richards, & Forrester, 1995) may be seen as a regulation deficit. A serious deficit in the access to mental states has been reported in autistic patients (Baron-Cohen, 1995; Frith, 1989). Cristopher Frith (1992) has highlighted the presence of a metathinking deficit in schizophrenics. Lastly, it has been observed how Paranoid Personality Disorder involves a deficit in the ability to decentre, i.e. to read others' mental states from a non-egocentric perspective (Nicolò, Dimaggio, Semerari, & Carcione, 2001).

A researcher thus finds himself dealing with what appears to be a single a dimension but at the same time is made up of various independent dimensions. In constructing a research tool for the evaluation of whether there are dysfunctions in patients' metacognitive abilities we have to tackle precisely this type of problem.

The first question we need to ask ourselves is: are these authors describing different aspects of a single disorder relating to the ability to acquire and use one's knowledge of mental states or are they describing different phenomena? In other words, can we talk of a single function of 'mentalization' which can be more or less severely disturbed or is 'mentalization' a concept containing different functions which may be disturbed one by one?

There are in fact two hypotheses put forward in the clinical literature: the first is the unitary hypothesis that considers the knowledge of mental states to be a continuum going from the simplest to the most sophisticated levels. At a lower level, for instance, there is the awareness of the existence of mental states, at a higher level the ability to distinguish single elements (such as single emotions) and at a much higher level the ability to think about processes in an integrated way. With this interpretation there is a dimensional quantity which can be described in terms of low, medium and high levels. Two scales are built on this principle: the Reflective Scale (Fonagy, Steele, Steele, & Target, 1997) and the Assimilation of Problematic Experience Scale (APES; Stiles, Meshot, Anderson, & Sloan , 1992).

Fonagy's Reflective Scale is an attempt to render operational Main's notion (Main, 1991) of metacognitive monitoring and is applied to the answers given to the Adult Attachment Interview. It evaluates the level of complexity of a subject's knowledge of his and others' mental states and psychological processes. The final result is a global evaluation of the Reflective Function. The APES is applied to transcripts of psychotherapy sessions and consists of seven levels going from *warded off* to *mastery* of a problematic experience.

These types of scale make it possible to make a quantitative comparison among different subjects and, in the case of APES, it facilitates the com-

parison of the changes undergone by subjects during treatment[1].

The second hypothesis is the modular one (Semerari, Carcione, Falcone, & Nicolò, 2001; Semerari et al., 2002a). This suggests that, in the case of normal functioning, the knowledge of mental states is the result of an interaction between independent functions. A disorder is thus the result of a malfunctioning of single functions. This interpretation allows qualitative distinctions among patients based on the deficient functions. For example, a patient with monitoring and regulation disorders would appear different from a qualitative point of view from a patient with integration and regulation disorders. This kind of approach has the advantage of stressing the variety in malfunctioning that emerges from clinical descriptions and makes it possible to draw up prototypical profiles of metacognitive malfunctioning (Semerari et al., 2002b). A profile is defined by the specific functions that are found to be disturbed in a certain category of patients.

The present article is first and foremost a first attempt at testing the modular hypothesis, i.e. that there is a set of sub-functions—functionally independent of each other—to the overall skill we call Metacognition. In a manner similar to that of Taylor et al. (1997) in their affirmation of alexithymia, we can say that metacognition is multifaceted and made up of logically related, subordinate concepts. In measuring such a multifaceted construct 'a scale can reach generally acceptable levels of internal consistency and homogeneity and still yield multiple factors' (Briggs & Cheek (1986) cited in Taylor et al., 1997).

To this end we have constructed a tool that analyses the sub-functions assuming they are independent. In the case of a multifaceted construct like metacognition 'validational research should demonstrate that the subordinate concepts of the construct can be measured separately and that they are related empirically' (Carver (1989) cited in Taylor et al., 1997).

For example, if a patient is unable to gain access to the thoughts of others in a decentred way, it cannot be taken for granted that he will also fail in identifying his own thoughts and emotions. From a psychometric point of view a confirmation of the modular hypothesis would emerge from an adequate item-to-scale correlation for all the items (confirming that there is one single function) and independence between the sub-functions (confirming that the functions belong to separate subsystems). Another hypothesis that we are starting to test is the tendency for the metacognitive functions to improve when psychotherapeutic treatment is proving successful.

In this article we have analysed a sample which is certainly not big enough to confirm or disprove one or other of the two hypotheses; the data we shall describe merely tend to suggest that the modular hypothesis might be correct, but nothing more than that. Our current aim is therefore more limited, i.e. to describe the tool, validate its reliability and illustrate, through its use with two patients suffering from separate personality disorders, how patients with a different psychopathological diagnosis have different metacognitive deficit profiles and how these profiles become altered during treatment.

Transcriptions and scoring of about 100 sessions with different patients, suffering from different psychopathological conditions, are currently underway, with the aim of testing on the one hand the modular hypothesis and on the other evaluating if, as we maintain, different diagnostic profiles are matched by different metacognitive profiles.

The starting point for a research project such as this is the identification, among the various different theories propounded, of a definition of metacognition that is able to describe the phenomena involved and make an empirical comparison possible.

DEFINITIONS: METACOGNITION, METACOGNITIVE CONTENTS AND FUNCTIONS

Linguistic problems with definitions arise from the fact that there has been an interest in the ability to comprehend and regulate mental states on the part of authors from different schools. In fact it is not clear whether the term 'metacognition' is always employed to refer to the same concept. It is therefore necessary to establish a clear definition and explain why it has been chosen.

Wells and Purdon's definition (1999) of metacognition is of particular interest: 'the aspect of information processing that monitors, interprets, evaluates and regulates the contents and processes of its organization'. This definition is of heuristic value for two reasons. First of all it so wide as to include many of the clinical phenomena which

[1]However, it needs to be said that if the APES readily offers itself to an interpretation in modular terms, there is no reason why the dimensions of awareness identified by Stiles should not be analysed as if they were mutually independent.

have already been analysed. For instance, the reference to 'contents and processes' includes both the ability to recognize the various elements (specific thoughts and emotions) of one's mental state, and the ability in the abstract to comprehend behaviour in terms of intentionality and variations over time in intentional states (i.e. processes).

Metacognitive contents are the ideas and beliefs linked to a particular mental phenomenon: beliefs about beliefs. A typical problematic metacognitive belief is that found by Salkovskis (Salkovskis, 1985, 1989; Salkovskis et al., 1995) in patients with OCD, for whom thinking about performing a particular action increases the probability of its being performed.

When Ulysses met the Sirens, he was able both to recognize the contents of his mind (the desires he had at the same time to both listen to the singing and to go back to Ithaca) and to understand the incompatibility of the two desires. He was also able to acknowledge and foresee the variation of his mental states affected by time and circumstances (he would stop longing for Ithaca when influenced by the singing and he would start longing for it again when the singing stopped). In the end, he was able to enact a regulation strategy (binding himself to the mast). A poorer cognitive ability, such as for instance, the ability to monitor only the contents present in a *precise moment*, would have had catastrophic effects.

Moreover, besides cognitive activities (monitors, interprets, evaluates), Wells and Purdon's definition also includes regulation and so it allows us to consider in the clinical study of metacognition those regulation disorders which are psychopathologically significant.

Secondly, although it is a broad definition, it underlines that there are different activities that could be disturbed in clinical situations. In fact some patients might have only a monitoring disorder, some others only a regulation disorder and so on. Whilst we have started out from Wells and Purdon's definition, we have however focused on metacognitive functions, i.e. the whole set of abilities that allow us to understand mental phenomena and work them out in order to tackle tasks and master mental states that are a source of subjective sufferance (Carcione & Falcone, 1999; Carcione, Falcone, Magnolfi, & Manaresi, 1997). In comparison with Wells and Purdon's definition, we keep the subdivision into monitoring and regulating abilities, but we concentrate on the functional ability to perform certain operations, rather than on the contents. In other words and to clarify this distinction, let us consider the following affirmation: 'I was anxious and agitated and I thought I was going mad' or 'I just couldn't shake hands with a client of mine for fear of catching AIDS. I thought: I'm not normal; either I'm mad or a right idiot'. Both of these point to a metacognitive content (i.e. beliefs about and evaluations of several of one's own thoughts) which is problematical: the idea that feeling anxious could imply the threat that one is close to going mad and the idea that having thoughts that are obsessive could be an indicator of madness or stupidity, but they do not point to a disorder in functioning, given that the subjects are capable of identifying, describing and recalling the emotional and cognitive components of their mental states, precisely what we, on the other hand, focus our attention on.

TOOLS: THE METACOGNITION ASSESSMENT SCALE (MAS)

The basic principle of the MAS is to subdivide metacognitive activity into sub-functions (see Appendix A). To identify these sub-functions, we considered for the most part the clinical literature that describes disorders in the ability to know and regulate mental states. In addition, as clinical material, we used the transcripts of psychotherapeutic sessions involving patients with, for the most part, Personality Disorders. We have determined the following sub-functions.

Understanding One's Own Mind

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Identification

Identification (ID) is the ability to distinguish, recognize and define one's own inner states (emotions, cognitions). In the MAS the identification function is divided into two sub-functions: (a) the ability to recognize one's own representations (thoughts and images); (b) the ability to recognize emotions.

Here is an example of a failure in the identification function, as a result of which the patient, a 26-year-old woman diagnosed as having Avoidant Personality Disorder (DSM IV, APA, 1994), has difficulty from a metacognitive point of view in recognizing the components of her inner states, emotions and thoughts.

P.: I went to the university. (silence)
T.: How did you get on?
P.: Well, . . . (silence)
T.: How did you feel?
P.: My hands were trembling.

The patient describes her somatic state instead of describing her emotional condition.

> T.: It must have been difficult. Do you remember what you were thinking about?
> P.: I was nervous.
> T.: What were you thinking about at that moment?
> P.: Nothing, maybe I looked odd.

The difficulty in describing her thoughts changes into a kind of observation from the outside of what she looks like.

Relating Variables

Relating variables (RV) is the ability to establish relations among the separate components of a mental state and between the components of mental states and behaviour (i.e. 'I was angry because I thought he was pulling my leg, I didn't answer the phone because I didn't want to speak to him'). Through RV a subject explains his/her own behaviour in terms of causes and/or motivations. If there is a deficit, he/she is unable to discern the reasons for his/her behaviour.

> P.: I don't know how, but I always find myself in front of the fridge and empty it completely.

ID and RV together constitute metacognitive monitoring[2]. For the definition of monitoring deficits we have used as a basis descriptions of alexithymia in psychosomatic patients (Taylor et al., 1997), and descriptions of patients with Avoidant, Narcissistic and Schizoid Personality Disorders (Dimaggio et al., 2002; Dimaggio, Procacci, & Semerari, 1999; Kohut, 1971; Procacci et al., 2001).

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Differentiation

Differentiation (D) is the ability to recognize that the contents of representations are subjective events of a mental nature and, therefore, different from reality and without a direct influence on it. Attachment theorists consider the development of awareness of the representational nature of thought an important protective factor if compared to the psychological effects of parents' incoherent and traumatic behaviour (Fonagy & Target, 1997; Main, 1991). Differentiation entails acknowledging the subjectivity of our representations and recognizing the limits of the influence our thoughts and expectations have on reality. It also allows us to consider our representations of the world and of other individuals as subjective and hypothetical.

In contrast, difficulty in looking critically at one's beliefs and in considering them hypothetical representations and/or a belief that thoughts may directly influence reality signals a malfunctioning. The best known disorder of this kind is the thought–action fusion of Obsessive Compulsive patients (Rachman & Shafran, 1999; Salkovskis, 1985).

The MAS considers two items which define Differentiation. The first is a difficulty in considering the truth content of a representation in a critical manner. The second is the idea that thought and reality may influence each other. For the definition of the former we have mainly considered Fonagy's (1991) description of reflective functioning in Borderline Patients; for the latter, Salkovskis' (1985, 1989) descriptions of Obsessive-Compulsive Disorder.

Examples of success:

> P.: On the bus I feel that everybody is looking at me but they are probably just thinking about their own business.
> P.: I know that I won't go mad but then I say to myself: what if it does happen?

Example of failure:

> P.: Whenever I put the key into the lock I think my parents could die. To avoid this I open and close the door three times.

Integration

Integration (I) is the ability to work out coherent descriptions of one's mental states and processes. It is the function we use to describe and discuss our inner scenario, a dialogue inside ourselves that takes a narrative form and gives a sense of continuity to the private and interpersonal aspects of our self (Bruner, 1986; Dimaggio & Semerari, 2001; Hermans & Kempen, 1993; Neimeyer, 2000; Sarbin, 1986).

An integration deficit makes a mind *confused* or *dissociated*: a subject displays contradictory, fragmented and discontinuous aspects of his/her self and is unable to arrange his/her thoughts and memories in a narrative form or construct superordinate points of view about him/herself and others. In the clinical literature there are at least

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[2]Our definition of metacognitive monitoring includes certain basic activities that are not taken into account in other scales. For instance, the Reflective Scale considers the statement 'I was angry' to be a non-reflective one, whereas the MAS interprets it as an identification operation.

two different types of description of an integration deficit. The first involves the incoherence of a mental state containing various and contradictory representations of the self and of other individuals or many various thoughts all emotionally relevant following each other in a chaotic manner with no apparent hierarchy.

Example:

> P.: Well, today it seems to me I haven't got any reason for living . . . [she starts crying] . . . I can't say if I'm annoyed, angry or anything else because of my family, because I can't stand them! There are things I can't stand and if it depended on me I'd cancel them out but I can't do that, which makes me feel powerless. And then I'm powerless in my life and in all I do, because I was trying to work hard for my future . . . I was thinking of my father, because I realized he's a person with some weaknesses. He's a timid person; he fears everything; he always wants to be understood; he almost wants someone to take care of him. I hate him for this reason because it should be him taking care of me. This is one of the reasons why, . . . hm I was having my usual thoughts again and then suddenly they became so many! Very real, and quite suddenly I didn't feel well any more . . .
>
> Well, I thought of my mother and grandmother, whom I cannot stand [angry], she's always poking her nose in other people's affairs in order to criticize them and I would like her to be on her own but it's not possible. My mother isn't able to be a reference point for me. I think she does it on purpose, that she somehow enjoys denying me her help. I couldn't stop thinking about this continual need for help [she starts crying desperately] because I thought that if I could get it out of my mind everything would be all right. But I wasn't able. Because I thought of death, I thought that life keeps on running on and on and on and my life is running through my fingers and I'm not able to do anything of what I would like to do. I'm not able to do anything! And I can't manage the concrete things that happen to me. I imagine them piling up, piling up over time and me not being able to cope. It seems as if I haven't had any kind of power over my life.

What strikes us is the chaotic nature of the patient's representations. Each of the problems she relates—the meaning of life, control over choices, need for help, relationships with relatives—has a strong emotional value and they should be treated with attention. However, with the way that they keep on crowding together in her mind it is not possible to analyse them in detail or deal with them.

A second type of integration deficit involves difficulty in describing contradictory mental states as they occur over time (Clarkin, Yeomans, & Kernberg, 1999; Kernberg, 1975; Ryle, 1997). For example:

> P.: I remember her as a very warm and friendly person. . . . she gave me assurance. She always insisted I should have more confidence in myself.

A little later talking about the same person:

> P.: I felt that she wasn't sincere; there was something that didn't convince me. Also that fact about having more confidence in myself . . . but what confidence!? I needed to have more confidence in her.

To embrace these two aspects, Integration is divided into two items: (a) the ability to provide an integrated description of one's own mental state; (b) the ability to describe the changes over time in one's own mental states and give them a coherent narrative form.

Understanding Others' Minds

The sub-functions we have just described refer to a series of different mental operations involving knowing one's mental states. In the literature, especially on developmental psychology, the mechanisms involved in mind reading are still under discussion: is there the same mechanism behind the reading of one's own mental states and those of other individuals? Or are they two separate mechanisms?

Authors such as Gopnik and Meltzoff (1997) or Frith and Happé (1999), who support the so-called 'Theory of Theory', agree on the existence of one single developmental process leading to the building of the Theory of Mind (ToM) and underlying the knowledge of one's own and other individuals' mental states.

Some other authors (Harris, 1989, 1995) follow the 'Simulation Theory', according to which the knowledge of one's own mental states is the first to be developed and is then used later in the understanding of those of other individuals.

As to mind reading skills, Nichols and Stich (2001a, 2001b) distinguish two categories: the

ability to 'detect', i.e. ascribe mental states to someone, and the ability to 'reason', i.e. use the *detected* information to make forecasts. According to these authors, we use ToM when detecting and reasoning about other individuals' mental states; when considering our own mental states we use a different mechanism called the Monitoring Mechanism (MM). The latter permits us to know our own mental states even if we do not use ToM.

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In this article we do not intend to analyse the terms of the discussion. However, for a clinical evaluation of the psychotherapeutic process, we need to distinguish the operations involving one's own mental states from those involving other individuals' mental states. In fact, the MAS consists of two different sections which stress the above-mentioned differences. These sections include two sub-functions: one referring to one's own mental states and one to those of other individuals.

The first section, *Understanding of one's own mind* (UownM), includes the sub-functions we have just described.

The second section, *Understanding of others' mind* (UOM), includes the same sub-functions but referred to other individuals' mental states. This second section therefore includes the following.

Identification

Identification (ID) refers to the ability to distinguish and define the emotional and cognitive components of other people's inner states (e.g. 'He was angry with me').

Relating Variables

Relating variables (RV) refer to the ability to identify the causes and reasons of other people's inner states and behaviour (e.g. 'He was angry with me because I hadn't helped him'). Both the sub-functions constitute the function termed 'monitoring' of other individuals' inner states.

Differentiation

Differentiation (D) consists of the ability to recognize the representational nature of other individuals' thoughts (e.g. 'Giovanni is convinced that if he doesn't walk the same road every morning, a catastrophe will happen, but I know that it is one of his fantasies and not a premonition').

Integration

Integration (I) is the ability to produce coherent descriptions of other people's mental processes and states.

We need to add that comprehension of other individuals' mental states may take place in a decentred or egocentric way. The scale therefore includes *Decentration (Dec)*, referring precisely to the ability to comprehend another individual's mental state from a non-egocentric perspective. It enables us to recognize the hypothetical nature of our reading of other individuals' minds and, at the same time, we are able to produce interpretations independent of other people's knowledge of themselves. Moreover, our interpretation is not exclusively linked to ourselves (e.g. 'She was staring at me; I thought she was in love with me but maybe she was only tired, looking into empty space').

The following on the other hand is an example of deficient Dec skills:

> P.: She was staring at me; I thought she was in love with me but maybe, on the contrary, she was angry with me, or she was thinking that I am no good and am to be despised.

The patient is aware of the hypothetical nature of his interpretation but each hypothesis is always referred to himself. He lacks the ability to detach himself from the relationship and adopts an egocentric perspective.

The third section of the scale refers to *Mastery (M)*, i.e. the overall definition we give to regulation and control activities. M is the ability to work through one's representations and mental states, with a view to implementing effective action strategies, in order to accomplish cognitive tasks or cope with problematic mental states.

Mastery

Mastery Basic Requirements (MBR) refers to the ability to define problems in plausible psychological terms.

Mastery strategies can be divided into separate categories according to the complexity of the metacognitive operations involved.

First Level Strategies

First level strategies (MS1) require only a modest reflection effort. They include modifying a mental state by influencing the state of the organism (for example through the use of suitable amounts of psychiatric drugs), avoiding feared situations or resorting to interpersonal assistance.

Second Level Strategies

Second level strategies (MS2) require a greater reflection effort. They include, on a voluntary

Table 1. General structure of the Metacognition Assessment Scale (MAS)

Understanding of one's own mind (UownM)	Understanding of others' mind (UOM)	Mastery (M)
Basic requirements	Basic requirements	Basic requirements
Identification	Identification	First-level strategies
Relating variables	Relating variables	Second-level strategies
Differentiation	Differentiation	Third-level strategies
Integration	Integration	
	Decentration	

The table shows the subdivision of MAS in three sections (the domains of metacognitive abilities) and the sub-functions that constitute each of them.

basis, imposing upon oneself or inhibiting a certain type of behaviour, actively modifying one's level of attention and concentration and voluntarily thinking or not thinking about a problem.

Third Level Strategies

Third level strategies (MS3) require a high level of reflection effort. They include adopting a rational and critical attitude to the beliefs that are behind a problematic state, using one's knowledge about others' mental states to regulate interpersonal problems and accepting in a mature way one's personal limits when trying to master oneself or influence events.

To summarize, MAS is divided into three sections (see Table 1): *Understanding one's own mind*, the comprehension of one's own mental states; *Understanding others' minds*, the comprehension of other individuals' mental states; and *Mastery*, the strategies a subject uses to regulate his/her own mental states.

We need to stress that the sections UownM and UOM include the item *Basic Requirements (RB)*: this refers to the ability to recognize one's own and other's mind as something autonomous, separate and different from the minds of others.

Construction and Validation of the Scale

The first step was the identification of the various mental functioning skills, based on the literature that exists on the subjects of mentalization and attachment theory (Fonagy, 1991, 1993, 1995; Main, 1991; Main & Hesse, 1992; Main & Solomon, 1995), Theory of Mind (Baron-Cohen, Leslie, & Frith 1985; Campioni, 1995; Premack & Woodruff, 1978; Wellman, 1990; Wimmer & Perner, 1983), metacognition (Cornoldi, 1995; Flavell, 1976, 1981; Flavell, Miller, & Miller, 1993; Mazzoni & Nelson, 1998) and, more generally, metarepresentation (Frith, 1992; Sperber, 2000).

Each item was discussed within the group and approved for its inclusion in the scale after a cross-check with, as we mentioned, the available literature and the session transcripts which we were analysing. All the researchers participating in the discussion had at least 10 years of training and working experience, either as clinicians or as researchers and were of either the cognitive or psychodynamic schools. The judges were then given a training course of about 20 h, with both individual and group homework and supervised work on session transcripts.

To calculate their level of reliability we used Kendall's W coefficient to analyse the extent to which the independent scorers agreed with each other. We did not use Cronbach's alpha, since MAS is a ratio scale, that does not evaluate the presence or absence of a skill, but only the presence of a success or of a failure in the ability to use that function (e.g. UownM 5yes–UownM 5no).

Agreement was calculated for all areas (UownM, UOM, M both for successes and failures) with submission of two sample sessions with two different patients to three independent judges, who then repeated the scoring about 6 months later. The level of reliability that emerged was, for the first patient $W = 0.935$; for the second = 0.931. At the second scoring for the first patient $W = 0.929$; for the second $W = 0.898$. The high values of W indicate that the judges were applying the same evaluation criteria and thus reached a high level of agreement in all the examples ($p < 0.01$).

We currently have scores for 11 patients, so that we are not in a position to present data that are statistically meaningful regarding their concurrent, discriminative and predictive validity, nor regarding the correlations demonstrating the independence between the sub-functions, i.e. the strength

of the modular hypothesis. However, we do present the data as they are at the current state of the art and they provide some first results that are encouraging in this respect.

Finally, to calculate the correlations among sub-items, we have used Bravais–Pearson's rho correlation coefficient (see Tables 2 and 3).

The Manual

The manual contains the instructions the judges need to follow in marking single units of the text. The first thing to do is to divide the text into marking units. Each piece of conversation by a patient between two interruptions by a therapist is considered a text unit.

The scale and the manual should identify both the times the subject successfully uses a function and the times he fails to use it. Consequently successes and failures are evaluated separately for each function. Thus the Scale does not evaluate the presence or absence of a skill, but only the presence of a success or of a failure in the ability to use that function. In each unit the judge has to signal the presence of successes and/or failures for each of the subunits which constitute the different functions. For instance, if the patient demonstrates an ability to report his own thoughts, the judge will mark UownM 3 (item 3 understanding of one's own mind), and if the patient fails to relate these two variables, the judge will mark UownM 7. The abilities that it is not possible to observe in the marking units, either in the form of a deficit or operating correctly, are not taken into consideration. Each subunit is marked only once inside each of the text units. To identify failures and successes using each metacognitive function as prescribed in the manual, the judge has to pay special attention to some factors. The first is the patient's general representation of his/her state of mind (or those of the other people the patient talks about as regards understanding others' minds). For instance, a purely factual or behavioural description that evokes an opaque representation suggests an identification failure; a representation which possesses emotional and cognitive elements but is chaotic and incoherent suggests an integration failure. The second factor is the use of verbal expressions suggesting the presence of metacognitive activity (I thought, I felt, etc.). In this case colloquial expressions or stereotyped phrases are not taken into account. The third factor is the evaluation of the kind of function stimulated by the therapist's questions. For instance, inability to answer questions such as 'What were you thinking of?' or 'What did you feel?' suggests an identification failure; no answer to questions such as 'Why do you feel anxious?' suggests a failure in relating variables.

METHOD

The clinical cases we refer to below have been chosen from a broader research programme supported by the Italian National Health Institute and designed to evaluate the metacognitive function as an indicator of the efficacy of psychotherapy. For each patient a psychopathological and diagnostic evaluation is performed using the categories of DSM IV (APA, 1994), SCID II (1987), GAS (Endicott, Spitzer, Fleiss, & Cohen, 1976), BPRS (Nicolau et al., 1995) and AMDP (Bauman, 1987; Guy & Ban, 1982). This evaluation is repeated 1 and 2 years (if therapy is continuing) after the beginning of therapy. All sessions are recorded and integrally transcribed after the patient has given his consent. Treatment was of the cognitive-behavioural type in private health care facilities.

The development of the metacognitive function is represented in diagrams that show the trend in when the indicators are present or absent during the sessions.

CLINICAL CASES

The cases we present serve as an example—from which it is not possible to generalize because of the smallness of the sample—of the possibilities offered by the MAS for distinguishing between different metacognitive profiles and trends in patients diagnosed for different Personality Disorders.

The first case is that of a 22-year-old woman, a university student, diagnosed as having a Recurring Major Depressive Disorder on DSM-IV Axis I and Borderline Personality Disorder (BPD) on Axis II. An evaluation was made of the patient's psychological profile and global functioning during the first year of therapy, at the end of which hardly any improvement in the symptoms was observed (BPRS 44–43; AMDP 36–34; GAS 45–50).

The second case is that of a 26-year-old woman with a law degree but without a fixed professional activity, diagnosed as having a Mild Recurrent Major Depressive Disorder on DSM-IV Axis I and a Narcissistic Personality Disorder (NPD) on Axis II. In this case too an evaluation was made of the patient's psychopathological profile and global

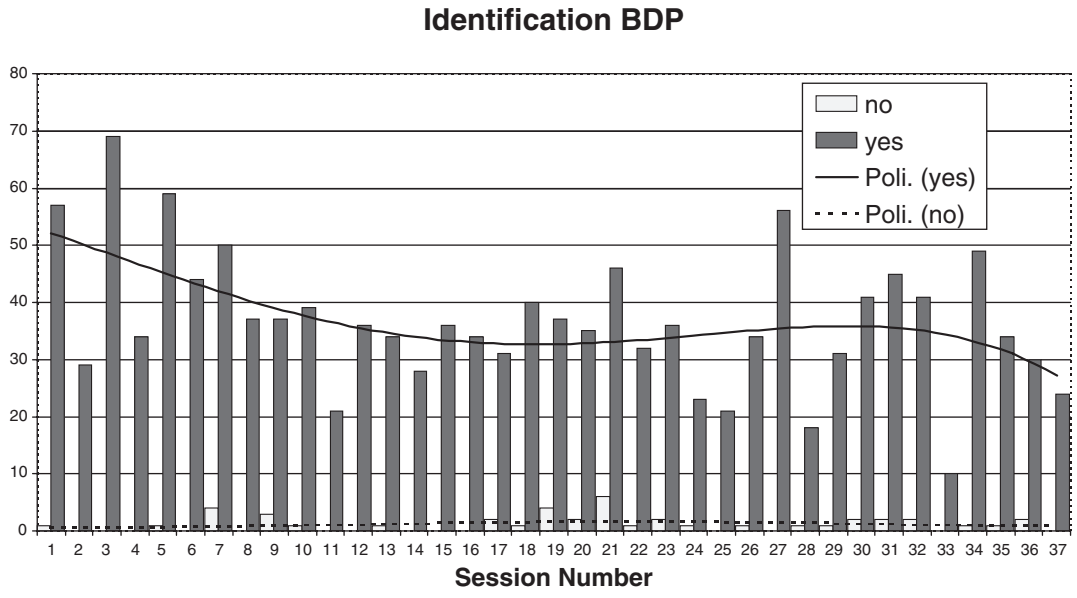


Figure 1. Failures and successes in the identification function during the first year of psychotherapy in a patient suffering from Borderline Personality Disorder (BPD). The *x-axis* indicates the session number and the *y-axis* the values of successes (yes) and failures (no) in identifying internal states pointed out in each session. The line indicates the trend of the successes and the dotted line indicates the trend of failures
Figure 1. Failures and successes in the BPD patient's *Identification* function

functioning during the first year of therapy, at the end of which there was an improvement in the symptoms (BPRS 44–35; AMDP 31–16; GAS 75–80). The therapy is still in progress.

RESULTS

The data gathered show different metacognitive deficits. Among the alterations in each of the cases in the various functions we now present those for which the difference between the two metacognitive profiles is greatest.

Identification (ID) and Relating Variables (RV)

As mentioned earlier, these functions refer to the ability to recognize respectively the elements that constitute an inner state (thoughts, representations and emotions) and the relationships between the variables that constitute a mental state. They express the effectiveness of metacognitive monitoring functions.

In the case of the patient with BPD both functions appear to be adequate right from the start of treatment (see Figures 1 and 2). Her identification success rate was high at the beginning of treatment and remains so throughout the period, whilst failures are only rare and occasional.

In the patient with NPD there was a deficit initially in ID, which tended to diminish progressively as therapy proceeded. Even more remarkable was her difficulty in RV, with a clear improvement occurring only in the final sessions of the first year of therapy (see Figures 3 and 4).

Looked at together, Figures 3 and 4 show that this patient's mental states tend to be opaque. She finds it difficult to say what she feels, thinks or desires and to point to the causes of and motivations for her actions. Her conversation contains few references to emotional states or inner dialogues and is composed mainly of descriptions of facts and behaviour. The patient with BPD does not appear to suffer from the same deficits.

Differentiation (D)

The D function consists of the ability to grasp the difference between representation and reality, by recognizing the representational nature of thought. In the patient with BPD there were failures mainly in the early part of the therapy (see Figure 5); they are tending to decrease as the first year comes to

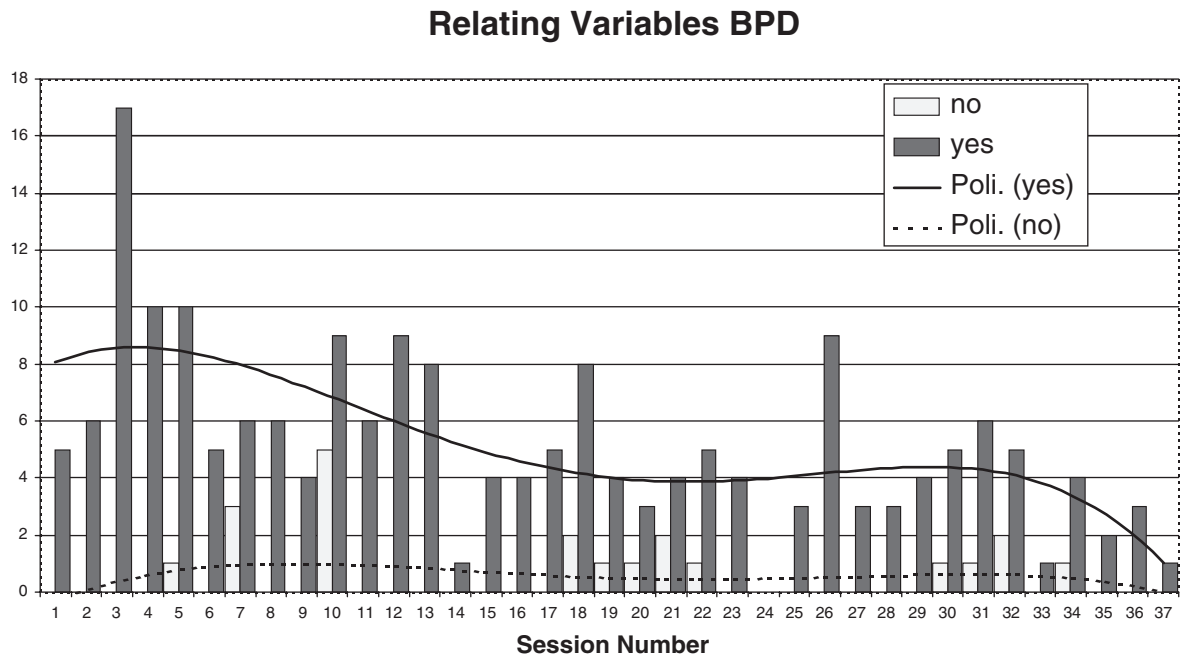


Figure 2. Failures and successes in relating variables function during the first year of psychotherapy in a patient suffering from Borderline Personality Disorder (BPD). The *x-axis* indicates the session number and the *y-axis* the values of successes (yes) and failures (no) in relating different mental variables and internal and behavioural variables pointed out in each session. The line indicates the trend of the successes, the dotted line indicates the trend of the failures
Figure 2. Failures and successes in the BPD patient's *Relating Variables* function

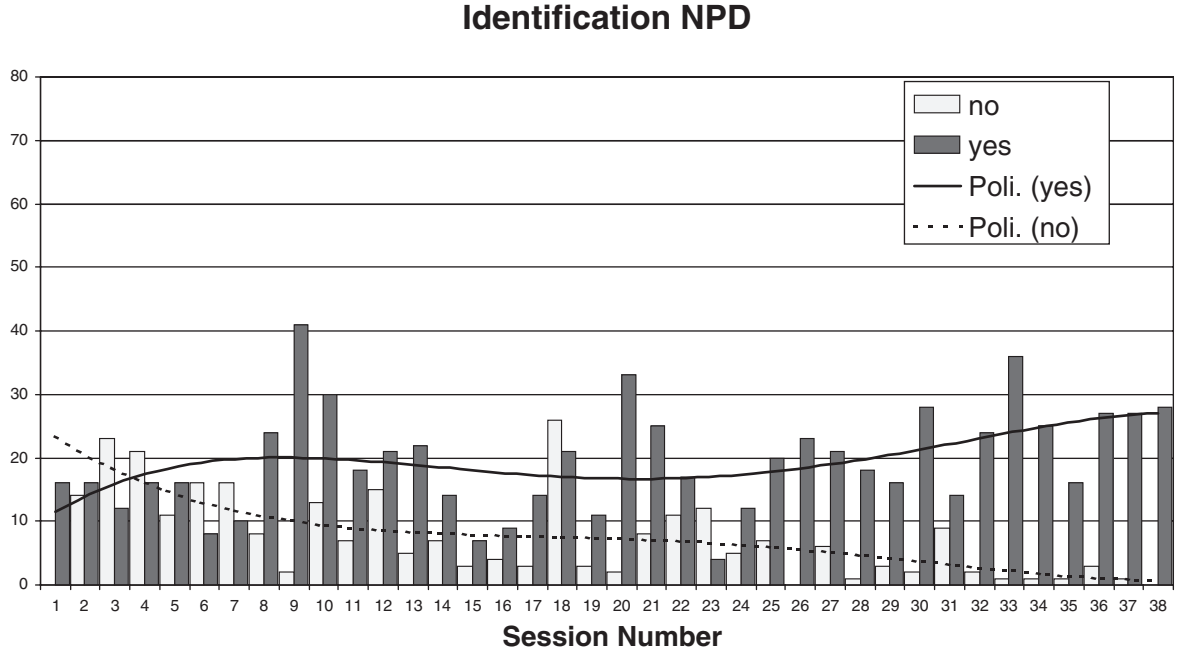


Figure 3. Failures and successes in identification function during the first year of psychotherapy in a patient suffering from Narcissistic Personality Disorder (NPD). The *x-axis* indicates the session number and the *y-axis* the values of successes (yes) and failures (no) in identifying internal state pointed out in each session. The line indicates the trend of the successes, the dotted line indicates the trend of the failures
Figure 3. Failures and successes in the NPD patient's *Identification* function

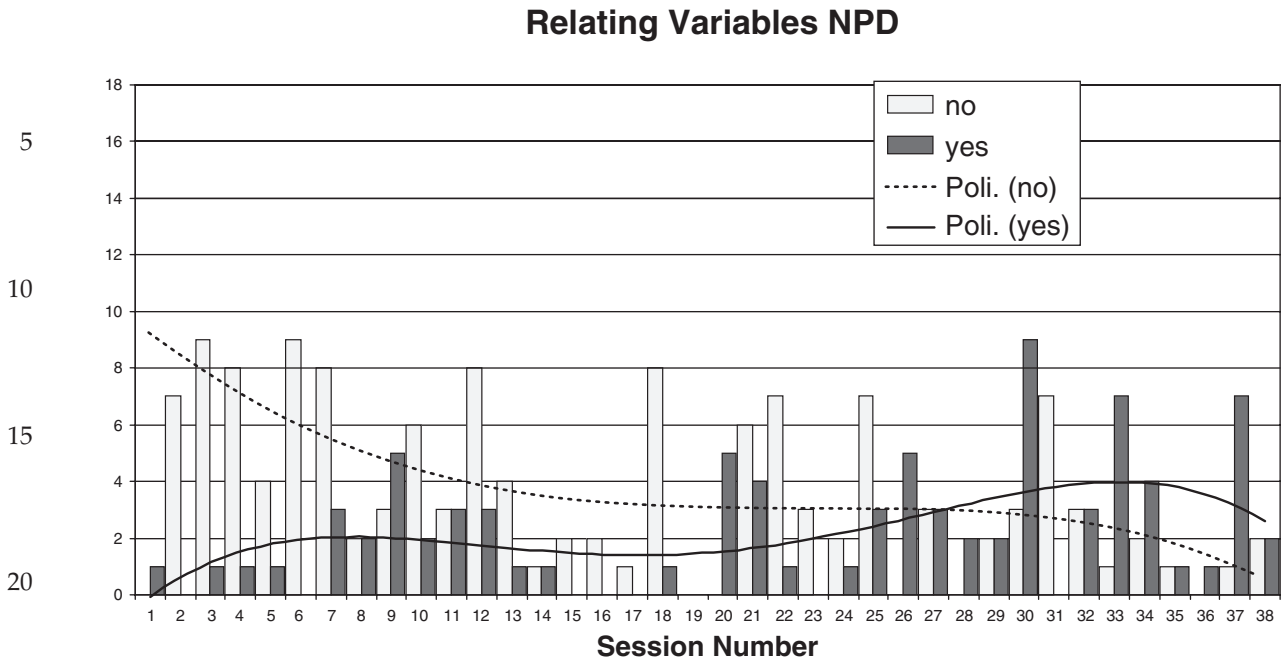


Figure 4. Failures and successes in relating variables function during the first year of psychotherapy in a patient suffering from Narcissistic Personality Disorder (NPD). The *x-axis* indicates the session number and the *y-axis* the values of successes (yes) and failures (no) in relating different mental variables and internal and behavioural variables pointed out for each session. The line indicates the trend of the successes, the dotted line indicates the trend of the failures
Figure 4. Failures and successes in the NPD patient's *Relating Variables* function

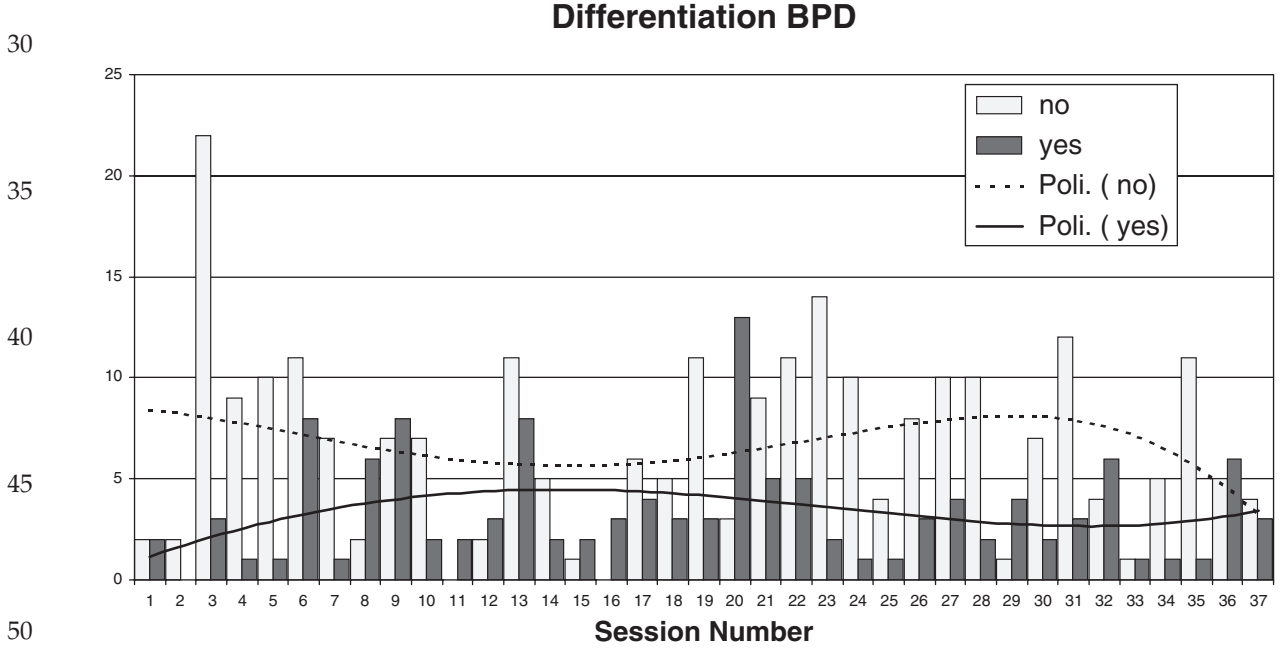


Figure 5. Failures and successes in identification function during the first year of psychotherapy in a patient suffering from Borderline Personality Disorder (BPD). The *x-axis* indicates the session number and the *y-axis* the values of successes (yes) and failures (no) in differentiating internal and external reality as pointed out in each session. The line indicates the trend of the successes, the dotted line indicates the trend of the failures
Figure 5. Failures and successes in the BPD patient's *Differentiation* function

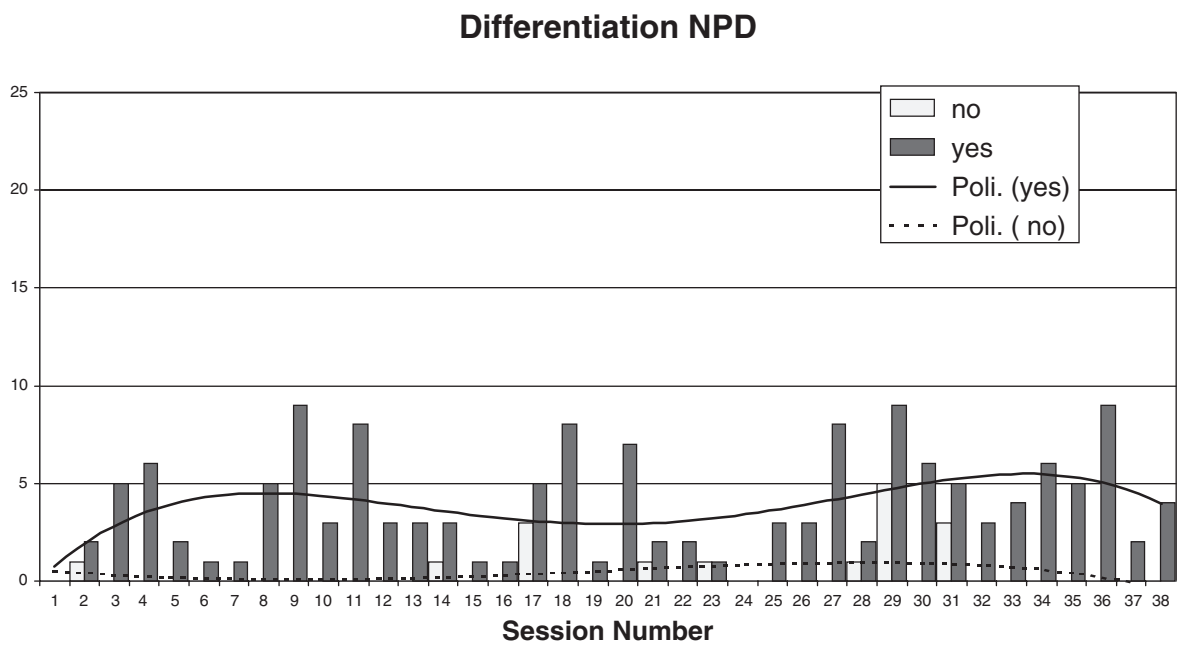


Figure 6. Failures and successes in differentiation function during the first year of psychotherapy in a patient suffering from Narcissistic Personality Disorder (NPD). The *x-axis* indicates the session number and the *y-axis* the values of successes (yes) and failures (no) in differentiating internal and external reality pointed out in each session. The line indicates the trend of the successes, the dotted line indicates the trend of the failures
Figure 6. Failures and successes in the NPD patient's *Differentiation* function

an end, but there is fundamentally little change in the level of positive expression of the function.

This type of deficit indicates that the patient tends to confuse representation with reality and has limited critical skills when dealing with her own representations, with negative consequences for her control skills.

The successes of the patient with NPD consistently outnumbered her failures, which occurred mainly in the second half of the period, probably because the improvement in monitoring functions allowed better access to representations, making it possible to see those failures previously hidden by the difficult access to inner representations (see Figure 6).

Integration (I)

In the patient with BPD I appeared to be prone to dramatic swings during the first year of therapy (see Figure 7).

At the beginning deficits were clearly in the majority, an improvement was observed during the intermediate phases, with positive occurrences tending to equal and/or surpass negative ones, whilst in the final period there was a renewed deterioration.

The patient with NPD showed an I deficit in the first part of the period and then tended to improve gradually (see Figure 8).

In fact, the failure/success ratio inverts in the middle of the period and towards the end there tended to be an end to failures and substitution by successes. In this case, the initial difficulties in integration may have been influenced by a lack of information due to a deficit in the patient's monitoring functions. Their improvement would have provided the information necessary for I to be able to function. In the first patient, on the other hand, it is not that there is a lack of information concerning the monitoring of inner states, but rather there is too much of it or it is chaotic.

Mastery

The patient with BPD, in line with forecasts forpatients with this sort of diagnosis (Linehan, 1993; Semerari, 2001), showed a severe deficit in the

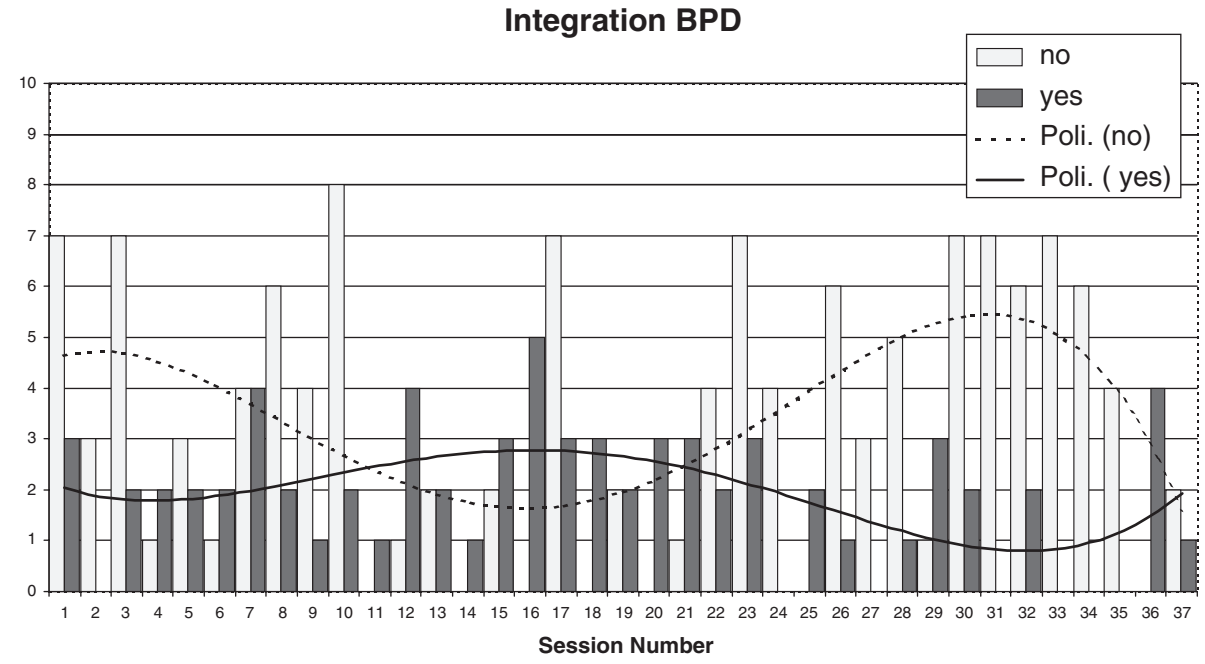


Figure 7. Failures and successes in integration function during the first year of psychotherapy in a patient suffering from Borderline Personality Disorder (BPD). The *x-axis* indicates the session number and the *y-axis* the values of successes (yes) and failures (no) in integrating mental states pointed out in each session. The line indicates the trend of the successes, the dotted line indicates the trend of the failures
Figure 7. Failures and successes in the BPD patient's *Integration* function

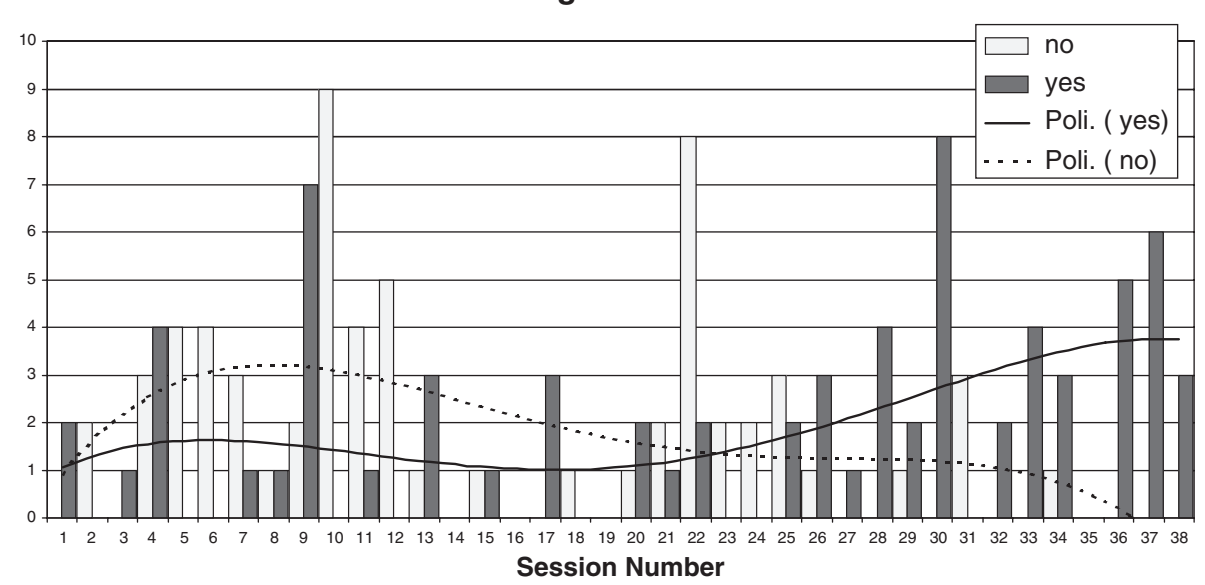


Figure 8. Failures and successes in integration function during the first year of psychotherapy in a patient suffering from Narcissistic Personality Disorder (NPD). The *x-axis* indicates the session number and the *y-axis* the values of successes (yes) and failures (no) in integrating mental states as pointed out in each session. The line indicates the trend of the successes, the dotted line indicates the trend of the failures
Figure 8. Failures and successes in the NPD patient's *Integration* function

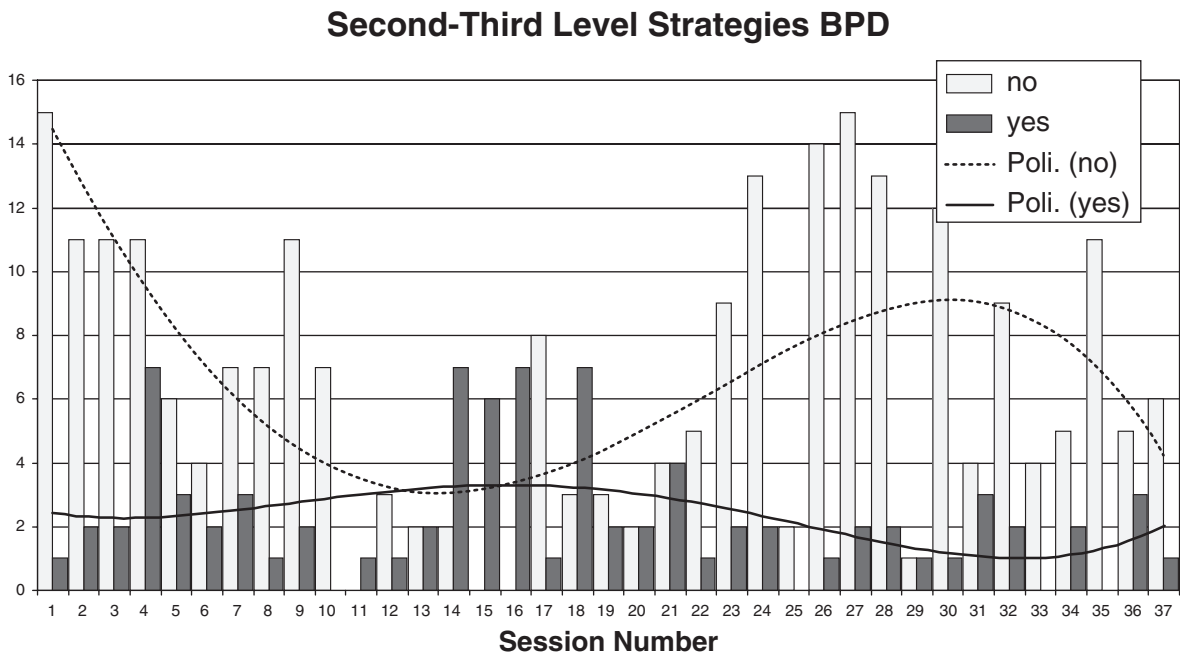


Figure 9. Failures and successes in the second to third level mastery strategies during the first year of psychotherapy in a patient suffering from Borderline Personality Disorder (BPD). The *x-axis* indicates the session number and the *y-axis* the values of successes (yes) and failures (no) in operating strategies to cope with problematic mental states as pointed out in each session. The line indicate the trend of the successes, the dotted line indicates the trend of the failures
Figure 9. Failures and successes in the BPD patient's *second to third level Mastery Strategies* function

ability to carry out mastery operations. Figure 9 is a summary of the second and third level strategy (MS23) successes and failures and shows failures to be constantly in the majority, except for a brief period in the middle. This indicates that the patient is unable to cope with her problematic states, either through the regulation of her conscious attention (second level strategies) or even, as in any case is to be expected considering her differentiation and integration deficits, by standing back and taking a critical look at her own beliefs or by using her knowledge about herself consciously (third level strategies).

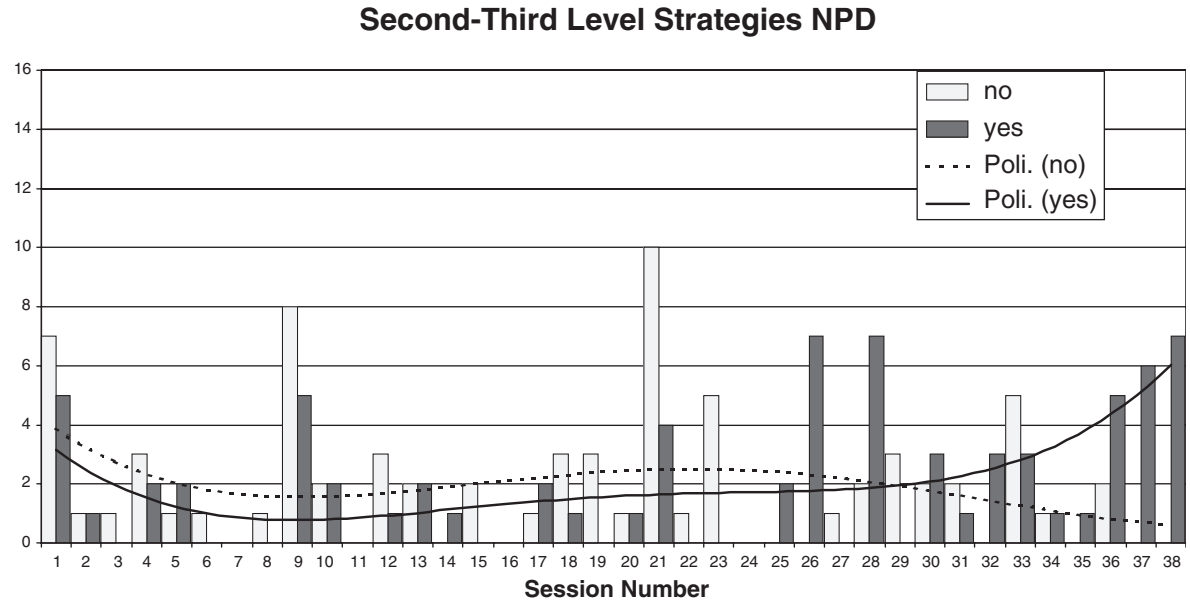
For most of the therapy the patient with NPD showed a deficit in mastery skills second and third level strategies (see Figure 10). In the final part of the period there was a tendency for successes to increase and for the mastery failure/success ratio to invert as her symptoms improved.

By separating out the various metacognitive activities, it is possible to identify a different profile for each of the two patients. Could this method allow us to investigate the relationships between functions and between the various deficits? Tables 2 and 3 show the correlation matrixes between successes and failures in each function. The correlation coefficients are calculated on the basis of data derived from the frequency pointed out during the sessions for each variable (see Tables 2 and 3).

Variables with a frequency rate lower than 15 have been excluded from the calculations; as a result, Table 2 relating to the patient with BPD does not show the failures in ID and RV and Table 3 relating to the patient with NPD does not include the failures in D.

The relations among the different sub-functions are complex . The two clinical cases present different profiles but the resulting data match the modular metacognitive theory. They also fit with psychopathological theories about these disorders.

In both of the matrixes it is possible to see a strong correlation between ID and RV, as regards both positive trends and, where present, negative ones, as in the case of the patient with NPD. Both



2 Figure 10. Failures and successes in the second to third level mastery strategies function during the first year of psychotherapy in a patient suffering from Narcissistic Personality Disorder (NPD). The *x-axis* indicates the session number and the *y-axis* the values of successes (yes) and failures (no) in operating strategies to cope with problematic mental states pointed out in each session. The line indicates the trend of the successes, the dotted line indicates the trend of the failures Figure 10. Failures and successes in the NPD patient's *second to third level Mastery Strategies* function

data are consistent with modular theory that considers ID and RV as different expressions of monitoring activity.

The deficits in D and I are not linked, as shown in Table 2 (rho = 0.012), and they are not influenced by monitoring which has been effective during the whole psychotherapy.

In the BPD patient the deficit in D is linked to the good results in ID (rho = 0.381), which is coherent with other psychopathological theories. It may depend on the fact that the more accurate patient's description of her internal state is, the more evident is her inability to recognize the representational nature of her thoughts. Therefore, in this case the differentiation deficit is not caused but disclosed by successful monitoring activities.

In the patient with BPD the matrix shows (see Table 2) a significant correlation between the failures in I and the successes in ID. The situation of the patient with NPD is different. Table 3 shows a correlation among successes, as well as among their failures, in RV and in I. This data seem to be again consistent with modular theory: in fact the difference between the two profiles can be produced by a different amount of information deriving from monitoring activities. Whereas in the patient with BPD the effective monitoring of internal states does not influence the integration deficit (as shown by the correlation Ino/ID yes), in the patient with NPD the integration deficit may depend on a defective monitoring. In NPD Table 3 12 shows a significant correlation between the deficit in I and the deficit in monitoring functions (ID and RV), as well as a significant correlation between the successes in I and the success in monitoring function and moreover a significant inverted correlation between the successes in I and the deficit in ID (rho = –0.502). According to this data is possible to hypothesize that in the patient with NPD primitive defective monitoring limits the amount of available information concerning internal states and this fact cause the failures in I. A comparison between these data and the development of the functions (see Figures 3 and 4 versus Figure 8) shows a linear improved development following the same trend.

With regard to Mastery operations, there is in particular a correlation between a deficit in MS23 and the Integration deficit (rho = 0.637) in the case of the BPD patient (see Table 2), as well as a negative correlation between successes in MS23 and failures in I (rho = –0.354).

Table 2. Correlation matrix of metacognitive functions in BPD
Table 2. Correlation matrix the BPD patient's metacognitive functions

			D no	I no	M23 no	ID yes	D yes	RV yes	I yes	M23 yes
Spearman's rho	D no	Correlation coefficient	1.000	0.220	0.410*	0.381*	0.228	0.240	0.012	0.160
		Sig. (2-tailed)		0.190	0.012	0.020	0.174	0.153	0.946	0.343
	I no	Correlation coefficient	0.220	1.000	0.637**	0.337*	–0.196	0.230	–0.107	–0.354*
		Sig. (2-tailed)	0.190		0.000	0.042	0.244	0.171	0.527	0.032
	M23 no	Correlation coefficient	0.410*	0.637**	1.000	0.332*	–0.151	0.242	–0.192	–0.186
		Sig. (2-tailed)	0.012	0.000		0.045	0.373	0.149	0.255	0.269
	ID yes	Correlation coefficient	0.381*	0.337*	0.332*	1.000	0.075	0.620**	0.196	0.305
		Sig. (2-tailed)	0.020	0.042	0.045		0.661	0.000	0.245	0.067
	D yes	Correlation coefficient	0.228	–0.196	–0.151	0.075	1.000	0.013	0.179	0.189
		Sig. (2-tailed)	0.174	0.244	0.373	0.661		0.940	0.289	0.262
	RV yes	Correlation coefficient	0.240	0.230	0.242	0.620**	0.013	1.000	0.240	0.142
		Sig. (2-tailed)	0.153	0.171	0.149	0.000	0.940		0.153	0.401
	I yes	Correlation coefficient	0.012	–0.107	–0.192	0.196	0.179	0.240	1.000	0.232
		Sig. (2-tailed)	0.946	0.527	0.255	0.245	0.289	0.153		0.167
	M23 yes	Correlation coefficient	0.160	–0.354*	–0.186	0.305	0.189	0.142	0.232	1.000
		Sig. (2-tailed)	0.343	0.032	0.269	0.067	0.262	0.401	0.167	

*Correlation is significant at the 0.05 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).
The table shows the correlation matrixes between successes and failures in each function. The correlation coefficients are calculated on the basis of data deriving from the frequency pointed out during the sessions for each variable. Variables with a frequency rate lower than 15 have been excluded from the calculations; as a result, this table does not show the failures in ID and in RV.

In the case of the patient with NPD the deficits in MS23 are correlated with failures in I, and the successes are correlated with the successes in monitoring and integration functions, but Table 3 shows an inverted correlation between the successes in MS23 and the failures in ID (rho = –0.407).

Therefore, in order to operate mastery strategies the BPD patient needs to improve her integrational operations and the NPD patient needs to improve monitoring operations.

CONCLUSIONS

The method we have presented is a first step towards the testing the following hypotheses: (a) seriously ill patients suffer from dysfunctions in their metacognitive skills; (b) metacognitive skills have a modular structure, i.e. they are relatively independent of each other; (c) different psychopathological conditions involve different metacognitive deficit profiles; (d) successful psy-

2 Table 3. Correlation matrix for metacognitive functions in NPD
Table 3. Correlation matrix the NPD patient's metacognitive functions

			ID no	RV no	I no	M23 no	ID yes	D yes	RV yes	I yes	Ms23 yes
Spearman's rho	ID no	Correlation coefficient	1.000	0.783**	0.631**	0.272	–0.353*	–0.263	–0.444**	–0.502**	–0.407*
		Sig. (2-tailed)		0.000	0.000	0.098	0.030	0.111	0.005	0.001	0.011
	RV no	Correlation coefficient	0.783**	1.000	0.691**	0.189	–0.088	–0.105	–0.152	–0.302	–0.203
		Sig. (2-tailed)	0.000		0.000	0.255	0.598	0.532	0.361	0.065	0.221
	I no	Correlation coefficient	0.631**	0.691**	1.000	0.330*	–0.030	–0.146	–0.095	–0.266	–0.148
		Sig. (2-tailed)	0.000	0.000		0.043	0.857	0.381	0.569	0.106	0.377
	MS23 no	Correlation coefficient	0.272	0.189	0.330*	1.000	0.169	0.189	0.067	0.125	0.133
		Sig. (2-tailed)	0.098	0.255	0.043		0.312	0.256	0.691	0.455	0.426
	ID yes	Correlation coefficient	–0.353*	–0.088	–0.030	0.169	1.000	0.536**	0.779**	0.581**	0.671**
		Sig. (2-tailed)	0.030	0.598	0.857	0.312		0.001	0.000	0.000	0.000
	D yes	Correlation coefficient	–0.263	–0.105	–0.146	0.189	0.536**	1.000	0.319	0.410*	0.235
		Sig. (2-tailed)	0.111	0.532	0.381	0.256	0.001		0.051	0.011	0.155
	RV yes	Correlation coefficient	–0.444**	–0.152	–0.095	0.067	0.779**	0.319	1.000	0.668**	0.564**
		Sig. (2-tailed)	0.005	0.361	0.569	0.691	0.000	0.051		0.000	0.000
	I yes	Correlation coefficient	–0.502**	–0.302	–0.266	0.125	0.581**	0.410*	0.668**	1.000	0.676**
		Sig. (2-tailed)	0.001	0.065	0.106	0.455	0.000	0.011	0.000		0.000
	MS23 yes	Correlation coefficient	–0.407*	–0.203	–0.148	0.133	0.671**	0.235	0.564**	0.676**	1.000
		Sig. (2-tailed)	0.011	0.221	0.377	0.426	0.000	0.155	0.000	0.000	

*Correlation is significant at the 0.05 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).
The table shows the correlation matrixes between successes and failures in each function. The correlation coefficients are calculated on the basis of data deriving from the frequency pointed out during the sessions for each variable. Variables with a frequency rate lower than 15 have been excluded from the calculations; as a result, this table does not show the failures in D.

chotherapy treatment involves strengthening the skills that are dysfunctional.

With regard to these various hypotheses it is not yet possible to draw any general conclusions, given the smallness of the sample analysed. The fundamental result arising from this research work is that the scale has a good level of reliability and represents a tool that is capable of picking up different types of deficit in different sub-functions. The results achieved, albeit limited, encourage us to continue in this direction.

With regard to the modular hypothesis, the results show that in both the patients the sub -functions move in an independent manner, with some of them damaged whilst others remain intact. Such a result is compatible with the hypothesis we are asserting.

The fact that the MAS divides metacognitive activity into sub-functions makes it possible to determine exactly which ones are deficient in a certain patient and/or class of patients and to identify their specific metacognitive profile and explain

the differences between profiles and trends in the sub-functions during psychotherapy treatment.

Starting from the hypothesis that there are different metacognitive profiles for different clinical situations, we can obtain important indications for the understanding and treatment of severe disorders.

The examples we have described show how analysing the various functions separately makes it possible to observe different types of deficit and different responses during treatment. If we compare the metacognitive profiles of the two patients, we may note several important differences. The BPD patient primarily has difficulty in making distinctions between representation and reality together with an integration deficit, whilst maintaining the ability to identify the components that make up mental states and the relationships between them.

The NPD patient primarily has difficulty in identifying the components of mental states and the relationships between them, whilst she is always able to distinguish between representations and reality; integration processes are problematical but the function is less hampered than in the previous case and less subject to extreme variation. In both cases there is a deficit in mastery functions, which appears to be decidedly more severe in the BPD case.

The first hypothesis is that the differences emerging are patient-specific and not pathology-specific. The second is that these differences are pathology-specific. Only with a wide-scale study will it be possible to evaluate which of these hypotheses is correct. However, it has to be said that the data is consistent with certain theories about both BPD and NPD, which see an integration deficit being present in the first (Kernberg, 1975; Liotti, 1999; Ryle, 1997) and a monitoring deficit present in the second (Dimaggio et al., 2002; Jellema, 2000; Kohut, 1971; Krystal, 1998).

With this method it is also possible to show whether and how psychotherapy treatment exerts a positive influence on metacognitive functioning and to control the accuracy of the forecast that failure to exert such a positive influence on patients with highly deficient metacognitive profiles will be associated with poorer results in therapy. In fact the usefulness of this type of analysis in a clinical situation lies in how it suggests which therapeutic treatment to adopt.

Limiting ourselves to our two examples, we can see that the respective metacognitive profiles create different tasks for a therapist. In the NPD case, the task can be summarized as helping the patient to achieve more direct contact with her own feelings, emotions, thoughts and desires. In the BPD case, emotions and thoughts are clear from the start, but the patient needs to learn to take a critical distance from them, to construct a point of view that describes how they are organized and how they occur over time, and to formulate mastery strategies.

Finally, the analysis of metacognitive functions as part of the therapeutic process can furnish some valuable indications. If we look at the charts in our examples, we can easily identify a number of critical points: moments in which the ratio between failures and successes becomes inverted, sessions that mark clear improvements or deteriorations in individual functions or others in which failures and successes are balanced. The analysis of these critical points could permit us to pinpoint the relationships that exist between metacognitive trends and types of therapeutic treatment and thus make a contribution to improving technique.

Evaluating all the sub-functions over long periods is time-consuming and this limits the size of the sample. However, it can be useful in studying the therapeutic process in detail. By observing the changes in all the different sub-functions, it is possible to identify the therapeutic treatment that is most frequently associated with improvements in metacognition (on the assumption, of course, that these produce a psychopathological improvement), so that specific treatments for deficits can be devised for each individual.

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APPENDIX A: THE METACOGNITION ASSESSMENT SCALE (MAS)

Understanding One's Own Mind

Basic Requirements NO YES

1 The subject acknowledges having mental functions
2 The subject represent him/herself as a person with autonomous thoughts and feelings

Identification NO YES

3 The subject is able to define and distinguish his/her own cognitive operations (e.g. remembering, imagining, having fantasies, dreaming, desiring, deciding, foreseeing and thinking)
4 The subject is able to define and distinguish between his/her own emotional states

Differentiation NO YES

5 The subject recognizes that the representation of the self and/or of the world is subjective and/or fallible and/or that his/her own opinions have changed or are changeable
6 The subject recognizes the representational nature of thoughts and the limited impact that expectations, thoughts and desires have on reality

Relating Variables NO YES

7 The subject recognizes that his/her behaviour may be determined by one specific mode of cognitive and/or emotional functioning and admits he/she is influenced by social and/or interpersonal variables related to the context of his/her cognitive and/or emotional functioning, or related to his/her behaviour

Integration NO YES

8 The subject is able to give a complete description of his/her own mental state and/or of the interpersonal processes in which he/she is involved, through his/her perception of cognitive and/or emotional elements
9 The subject is able to integrate his/her different modes of cognitive and/or emotional functioning into a coherent and complex narrative

Understanding Others' Minds

Basic Requirements NO YES

1 The subject recognizes the existence of mental functions in others
2 The subject represents others as persons with autonomous thoughts and feelings

Identification NO YES

3 The subject is able to perceive other individuals' cognitive operations (such as remembering, imagining, having fantasies, dreaming, awaiting, foreseeing, meditating)
4 The subject is able to perceive other individuals' emotional states

Differentiation NO YES

5 The subject considers his/her own representations of other individuals' mental states and functioning as subjective and hypothetical

Relating Variables NO YES

6 The subject makes plausible inferences about other individuals' mental states and recognizes the communicative value or signs of attitude or behaviour

Integration NO YES

7 The subject is able to give a complete description of other individuals' mental states and/or the interpersonal processes in which they are involved through the perception of cognitive and/or emotional elements
8 The subject is able to integrate other individuals' different modes of cognitive and/or emotional and/or relational functioning into a coherent narrative

Decentration NO YES

1 The subject recognizes that he/she is not necessarily at the centre of other individuals' thoughts, feelings and emotions and/or that their actions stem from goals and reasons mostly independent of the relationships they have with the subject
2 The subject recognizes that other individuals may perceive events in a different way from his/her own and/or interpret them differently
3 The subject recognizes that variables, such as time, individual development, and experiences, determine the modes of the mental functioning of other individuals and/or recognizes that personal and relational events influence their processes and mental states

Mastery

Basic Requirements NO YES

1 The subject discusses his own behaviour and psychological processes and relates them not as simple matter-of-fact data but as tasks to be done and problems to be solved
2 The subject is able to define the terms of the problem in a plausible way

First-level Strategies NO YES

3 The subject tries to act directly on the problem state by modifying the general state of his/her organism
4 The subject avoids the occurrence of problem states and/or uses the relational context as a support

Second-level Strategies NO YES

5 The subject tackles the problem voluntarily by imposing a certain type of behaviour on him/herself or inhibiting it
6 The subject tackles the problem voluntarily by adjusting his mental order

Third-level Strategies NO YES

7 The subject tackles the problem by acting upon the evaluations and beliefs which are at the basis of the problem itself and/or by using his/her general knowledge of his/her own mental functioning
8 The subject tackles the interpersonal dimension of the problem by using his/her own general knowledge of other people's mental functioning
9 The subject tackles the problem by accepting his/her own limits in managing his/her own self and influencing events

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