


# Metacognition, Borderline Pathology and Psychotherapeutic Change: A Single-Case Study

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**Abstract.** The aim of this study is to analyze whether: (a) a specific type of metacognitive deficit is present in a patient with Borderline Personality Disorder; (b) a metacognitive improvement can be detected during the psychotherapy treatment; (c) if this improvement can be indicative of the effectiveness of psychotherapy itself. A single case study has been conducted; metacognitive deficits have been measured with the Metacognition Assessment Scale (MAS). In line with the hypothesis, the results show a global and progressive improvement of meta-cognitive functions. We conclude in agreement with the current literature, the existence of a major deficit in Differentiation and Integration subfunctions (belonging to Self-reflexivity), compared to Characterization and Relation between variables subfunctions (belonging to Metacognitive monitoring).

**Keywords:** metacognition, Borderline Personality Disorder, Metacognition Assessment Scale, psychotherapy research, single-case


Many theoretical approaches try to understand the genesis of Borderline Personality Disorder-BPD and to identify the kind of psychotherapeutic treatment that could follow (Lambert, 2004; Oldham, Skodol, & Bender, 2005; Roth & Fonagy, 1996). According to Kernberg's theory (1967), borderline personality disorders stem from a conflict between libidinal and aggressive instincts that occurred at the pre-oedipal age and dealt with the primitive defense mechanism of splitting, whereas Fonagy and Target (1997) identify the mental representation of the internalized objects as one of the specific aspects of borderline functioning (Fonagy et al., 1995). According to Linehan (2001), the core of BPD is a serious shortcoming of the emotional regulatory system, which originates from a combination of variables related to temperament and environment. The construct of metacognition is a good link between Kernberg's and Fonagy's conceptualization and becomes a bridge that links these differ-

ent conceptualizations (Carcione, Falcone, Magnolfi, & Manaresi, 1997; Dimaggio, Semerari, et al., 2007) with others (Carcione et al., 2008; Dimaggio, Carcione, et al., 2009; Dimaggio, Semerari, et al., 2007; Semerari, Carcione, Dimaggio, Falcone, et al., 2003; Semerari, Carcione, Dimaggio, Nicolò, et al., 2005). Metacognition is a multidimensional function according to Carcione's theory (1997), and can be assessed with the MAS. As described below, we can find the combination of three different theoretical models proposed by Kernberg (1967), Fonagy and Target (1997), Linehan (2001). This construct refers to mental activity used to establish satisfying interpersonal relationships, formulate and direct our requests for help and predict others' behavior. This multidimensional construct becomes also a bridge between Experimental Psychology, Development Psychology and Psychotherapy. Metacognitive knowledge is considered a key element in the study of evolutionary psychology (Baron-Cohen, Leslie, & Frith, 1985; Flavell, 1979). In the cognitive psychology area the construct interacts with other concepts such as attributions, motivation and self-esteem. According to the psychoanalytic perspective of authors like Fonagy, the "pretend" mode replaces the psychic equivalence mode (overlap between internal reality and external reality) that is specific to an earlier age (Fonagy, & Target, 2001). Results indicate that the child needs to experience his mental

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states through play and through a secure attachment relationship with his caregiver (Caviglia, Fiocco, & Dazzi, 2004; Meins et al., 2002). According to Fonagy's dialectical model, the child will develop a good level of metacognition as a result of introjecting the image of himself as a thinker because he has been thought of by his mother (Caviglia, 2005; Caviglia, Perrella, & Iuliano, 2005; Fonagy, & Bateman, 2005; Meins et al., 2002). For this reason, the model appears to be dialectical, it is an inter-subjective process by which the child tries to understand the parent's mind while the parent tries to understand and contain the child's mind. Although for many psychoanalysts, like Kernberg, the child introjects the rejecting or comforting object of his mother, in Fonagy's dialectical model it is the self-image that is introjected, the self-image that is mirrored by his mother's face, the way she cares for him and the relationship established between the two. It is also evident, however that the self-reflexivity capacity (metacognitive ability) would help to prevent the risk of psychopathological development. Fonagy identifies the self-reflexivity deficit (metacognitive skills) as a key risk in the etiology of BPD. Within this pathology the child could experience abuse from a significant person in an attachment relationship, and at the same time would lack a parallel secure attachment relationship able to mitigate the trauma. In these conditions, the child would avoid—deliberately though unconsciously—the metarepresentation of the parent's mind in an attempt to avoid the underlying hostile reasons for the parent's behavior (Fonagy & Target, 2001). The generalization of these deficits to all intimate relationships could completely prevent the child from experiencing the mental state simulation by the abusive caregiver. Fonagy suggests that the generalization takes place only within an attachment relationship and therefore it is a selective and contextual meta-cognitive deficit. When mirroring fails, the child does not internalize his own image, but his mother's rigid defenses. These results confirm the role played by the reflexive function deficit in the lack of processing of the trauma and that means it would contribute in the evolution of BPD. The metacognition construct is important for both clinical applications and research; it can be considered an indication of the therapeutic change. Empirical studies suggest that the presence of traumatic events and the failure of parents as a source of support and protection are common elements in patients diagnosed with borderline personality disorders (Gunderson, Kolb, & Austin, 1981). Problem solving, planning and monitoring our own cognitive processes are related to the construct of the "metacognitive function" (Semerari, 1999; Semerari, et al., 2005). The metacognitive function operates in a context of consciousness and constantly plays an active role in achieving an adequate affective regulation and processing of unpleasant and/or traumatic experiences (Main, Kaplan, & Cassidy, 1985). In its clinical application, this construct could provide elements that might be helpful in the diagnosis and prognosis of var-

ious psychopathologies. The metacognitive failure may offer the key to interpret etiopathogenetic mechanisms as well as the persistence of severe psychopathologies, including borderline personality disorder (Allen, Fonagy, & Bateman, 2008; Fonagy, & Bateman, 2005; Fonagy & Target, 2001; Semerari, Falcone, Carcione, & Nicolò, 2001; Semerari, et al., 2005). In borderline personality patients, the metacognitive failure also jeopardizes the therapeutic alliance as well as the positive outcome of the therapy itself. Specifically, in BPD patients monitored through the Metacognition Assessment Scale, we assumed, based also on the existing literature, that there is a major deficit (in terms of operationalization of the construct of metacognition) in the differentiation and integration of sub-functions of self-reflexivity rather than in the sub-functions of characterization and relation between variables (both pertaining to the metacognitive monitoring function). Self-reflexivity, the first sub-function, theoretically should suffer a major deficit in BPD subjects. As Fonagy pointed out, borderline patients may have a good representation of others' mind, to the detriment of their own, because they have always paid attention to unpredictable signals from their parents and consequently, they paid less attention to their own mental states (Fonagy & Target, 2001). Observation of patients with personality disorders have led to the identification of prototypical profiles for each personality disorder and have led to the identification of nuclear metacognitive deficits shared by several patients with the same personality disorder (Allen, Fonagy, & Bateman, 2008; Dimaggio & Semerari 2004; Fonagy, 1991).

In brief, the meta-cognitive functions may be present or damaged, independently of each other and with a different degree of impairment in various disorders (Fonagy, & Bateman, 2005; Dimaggio et al., 2007). In order to confirm the above-mentioned literature, the aim of this research, which is a preliminary study to explore some of the research hypotheses, is to assess metacognition in the psychotherapeutic treatment of a patient diagnosed with borderline personality disorder. This study has been conducted to collect preliminary data that will be used for heuristic purposes, to be verified with further research. Our contribution, which is part of research work conducted on this process is to verify whether a specific type of metacognitive deficit can be found in borderline personality disorder; whether metacognitive activity increases during psychotherapy and whether such increased activity indicates how effective the therapy is (Allen, Fonagy, & Bateman, 2008; Bucci, 1997; Bucci, 2000; Caviglia, & De Coro, 2000; Caviglia, Perrella, Sapuppo, & Del Villano, 2010; Fonagy & Bateman, 2005). The effectiveness of the psychotherapy has been assessed with the SCID II and through the assessment of the change in metacognitive function, operationalized and assessed with the MAS. Trying to integrate the different theoretical references, we postulated the existence of a major deficit in the self-reflexivity sub-

function. Furthermore, since these capacities are stable over time, we expect an increase in the success rate of the deficit sub-functions during the final sessions of the therapy. This is due to the fact that we assumed that the change of these sub-functions is slow but constant over time. As a result, the metacognitive increase may provide a useful gauge for the validation of results achieved through psychotherapy.

### Method

A single case was used for this longitudinal study, to track the patient and observe her change during the psychotherapy, monitoring the same variables for the whole length of the treatment. The single case study was chosen because of its accuracy in detecting changes.

### Patient

Our subject was a 23-year-old female with borderline personality disorder assessed through clinical interview and SCID-II (First, Gibbon, Spitzer, Williams, & Benjamin, 1997). The patient showed the following symptoms:

- (1) A pattern of unstable and intense interpersonal relationships characterized by alternating between extremes of idealization and devaluation;
- (2) Frantic efforts to avoid real or imagined abandonment;
- (3) Identity disturbance: markedly and persistently unstable self-image or sense of self;
- (4) Affective instability due to a marked reactivity of mood;
- (5) Chronic feelings of emptiness;
- (6) Inappropriate and intense anger or difficulty controlling anger.

These symptoms, allowed the diagnosis of Borderline Personality Disorder, included in cluster B Axis II of the DSM-IV (APA, 1994).

### Treatment

A male clinician with over 20 years experience, after the psychological assessment, treated the patient, in a private specialized clinic and research center for the treatment of personality disorders, with a cognitive oriented psychotherapy (Beck & Freeman, 1990), one session per week for six years. The patient received a weekly cognitive-oriented psychotherapy session from 1996 to 2001. 8 sessions (2 initial, 4 middle, 2 final) were recorded, transcribed and analyzed. Two doctoral students trained as judges by the clinical researchers, independently scored 30% of the 240 sessions (length of the whole psychotherapy treatment over 6 years). Their results showed satisfactory levels of agreement (Cohen's  $k$  .76). In severe patients, a metacognitive improvement can be indicative of the effectiveness of

the cognitive oriented psychotherapy treatment.

### Measures

The tool used was the Metacognition Assessment Scale (MAS) which allows a quantitative measurement of the metacognitive function change in psychotherapy. It can be applied to transcript therapy sessions and/or to the follow up. It comprises 40 dichotomous items with yes/no answers, yes indicates a successful response and no indicates failure. The usefulness of MAS resides in its modular approach, the construct being divided into three sub-functions: self-reflexivity, understanding the decentralization of the mind of others, mastery (each of these is further divided into additional subfunctions).

In this pilot study we only assessed the first sub-function, self-reflexivity, because it represents—according to the theory—a deficit in the borderline patient. Self-reflexivity (the subject's ability to represent mental events and perform heuristic cognitive operations on his mental functioning) consists of nine sub-functions, with dichotomous values (yes, no) that indicate the following variables: A1, A2 basic requirements (the ability to recognize one's own mental states as being autonomous); A3, A4 characterization, (the ability to discriminate between cognitive and emotional components in one's own internal states); A5, A6 differentiation between mental representations and external world; A7, ability to build relations between variables in order to explain the reasons for one's own behavior; A8, A9 integration (the ability to integrate cognitive and emotional functioning into a coherent narrative framework).

When using MAS, the recorded psychotherapy sessions must be dated, then read, then split into text units. Each unit is a piece of patient's speech between two comments made by the therapist. The judge will choose the section of the scale (in our study self-reflexivity), then the function (e.g., differentiation), finally, the specific item (e.g., A5) which will be scored: Success (A5 yes) or failure (A5 no) (Carcione et al., 1997).

### Data Analysis

In order to verify the hypotheses described above, we performed a frequency count.

### Results

The analysis of the frequencies revealed a progressive and global improvement of metacognitive functions. A3, A4 characterization, is positive and constant for all the sessions assessed (see characterization trend in Figure 1, which shows on the x-axis the sessions and on the y-axis frequency of the successes and failures of characterization. We can note successes but no failures).

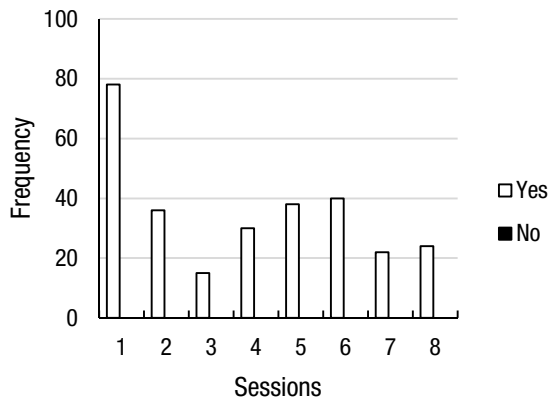


Figure 1. Characterization trend

Thought reversibility (A5) was deficient (yes = 0) in the initial session, increased in the middle sessions and reached a positive peak in the 2001 final sessions. Instead, the recognition of the limits of thought (A6) followed a linear upward trend (see Figure 2, which shows on the y-axis the absolute frequencies of the successes and failures. The trend is mostly negative until the sixth session, after which the frequency of Yes exceeds that of No. It testifies a consistent deficit in differentiation in spite of the previous function (characterization) and a positive trend in the number of successes in the subsequent therapy sessions).

The relationship between variables (A7) showed positive values throughout, an improvement in the median sessions, and then remained constant in the final sessions (see Figure 3, which shows on the y-axis the absolute frequencies of the relation between variables. This function is activated in almost all the sessions except in one, but it does not affect the hypothesis of the integrity of the function).

The integration functions (A8, A9), had very low values at the beginning then switched to an increasingly positive trend during psychotherapy (see Figure 4, which shows on the y-axis the absolute frequency of the integration. There is a considerable impairment of the function, which confirms our hypothesis. There was a marked improvement only from the sixth ses-

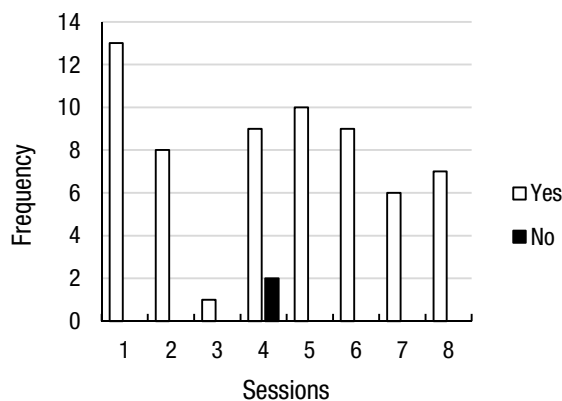


Figure 3. Relations between variables trend

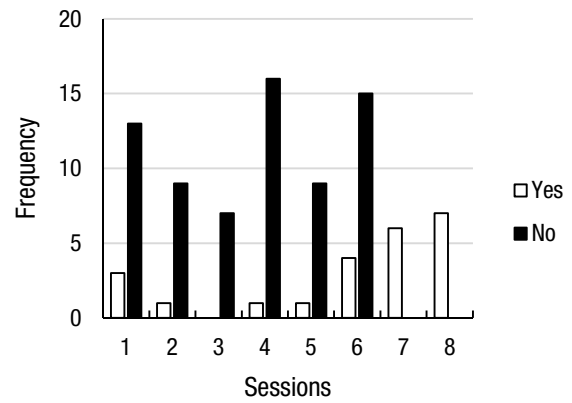


Figure 2. Differentiation trend

sion on. This result is a good indicator for the validation of the therapeutic process.

This shows that our work describes the trend of self-reflexivity in a patient with Borderline Personality Disorder. In particular it shows a positive trend for the sub-functions of integration and differentiation that significantly improve over the years.

### Discussion

Our work, aimed to verify whether a specific type of metacognitive deficit could be identified in the borderline personality disorders (Allen, Fonagy, & Bateman, 2008; Bucci, 2000; Caviglia, & De Coro, 2000; Caviglia et al., 2010; Fonagy, & Bateman, 2005); whether metacognitive activity would increase during psychotherapy; and whether such increased activity was indicative of how effective the therapy is (Fonagy et al., 1995).

The interpretation of the results confirms the link between Borderline Personality Disorder and the deficit of self-reflexivity, which may explain the split, the idealization/devaluation, emptiness and fragility of the ego typical of a BPD subject. These criteria, assessed with SCID-II (First et al., 1997) before the psychotherapy treatment and re-assessed at the end of the six years of treatment improved dramatically. Alt-

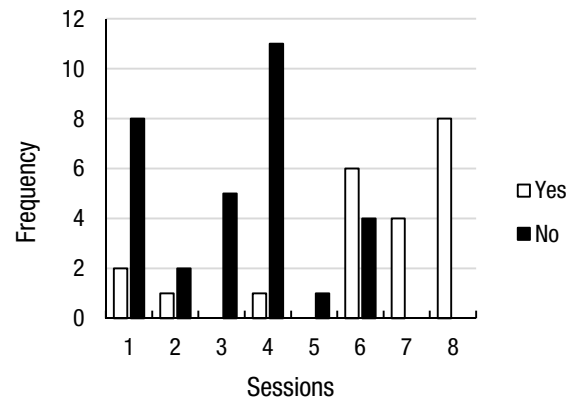


Figure 4. Integration trend

though our data does not add new input to the existing literature, they represent a further confirmation of the link between some metacognitive sub-function deficits and the Borderline Personality Disorder. Furthermore if the link between the metacognitive improvement and the psychotherapy were confirmed with further research on the clinical intervention, we could conclude, according to the results reported, that the clinician should focus his intervention on the improvement of the patient's metacognitive sub-functions, in order to help his change. Our second hypothesis states that during the therapy there is an improvement of some impaired subclasses, and this hypothesis, too, was confirmed. This result can also be considered an indirect indicator of the effectiveness of psychotherapy, although we have no control over other intervening variables.

As an example, below we report some therapy session segments, scored with the appropriate MAS values. In the first session, when the therapist asks how she feels, she answers:

P: I've been feeling bad for a few days. I don't know why, the last time I came here I had a strange feeling. Just before when I was on the subway with my father I thought: "yes I can definitely get rid of unnecessary fears, at least with my father, I must not be afraid", and it seemed positive to me. Then I went into crisis at the thought of having to take public transport even if I was afraid, however in the last few days starting from here there are other things, I was reminded of other problems, of relationships with others, my problem is that I cannot accept criticism, at night I think that people are criticizing me.

In this session segment, the patient already shows a good ability to report her own emotional states and thoughts, but she is very confused. We score a success in characterization (A3 yes, A4, yes) and in relation between variables (A7 yes), and a deficit in integration (A8 no). We also observe a success in differentiation (especially in A6) because the patient gives limited power to desires that influence the external reality:

P: My thoughts on the fact that I'm sick, I feel sick, that now I'm in a situation where I can't go out and because I want to, I feel that I have the strength to do so.

Later the patient is able to describe, what she thought and how she felt the night before (A3, A4 yes). In the description, she makes assumptions about the mental states of others (mother), integrating her thoughts in a consistent way (A8 yes):

P: So I could not get to sleep, I thought about my mother and the fact that she wants me to become stronger, and that I should have tried to behave in a normal way, so as not show too much to others, (...). I compared myself to a baby when it starts crying and wants only love and nothing else, who does not want anything else (...).

### Limits

In addition to the above mentioned conclusion we would also like to underline the limits of this single case study. The limits refer to the fact that results cannot be generalized, except if we were to analyze a large number of single case studies but that would imply a very long slow process. Another limit is the data interpretation, because there are no other comparable data for such a treatment and we cannot say if the outcomes are related to the specific technique used during the treatment or if they are aspecific effects. However if we look at the results, we could find them very useful for the clinician. This method provides the clinician with better insight as it allows the microscopic and qualitative analysis of the patient's traits and treatment, but it also raises several questions for researchers. So far, these questions remain unanswered. One question, as we have said, is whether knowledge acquired through the single case study can be applied to an entire clinical population (Dazzi, Lingardi, & Colli, 2006; Kächele, 2002; Kächele, Schachter, Thomä & The Ulm Psychoanalytic Process Research Study Group, 2009; Lingardi, & Fontana, 2003). This

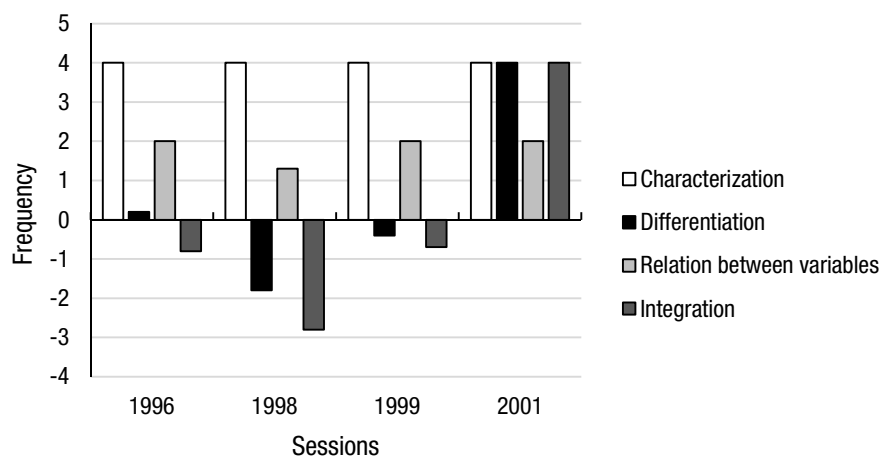


Figure 5. Self-reflexivity trend

kind of research conducted on a single clinical case (or a few clinical cases) is quite frequent and uses specific textual assessment tools to perform a longitudinal analysis of the therapeutic sessions. The single-case study is the preferred method in contemporary research in psychotherapy as it allows both macro and micro analysis (Kazdin, 2011; Wallerstein, 2002). This methodology compares the functioning of the patient's personality, the treatment process and the outcomes, "Patient-Therapist-Outcome" (PTO; Strupp, Schacht, & Henry, 1988) The single case study, with its specificity, allows the results to be generalized to a specific statistical population, rather than relying on the vagueness of the generalized design (Chassan, 1979). Among the advantages, the single case methodology includes the immediacy of reading the results, and the immediate applicability in the clinical setting (Fonagy, 2002; Kächele, 2002; Roth & Fonagy, 1996). The single case study is useful both for verification of clinical hypotheses and for research methods in the therapeutic process (Fonagy & Moran, 1993).

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