

Comparison of Theory of Mind between Patients with Major Depressive Disorder and Stimulant-Induced Depressive Disorder

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Abstract

Objective: Theory of mind (ToM) denotes the ability to understand the mental state of others and perceive their unique beliefs and emotions. In this study, we compared ToM between individuals with major depressive disorder (MDD) and stimulant-induced depressive disorder (SIDD).

Method: This cross-sectional, causal-comparative study included patients with MDD or SIDD admitted to Ostad Moharary Neuropsychiatric Hospital between January and June 2022. Each diagnosis was confirmed through a semi-structured interview conducted by a single attending psychiatrist according to the DSM-5 criteria. After consecutive sampling of 110 individuals, 51 patients completed the study in each group. Demographic characteristics were recorded, and the Persian version of the revised Reading the Mind in the Eyes Test (RMET) was used to evaluate ToM. Statistical analysis was performed using SPSS v.25, employing the t-test, chi-squared test, linear regression, and analysis of covariance (ANCOVA).

Results: Our analysis included 102 subjects (65.7% male) with a mean age of 35.17 ± 7.54 years. The two groups were similar in age, gender, marital status, working status, occupation, economic class, and ethnicity ($P > 0.05$). The RMET scores were 12.94 ± 4.03 and 11.86 ± 3.15 in the MDD and SIDD groups, respectively ($P = 0.135$). Almost all patients had low RMET scores (< 22); only two individuals in the MDD group achieved normal scores (22–30). ANCOVA revealed no significant confounding effects between the independent variables. Furthermore, regression analysis revealed that the level of education had a significant linear relationship ($\beta = 0.249$) with the RMET score ($P = 0.021$).

Conclusion: Hospitalized patients with MDD and SIDD have similar ToM deficits, as measured by the RMET.

Keywords: Major Depressive Disorder; Psychometrics; Substance-Related Disorders; Theory of Mind

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Table 3. Analysis of Covariance Model Output for Determining the Confounding Effects of Group, Age, Occupation, and Education on the Reading the Mind in the Eyes Test Score

Source	Type III Sum of Squares	df	Mean Square	F	P-value
Corrected Model	1039.471 ^a	66	15.750	0.492	0.841
Intercept	1071.210	1	1071.210	33.475	0.109
Group	25.739	1	25.739	0.804	0.535
Age	344.567	31	11.115	0.347	0.900
Occupation	31.942	4	7.985	0.250	0.884
Education	221.885	8	27.736	0.867	0.686
Group * Age	178.348	11	16.213	0.507	0.812
Group * Occupation	46.153	2	23.076	0.721	0.640
Group * Education	66.248	5	13.250	0.414	0.819
Error	32.000	1	32.000		
Total	12720.000	68			
Corrected Total	1071.471	67			

a. R Squared = 0.970 (Adjusted R Squared = -1.001). df: degrees of freedom. F: F-statistic.

Table 4. Linear Regression Model for Determining the Effects of Age, Group, and Education on the Reading the Mind in the Eyes Test Score

Coefficients ^a					
	Unstandardized Coefficients		Standardized Coefficients	t	P-value
	B	Std. Error	Beta		
(Constant)	7.825	2.372		3.298	0.001
Age	0.024	0.046	0.056	0.526	0.601
Group	1.720	0.915	0.209	1.879	0.064
Education	0.285	0.121	0.249	2.359	0.021

a. Dependent Variable: Reading the Mind in the Eyes Test (RMET) Score

Discussion

Theory of mind is regarded by Wellman as a prerequisite for understanding the social environment and a necessity for engaging in competitive social behaviors (1). The present study compared theory of mind between patients with major depressive disorder and stimulant-induced depressive disorder. The two groups were well-matched in terms of demographic characteristics except for education level. We found that both groups had a defect in theory of mind according to the RMET, although patients with major depressive disorder achieved slightly higher scores, possibly mediated by their higher education level.

Previous studies have shown that patients with major depressive disorder have impaired abilities in various aspects of theory of mind, including cognitive, affective, visual, verbal, and reasoning tasks, compared to healthy controls (3, 7, 13-17). In these patients, deficits in theory

of mind are mostly reported in the symptomatic phase, becoming more pronounced as the symptoms of depression worsen (3, 7, 13-17). Our results align well with the literature as we demonstrated significant deficits in theory of mind among patients hospitalized due to major depressive disorder or stimulant-induced depressive disorder. Nonetheless, contrary to the general trend, some studies have found that individuals with depression perform equally or even better than controls on the RMET; however, these studies mostly included patients with mild/subclinical, remitted, or unspecified types of depression (13, 14, 17, 27, 28). Some researchers note that such individuals may have increased sensitivity in recognizing negative emotions compared to positive ones (7). However, our patients can be assumed to have had severe forms of depression as they all required hospitalization. This severity of depression could explain their significant deficits in