

# Emotional Intelligence in Panic Disorder

## *Intelligenza emotiva nel disturbo di panico*

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**SUMMARY.** Panic attacks are psychopathological phenomena with a strong emotional activation that often induces subsequent anticipatory anxiety and phobic avoidance. Impairment in emotional processing in patients with Panic Disorder (PD) has been hypothesized. Emotional Intelligence (EI) involves the individual abilities to perceive, understand and manage emotions in order to cope with changes in internal and external environment. We examined EI in 42 patients with PD with Agoraphobia compared to 49 healthy controls and investigated if clinical severity of Agoraphobia is related to EI performance. We assessed EI by Mayer-Salovey-Caruso Emotional Intelligence Test and Agoraphobia by Mobility Inventory for Agoraphobia. Patients with PD and Agoraphobia showed lower Strategic EI ability than healthy controls, in both Understanding and Managing emotion abilities, and a general propensity to attribute negative emotional valence to different stimuli. These preliminary results suggest that impaired mechanisms of understanding and integrating emotions may be involved in the phenomenology of PD. These features might be the target of psychological interventions in PD. On the contrary, Emotional Intelligence did not appear to affect the clinical severity of Agoraphobia.

**KEY WORDS:** panic disorder, emotional intelligence, emotion, intelligence, anxiety.

**RIASSUNTO.** L'attacco di panico è un fenomeno psicopatologico con una componente emozionale che spesso induce ansia anticipatoria ed evitamento fobico. È stato ipotizzato che un'anomala processazione delle emozioni possa avere un ruolo nel disturbo di panico (DP). L'intelligenza emotiva (IE) comprende le abilità individuali di percepire, comprendere e gestire le emozioni proprie e altrui al fine di rispondere in maniera efficiente ai cambiamenti dell'ambiente interno ed esterno. Nel nostro studio è stata confrontata l'IE di 42 pazienti con DP e agorafobia e di 49 soggetti senza disturbi psichiatrici ed è stata valutata la possibile relazione tra la gravità clinica dell'agorafobia e le caratteristiche dell'IE nel gruppo dei pazienti. L'IE è stata valutata attraverso il Mayer-Salovey-Caruso Emotional Intelligence Test; la gravità dell'agorafobia è stata misurata con il Mobility Inventory for Agoraphobia. I pazienti con DP hanno mostrato punteggi di IE strategica inferiori rispetto ai controlli sani, in entrambe le componenti di comprensione e gestione delle emozioni, e un'elevata tendenza ad attribuire una valenza emotiva negativa a stimoli differenti. Questi risultati preliminari suggeriscono che una compromissione dei meccanismi di identificazione e di integrazione delle emozioni possa essere coinvolta nella fenomenologia del DP. Questa caratteristica potrebbe costituire una delle aree d'intervento per il trattamento psicologico nel DP. L'IE non sembra invece influenzare la gravità clinica dell'agorafobia.

**PAROLE CHIAVE:** disturbo di panico, intelligenza emotiva, emozione, intelligenza, ansia.

## INTRODUCTION

Panic attacks are common psychopathological phenomena with a strong emotional activation that seems to come out of the blue and often induce subsequent

anticipatory anxiety and phobic avoidance (1). Thus, emotions might play a relevant role both in triggering phenomena and in development of full-blown Panic Disorder (PD). Some studies suggested an impairment in emotional processing in patients with PD; they

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### *Emotional Intelligence in Panic Disorder*

showed difficulty in labelling emotions, over-control of emotional experience leading to an emotional suppression habit in their daily lives and withdrawal of emotional expression (2).

Strategies of emotional control might have an adaptive function for subjects who experience panic attacks. Patients might become conditioned to associate emotional experiences with the early signals of a panic attack and thus developing biases in managing emotions. These findings are also in line with cognitive theories that indicate an important role of a cognitive-emotional deficit in the pathogenesis of PD; at least some panic attacks might occur as result of an enduring tendency to misinterpret bodily sensations, even those related to emotional experiences, as a sign of imminent catastrophe such as a heart attack. Experiential and emotional avoidance might decrease the possibility to experience physical sensations and to have a panic attack, with a selective bias towards somatic aspects of emotions (3,4). An emotional-cognitive failure might also influence the development of anticipatory anxiety and phobic avoidance in patients with PD (5-7).

Although there is a general agreement that disturbances in emotion processing might play a role in Anxiety Disorders, research in this area is conceptually and methodologically difficult. One particularly influential framework is Emotional Intelligence (EI) Theory (8-10). EI integrates several aspects related to emotions, focusing on the abilities of coping with changes in internal and external environment, and involves the individual ability to perceive, understand and manage own and others emotions. EI assesses individual emotional processes, adding information to traditional measures of general intellectual ability, personality traits, and self-report measures of emotional competence (11,12). Higher EI scores are associated with higher levels of adaptive functioning across a variety of domains, including health-related outcomes (10), while lower scores are correlated with poorer outcomes including illegal drug and alcohol use, deviant behavior, and poor social interactions (11,12). Among Anxiety Disorders, assessment of EI has been applied in two studies in patients with Generalized Social Phobia (GSP) (13) and Generalized Anxiety Disorder (GAD) (14) showing significant differences of their emotional processes from healthy controls. Patients with GAD showed higher Perception of emotions (Experiential EI) and lower efficiency in Understanding and Managing emotions (Strategic EI) than healthy controls, with excessive worry, insufficient modulation, and search of reassurances as repetitive triggers of emotional bias vicious cycles. Patients with GSP showed lower Experiential and Strategic EI than both

healthy controls and patients with GAD, probably linked to their minor attention to emotional activity with reduced flexibility in environmental interactions, reduced memory of triggering situations and interpretation bias in social situations; according to this findings, severity of social anxiety was negatively correlated with Experiential EI scores (13).

On these bases, better understanding the emotional processes in subjects with Anxiety Disorders might contribute to clarify underlying mechanisms of the disorders. To our knowledge, EI has never been examined in patients with PD.

The current exploratory study was designed to address two hypotheses:

1. Patients have poorer EI performance than healthy controls.
2. EI is associated with clinical severity of Agoraphobia, conceived as an emotional response to panic attacks.

## **MATERIALS AND METHODS**

### *Sample*

We consecutively recruited 51 patients with Panic Disorder, with and without Agoraphobia and 49 healthy controls. Patients were recruited at the outpatients facility of the Anxiety Disorders Clinical and Research Unit at San Raffaele Turro Hospital, Milan, and healthy controls from the staff of the hospital and by word of mouth within general population. All subjects were diagnosed for current and past mental disorders according to DSM IV-TR (15) by a psychiatrist with a clinical interview and the administration of the standardized interview for psychiatric diagnoses MINI-Plus (16).

Criteria to inclusion in the study were: age between 18-65 years; current diagnosis of PD with or without Agoraphobia according to DSM-IV-TR (15); absence of any lifetime psychiatric disorder and sporadic panic attacks for healthy subjects. Exclusion criteria were: previous or present psychological treatments and psychotropic medication in the last 2 weeks.

After inclusion in the study, subjects were tested by a resident psychologist, in standardized settings, with the Mayer-Salovey-Caruso Emotional Intelligence Scale (MSCEIT) (9), administered to both patients and controls, and with the Mobility Inventory for Agoraphobia (MIA) (17) administered to patients only.

Nine out of the 51 patients recruited had PD without Agoraphobia and 42 patients had PD with Agoraphobia. Due to the small number of patients with Panic Disorder without Agoraphobia, we decided to exclude them from the analysis.

Ethical Committee ASL, city of Milan, approved the study. All subjects received an accurate oral and written explanation of the entire procedure before psychometric evaluations and signed a written informed consent.

### Measures

The MIA (17) is a self-report scale of 27 items, designed to assess severity of agoraphobic avoidance in both situations in which a trusted companion accompanies the patient and in which the patient is alone. There are two scores obtained by computing an average of the items on the Avoidance Alone Condition scale and the average for the Avoidance Accompanied Condition scale. The range of Avoidance intensity score is 1 (never avoiding) to 5 (always avoiding).

The MSCEIT is an evaluator-administered performance Emotional Intelligence test (on-line MSCEIT version, including on line version of scoring, was adopted) and it is composed by 141 items grouped into 8 types of tasks. MSCEIT showed high face, high inter-rater reliability and content validity (9,10). Answers of each subject were scored on a specific electronic grid and then sent on-line to New York Multi Health Systems (MHS) for computerized scoring. Final individual scores were standardized (mean = 100, standard deviation = 15) in relation to a normative sample (9).

There are several scores rated by the test. The Total EI Score is a result of the subjects answers to all of the eight tasks. MSCEIT gives also specific scores for two EI areas: Experiential EI Quotient and Strategic EI Quotient (10). Each of this two factors can be further split in two further branches with a total of four EI branches.

The Experiential EI Quotient ( $\alpha=0.86$ ) includes the two branches *Perceiving emotion* (ability to detect expressions from facial and scenarios images;  $\alpha=0.88$ ) and *Facilitating thought with emotion* (linking emotional input to cognition orienting;  $\alpha=0.61$ ). The former is the primary step in emotional processing as it corresponds to how well a respondent can accurately recognize his and others emotions (13). The latter links emotion to cognition and focuses on the ability to generate and use emotions in cognitive tasks such as problem solving and creativity.

The Strategic EI Quotient ( $\alpha=0.77$ ) is the last behavioral process that drives action from emotional input information and it gives emotional regulation feedbacks to brain decision-making. It includes two branches: *Understanding emotion* referring to the ability of understanding complex emotions, emotional chains and the process of transition between emotions, without necessarily perceiving feelings well or fully experiencing them (ability in appraisal process and linguistic transitions from one emotions to others;  $\alpha=0.75$ ); *Managing emotion* referring to the ability of making an integrations of own and others emotions to plan successful strategies (decision making and modulation of emotion with others;  $\alpha=0.86$ ).

Score ranges for all scales are the following: *Improve* (0 - <70), *Consider developing* ( $\geq 70$  - <90), *Competent* ( $\geq 90$  - <110), *Skilled* ( $\geq 110$  - <130), *Expert* ( $\geq 130$ ).

In addition, the MSCEIT includes a Positive/Negative Bias score, that aims to measure the individual's tendency to respond to the pictorial stimuli with either positive or negative emotions. The Positive/Negative Bias score is standardized to reflect the tendency to assign positive or negative emotions to stimuli relative to the normative group. A score >115 indicates a more than typical tendency at assigning positive emotions, and a score <85 indicates a more than typical tendency at assigning negative emotions.

### Statistical analyses

ANOVA models were performed to compare the mean scores of the MSCEIT scores between patients with PD with Agoraphobia and healthy controls. We performed preliminary analyses checking for possible confounding effects of age, years of education and gender. Gender was also checked as a possible factor interacting with the diagnosis factor.

Pearson correlation was applied to study the association between agoraphobic symptoms severity (MIA scores) and EI levels (MSCEIT scores).

The significance level for each test was maintained at  $\alpha=0.05$  even if we performed multiple tests in the study. Due to the newness and the still hypothesis-generation level of the subject under study, we preferred to give more importance to have less probability of type II error (false negative) at the expense of a higher probability to fall in type I error (false positive). Furthermore it should be remarked that the tests performed in the whole study are partially dependent, this taking to a smaller increase of the experiment wise error rate (the probability to fall in false positive error along the entire experiment) than in case of complete independence among tests. These considerations will be taken into account during discussions of results obtained from the analyses.

## RESULTS

Sociodemographic variables and MIA scores descriptive statistics are shown in **Table 1** and observed and adjusted (for covariates) means for MSCEIT scales are shown in **Table 2**.

### *EI scales scores in patients with PD and AGO and healthy controls*

As a result of preliminary analyses, we included age and years of education as covariates but not gender in the final ANOVA models.

*Emotional Intelligence in Panic Disorder*

**Table 1. Descriptive statistics**

	PD with AGO		Controls	
	Mean	Std. Dev.	Mean	Std.Dev.
Years of education	13,4762	3,36581	15,3265	3,41801
Age	32,2381	8,68924	34,0408	9,59157
MIA Accompanied	2,3167	0,95499	-	-
MIA Alone	2,6119	1,04947	-	-
	PD with AGO		Controls	
	Male	Female	Male	Female
Gender	19	23	21	28
(%)	45,24	54,76	42,86	57,14
Total	42		49	

Std. Dev. = Standard Deviation

**Table 2. MESCEIT scores in subjects with PD with AGO and healthy controls**

MESCEIT SCORES	PD with AGO					Controls				
	Mean	Std. Dev.	Std. Error	Adjusted mean	Adjusted Std. Error	Mean	Std. Dev.	Std. Error	Adjusted mean	Adjusted Std. Error
Total	87,10	9,04	1,52	86,61	1,53	89,53	10,62	1,40	90,02	1,42
Experiential Quotient	101,00	12,62	2,33	99,99	2,29	98,12	16,33	1,95	99,13	2,13
Strategic Quotient***	80,66	7,87	1,15	80,57	1,20	86,24	8,06	1,22	86,34	1,11
Perceiving Emotions	105,20	17,44	3,23	103,98	3,20	105,83	22,64	2,69	107,05	2,98
Facilitating Thought with Emotions	97,09	13,04	2,09	96,36	2,18	94,27	14,62	2,01	100,70	2,03
Understanding Emotions*	81,98	9,43	1,39	82,01	1,49	87,05	9,76	1,45	87,02	1,38
Managing Emotions*	84,91	8,93	1,31	84,43	1,38	88,99	9,17	1,38	89,47	1,29
Positive/Negative Bias**	92,74	14,97	1,73	93,71	2,08	103,64	12,13	2,31	102,67	1,93

Std. Dev. = Standard Deviation; Std. Error = Standard Error of mean. Adjusted Means and Adjusted Standard Errors of Means corrected for age and years of illness covariates. \* p<0.05; \*\* p<0.01; \*\*\* p<0.001

MSCEIT scale scores considered as dependent variable were the Total EI scale, the two EI Quotient (Experiential EI, Strategic EI), the four branches scale of the two EI Quotients (Perceiving emotion, Facilitating thought with emotion, Understanding emotion, Managing emotion) and the Positive/Negative Bias scale.

Patients with PD and Agoraphobia showed significant lower scores than healthy controls for Strategic EI Quotient (F=11.85; p<0.001), its two branches Understanding emotion (F=5.82; p<0.05) and Managing emotion (F=6.76; p<0.05) scales and the Positive/Negative Bias scale (F=9,48; p<0.01; **Table 2**).

*Association between agoraphobic symptoms severity and EI*

We performed correlations between the MIA scores (Avoidance Alone Condition and Avoidance Accompanied Condition) and the MSCEIT scores considered in the previous analyses (see above). None of the correlations resulted significant (**Table 3**).

**DISCUSSION**

This is the first study investigating EI in PD, thus our results should be considered preliminary. We found that

**Table 3. Correlations between MIA and MESCEIT scores**

Correlations	MESCEIT SCORES								
		Total	Experiential Quotient	Strategic Quotient	Perceiving Emotions	Facilitating Thought with Emotions	Understanding Emotions	Managing Emotions	Positive/Negative Bias
MIA accompanied	r	0,038	-0,083	0,126	-0,289	0,218	0,227	-0,538	-0,020
	p	0,81	0,60	0,43	0,06	0,17	0,15	0,74	0,90
MIA alone	r	0,054	-0,058	0,110	-0,227	0,169	0,204	-0,053	-0,013
	p	0,73	0,71	0,49	0,15	0,28	0,20	0,74	0,93

patients with PD and Agoraphobia have lower Strategic EI ability than healthy controls, in both Understanding and Managing emotion abilities, whereas, contrary to our hypothesis, severity of Agoraphobia did not correlate with EI scores.

These preliminary findings of our study should be confirmed in larger samples; future studies could investigate the possible influence of EI performance on the different clinical aspects of the phenomenology of PD, such as severity of panic attacks, anticipatory anxiety, catastrophic cognitions or the course of the disorder over time. Since two previous studies found differences in EI in patients with GSP (13) and GAD (14) compared to controls, future studies should also clarify the specificity of these features among different Anxiety Disorders. Finally, our exploratory study does not allow understanding whether the poor EI abilities in patients with PD might be the result of modifications following the onset of PD or might be a risk factor for the disorder and further studies could investigate this issue.

Strategic EI is indexed by questions related to emotional semantic knowledge, such as how an individual might feel in a particular situation or how an individual might behave following a particular emotional situation, and it is thought to involve the ability to reason about emotions and their management. Moreover, it is considered an index of higher-level, conscious processing of emotions. Our finding of low levels of Understanding emotion ability in patients with PD might be the expression of their tendency to smooth feared somatic and emotional sensations, that could result, over time, in a decrease of their comprehension of inner feelings with an emotional bias vicious cycle. This parallels previous findings of high levels of Alexithymia in patients with PD and suggestions of emotional suppression strategies and maladaptive efforts to control emotions as part of the phenomenology of PD and anxiety disorders (18-21). Managing emotions plays a

relevant role in coping with daily demands and in being more effective in personal and social life; when complex and uncertain decisions need to be taken, emotional states influence the selection of the appropriate actions (19). Low levels of Managing emotions in patients with PD might be the expression of an inability to integrate emotions in planning successful behavioral strategies in personal and social realms. Thus, low overall Strategic EI might influence several aspects of PD, such as anticipatory anxiety, catastrophic cognitions and social, relational and working disability levels, that often cause marked distress and impairment in daily functioning, with significant deterioration in the quality of life of affected subjects.

Finally, patients with PD showed lower scores at Positive/Negative Bias scale than controls, indicating a general propensity to attribute negative emotional valence to different stimuli; this feature might influence anxious responses to biased cues in patients with PD, possibly influencing their behavioral strategies (22-25). Overall these findings are in line with previous suggestions that deficits in conceptual verifications and in inhibition of pre-attentively triggered alarm signals, ascending from diencephalic structures to the limbic system, might contribute to the phenomenology of PD (26,27). Moreover, an increase of negative emotions might also arise from the poor strategic management of emotions, such as the propensity to suppression, that may raise sympathetic arousal or cause distress if the subjects failure to achieve complete suppression of negative emotions (22); thus, negative emotions and low Strategic EI may be linked in a bidirectional vicious cycle relationship.

We failed to find a correlation between severity of agoraphobia and EI scores in patients with PD. Methodological explanations include the lack of patients with PD without agoraphobia, the small sample size and the range of MIA scores compared to MSCEIT scores that may not provide sufficient power to



### *Emotional Intelligence in Panic Disorder*

detect this possible relationship. However, at least some patients with PD with agoraphobia may compensate their automatic processing deficits with other biased and consciously controlled strategies, not directly linked to Strategic EI abilities, leading to agoraphobic avoidance as the best adaptive way of coping with panic attacks (2,28,29). Future direct comparisons between patients with PD with and without agoraphobia are warranted to clarify if EI might have an actual influence on agoraphobic behaviors.

### **CONCLUSIONS**

Compared to healthy controls, patients with PD showed poorer Strategic Emotional Intelligence, in both Understanding and Managing emotion abilities, and a general propensity to attribute negative emotional valence to different stimuli. These characteristics might influence the features of the disorder and could be the target of psychological interventions in PD. On the contrary, EI did not appear to directly affect the clinical severity of agoraphobia.

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