Mentalization and autobiographical memory as clinical components of the self and identity

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Psychoanalysts have suggested that a mentalization process is required for the transformation of drives and affects into mental representations of self and others. Meanwhile, neuroscientists suggest that episodic memory, through autonoetic consciousness, is crucially involved in the elaboration of the Self and subjective experience. This research empirically investigates the relationship between the quality of mentalization and the efficacy of autobiographical recall, and considers childhood trauma and psychopathology as possible related factors. Thirty participants presenting with either high or low mentalization profiles according to the Mental States Rating Systems (MSRS) were submitted to the TEMPau, a semi-structured interview designed to assess the quality of autobiographical recall from several criteria (episodicity, self-perspective and consciousness). Childhood trauma was assessed using the Childhood Trauma Questionnaire (CTQ). The Symptom Checklist (SCL–90-R) and the Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II) were used to assess global symptomatology and Axis-II disorders respectively. As expected, levels of mentalization are related to higher levels of childhood abuse (emotional, physical and sexual) and symptomatology (SCL–90-R Global Severity Index). However, contrary to our expectation, better autobiographical memory is associated with poor mentalization profiles, although spontaneity of recall is less efficient in those subjects. No significant relation was found between Axis-II disorders and traits, and other clinical variables.

Keywords: mentalization, autobiographical memory, childhood trauma, personality disorders

A psychoanalytic contribution to the concept of the Self: Mentalization

The concept of mentalization, traditionally centered on the notion of transformation and elaboration of drives and affects into mental representations (Marty, 1990, 1996), has a long and fruitful history within the theoretical and clinical traditions of psychoanalysis. However, its various definitions complicate its measure and clinical application (De Tychey et al., 1997; Diwo, 1999). In addition, many overlapping and related concepts, such as emotional intelligence

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Bar-On, 2000; Mayer, Salovey, & Caruso, 2008) and reflective functioning (Fonagy, 1989; Fonagy & Target, 1996, 2000) have also recently emerged. These notions contributed to a deeper understanding of some aspects of mentalization, but also prompted questions about the conceptual boundaries of this crucial function in the creation of the human subjectivity and the Self. Bram and Gabbard (2001) suggest to limit the term “mentalization” to its classical conceptualization, originating from the French psychoanalytic tradition. For Marty (1990, 1996) mentalization first and foremost refers to the representational process itself, that is, the transformation of somatic drive/affect excitations into representable and ultimately symbolized mental contents. This elaborative work of the internal world and subsequent reflective thinking is considered as a primary factor in tolerating negative affects, thus preventing impulsive and excessive discharge through acting-outs (e.g. auto and hetero-aggressive behaviors, compulsive sexual activity, drug abuse, etc.) and/or psychosomatic disorganizations (Chemouni, 2000; De Tychey et al., 1997; Marty, 1990, 1996).

On the operational level, the mentalization process is particularly manifest in verbal productions, as clinicians witness successive shifts in mental states. According to Putnam (1988), state-related variables comprise, among other key elements, affects, access to personal memories and sense of self. For instance, in an affectively charged situation, we would consider as poorly mentalized the patient presenting a persistent state of concreteness, describing his affective experience in an anecdotal fashion and using words that only duplicate actions, thus resulting in an “empty presence”. Somatic discharges may also be observed. Defensive activity seriously distorting the subjective reality (e.g. denial, splitting), or secondarily prevent a meaningful symbolic content to gain consciousness and to be integrated into the personal history and/or identity is also considered an indication of poor mentalization. By contrast, the patient showing more reflexivity and insight, who is able to contain and explore in a relatively non-defensive manner his inner world and emotions or to use metaphors to symbolize his experience would be considered to show good mentalization. Therefore, mentalization has to do with both the quantity and the quality of emotionally significant mental representations of self and others, as part of the whole subjective experience. It also refers to the upholding and availability of these representations for thought processes, as well as to the permanence and fluidity of the associative function among them. It is this original view of mentalization that will be considered in the present project.

Observations documenting the relationships between mentalization and other clinical variables are numerous. Zanarini and Frankenburg (1997) found a positive association between a history of childhood trauma and poor mentalization among a group of personality disordered participants. Bouchard and colleagues (2008) found that poorly mentalized subjects have a higher number of DSM-IV diagnoses, over and above gender and attachment status. They also noted that the absence of a diagnosis (whether on axis I or II) increases a subject’s chance of being securely attached. Although attachment was not directly measured in this project, some of its potential covariates (personality disorders, psychological
symptoms, and childhood trauma) were studied in relation to both mentalization and autobiographical memory.

A neuropsychological contribution to the concept of the Self: Memory systems

In the widely accepted structural model of multiple memory systems (Schacter & Tulving, 1994; Schacter, Wagner, & Buckner, 2000; Tulving, 1983, 1985), a system is defined as a set of correlated processes, each with its own logic regarding encoding, storage, consolidation and retrieval of information. In addition, each differs in terms of its underlying neurological substrates, the kind of information it processes and by specific operating rules and laws of functioning. Self-representations underlying identity and character necessarily involve long-term memory, which can be divided into two broad systems: procedural memory (of particular importance is the affective subsystem involving implicit processes, although motor and cognitive procedures may be embedded in a higher-order self-definition, but in a more peripheral sense) and declarative memory (including both explicit semantic and episodic contents).

In its narrower conceptualization, procedural memory implies cognitive (e.g. reading) and motor abilities (e.g. riding a bike). Representations created in this system are in themselves non-symbolic and cognitively hardly graspable, although one might exert a reflexive activity on them (e.g. I can tentatively describe explicitly how I proceed to ride a bike). The recall of encrypted memories in the procedural system is totally dependent on external stimulations that act as primes (e.g. being on my bike) for the encoded information. The form of consciousness associated with procedural recall is said to be anoetic; the person has no sense of a knowing or remembering process taking place (Siegel, 1999; Tulving, 2002; Wheeler, Stuss, & Tulving, 1997).

Procedural memory also encompasses affective procedures, which includes classical conditioning as well as more complex affective schemes, such as core features of attachment patterns and object relations (Fosshage, 2005). Implicit affective memory is central to identity consolidation and can be viewed as one of the core layers of the self. Its relations to mentalization processes required further exploration. We shall here focus on “higher” layers of the Self, relying on explicit declarative memory.

Declarative memory is the umbrella term that designates a cognitively graspable material, which can be expressed in words, fantasies and memories (i.e. highly symbolic. Aspects of identity and character necessarily, but not exclusively, involve the use of the long-term declarative memory systems. Declarative memory is divided into two distinct but interrelated systems. The semantic system concerns factual knowledge. Its products are propositional representations concerning both the self (e.g. name and birth date) and the world (including abstract knowledge such as mathematics). It is the system of the so-called objective thought; emotions play virtually no role in this system. The episodic memory system shares several characteristics with the semantic system, but also possesses unique features. As Tulving (2002, p.5) put it, “the essence
of episodic memory lies in the conjunction of three concepts – self, autonoetic awareness, and subjectively sensed time.” It allows events (or episodes) situated in time and space to be remembered by the subject. It also allows projection of the self in the future. Further, emotions and other phenomenological qualities of the event (e.g. sensations, cognitions, perceptions), are central to the subjective quality in the encoding of the experience. The products issued from the episodic system are remembered from an “actor-like perspective” (first person), while the facts of the semantic system are known and recalled from a “spectator-like perspective” (third person) (Piolino, Desgranges, & Eustache, 2000).

Mental representations pertaining to the self, engraved into semantic or episodic memory subsystems, are said to be autobiographical. It has been suggested that richer episodic contents (i.e. characterized by more specificity and phenomenological details in comparison to decontextualized semantic contents), is an indication of the higher quality and efficacy of autobiographical memory. The term episodicity has been put forward to designate this characteristic. Taken at face value, a careful examination of both autobiographical memory and mentalization conceptual features has led us to believe that mentalization processes would contribute to key aspects of the quality of encoding and recall of emotionally charged episodes, and vice-versa.

The quality of mentalization and the efficacy of autobiographical recall

When a stimulation occurs (whether internal or external), specific sub-cortical structures of the limbic system (e.g. amygdala) and specialized cortical regions (e.g. orbitofrontal cortex) screen for emotional content and implication (Siegel, 1999). Contrary to highly emotional arousing events, experiences that involve lower emotional intensity seem not to trigger focal attention and thus are less likely to be experienced as “important” (Markowitsch, 2000). These memories are therefore not easily recalled later on, because explicit encoding has not occurred. However, if the event involves high stakes or is overwhelming (traumatic), numerous factors may inhibit activity in the structures involved in explicit encoding (particularly the hippocampus) and thus prevent subsequent retrieval as well. It is an inverted-U-shaped-curve effect (Metcalfe & Jacobs, 1996; Nadel & Jacobs, 1998; Schooler & Eich, 2000). It has been shown that individuals that underwent severe traumatic experiences during childhood present with overgeneral autobiographical memory (Crane & Duggan, 2009; McNally et al., 2006).

On one hand, it is suggested that higher mentalization capacities may help to reduce the disruptive impact of negative affects at the neurological level during the encoding process. On the other hand, it is suggested that in individuals having at their disposal “thick” layers of symbolic self-representations that are permanently and fluidly interconnected (i.e. presenting high quality of mentalization), episodic encoding is further facilitated and enriched as a result of this highly contextualized network of information. At an empirical level, it is hypothesized that the quality of mentalization will be positively related

1 Autobiographical memory is not a distinct memory system, but rather a particular way to designate the specific contents of representations.
to the efficacy of autobiographical recall, and that both mentalization and autobiographical recall will be negatively related to childhood trauma and to the presence and/or severity of psychopathology.

Method

Participants. Thirty (30) francophone participants (14 males and 16 females), aged 20 to 50 years old, were recruited. Given the correlational design of this research, it was necessary to obtain participants with both high and low mentalization profiles. Therefore, in order to avoid variance restriction regarding mentalization, which would have prevented any results from being interpretable, clinical (53%) as well as non-clinical (47%) participants were included in the sample. The clinical participants would presumably present with lower mentalization profiles, and the non-clinical, with higher mentalization capacity.

Clinical participants were outpatients at (name of hospital – to be identified in the final version), a psychiatric institute located in Montréal (Canada), and were either participating in a long-term group psychotherapy for severe personality disorders or in a day-hospital intensive treatment program for anxiety and depressive disorders. The non-clinical participants were undergraduate psychology students or their relatives recruited at (First author’s University – to be added in the final version). Participant’s characteristics are presented in Table 1.

Exclusion criteria. Participants presenting with the following medical conditions, expected to interfere with long-term memory encoding and/or recall, were excluded from the project prior to or after a screening interview: 1) Severe alcoholism or drug abuse (Eiber, Puel, & Schmitt, 2000); 2) Post traumatic or acute stress disorder (Buckley, Blanchard, & Neil, 2000; McNally, Litz, Prassas, Shin, & Weathers, 1994); 3) A known history of head injury, brain damage, neurological disorder, severe pregnancy and prenatal complications or premature birth. Participants presenting with a score higher than 55/120 on Brown’s Attention Deficit Scale (ADD-A) (Brown, 1996/2001), indicating a high probability of presenting an attention deficit disorder, were also excluded; 4) Present or recent (12 months or less) electroconvulsive therapy (McElhiney, 1999; Peretti, Danion, Grangé, & Mobarek, 1996); 5) Chronic psychotic disorder (Riutort, Cuervo, Danion, Peretti, & Salame, 2003); 6) Present major depressive disorder (Park, Goodyer, & Teasdale, 2002; Sampson, Kinderman, Watts, & Semb, 2003; Wessel, Meeren, Peeters, Arntz, & Merckelbach, 2001).

Instruments and Measures

The Autobiographical Memory Task. The TEMPau (in French, Test Épisodique de Mémoire du Passé lointain Autobiographique) is a semi-structured interview originally designed to assess retrograde amnesia (Piolino, Belliard, Desgranges, Perron, & Eustache, 2003; Piolino, Desgranges, et al., 2003; Piolino et al., 2006; Piolino et al., 2000). As the original coding method was not available from the authors and not explicitly mentioned in their publications, and because our sample comprised only neurotypic subjects, an adaptation of the interview was used. The interview was tape-recorded and verbatim transcriptions were used to assess the quality of autobiographical recall for three periods:

1) Childhood (4–11 years old), 2) Adolescence (12–19 years old) and 3) Adulthood (19 and over, except the last

2 The original interview covers five encoding periods: infancy and adolescence (0–17 years old), young adulthood (18–30 years old), adulthood (30 and up), the five last years (except the last 12 months) and the last year. These periods were modified here to match the expected mean age of our sample (30 to 35 years old). Indeed, the original interview was designed to be administered to older persons suffering from severe memory disorders.

3 Also, the onset of the first encoding period was set at four years old to avoid any bias in favour of the semantic memory (e.g. fragmentary but coherent memories reported as young as 2 years old).
For each period, subjects were asked to retrieve four thematic memories (a significant encounter, a school/professional event, a trip, a family event). The full interview thus comprises twelve (12) distinct episodes, each coded on four dimensions.

First, the episodicity subscale identifies unique memories of relatively short duration that are situated in time and space and filled with phenomenological details, such as perceptions, emotions and sensations. In the present study the episodicity subscale was coded on a six-point Likert scale. A score of zero (0) was given if the subject was unable to give any memory, or gave a general appreciation (e.g. “My childhood was happy”). A score of one (1) was given for repeated or extended events (duration of more than twenty-four hours), with no spatial and temporal elements, or any vague and overgeneral repeated memories (e.g. “We spent every Christmas with my relatives”). A score of two (2) was attributed for repeated or extended events that were well situated in time and space, or for unique events (e.g. that happened once) that were not situated in time and space. Higher scores were given for unique episodes clearly situated in time and space, and remembered with few (3), many (4) or exceptional (5) phenomenological details, irrespectively of the length of the narrative. The maximal score for the episodicity subscale is sixty (60).

A second subscale assessing self-perspective during retrieval (actor or first-person vs. spectator or third-person perspective) is also taken into account in the rating. The memory is given a score of between zero and two depending on the self-perspective being in the third person (perspective=0), a combination of third and first person perspective (as if the person were re-experiencing the memory from within the scene and from outside) (perspective=1), or clearly from a first-person point of view, as if the subject was walking the scene and looking at it with her own eyes (perspective=2). The maximal score for self-perspective is twenty-four (24).

A third dimension of autobiographical memory assessed by the interview is inspired by the R/K paradigm (Gardiner, 1988; Tulving, 1985). The awareness was evaluated according to the subject’s sense of “knowing” the facts (semantic recall) or truly “remembering” what happened (episodic recall). Three aspects of each episode were assessed for awareness: factual (what happened), time (when did it happen) and space (where did it happen). The K responses were given a score of zero (0), while the R responses were given a score of one (1). Maximum score for awareness is 36. Scores on the three subscales (episodicity, perspective, awareness) were weighted so that each of the three dimensions contributed equally to the global autobiographical memory mean score. The maximum global score for the full interview is 216.

Finally, a separate score of spontaneity of recall is also coded in a reversed relationship to the number of cues given to the subject by the interviewer to recall a specific episode, instead of a generic one (e.g. for the school event: Do you remember your first day in school?). Spontaneity scores range from zero (0) (specific memory generated from four cues or more, and non-specific memories, i.e. that have obtained a score of 0, 1 or 2 on the episodicity subscale), to four (4) (specific memories generated without any cue or prompt). The maximum score for spontaneity is forty-eight (48).

The TEMPau interview appears to be at least as satisfactory comparing to more classical episodic tests (Piolino et al., 2006). It has the advantage of considering several relevant components of autobiographical memory (episodicity, self-perspective and awareness) and a large range of encoding periods (childhood, adolescence and adulthood). It also presents good ecological validity. The principal author of the TEMPau interview reported over 85% interrater agreement for each subscales (P. Piolino, personal communication). In the present research, ninety-six memories (26.7% of the sample) were coded by trained research assistants and the first author. The intraclass correlation coefficient obtained for interrater agreement (global score) was good (ICC=0.72, p ≤ 0.00) and a consensus was obtained for every score. Cronbach’s alphas for the episodicity (α=0.87), perspective (α=0.82), awareness (α=0.91) subscales were good, and the global scale is satisfying (α=0.79). The alpha for the spontaneity score is also good (α=0.88).
The Mental States Rating System (MSRS). In previous work on therapist mental states, as part of the global countertransference response, Bouchard and colleagues (Bouchard, Normandin, & Seguin, 1995; Lecours, Bouchard, & Normandin, 1995; Normandin & Bouchard, 1993) initially distinguished between three basic states of mental activity (reflective, objective-rational and reactive). Eventually, these distinctions were elaborated to encompass patient mental states in psychotherapy, and more generally in verbal productions of any subject observed in a psychologically meaningful situation (that is, emotionally charged). The Mental States Rating System (Bouchard, Audet, Picard, Carrier, & Milcent, 2001) was further adapted and refined and presently differentiates between sixteen different mental states situated on a hypothetical continuum from low to high mentalization (e.g. from concrete thinking, low-defensive, intermediate-defensive, high-defensive, objective-rational to reflective mental activity). The sixteen categories were further converted into a dimensional scale with scores ranging from 0 to 100 (Bouchard, Boisvert, & Dauphin, 2005). High mentalization profiles (predominance of reflectivity) are indicated by global scores above seventy (70), while low mentalization profiles (concrete thinking, low defensive activity) are characterized by global scores below forty (40). The mean global score was used in analyses.

The MSRS grid may be applied on any clinical interview transcript, with slight interrater adjustments regarding specific clinical material. In our project, the MSRS was applied to four memories of the TEMPau interview (childhood and adolescence periods, school and family episodes). According to clinical evidence, these four memories would presumably be the most affectively charged, so maximal mentalization activity would presumably be observed. Two undergraduate students in psychology were trained for about thirty hours with the MSRS grid. They were blind regarding autobiographical memory codification and subject’s subgroup membership (clinical, non-clinical). The intraclass correlation coefficient obtained for interrater agreement on MSRS global scores (0–100) was high (ICC=0.88, p<0.000) (N=47 memories, 39.2% of the sample).

Childhood Trauma Questionnaire (CTQ). The CTQ (Bernstein & Fink, 1998) is a 28-item self-report questionnaire requesting each participant to retrospectively review his/her personal history of childhood abuse and neglect. It includes five subscales (physical abuse, sexual abuse, emotional abuse, physical neglect, emotional neglect), each subscale comprising five items rated on a five-point Likert scale (0 = never true, 4 = very often true). An additional 3-item denial/minimisation scale permits the detection of potential false-negative responses (i.e. underreporting of trauma). The completion time is about ten minutes. The French version of this questionnaire shows internal consistency similar to the original version (Cronbach’s alpha ranging from 0.79 to 0.94). Test-retest reliability (three-week interval) is good (Pearson’s r ranging from 0.76 to 0.96). A factor analysis performed on the French version yielded a factorial structure similar to the original version (Paquette, Laporte, Bigras, & Zoccolillo, 2004). In our sample, similar reliability scores were found. Cronbach’s alphas were good (α=0.77 for physical neglect, α=0.80 for emotional neglect, α=0.82 for physical abuse, α=0.90 for sexual abuse and α=0.88 for emotional abuse). No cases of under-reporting were detected.

Symptoms Checklist–90 items-Revised (SCL–90-R). The SCL–90-R (Derogatis, 1983) is a 90-item self-report questionnaire describing psychopathological symptoms (mostly from axis I) occurring in the previous week. Each item is scored on a five-point Likert scale (0 = not at all, 4 = excessively). The scale yields a Global Severity Index (GSI – mean score on the 90 items) indicating the impact of symptomatology on daily functioning. A GSI higher than 0.57 is considered to be an indication of a distress/psychopathology level impeding day-to-day functioning (Schauenberg & Strack, 1999). In the present research, subscales for specific clusters (e.g. depression, anxiety) were not scored. The SCL–90-R shows good internal consistency (alpha ranging from 0.77 to 0.90). Test-retest reliability (two-week interval) is adequate (Pearson’s r ranging from 0.68 to 0.90) (Peveler & Fairburn, 1990). The French version possesses psychometric qualities similar to the original version (Fortin & Coutu-Wakulczył, 1985).
**Data gathering**

Clinical volunteers. The two attending psychiatrists (names of 4th and 5th coauthors – to be added in the final version) first introduced the research to patients during individual follow-up sessions. If the patient agreed, a twenty-four-hour reflection time was allowed to the participant to read the informed consent form. The principal researcher (first author’s initials – to be added in the final version) set the appointment for the eligibility interview (including screening questionnaires and review of the medical record) following which the clinical questionnaires were given to the subject and completed at the hospital. She was also responsible for all clinical interviews that followed (TEMPau, SCID-II), which were administered on two different days, usually across a two-week period. All TEMPau interviews were audio-taped for further codification.

Non-clinical volunteers. The non-clinical participants were recruited by research assistants (graduate and undergraduate students in clinical psychology). The same procedure was used as with the clinical subgroup with the exception that some interviews (N=9, 30%) were performed by research assistants under supervision and after a two-month training by the principal researcher. Each interview was then reviewed to ensure the comparability of protocols. Two protocols were discarded after this procedure: the first one because the interviewer directly elicited the mentalization process during the TEMPau interview and the other one due to a recording failure that prevented an accurate transcription.

**Results**

Before proceeding with data analysis, each variable was examined to establish the nature of its observed distribution. The normality of every distribution was acceptable. However, challenged homoscedasticity and some curvilinear relations were observed within the pool of variables scatter plots. Given the sample size and the fact that stringent assumptions of most parametric techniques were not met, data were first explored through non-parametric tests (Chi-squared tests and Spearman’s rank order correlations). Nonetheless, some parametric techniques were possible given their robustness when some specific assumptions are slightly violated (e.g. MANOVA) (Tabachnick & Fidell, 2007). All analyses were performed using SPSS (v.16.0).

**Preliminary analyses: Relations between gender and clinical variables**

In our sample, gender is unrelated either to mentalization (MSRS – high vs low global score) \([\chi^2 (1, N = 30) = 1.08, \text{ ns}]\) or to autobiographical memory (TEMPau – high vs low global score) \([\chi^2 (1, N = 30) = 0.000, \text{ ns}]\). Likewise, gender is not related to the CTQ global score \([\chi^2 (1, N = 30) = 0.067, \text{ ns}]\) or to the presence of an axis II disorder (SCID-II) \([\chi^2 (1, N = 30) = 0.00, \text{ ns}]\). Thus, in subsequent analyses male and female subjects were grouped.

**Correlations among clinical variables**

Spearman’s rank order correlations (rho) were obtained for clinical variables global scores (see Table 2)\(^4\). Descriptive statistics are presented in Table 1.

\(^4\) Pearson’s correlations (r) lead to similar results.
Table 1. Descriptive Statistics for Sociodemographic and Clinical Variables

<table>
<thead>
<tr>
<th></th>
<th>Total sample</th>
<th>Clinical</th>
<th>Non-clinical</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>(N=30)¹</td>
<td>(N=16)²</td>
<td>(N=14)²</td>
</tr>
<tr>
<td></td>
<td>(M=14, F=16)</td>
<td>(M=8, F=8)</td>
<td>(M=6, F=8)²</td>
</tr>
<tr>
<td>Age (in years)</td>
<td>32.1 9.9</td>
<td>37.2 9.0</td>
<td>26.2 7.5</td>
</tr>
<tr>
<td>Education (in years)</td>
<td>12.7 2.0</td>
<td>11.9 2.2</td>
<td>13.6 1.2</td>
</tr>
<tr>
<td>Memory (TEMAU – Global)</td>
<td>169.9 19.8</td>
<td>177.8 13.0</td>
<td>160.9 22.7</td>
</tr>
<tr>
<td>– Episodicity</td>
<td>58.3 6.5</td>
<td>60.2 4.8</td>
<td>56.1 7.5</td>
</tr>
<tr>
<td>– Perspective</td>
<td>48.4 13.5</td>
<td>51.9 12.7</td>
<td>44.4 13.6</td>
</tr>
<tr>
<td>– Consciousness</td>
<td>63.8 5.2</td>
<td>65.6 3.3</td>
<td>61.7 6.2</td>
</tr>
<tr>
<td>– Spontaneity of recall</td>
<td>44.9 3.1</td>
<td>43.9 3.5</td>
<td>46.0 2.1</td>
</tr>
<tr>
<td>Mentalization (MSRS)</td>
<td>62.1 7.5</td>
<td>59.2 8.6</td>
<td>65.3 4.4</td>
</tr>
<tr>
<td>Trauma (CTQ – Global)</td>
<td>45.8 18.6</td>
<td>52.7 21.6</td>
<td>38.0 10.5</td>
</tr>
<tr>
<td>– Emotional abuse</td>
<td>10.8 5.4</td>
<td>12.8 6.0</td>
<td>8.5 3.6</td>
</tr>
<tr>
<td>– Physical abuse</td>
<td>7.20 4.6</td>
<td>9.0 5.7</td>
<td>5.1 0.4</td>
</tr>
<tr>
<td>– Sexual abuse</td>
<td>7.4 4.3</td>
<td>8.6 4.9</td>
<td>6.1 3.2</td>
</tr>
<tr>
<td>– Emotional neglect</td>
<td>12.7 4.9</td>
<td>13.7 5.2</td>
<td>11.5 4.3</td>
</tr>
<tr>
<td>– Physical neglect</td>
<td>8.0 3.9</td>
<td>9.1 4.6</td>
<td>6.7 2.6</td>
</tr>
<tr>
<td>Global Severity Index (SCL–90-R)</td>
<td>0.8 0.5</td>
<td>1.0 0.6</td>
<td>0.6 0.3</td>
</tr>
<tr>
<td>SCID-II (number of traits)</td>
<td>10.3 7.5</td>
<td>12.2 7.5</td>
<td>8.4 7.3</td>
</tr>
<tr>
<td>SCID-II (number of diagnoses)</td>
<td>0.5 0.5</td>
<td>0.8 0.4</td>
<td>0.2 0.4</td>
</tr>
</tbody>
</table>

| Cluster A diagnoses     | 7.0% 14%    | 0% 0%   |
| Cluster B diagnoses     | 14.0% 21%   | 7% 7%   |
| Cluster C diagnoses     | 21.5% 29%   | 14% 14% |
| NOS axis–2 disorders    | 14.0% 21%   | 7% 7%   |
| No axis–2 disorder      | 50.0% 21%   | 79% 79% |
| Two axis–2 diagnoses    | 42.5% 64%   | 21% 21% |

¹ For SCID variables, N=28 (N=14 in the clinical subsample).
² M=Males F=Females
Clinical correlates of mentalization (MSRS). Contrary to our hypothesis, no relation was found between the mentalization mean score and the global quality of autobiographical recall ($\rho = -0.08$, ns) or its specific subscales (episodicity, self-perspective, awareness) (see Table 2). However, the MSRS is moderately and positively linked to the spontaneity of recall ($\rho = 0.41$, $p < .05$). This suggests that subjects with higher mentalization capacities retrieve specific memories more easily (i.e. with less prompts and cues from the interviewer) than subjects presenting with mentalization deficits. Finally, consistent with previously established observations (Bouchard et al., 2008), there is a moderate negative relationship between the quality of mentalization (MSRS) and childhood trauma (total CTQ) ($\rho = -0.39$, $p \leq 0.05$). Mentalization deficits are greater among subjects who have suffered from abuse, whether emotional ($\rho = -0.51$, $p \leq .01$), physical ($\rho = -0.60$, $p \leq .01$) or sexual ($\rho = -0.40$, $p \leq .05$), but not from emotional or physical neglect. Surprisingly, no relation was found between mentalization and personality disorders (SCID-II: number of endorsed criteria). However, we found that subjects presenting higher mentalization profiles tend to have less psychological symptoms, as measured by the SCL–90-R Global Severity Index ($\rho = -0.57$, $p \leq .01$). Symptoms were also more likely to be present in subjects reporting abuse (emotional, physical and sexual), as well as emotional neglect (see Table 2).

Clinical correlates of autobiographical memory. Unexpectedly, a moderate positive correlation is found between the CTQ global score and the TEMPau global score ($\rho = 0.52$, $p \leq .01$). This suggests a more detailed and specific autobiographical recall in subjects reporting higher levels of childhood trauma, specifically sexual abuse ($\rho = 0.61$, $p \leq .01$) and physical neglect ($\rho = 0.52$, $p \leq .01$). Finally, correlations between the CTQ total score and specific subscales of the TEMPau suggest that this link might be due essentially to the predominance of the actor-like perspective of the subject when he/she recalls the episode ($\rho = 0.38$, $p \leq .05$), reflecting perhaps a lesser degree of “distance” from the recalled episode. Also, for sexual abuse (but not physical neglect), a richer description of the episode in terms of phenomenological details such as sensations, perceptions, cognitions or emotions (episodicity) contribute to this relationship ($\rho = 0.40$, $p \leq .05$). Finally, no relation was found between the TEMPau and the SCL–90-R or the SCID-II.
Table 2. Spearman’s Correlations (ρ) Among Clinical Scores

<table>
<thead>
<tr>
<th></th>
<th>MSRS</th>
<th>Autobiographical Memory (TEMPau)</th>
<th>SCID</th>
<th>Childhood Trauma (CTQ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSRS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AM (Tot.)</td>
<td>-0.08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AM (Epi.)</td>
<td>0.00</td>
<td>-0.50**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AM (Csc.)</td>
<td>-0.04</td>
<td>0.65**</td>
<td>0.43*</td>
<td></td>
</tr>
<tr>
<td>AM (Pers.)</td>
<td>-0.08</td>
<td>-0.82**</td>
<td>0.02</td>
<td>0.30</td>
</tr>
<tr>
<td>AM (Spo.)</td>
<td>0.41</td>
<td>0.22</td>
<td>0.04</td>
<td>0.06</td>
</tr>
<tr>
<td>SCL–90-R</td>
<td>-0.57**</td>
<td>0.27</td>
<td>0.11</td>
<td>0.04</td>
</tr>
<tr>
<td>SCID-II</td>
<td>-0.15</td>
<td>0.10</td>
<td>0.03</td>
<td>-0.01</td>
</tr>
<tr>
<td>CTQ (Tot.)</td>
<td>-0.39**</td>
<td>0.52**</td>
<td>0.34</td>
<td>0.17</td>
</tr>
<tr>
<td>CTQ (EA)</td>
<td>-0.51**</td>
<td>0.32</td>
<td>0.21</td>
<td>-0.01</td>
</tr>
<tr>
<td>CTQ (PA)</td>
<td>-0.60**</td>
<td>0.28</td>
<td>0.30</td>
<td>0.28</td>
</tr>
<tr>
<td>CTQ (SA)</td>
<td>-0.40*</td>
<td>0.61**</td>
<td>0.40*</td>
<td>0.34</td>
</tr>
<tr>
<td>CTQ (EN)</td>
<td>-0.29</td>
<td>0.33</td>
<td>0.18</td>
<td>-0.05</td>
</tr>
<tr>
<td>CTQ (PN)</td>
<td>-0.04</td>
<td>0.52**</td>
<td>0.14</td>
<td>0.18</td>
</tr>
</tbody>
</table>

1 N=30 for all variables, except SCID-II (N=28)

MSRS=Mental States Rating System (Mentalization); CTQ: EA=Emotional Abuse; PA=Physical Abuse; SA=Sexual Abuse; EN=Emotional Neglect; PN=Physical Neglect; TEMPau: Epis.=Episodicity; Csc=Consciousness; Pers.=Self-perspective; Spo.=Spontaneity.

* Significant at the 0.05 level (2-tailed) ** Significant at the 0.01 level (2-tailed)

Clinical versus Non-clinical subjects: Assessment of Profiles

Given the absence of association found between mentalization and autobiographical recall and the unexpected positive correlation of the latter and childhood trauma, we proceeded with confirmatory profile analysis. Profile analysis was used to determine if the heterogeneity of our sample (clinical and non-clinical volunteers) might have had interfered with the observed associations. The first step was to determine if the two profiles are equivalent (test of parallelism: one-way MANOVA, group X measure). From the profile plot (see Figure 1), it is obvious that the two profiles are not parallel ($F=3.49$, $p = .02$) (see Table 3 for detailed between-subjects effects). Consequently, the subsequent tests of level and flatness of the profile analysis procedure were not executed. The results show that every clinical variable is significantly related to group membership, except for childhood trauma (CTQ: $F=3.71$, $p=.07$) (see Table 3). This unforeseen result is however likely attributable to lack of power⁵.

Table 3. Tests of Between-Subjects Effects of Group Membership (Clinical vs. Non-clinical)

<table>
<thead>
<tr>
<th></th>
<th>Global Scores</th>
<th>$F$</th>
<th>$p$</th>
<th>Partial $h_2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory (TEMPau – Global)</td>
<td>5.11</td>
<td>0.03</td>
<td>0.16</td>
<td></td>
</tr>
<tr>
<td>Mentalization (MSRS)</td>
<td>5.22</td>
<td>0.03</td>
<td>0.17</td>
<td></td>
</tr>
<tr>
<td>Trauma (CTQ – Global)</td>
<td>3.71</td>
<td>0.07</td>
<td>0.13</td>
<td></td>
</tr>
<tr>
<td>Personality Disorders (Number of criteria)²</td>
<td>12.61</td>
<td>0.00</td>
<td>0.33</td>
<td></td>
</tr>
<tr>
<td>Symptomatology (SCL–90–R – GSI)</td>
<td>21.5</td>
<td>0.00</td>
<td>0.43</td>
<td></td>
</tr>
</tbody>
</table>

1 N=30 for all variables, except SCID-II (N=28)

5 Independent sample t tests show significant mean differences for all clinical variables when the grouping variable is group membership (clinical vs. non-clinical).
As expected, subjects with poor mentalization profiles report higher levels of symptomatology, as measured by the SCL–90-R, and higher retrospective memories of childhood trauma (especially abuse, whether physical, emotional or sexual). However, they prove to have higher capacities to elicit detailed and specific autobiographical memories.

In order to closer examine this counterintuitive phenomenon, specific memories explicitly recognized as “traumatic” in the subject’s narrations and simultaneously presenting high episodic scores (4 or 5) were examined a posteriori for their qualitative contents. This represents a pool of 68 memories out of 360 (19%). It was found that those “traumatic” memories presenting many phenomenological details and that were specific (unique events situated in time and place) and recollected in an actor-like perspective were also often spontaneously defined by the participants as being typical examples of roles and issues within significant relationships (e.g. with caregivers or love mates). Thus, our commentary on “traumatic memory” is here strictly limited to interpersonal trauma. For example, a subject would add commentaries such as “it was always like this with my mother” or “this is the best example of the way we were together”. Themes of emotional abuse, failure to take care and betrayal were the most likely to be remembered (91% of the time). The prolonged contact with each subject during clinical interviews often gave further confirmation to this observation. Using a different frame of reference, it would seem indeed that these prototypal memories serve as a pictorial synthesis of internalized object relations.
The following (partial) transcript, used with the informed consent of the participant, is a representative illustration of such prototypal memory. The participant is a female in her mid-twenties attending group psychotherapy. Her profile on dichotomized variables is typical of what was found in our sample. It is characterized by: low education (less than 12 years), low overall mentalization capacities (MSRS below 60, with mostly low-level defensive activity), presence of at least one DSM-IV personality disorder, moderate to high level of childhood trauma (CTQ ≥ 85) and high autobiographical recall (i.e. characterized by high episodicity, actor-like perspective and remembered responses).

“Between 12 and 18, of course there was that blow, THE blow I received from my father. It changed the course of my life. I cannot think of anything else. Oh yes (laughs)! My grandmother was at home for a few days. She was quite rich at the time, that old witch, and we were not. It was in May, I will always remember... My brother decided to look in her things, just for fun, and found about five hundred dollars, probably her money for the holidays. He was so excited to show me that! I decided to keep twenty dollars. The whole idea was to spend the money with my girl friends at the candy store. [...] I had just turned twelve. When I came back home later that evening I felt a strong emotional strain within the house. I did not know why, but it was really tense and I soon figured out why: “My father knows”. He indeed confronted me about the money. I knew that a “yes” answer would lead to a solid blow, so I lied. All I got was ten more minutes free (laughs loudly). I never knew if I got punished for the lie or because I stole the money [...] Anyway, I remember him being on me, his knee on my chest, hitting me in the face and everywhere (coughs). I suddenly felt myself relaxing and becoming numb. I told myself: “Go ahead, if you want to hit me, hit as hard as you can, I don’t mind”. My mother tried to remove my father from me, she cried: “Stop, won’t you stop! You are going to kill her!” He finally stopped. My first reaction was to look at myself in the mirror; you know how girls are (laughs)! I was cut, my lip bled and I had two black eyes (coughs). He kept me grounded for a week. Not really to punish me, but to avoid the neighbor’s comments. My father, you know... I’m sorry but can I have water please? I cannot stop coughing (laughs)! [...]”

This is a typical traumatic memory, although it also illustrates one of the few detailed account of physical abuse we had in the sample. The memory is well contextualized and filled with many details, including thoughts and perceptions; the reader can easily picture the scene. However, noteworthy is the fact that the participant adopts toward her memory a quite defensive stance characterized by denial and eluding affects (e.g. laughs). Her epic account of the violent encounter also relies on some concreteness (e.g. quoting utterances,
factual and sequential reporting) and somatic discharge (coughing). These characteristics may have enhanced her subjective tolerance to affects elicited by the recall, although affect regulation in itself appears demanding. Thus, one can say that what we define as mentalization deficits (at least at the intermediate and low levels of defense and of concrete thinking) may in fact support autobiographical recall of emotionally distressing (“traumatic”) memories. Moreover, spontaneity of recall in subjects presenting a low mentalization profile tends to be poorer, suggesting that while memories are available and remembered in greater detail (i.e. encoding is good), they might be less easily accessible in the first place. Self-exposure to painful incidents may be avoided at a conscious level, and so are associated memories that might trigger traumatic recall. That is to say, the spontaneity factor measured by the TEMPau interview may be compatible with the notion of defensiveness.

At the biological level, it is a well-known fact that declarative episodic encoding is enhanced by affect intensity to a certain extent due to the effect of stress hormones (e.g. cortisol). In this sample, the relation between efficacy of autobiographical recall (“episodicity”) and childhood trauma is illustrated by an inverted U-shaped curve (not shown here) reminiscent of the relation reported by Metcalfe and Jacobs (1996) and Nadel and Jacobs (1998) between declarative recall and affect intensity (arousal) present at encoding. However, in this study, memories reported by the participants were non-traumatic events eighty percent (80%) of the time. Thus, autobiographical memory in general, and not solely memory for traumatic episodes, appears better in subjects presenting a personal history of childhood trauma. The correlation matrix obtained (see Table 2) suggests that the actor-like perspective at encoding prompted by the episode is the most relevant memory component to explain this relation. From a phylogenetic standpoint, it is certainly more adapted to be able to recognize quickly the characteristics of dangerous situations. Persons who have repeatedly been abused during childhood may have developed a subtle form of hypervigilance that would enhance focal attention and thus increase explicit encoding in most interpersonal encounters.

On the other hand, in these participants, emotions appear more or less elaborated and integrated to subjective experience (i.e. mentalization is poorer). Indeed, subjects may be able to recognize broadly their emotional states at the time of the event (e.g. fear, panic), but without further detail. Elaboration and symbolization, including for example interpersonal implications and fantasies related to traumatic experiences (e.g. “I was betrayed by the one who should have protected me”, “I am unworthy, I deserve to be mistreated”, etc.) were unlikely to be demonstrated in our sample, which further indicates poor mentalization.

However, higher affective activation (i.e. disruptive “traumatic” affect intensity) is associated to higher plasmatic levels of stress hormones (e.g. cortisol) that may cause hippocampal damage, thus lessening the efficacy of declarative encoding and recall. The biased distribution of the variable CTQ prevents us from examining this phenomenon.
CONCLUSION

The present study aimed at exploring the psychoanalytic concept of mentalization in the light of systemic memory models put forward by the neurosciences. It was proposed that higher mentalization capacities would lead to richer self-representations fluidly associated to one another and available for thought and reflexive activity. It was hypothesized that a comparable increasing in the ability to recall autobiographical episodes would reflect this phenomenon, thus leading to a richer Self concept and identity. It was found that mentalization profiles were unrelated to the quality of autobiographical recall. Poor mentalization was also related to higher levels of childhood trauma (especially abuse) and general symptomatology (as measured by the SCL–90-R), although we found no relation with axis-II psychopathology (SCID-II). Subjects with a personal history of childhood trauma seem to present better autobiographical memory (e.g. with more phenomenological details), although personal memories are less spontaneously recalled. A qualitative content analysis of traumatic interpersonal memories suggested that there seem to be a subtle hypervigilance process that takes place, thus keeping the subject in a state of interpersonal alertness that support formal encoding, but at the same time, by its very nature, prevent any subjective integration and reflexivity. Thus, one has to make a conceptual difference between autobiographical contents (or memories), defined from a neuropsychological standpoint (e.g. Damasio, 1999), from the subject’s autobiography per se, a higher-order psychological construct most likely underlying an integrated sense of Self and identity. We would argue that a stable sense of Self and identity is based on a secure attachment devoid of any abusive and/or traumatic basis. Only then the subject has the emotional safety and mental availability to turn inward his mental resources to represent, elaborate, symbolize and make sense of his subjective experience.

There are some limits to this correlational design. First, the sample is small (N=30), which may have prevented the detection of some phenomena and introduced some biases. Moreover, the fact that the TEMPau interview appeared to have elicited many traumatic memories in a significant number of participants underscores the need to control for trauma in future work. This is especially true of participants highly motivated to participate in this type of study and who may have been more susceptible to use this context as if it were a “psychotherapeutic space”. Also, one needs to keep in mind that the MSRS grid was here applied for the first time to TEMPau interviews. The specific type of clinical material elicited by the interview (e.g. objective descriptions) may have influenced the orientation of mental activity toward the lower end of the continuum. Indeed, maximum scores obtained in the sample are slightly above seventy (70) and would potentially have been higher in the context of more emotionally triggering interviews (e.g. Adult Attachment Interview).
Author Note

The authors would like to express their gratitude to the Research Advisory Board of the International Psychoanalytic Association (IPA) for its financial contribution to this project and to Marie-Michèle Boisvert for her implication in the development of this protocol.

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