Metamemory and personality traits

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Introduction

From the end of the nineteen-seventies and with the progressive spread of interest in *everyday memory*, the way people – and aged people in particular – assess their mnestic abilities has become a central issue in the field of metamemory studies. As we know, this term refers to a latent construct introduced in developmental psychology by Flavell (1971), pertaining to individuals' knowledge, perceptions and beliefs about their memory and about the memory system in general terms (Flavell & Wellman, 1977). Metamemory, in fact, includes not only knowledge about one's own memory, but also knowledge about ways and means of compensating its potential weakness. The conviction that self-assessments were a good predictor of the memory's objective performances encouraged the development of self-report measurements of mnestic efficacy, such as *Metamemory in Adulthood* (MIA), designed by Dixon and Hultsch (1983; 1984), *Everyday Memory Questionnaire* by Sunderland, Harris and Baddeley (1983) and the *Memory Functioning Questionnaire* (MFQ) by Gilewski, Zelinski and Schaie (1990)[2].
However, the dissemination of these tools and their use in different research contexts has at times had to cope with confused and contradictory results of studies analysing the relationship between subjective estimates and objective evaluations of mnestica efficacy (Cavanaugh, 1999; Larrabee & Levin, 1986; Loewen, Shaw & Craik (1990); Zelinski, Gilewski & Antony-Bergstone, 1990). While on the one hand it was believed useful to have easy-to-use tools to facilitate early diagnosis of cognitive deficits in a wide range of subjects, on the other hand it was necessary to clarify to what extent the distance between self-evaluations and memory performance was due to the weakness of the method or of some of the tools, and to what extent it was due to other factors. The research of Kahn, Zarit, Hilbert and Niederehe (1975) and later that of Bandura (1989), Cavanaugh and Murphy (1986), McDonald-Miszczak and Hertzog (1995), Small, Chan, Komo, Ercoli, Miller, Siddarth, Kaplan, Dorsey, Lavretski, Safena and Bookheimer (2001), West, Boatwright and Schleser (1984), and Zelinski and Gilewski (2004) has shown that the depressive symptomatology has a negative effect on metamnestic estimates in samples of non-clinical subjects. Studies by Costa and McCrae (1985) and by Martin (1985) attributed the tendency to underestimate one's own mnestic abilities to neuroticism and in general to the construct of *negative affectivity*[3] (Tellegen, 1982; Watson & Clark, 1984; Watson, Clark & Carey, 1988), a label covering anxiety, hostility, depression, impulsiveness, self-consciousness, vulnerability, as well as the tendency to assess one's own health negatively, independently of one's objective well-being (Watson & Pennebaker, 1989). In short, people with high scores on neuroticism scales or on other negative affectivity scales – in cases where the two terms are used as synonyms – would tend not only to underestimate the efficacy of their own memory and to emphasise failures (Lane & Zelinski, 2003; Ponds & Jolles, 1996; Smith, Petersen, Ivnik, Malec & Tangalos, 1996), but also to perceive themselves as generally lacking in efficacy and in the motivation to apply themselves to various kinds of tasks (Judge & Ilies, 2002; Zelinski & Gilewski, 2004). A further confirmation of this comes

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[2] For a critical survey of these tools see Herrmann, 1982.
[3] In the opinion of Watson and Clark (1984) negative affectivity is to be understood as an aspect of mood disposition. It is therefore an endogenous factor that as such is independent of the presence of an actual stressor agent. It reflects pervasive individual differences in negative emotionality and in self-image: individuals with high negative affectivity tend to be worried and troubled and to have a negative vision of the self, while persons with low negative affectivity are relatively content, secure and satisfied with themselves. "The negative moods experienced by those with high negative affectivity include subjective feelings of irritability, tension, preoccupation, as well as affective states like anger, contempt, disgust, guilt, dissatisfaction with themselves, a sense of rejection and, to a degree, sadness" (p. 465).

from the works of Bandura (1977; 1989) and Berry (1999) on memory self-efficacy, or the faith people have in the working of their own memory in future situations (Cavanaugh, 1996). The outcomes of the latter research clearly indicate that, like a self-fulfilling prophecy, lack of faith in one's own mnestic abilities determines a decline in memory performance (on this, see, among others, Cavanaugh & Poon, 1989; Fisk & Warr, 1996; Hertzog, Dixon & Hultsch, 1990; Luszcz, 1993; Seeman, Rodin & Albert, 1993). More specifically, negative assessments of memory functioning supposedly generate such advance anxiety that the motivation to apply effort in memory tasks is reduced (Riedel-Heller, Schork, Matschinger & Angermeyer; 2000; Valentijn, Hill, Van Horen, Bosma, Van Boxtel, Jolles & Ponds, 2006). Pearman and Storandt (2004) showed that in the aged, about a third of the variance related to perceived inefficacy of the memory can be explained by looking at a combination of different personality measurements (conscientiousness, self-esteem, neuroticism). The role played by conscientiousness on metamnestic estimates was also pointed out by Bigotti (2000) and by Zelinski and Gilewski (2004). The common denominator in almost all the studies refered to above is the use of self-reporting measurements, both for the assesssment of metamemory, and for recording the personality variables considered each time; the fact that findings were based on samples of non-clinical subjects; and the evidence that metamnestic estimates are affected by particular personality types.
The notion that personality traits mediate people's cognitive, emotive and social functioning and consequently influence the way individuals carry out a series of cognitive tasks is accepted by numerous theoreticians of personality and cognition (see, among others, Mischel & Shoda, 1999). In a recent work on a sample of normal subjects, for instance, Yovel, Revelle and Mineka (2005) found that in visual attentiveness tasks, individuals with higher scores on the *Schedule for Nonadaptive and Adaptive Personality* (Clark, 1993)[4], which measures the personality trait connected to obsessive-compulsive disorder, tend to focus on minute details of the stimuli instead of processing the stimuli globally, also confirming what Shapiro (1965) had observed on the connection between neurotic cognitive styles (for example, "obsessive-compulsive style" and "hysterical style") and specific perception and thought patterns.
Nevertheless, overall, the literature on the effect of personality traits on metamnestic estimates reveals some limits. Firstly, the difference between the measurements used for the recording of personality variables makes it difficult to reconstruct a clear, homogeneous picture of the issue. Secondly, it should be pointed out that for years attention has been directed mainly towards the aged, overlooking the potential effect of personality traits on estimates of memory efficacy among young subjects. If particular personality traits, some of which are positioned on the borderline between normality and pathology, influence the metamemory and help to accentuate the gap between metamnestic estimates and objective memory performance, it may be useful to identify the possible weight of each factor so as to adequately "correct" the evaluations expressed in self-reports of mnestic efficacy, above all when such tools are chosen for wide-range screening.

The aim of this paper is to ascertain, through a study conducted on non-clinical subjects, to what extent the assessment of the functioning of one's memory is affected by personality type. To this end we used the *Memory Functioning Questionnaire* (MFQ) of Gilewski, Zelinski and Schaie (1990), as the metamemory measurement in view of its psychometric features, the *ADP-IV questionnaire* (*Assessment of DSM-IV Personality disorders*), of Schotte and De Doncker (1994), a self-reporting tool for the evaluation of the diagnostic criteria of Axis II personality disorders of the DSM-IV. The choice of these tools was prompted by the fact that as well as a categorial assessment, the ADP-IV allows a dimensional estimate for each of the personality disorders of the DSM-IV. With the dimensional approach, in fact, it is possible to record the presence of groups of personality traits that are however below the personality disorder threshold. Moreover, to ascertain whether the metamnestic estimates are influenced by depressive symptomatology, we decided to administer at the same time the *Beck Depression Inventory* which provides a continuous score of the severity of depression symptoms.

[4] The *Schedule for Nonadaptive and Adaptive Personality* (SNAP) is a self-reporting measurement for the assessment of the diagnostic criteria of Axis II personality disorders of the DSM-III-R.

Method

There were 150 adults taking part in the research (75 M and 75 F), between 18 and 50 years of age (average age = 33.89; *SD* = 9.95). The participants were given, in balanced order, the Italian versions of the *Memory Functioning Questionnaire,* MFQ (Pedone, Cosenza & Nigro, 2005a), the *Assessment of DSM-IV Personality Disorders questionnaire,* ADP-IV (Pedone, Cosenza & Nigro, 2005b) and the *Beck Depression Inventory,* BDI (Beck, Ward, Mendelsohn, Mock, Erbaugh & 1961).

The *Memory Functioning Questionnaire* (Gilewski, Zelinski, Schaie, 1990) is composed of 64 items, in the 7-point Likert format, grouped into four sub-scales called respectively *Frequency of Forgetting* (FF), *Seriousness of Forgetting* (SF), *Retrospective Functioning* (RF) and *Mnemonics Usage* (MU). The first scale (*Frequency of Forgetting*) concerns the assessments related to the frequency of forgetting or to the overall efficacy of one's memory. The second scale (*Seriousness of Forgetting*) has to do with the assessments related to memory failures. The situations described to the subject are the same as those in the first section of the questionnaire (*Frequency of Forgetting*); in this case, however, the subject is asked to specify how serious s/he considers possible failures in such situations. The *Retrospective Functioning* scale, on the other hand, concerns the estimates made by the subjects of their own mnestic abilities compared to previous periods of their life (a year before, five years before, etc.). Lastly, the items of the *Mnemonics Usage* scale offer eight different memory facilitating strategies (making a shopping list, keeping an appointments diary, mentally repeating things, etc.), for each of which the subject has to indicate how often s/he uses it. The MFQ provides four different indexes, one for each of the aspects considered. The subjects that score high on all four scales believe they have few memory problems and rarely use external aids.

The ADP-IV questionnaire (Schotte & De Doncker, 1994; Schotte, De Doncker, Vankerckhoven, Vertommen & Cosyns, 1998; Schotte, De Doncker, Dmitruk, Van Mulders, D'Haenen & Cosyns, 2004) is a self-report tool for the evaluation of the diagnostic criteria of Axis II personality disorders in the DSM-IV. The tool consists of 94 items: 80 investigate the criteria of the 10 specific categories of personality disorders [*Paranoid* (PAR), *Schizoid* (SZ), *Schizotypal* (ST), *Antisocial* (AS), *Borderline* (BDL), *Histrionic* (HIS), *Narcissistic* (NAR), *Avoidant* (AV), *Dependent* (DEP) *Obsessive-Compulsive* (O-C)] and 14 those of the two aspecific categories [*Depressive* (NOS-DE) and *Passive-Aggressive* (NOS-PA)]. The questionnaire allows the typicalness of a trait (dimensional assessment) to be assessed on a 7-point Likert scale, as well as the degree of *distress*, of maladjustment and of suffering associated with it or caused by it (categorial assessment), which is estimated on a 3-point Likert scale. The dimensional assessment provides three different trait scores: one for each of the 12 categories of personality disorders, one score on the three clusters of the DSM-IV, and a total score, obtained by adding up the typicalness scores on the 94 items. Lastly, the *Beck Depression Inventory* (Beck *et al.*, 1961) is a well-known measurement of depression consisting, in the original version, of 21 items.

Results

Initially the scores on the twelve dimensions of the ADP-IV and the BDI were calculated so as to eliminate from the sample the subjects with diagnoses of personality disorder and/or with a level of depressive symptomatology conventionally considered moderate or serious (Beck inventory score >17)[5]. The sample on which the subsequent analyses were carried out was composed of a total of 121 subjects, 67 males and 54 females, between 18 and 50 years of age, with an average age of 32.17 (*SD* = 9.548).

[5] A critical discussion on the definition of the cut-off point of the BDI is found in Ruscio and Ruscio (2002).

Table 1

Mean and standard deviations of the scores obtained on the Beck Depression Inventory and on the Memory Functioning Questionnaire and ADP-IV scales

SCALE	MEDIA	*SD*
BDI	6.273	4.906
ADP-IV		
PARANOID (PAR)	20.645	6.562
SCHIZOID (SZ)	16.306	5.414
SCHIZOTYPAL (ST)	19.347	7.129
ANTISOCIAL (AS)	13.917	4.755
BORDERLINE (BDL)	23.157	7.615
HISTRIONIC (HIS)	18.504	6.196
NARCISSISTIC (NAR)	21.678	7.443
AVOIDANT (AV)	17.934	7.182
DEPENDENT (DEP)	18.492	6.519
OBSESSIVE-COMPULSIVE (O-C)	21.587	6.002
DEPRESSIVE (NOS-DE)	16.083	6.613
PASSIVE-AGGRESSIVE (NOS-PA)	15.967	5.183
MFQ		
FREQUENCY OF FORGETTING (FF)	175.325	26.008
SERIOUSNESS OF FORGETTING (SF)	73.099	19.158
RETROSPECTIVE FUNCTIONING (RF)	23.347	5.483
MNEMONICS USAGE (MU)	36.859	9.628

Figura 1 Hierarchical regressions analysis

The averages and standard deviations of the scores achieved on each of the scales and related sub-scales were then calculated.

Table 2

Matrix of intercorrelations between the measurements used

	BDI	PAR	SZ	ST	AS	BDL	HIS	NAR	AV	DEP	O-C	NOS-DE	NOS-PA	FF	SF	RF	MU
BDI	1																
PAR	.333**	1															
SZ	.357**	.403**	1														
ST	.342**	.593**	.605**	1													
AS	.117	.320**	.298**	.434**	1												
BDL	.435**	.676**	.417**	.628**	.523**	1											
HIS	.354**	.628**	.369**	.607**	.515**	.777**	1										
NAR	.345**	.630**	.383**	.618**	.370**	.652**	.698**	1									
AV	.380**	.537**	.637**	.608**	.351**	.534**	.461**	.431**	1								
DEP	.315**	.534**	.501**	.560**	.331**	.599**	.605**	.544**	.717**	1							
O-C	.314**	.609**	.461**	.528**	.159	.439**	.474**	.611**	.451**	.460**	1						
NOS-DE	.493**	.590**	.594**	.657**	.308**	.689**	.578**	.447**	.737**	.644**	.425**	1					
NOS-PA	.431**	.709**	.487**	.599**	.395**	.712**	.636**	.649**	.505**	.533**	.611**	.664**	1				
FF	-.272**	-.244**	-.215*	-.335**	-.065	-.312**	-.179*	-.152	-.262**	-.253**	-.127	-.340**	-.237**	1			
SF	.023	-.116	-.107	-.006	-.106	-.090	-.125	-.096	-.068	-.080	-.198*	-.088	-.154	-.049	1		
RF	-.103	-.082	-.017	.041	.328**	.007	.008	.057	-.093	-.107	-.224*	-.154	-.012	.056	.086	1	
MU	.049	-.146	-.087	-.201*	.156	-.110	-.073	-.161	-.057	-.085	-.165	-.102	-.201*	.260**	.106	.134	1

** p < .01 (2-code)
* p < .05 (2-code)

Legenda: BDI = *Beck Depression Inventory*; PAR = *Paranoid*; SZ = *Schizoid*; ST = *Schizotypal*; AS = *Antisocial;* BDL = *Borderline*; HIS = *Histrionic*; NAR = *Narcissistic*; AV = *Avoidant*; DEP = *Dependent*; O-C = *Obsessive-Compulsive*; NON-DE = *Depressive*; NOS-PA = *Passive-Aggressive* ; FF = *Frequency of Forgetting* ; SF = *Seriousness of Forgetting* ; RF = *Retrospective Functioning* ; MU = *Mnemonics Usage*.

As Table 2 shows, the dimension of *Frequency of Forgetting* was negatively correlated to BDI and to all the dimensions of the ADP-IV, except for the *Antisocial*, *Narcissistic* and *Obsessive-Compulsive* scales. Only one significant negative correlation was observed between the *Seriousness of Forgetting* scale and the *Obsessive-Compulsive* dimension of the *ADP-IV.* The scores obtained on the *Retrospective Functioning* scale correlated negatively with the *Obsessive-Compulsive* dimension and positively with the *Antisocial* scale of the ADP-IV. Finally, there were significant negative correlations between *Mnemonics Usage* and the *Schizotypal* and *Passive-Aggressive* scales.

In order to ascertain if there were differences in the average scores obtained on the four scales of the MFQ, on the BDI and the twelve dimensions of the ADP-IV linked to the variables of sex, age level[6] and education, the data were subjected to univariate analysis of variance. The results of the ANOVA did not show significant differences linked to the sex variable on the four MFQ scales, but did show an effect related to education on the Frequency of Forgetting scale ($F3, 116 = 6.645$; $p < .001$, $\eta 2 = .188$) and an effect linked to age on the Retrospective Functioning dimension ($F2, 118 = 4.911$; $p < .01$, $\eta 2 = .077$). No significant effect linked to the factors considered was shown as regards the scores obtained on the BDI. As far as the ADP-IV is concerned, the analysis of variance showed an effect tied to the sex variable only on the Antisocial dimension ($F1, 119 = 4.529$; $p < .05$, $\eta 2 = .037$), effects due to age on the Schizotypal dimension ($F2, 118 = 4.023$; $p < .05$, $\eta 2 = .064$), Antisocial ($F2, 118 = 7.382$; $p < .001$, $\eta 2 = .111$), Borderline ($F2, 118 = 4.592$; $p < .05$, $\eta 2 = .072$) and Histrionic ($F2, 118 = 6.778$; $p < .01$, $\eta 2 = .103$), and lastly an effect of the education variable on the Borderline scale ($F3, 117 = 3.603$; $p < .05$, $\eta 2 = .085$).

Summing up, as indicated by the results of the post-hoc tests (Tukey test; $p < .05$), in line with the results of previous studies (Schotte *et al.* 1998; 2004), the female subjects obtained significantly lower scores on the *Antisocial* dimension. Concerning the effect of education, it was observed that the higher the education level, the better the estimated mnestic efficacy, as evaluated on the *Frequency of Forgetting* scale. Conversely, the lower the education, the higher the scores on the *Borderline* scale of the ADP-IV[7].

[6] The sample was divided into three cohorts. The first group comprised subjects aged between 18 and 29, the second those between 30 and 39, and the third between 40 and 50.

[7] Also the analysis conducted by Schotte *et al*.(1998) showed a negative correlation between the education level and the *Borderline* scale.

Again on the basis of the post-hoc tests, our results indicated – as was largely expected – that the younger subjects do not complain of variations in mnestic efficacy linked to the passing of time (*Retrospective Functioning* scale of the MFQ). On the effect of age observed on the *Antisocial*, *Borderline* and *Histrionic* dimensions of the ADP-IV, it should be pointed out that younger subjects tend to show personality traits featuring higher levels of hostile interpersonal attitudes, of emotivity and unpredictableness. These results confirm what had already been pointed out by Schotte *et al.* (1998), concerning the inverse correlation between age and Cluster B scores.
Lastly, in order to examine the relations between demographic variables and personality variables, respectively, and the scores of mnestic efficacy as measured by the different MFQ scales, four separate hierarchical regressions were carried out, inserting in the model as a first block the demographic variables of sex, age and education, then the scores obtained on the Beck inventory and, lastly, the scores on the twelve categories of personality disorders measured by the ADP-IV, and the scores obtained on each MQF scale as criterion variables.
As Table 3 shows, as predictors of frequency of forgetfulness the regression analysis indicated education (the higher the education level, the better the metamnestic estimate), the scores obtained on the *Schizotypal* scale of the ADP-IV and on Beck's inventory. High scores on both the dimensions determine a more negative evaluation of one's own memory. The only predictor of the estimates about the seriousness of forgetfulness are the scores on the *Obsessive-Compulsive* dimension: subjects with obsessive-compulsive personality traits tend to emphasise the fragility of their own memory. Comparing the present mnestic efficacy with that of previous years (*Retrospective Functioning* scale), older people and individuals with higher scores on the *Obsessive-Compulsive* scale think their memory has got worse over time, while subjects with antisocial personality traits say their mnestic efficacy has increased with the passing of time. Lastly, predictors of the frequency of the use of memory facilitating strategies were shown to be the scores obtained on the *Antisocial*, *Passive-Aggressive* and *Schizotypal* dimensions of the ADP-IV and the scores on BDI. More specifically, persons with higher levels of depression and those who obtained higher scores on the antisocial trait say they use fewer external aids; in contrast, subjects with more marked passive-aggressive and schizotypal personality traits state that they make greater use of strategies to jog the memory.

TABLE 3

Summary of the hierarchical regression analysis

Scale of *Memory Functioning Questionnaire*	**Model**	**Standardized Coefficients β**	*t*	*p*	R^2	**ANOVA**
Frequency of Forgetting	EDUCATION	.210	2.446	.016	.191	$F_{3, 114} = 9.056; p < .001$
	BDI	-.193	-2.135	.035		
	SCHIZOTYPAL	-.231	-2.553	.012		
Seriousness of Forgetting	OBSESSIVE-COMPULSIVE	-.244	-2.569	.011	.054	$F_{2, 116} = 3.329; p < .05$
Retrospective Functioning	AGE	-.174	-1.990	.049	.231	$F_{5, 118} = 6.774; p < .001$
	SEX	-.120	-.1.372	.173		
	BDI	-.049	-.533	.581		
	ANTISOCIAL	.327	3.665	.000		
	OBSESSIVE-COMPULSIVE	-.241	-.2.746	.007		
Mnemonics Usage	BDI	.201	2.112	.037	.178	$F_{5, 118} = 6.174; p < .001$
	PASSIVE-AGGRESSIVE	-.284	-2.500	.014		
	ANTISOCIAL	.368	3.824	.000		
	SCHIZOTYPAL	-.255	-2.290	.024		

The independent partial correlations of the four hierarchical regressions indicate that when the demographic variables in the model are excluded, personality variables explain the more noticeable percentages of variance, above all on some dimensions of the *Memory Functioning Questionnaire*, specifically 7.86% for the *Frequency of Forgetting* scale, 5.38% for the *Seriousness of Forgetting* scale, 14.27% for the *Retrospective Functioning* scale, and 22.02% for the *Mnemonics Usage* scale.

Discussion

The results of the analyses carried out confirm the fact that the way subjects assess their own mnestic and metamnestic abilities is affected both by specific personality traits, and by the degree of depressive symptomatology.
More specifically, as far as the schizotypal aspect is concerned, it has been observed that individuals with a personality structure featuring a higher level of cognitive and perceptive distortions, eccentric behaviours and interpersonal malaise, state that they have greater memory problems and, in keeping with this assessment, that they more often use strategies to facilitate recall (such as keeping an appointments diary or making lists of things to do).
Also the presence of obsessive-compulsive personality traits can be a factor to take into account in interpreting the results of mnestic self-assessments, since subjects with more marked traits of perfectionism and higher performance standards make more severe assessment both of the seriousness of their forgetfulness and of the deterioration of their memory over time, probably due to a persistent tendency to be strongly self-critical towards their own mistakes. This result is, moreover, consistent with what had already been observed by authors like McNally and Kohlbeck (1993), McDonald, Antony, MacLeod and Richter (1997) and Woods, Vevea, Chambless and Bayen (2002), who pointed out that the obsessive-compulsive trait is accompanied by less faith in one's own mnestic abilities, as they are measured through self-reporting on metamemory (on this see also the findings of Tuna, Tekcan and Topçuoğlu del 2005).
As far as the relation between metamemory and antisocial personality traits is concerned, subjects with this kind of personality structure think on the one hand that their memory has improved over the years, and on the other hand, state – with absolute coherence – that they never or very rarely use mnestic aids. This sort of "metamnestic optimism" could be explained by referring to hypertrophic self-esteem, an "arrogant", over-presumptuous attitude and perhaps also the unwillingness to say that they are typical of this personality type.
Conversely, individuals characterised by passive-aggressive personality traits acknowledge that they use strategies and techniques to help their memory more often. Delegating remembering to outside sources seems to be in keeping with a constant way of relating to the environment and to themselves marked by lack of faith in their own abilities, negative expectations, refusing to take responsibility, and by the tendency to blame failure on outside sources.
Lastly, as far as the connection between metamemory and depressive symptomatology is concerned, the results we obtained suggest that although subjects with higher scores on the Beck inventory complain of a lack of memory efficacy, they state that they make little use of mnemonics. Probably the depressive ideations lead them to emphasise (or overestimate) their memory problems and, counter-intuitively, not to put any effort into seeking strategies to reduce failures.
Overall, the results of our study indicate that assessments on the functioning and efficacy of the memory are partly affected by demographic variables and, to a greater degree, by specific personality traits. This is in line with the literature, mentioned in the introduction, which points out systematic relations between modalities of memory self-assessment and personality dispositions. Unlike the other studies, our research, through the use of self-reporting for the evaluation of traits connected to the Axis II personality disorders of the DSM-IV and the use of a dimensional tool for the assessment of depressive symptomatology, has tried to establish to what degree metamnestic estimates are influenced on the one hand by negative affectivity, and on the other by particular personality types. Starting from the assumption that normal personality and pathological personality do not constitute separate categories, but are the poles of a continuum (Clark, 2005; Eysenck, 1994; Furnham & Crump, 2005; McCrae, Yang, Costa, Dai, Yao, Cai & Gao, 2001;

Markon, Krueger & Watson, 2005; O'Connor, 2002; Widiger & Samuel, 2005), the findings of our study could in future be extended to samples of clinical subjects. It is to be expected that, if the psychopathological configuration becomes progressively less hazy, then personality traits will weigh more significantly on memory self-assessment. In any case, we believe that in the praxis of metamemory research, self-reporting for the evaluation of memory-functioning should be used alongside tools designed for the evaluation of the personality, in order to "cleanse" the metamnestic estimate of those factors that may produce distortion in terms both of overestimation and of underestimation of the memory.

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