

# Comparison of bipolarity features between art students and other university students

Ahmet Demir<sup>1</sup>, Sengul Kocamer Sahin<sup>2</sup>, Gulcin Elboga<sup>2</sup>, Abdurrahman Altindag<sup>2</sup>, Ilkay Dogan<sup>3</sup>

<sup>1</sup>Gaziantep University Faculty of Medicine, Department of Mental Health Support Master Program, Gaziantep, Turkey

<sup>2</sup>Gaziantep University Faculty of Medicine, Department of Psychiatry, Gaziantep, Turkey

<sup>3</sup>Gaziantep University Faculty of Medicine, Department of Biostatistics, Gaziantep, Turkey

Copyright © 2019 by authors and Annals of Medical Research Publishing Inc.

## Abstract

**Aim:** There is a common belief that creativity and artistic talent/creativity are related to psychopathology. Mood disorders are more prominent in studies about relations between creativity and psychopathology. Also patients may be more productive during mania and hypomania periods of bipolar mood disorder. Considering these data, the purpose of this study was to investigate whether there is a predisposition to bipolar disorder in people with artistic creativity.

**Materials and Methods:** A total of 157 students were selected randomly from the Art department and 157 from different departments including Faculties of Law, Science and Literature and Education. Art students had proven their artistic competence by two stage examination. Groups were compared based on mood disorder questionnaire (MDQ) and bipolarity predisposition factors. SPSS 22.0 was used for statistical analyses. Chi-square analysis was used to compare case-control groups according to demographic characteristics.

**Results:** There were no significant differences between the groups in terms of age, sex, education, smoking, marital status, family history of psychiatric disorder. The number of psychiatric admissions were higher in the students of art ( $p=0.026$ ). Alcohol-substance use was higher among students of Art ( $p=0.001$ ). The MDQ scale result was 50.3% positive for Art students and 26.8% positive for students from different departments. MDQ scale, the predisposition of bipolar disorder was found to be significantly higher in Art students.

**Conclusion:** The high prevalence of bipolarity features with MDQ scale in art students supports the relationship between artistic talent / creativity and bipolar disorder.

**Keywords:** Bipolarity; art; creativity.

## INTRODUCTION

Creativity is the ability to produce original and valuable ideas or behaviors. It is classified as artistic creativity and scientific creativity, with each having their own unique characteristics (1). Artistic creativity can be defined as originality and the ability to design and produce works of art (2). There is a common belief that creativity and artistic talent/creativity are related to psychopathology (3). However, epidemiological studies on this issue are limited. The relationship between mood disorders and creativity has been investigated in these limited numbers of studies (4,5). In a study conducted on 30 creative writers, mental disorders, predominantly mood disorders, were shown to be higher than the controls (6).

Bipolar disorder (BD) is a mood disorder characterized by

mania, hypomania, mixt and depression episodes. Manic episodes are characterized by euphoria, grandiosity, reduced need for sleep, and psychomotor hyperactivity. Hypomania is a milder form of mania (7). Patients may be more productive during this period. It's thought that artists who have bipolar disorder such as Edward Munch, Robert Schumann, Vincent van Gogh, Johann Wolfgang von Goethe, Ernest Hemingway, Gustav Mahler, Otto Klemperer, George Frederic Handel, F. Scott Fitzgerald produced their historical works in these hypomanic episodes (8-10). When compared with the general population, successful authors show higher rates of affective disorders, especially bipolar disorder. Moreover, people who are afflicted with bipolar II subtypes and cyclothymia (mildest form of bipolar disorder with mood waves) have higher creativity skills (10).

**Received:** 18.07.2019 **Accepted:** 30.08.2019 **Available online:** 21.10.2019

**Corresponding Author:** Sengul Sahin, Gaziantep University Faculty of Medicine, Department of Psychiatry, Gaziantep, Turkey,

**E-mail:** snglkcmr@hotmail.com

When compared with the general population, individuals who have received an education in art have a higher probability of developing schizophrenia, bipolar disorder, and unipolar depression (11). It has been shown that individuals with bipolar disorder and healthy siblings of people with schizophrenia or bipolar disorder have higher rates of involvement in creative/artistic professions (12). Studies have been carried out on whether polygenic risk scores for schizophrenia and bipolar disorder are precursors for creativity as a result of which it has been determined that creativity and psychosis have common genetic roots (13).

Current studies in this area focus mostly on investigating creativity in patients with psychopathology. We also aimed to investigate predisposition to bipolar disorder as a psychopathology in creative people and thus a comparison was carried out between art students and students from faculties of Law, Science and Literature and Education with regard to whether there is a predisposition to BD in individuals with an artist spirit.

## MATERIAL and METHODS

The study was carried out during November 2018 and January 2019 at the Gaziantep University located in southeastern Turkey. The study population consists of university students. The effect size was determined as 0.4 ( $d=0.4$ ) for the study to be statistically significant, whereas the minimum required number of participants was 157 in order to investigate the predisposition to bipolar disorder in art students ( $\alpha=0,05$ ,  $1-\beta=0,80$ ). Analyses were carried out in G power 3.1 versions. A separate talent examination is conducted after the university examination in Turkey, for Faculties of Art. There is a separate specific talent examination comprised of two stages for each artistic talent. The first stage exam covers the ability of 'single-voice-double sound detection and application', 'melodic memory ability', 'rhythm detection, application skills' for music state conservatory and 'pattern test from live model' for pictorial art department. Whereas the second stage examination covers; 'harmonic dual sound and three-acoustic chord detection and application skill', 'instrument', 'singing' skills were evaluated for departments of basic sciences. Sound health, sound width, intonation, interpretation tests were conducted for the department of voice education, 'Motion sentence detection and application' and 'performing regional dance' for the Turkish folk dances department, whereas 'Imaginary pattern test' was used for the department of pictorial art. It is only after these tests that students who have proven their artistic competence can be admitted to these art faculties. These 157 students from art faculties and 157 students from different departments of Law, Science and Literature and Education faculties were selected randomly after which the MDQ scale was applied. Evaluation tools were handed over to the related academic member of each department. The evaluation tools were distributed by the academic member to students who accepted to take part in the study and the authors of the present study

did not establish any contact with the students. Patients under the age of 18 and those with severe neurological diseases were excluded from the study. Informed consent form was obtained from all students. The approval for the study was obtained from the Ethics Committee before the data acquisition stage. Mood Disorder Questionnaire (MDQ) was applied to both groups and the results were compared in terms of predisposition to bipolar disorder. A questionnaire was applied for a more detailed analysis to the students for acquiring data on income status, history of psychiatric disease, alcohol substance abuse, whether or not they chose the faculty with their own desires and whether they had family support in choosing this faculty or not as well as whether there was any other individual in their family studying at the same faculty. This questionnaire was also compared.

MDQ is a self-screening scale adapted to Turkish for screening and detecting bipolar disorders. The reliability and validity study of this scale in Turkish has been carried out (12). The Scale assesses lifelong bipolar disorder symptoms rather than current symptoms. Sensitivity and specificity results in Turkey show that the limit values of MDQ is seven (sensitivity:0.64; specificity:0.77) (14,15). The scale is considered under 3 headings. The first includes 13 yes / no items derived from DSM-IV criteria and clinical experience. The second section asks if there have been a few signs in the same period. The third section examines psychosocial problems caused by symptoms classified as none, little, moderate or severe (14,15). Initially, the scoring method requires at least seven out of 13 of the life-long manic symptoms to confirm the coexisting symptom and moderate or severely related functional impairment. However, MDQ has a much lower sensitivity and lower positive predictive value when performed in the general population. For this reason, Chung et al. suggested that in the general population, the third part should be considered to be positive for the answers of questions as the little, moderate or severe. They reported a sensitivity of 0.50 and a specificity of 0.90 as a result of this evaluation. It was put forth when the last two additional questions were excluded that sensitivity increased (16). Therefore, positivity, i.e., susceptibility to bipolar disorder was defined in our study as at least seven MDQ symptom scores resulting in minimal or more functional deterioration. A separate evaluation based on the only first question was included due to increased sensitivity after excluding the last two questions.

Frequency and percentage distributions were used to analyze demographic characteristics. Chi-square analysis was used to compare case-control groups according to demographic characteristics. Chi-square analysis was used to compare the case-control groups with a bipolarity tendency.

## RESULTS

A total of 314 cases were included in our study with 157 from the Faculty of Art and 157 from different departments

including the Faculties of Law, Science and Literature and Education. 138(87.9%) of the art students and 149(94.9%) of the other students were between the ages of 18-25. The study group was composed of 74(47.3%) males and 83(52.8%) females. There were no significant differences between the groups in terms of age, sex, education, smoking, marital status, income status, chronic disease, family history of psychiatric disorder and family support while choosing the faculty (Table 1).

A statistically significant increase was observed in the number of psychiatric admissions in the students of art ( $p=0.026$ ). It was found that the students of the Faculty of Art selected the department by themselves more in

comparison with the students of other faculties without being directed or forced by their families ( $p=0.001$ ).

Alcohol-substance use was higher at a statistically significant level among students of Art ( $p=0.001$ ). The predisposition of bipolar disorder was observed to be higher at a statistically significant level among students of Art ( $p=0.001$ ) (Table 2) as a result of the evaluation carried out for all 3 questions of the MDQ scale.

The predisposition to bipolar disorder was observed to be higher at a statistically significant level in Art students ( $p=0.001$ ) (Table 3) as a result of the evaluation made with only question 1(7/13 and above positivity) of the MDQ scale.

**Table 1. Comparative sociodemographic data**

		CASE KONTROL				$\chi^2$	P
		ART FACULTY		OTHER FACULTIES			
		Number	Percent (%)	Number	Percent (%)		
Sex	Male	74	47.13	62	39.49	1.868	.172
	Female	83	52.87	95	60.51		
Age	18-25	138	87.90	149	94.90	5.268	.072 <sup>a,b</sup>
	26-40	18	11.46	8	5.10		
	41 and above	1	.64	0	.00		
Marital status	Single	151	96.18	153	97.45	1.124	.570 <sup>a,b</sup>
	Married	5	3.18	4	2.55		
	Divorced	1	.64	0	.00		
Income status	Income less than expense	73	46.50	78	49.68	3.138	0.208
	Income equal expense	69	43.95	72	45.86		
	Income more than expense	15	9.55	7	4.46		
Chronic disease	Yes	13	8.28	14	8.92	0.041	0.840
	No	144	91.72	143	91.08		
Family history	Yes	17	10.83	12	7.64	0.950	0.330
	No	140	89.17	145	92.36		
Psychiatry dmission	Yes	26	16.56	13	8.28	4.948	.026
	No	131	83.44	144	91.72		
Alcohol-substance use	Yes	40	25.48	18	11.46	10.235	0.001
	No	117	74.52	139	88.54		
Faculty choice	Own desire	149	94.90	123	78.34	18.581	.000
	Not own desire	8	5.10	34	21.66		
Family support	Yes	139	88.54	138	87.90	0.031	.861
	No	18	11.46	19	12.10		
Other individual in their family in the same faculty	Yes	17	10.83	24	15.29	1.375	0.241
	No	140	89.17	133	84.71		

Table 2. General evaluation of 1st, 2nd, 3rd questions of MDQ

			MDQ		Total	$\chi^2$	P
			NEGATIVE	POSITIVE			
CASE	ART FACULTY	Number	78	79	157	18.407	0.001
		Percent (%)	49.7%	50.3%	50.0%		
CONTROL	OTHER FACULTIES	Number	115	42	157	18.407	0.001
		Percent (%)	73.2%	26.8%	50.0%		

Table 2. General evaluation of 1st, 2nd, 3rd questions of MDQ

			MDQ		Total	$\chi^2$	P
			NEGATIVE	POSITIVE			
CASE	ART FACULTY	Number	36	121	157	47.0	0.001
		Percent (%)	27.3	66.5	50.0		
CONTROL	OTHER FACULTIES	Number	96	61	157	47.0	0.001
		Percent (%)	72.7	33.5	50.0		

## DISCUSSION

Many studies and theories have aimed to find the link between psychopathology and artistic creativity, in other words to find the common roots of madness and extinction. For this purpose, the possible effect of writers and artists on bipolar disorder and their artistic creativity has been tried to be analyzed. Scientific observations and experiments as well as experiences and impressions since ancient times; in particular, psychopathological symptoms of bipolar disorder, major depression and cyclothymia were more common among writers, poets, composers, and visual artists. The cognitive and other psychological characteristics of artistic creativity are similar in many respects to hypomanic symptomatology. This bipolar state of mind can contribute to creative success in various arts (17). In a study on patients with bipolar disorder and their children; the creativity of children with bipolar disorder or high risk of bipolar disorder was found to be higher than healthy children. As a result; this study has focused on both the creativity and the transmission of genes of bipolar disorder, and found that creativity increased in clinically unaffected first-degree relatives of bipolar disorder patients (18). Other studies also indicating that artistic ability and creativity have increased in bipolar disorder patients (10,19) mood disorders are more common in successful people in creative occupations (18) and that mood fluctuations and creativity are related (20). Furthermore, creativity and bipolar disorder are similarly related to dopaminergic pathways, (8) and there are studies that both have similar genetic origins (13). Our study evaluated the relationship between bipolar disorder and creativity from a different perspective, 'on healthy subjects with artistic talent' and supports the hypothesis that individuals with artistic creativity are related to bipolar disorder. When compared to the general population, bipolar mood disorder is represented highly among writers and artists (8). In addition, bipolar disorder patients

reported that they were more creative in manic / hypomanic periods (21). Artistic creativity also stands out in bipolar disorder, depression and schizophrenia (8). This study supports the relationship between artistic creativity and predisposition to bipolar disorder. There is an increased comorbidity between bipolar disorder and alcohol / substance use disorders (22). Substance use may be a factor that can predict an early onset of an affective disorder (23). The fact that art students are more likely to use alcohol in addition to their predisposition to bipolar disorder according to MDQ further strengthens the relationship between bipolarity and art creativity (19). Similarly, it has also been put forth as a result of our study that more psychiatric admissions in art students draw attention to the relationship between creativity and bipolar disorder. We don't know the reason for these psychiatric admissions of art students. However, we know that there are prodromal symptoms in bipolar disorder (24). Perhaps because of these subsyndromal symptoms, psychiatric admissions may be higher in this group. A study has been carried out as a result of which it has been reported that Bipolar disorder features are observed more in art students in comparison with technology students (25). Similarly, it was also determined in our study as a result of the evaluation carried out after selecting faculties of Law, Science-Literature and Education as a control group that characteristics of bipolar disorder were higher in art students. While majority of the current studies have been carried out in mental health units, this poses a limitation in terms of bias and the fact that this study it was a strong point for the present study that it has been conducted among a general healthy population. The fact that the questionnaire was completed by the participants and that they might not provide the correct information is the limitation of this study. Another limitation is that creativity is not only related to talent. It is difficult to evaluate both artistic and scientific creativity. Participants in our study were individuals with artistic talent. Also, structured psychiatric interview like

SCID II did not be performed. So some additional psychiatric diagnoses (bipolar disorder, attention deficit hyperactivity disorder, substance abuse etc.) are likely to be missed.

## CONCLUSION

This study supports the relationship between artistic talent / creativity and bipolarity symptoms. The higher prevalence of alcohol-substance use and psychiatric applications in the past in fine arts students strengthen the relationship between creativity and bipolarity symptoms. Arts students may be more inflexible with regard to being more dominant in making their own professional choices. Creative activity and the use of this artistic ability can provide a clinically meaningful power. Large scale studies in groups in which psychiatric diagnoses are excluded by structured interviews are required.

*Competing interests: The authors declare that they have no competing interest.*

*Financial Disclosure: There are no financial supports*

*Ethical approval: This study was approved by the Institutional Ethics Committee and conducted in compliance with the ethical principles according to the Declaration of Helsinki.*

AhmetDemir ORCID: 0000-0002-6952-7113

Sengul Sahin ORCID: 0000000253713907

Gulcin Elboga ORCID: 0000-0003-3903-1835

Abdurrahman Altındag ORCID: 0000-0001-5531-4419

Ilkay Dogan ORCID: 0000000175526478

## REFERENCES

- Shi B, Cao X, Chen Q, et al. Different brain structures associated with artistic and scientific creativity: a voxel-based morphometry study. *Sci Rep* 2017;7:42911.
- Abra J. Changes in creativity with age: data, explanations, and further predictions. *Int J Aging Hum Dev* 1989;28:105-26.
- Aslan S, Kayacı Ü. Psikopatoloji, Yaratıcılık ve sanat terapi. *Türkiye Klinikleri Psychiatry-Special Topics* 2015;8:77-84.
- Taylor CL. Creativity and Mood Disorder: A systematic review and meta-analysis. *Perspect Psychol Sci* 2017;12:1040-76.
- Maçkalı PZ, Gülöksüz S, Oral T. Yaratıcılık ve iki uçlu bozukluk. *Türk Psikiyatri Dergisi* 2014;25(1).
- Andreasen NC. Creativity and mental illness: prevalence rates in writers and their first-degree relatives. *Am J Psychiatry* 1987;144:1288-92.
- Holm-Hadulla RM, Koutsoukou-Argyrak A. Bipolar disorder and/or creative bipolarity: robert schumann's exemplary psychopathology - combining symptomatological and psychosocial perspectives with creativity research. *Psychopathology* 2017;50:379-88.
- Sachs GS, Thase ME, Otto M, et al. Rationale, design, and methods of the systematic treatment enhancement program for bipolar disorder (STEPBD). *Biol Psychiatry* 2003;53:1028-42.
- Janka Z. Artistic creativity and bipolar mood disorder. *Orv Hetil* 2004;15:145:1709-18.
- Szakács R. The facets of creativity in the light of bipolar mood alterations. *Idegyogy Sz* 2018;30:63-71.
- MacCabe JH, Sariaslan A, Almqvist C, et al. Artistic creativity and risk for schizophrenia, bipolar disorder and unipolar depression: a Swedish population-based case-control study and sib-pair analysis. *Br J Psychiatry* 2018;212:370-6.
- Kyaga S, Lichtenstein P, Boman M, Hultman C, Långström N, Landén M. Creativity and mental disorder: family study of 300 000 people with severe mental disorder. *Br J Psychiatry* 2011;199:373-9.
- Power RA, Steinberg S, Bjornsdottir Rietveld CA, et al. Polygenic risk scores for schizophrenia and bipolar disorder predict creativity. *Nature Neuroscience* 2015;18 953-5.
- Konuk N, Kiran S, Tamam L, et al. Validation of the Turkish version of the mood disorder questionnaire for screening bipolar disorders. *Türk Psikiyatri De* 2007;18:147-54.
- Hirschfeld RM, Calabrese JR, Weissman MM, et al. Screening for bipolar disorder in the community. *J Clinical Psychiatr* 2003;64:53-9.
- Chung KF, Tso KC, Chung RT. Validation of the mood disorder questionnaire in the general population in hong kong. *Compr Psychiatry* 2009;50:471-6.
- Greenwood TA. Positive traits in the bipolar spectrum: the space between madness and genius. *Molecular Neuropsychiatry* 2016;2:198-212.
- Simeonova DI, Chang KD, Strong C, et al. Creativity in familial bipolar disorder. *J Psychiatr Res* 2005;39:623-31.
- Santosa CM, Strong CM, Nowakowska C, et al. Enhanced creativity in bipolar disorder patients: a controlled study. *J Affect Disord* 2007;100:31-9.
- Burkhardt E, Pfennig A, Breitling G, et al. Creativity in persons at-risk for bipolar disorder-A pilot study. *Early Interv Psychiatry* 2018;10.
- Crawa S, Parker G, Fletchera K. et al. Self-reported creativity in bipolar disorder: prevalence, types and associated outcomes in mania versus hypomania. *J Affect Disord* 2013;151:831-6.
- Cardoso TA, Bauer IE, Jansen K, et al. Effect of alcohol and illicit substance use on verbal memory among individuals with bipolar disorder. *Psychiatry Res* 2016;243:225-31.
- Goldstein BI, Bukstein OG. Comorbid substance use disorders among youth with bipolar disorder: opportunities for early identification and prevention. *J. Clin. Psychiatry* 2010;71:348-58.
- Hauser M, Correll CU. The significance of at-risk or prodromal symptoms for bipolar I disorder in children and adolescents. *Canadian J Psychiatry* 2013;58:22-31.
- Siwek M, Dudek D, Arciszewska A, et al. The analysis of the bipolarity features in students of arts and the students of technology. *Psychiatr Pol* 2013;47:787-97.