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Perinatal depression screening and early treatment

Summary

Objective

The importance of mother's role in child development and the central role of women in modern society have meant that screening programs for women's health were developed. The perinatal period is a very fragile phase of a woman's life, during which there is an increased risk of developing a depressive disorder. This study has the purpose to evaluate the prevalence of perinatal depression, through a screening on pregnant women and in the post partum period, and also to offer them an early therapeutic intervention.

Materials and Methods

Data were collected in three steps. At first, a screening was performed, in the third trimester of pregnancy, by the Patient Health Questionnaire 9 (PHQ-9), a self-administered interview for the evaluation of depressive symptoms. All pregnant women received an information brochure on psychiatric disorders that can occur during pregnancy and post partum period. Women who reported a positive test in pregnancy were invited to a clinical interview with a psychiatrist. The second evaluation of depressive symptoms was performed at 40 days after delivery, and the third at 6 months. We also collected data for the most common risk factors associated with perinatal depression.

Results

225 pregnant women were enrolled. 70 (31.1%) reported a PHQ score > 5 and 39 of these (17.3%) were diagnosed with depression at the subsequent psychiatric evaluation. 16 depressed pregnant women (7.35%) accepted a pharmacological and/or psycotherapic treatment. 182 women participated in the first follow up, 40 days after delivery, and 8% of them reported some depressive symptom. 167 mothers took part in the second follow up, six months after giving birth and 1.8% of them showed a depressive symptomatology. The presence of depressive symptoms was significantly associated with having suffered from nausea or vomiting (χ^2 = 4.242 p = 0.039). having had spontaneous abortions in the past (χ^2 = 4.723 p = 0.030). having taken psychopharmacological treatment in the past (χ^2 = 5.789 p = 0.016) and living in precarious housing conditions following the L'Aquila 2009 earthquake (χ^2 = 7.216 p = 0.007).

Conclusions

This study confirms that perinatal depression is a very common complication of pregnancy. For this reason a special attention from the public services is required, by developing targeted screening programmes. Our data from the post partum period confirm that participating at a screening and prevention programme is associated with a reduction of depressive symptom prevalence and finally with an improving of women health.

Key words

Perinatal depression • PHQ-9 • Woman mental health • Earthquake

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Introduction

The perinatal depression, a great complication of pregnancy and postpartum, is a mental disorder known since the Hippocrates' age. It is characterized by the symptom presence and the typical duration of a major depres-

sive episode, as described in the DSM-5 [1], but they occur during the perinatal period, also with the presence of specific thinking and feelings about the maternal role. These latter may be expressed with: perception to be unable to take care of the son, fear and insecurity in the sons handling, negative and ambivalent feelings toward the baby, perception of isolation from the familial environment [2]. The perinatal depression is distinguished into: prenatal depression, if it occurs during the pregnancy, and postpartum depression, if the disease arises during the first four weeks after the childbirth, according to the DSM-5 or during the six weeks after, according to the ICD-10. However, the recent literature extends this period to 12 months after the childbirth [3].

In the last two decades a great interest arose about the women health during the pregnancy and the post partum, because the mother centrality in the child development has been better understood. It has been indeed demonstrated that an untreated perinatal depression may compromise the mother-child attachment quality [4-7], it may also negatively affects the temperament as well as the neuro-cognitive and psychological development of the child, predisposing him to psychic and behavioral disorders during adolescence and adult age [8-9].

Obstetric and neonatal complications [9], as well as more serious consequences for the mother, such as suicide and infanticide [10], may be associated to an untreated depression during the pregnancy.

The literature interest focused on seeking the risk factors associated to a perinatal depression onset with the aim to build up prevention programs based on the stress-vulnerability model. In this model the presence of individual vulnerability factors is considered the base for depression development [11 12].

Some of the most common risk factors for perinatal depression are: a history of depression, psychiatric familiarity, problematical relationship with the partner, lack of perceived social support, recent traumas and negative life events [13-17].

The evaluation of risk factors and psychopathological severity is primarily important to develop pathways to care tailored to guarantee mother and child health. Although several results in the literature suggest the importance of a screening at an early stage of the postpartum depression, there is still little data regarding the primary prevention. Recent literature results demonstrate that several women developing a postpartum depression had already presented depressive symptoms during the pregnancy [18]. Such data suggest the importance of identifying depression cases during the pregnancy, as a useful way to prevent a postpartum episode. Unfortunately pregnant women scarcely access the mental health services since they are not diagnosed for depression and they rarely accept a treatment, thinking that it could be dangerous to the baby [19]. This is the reason why it is important to create links with the gynecological and maternity divisions to get in touch with the pregnant women. Psychiatrists, moreover, when facing a depressed pregnant woman, would be required to make a difficult therapeutic choice among the available treatments such as pharmacological therapy, psychotherapy, or the non-treating [20]. This choice needs an accurate risk-benefit evaluation and it must be shaped according to the symptom severity and the gestational timing in which the disease occurs [20]. The aim of our study is to estimate the prevalence of the perinatal depression by carrying on a screening of depressive symptoms in pregnant women and to evaluate a possible prevention role of giving them information about psychiatric diseases during pregnancy and their early treatment.

Methods

Sample

The study was approved by the ethics committee of the University of L'Aquila in the respect of human rights; it adheres to the Declaration of Helsinki. All patients provided a written informed consent after receiving a detailed explanation of the study. The privacy rights of all subjects was observed.

The study was carried on from September 2014 to September 2015, in the Psychiatric and the Obstetrics and Gynecological divisions of the San Salvatore Hospital in L'Aquila. Pregnant women in the third trimester of pregnancy were enrolled on a voluntary basis in parallel with the routine pre-hospitalization, a gynecological examination, in anticipation of childbirth. A specific leaflet containing information about mental disorders in pregnancy and in the postpartum was distributed to pregnant women. Women were also provided with telephone numbers to ask for support if they had been in psychological distress. Inclusion criteria were: age of 18 or over; a physiological pregnancy without obstetrical complications or medical comorbidities; a good ability to understand and communicate in Italian. They have been asked to give their telephone number at the aim to be called back and informed about the results of the screening, to be asked for repeat the evaluation through a telephone interview at 40 days and six months after birth, and finally to be eventually taken in care.

Assessments

Socio-demographic data were collected in order to identify the presence of the most common risk factors associated with perinatal depression described by the current literature [13-16].

The Patient Health Questionnaire-9 (PHQ-9) was chosen for the evaluation of depressive symptoms because it is a short tool that can be simply used in public services

as single instrument to screen for depression. In fact, the PHQ-9 [21] is a self-administered scale, initially validated to assess depressive symptoms in the general population, but recently also for the population of women who are pregnant or in childbirth [22]. It consists of nine items that assess depressive symptoms referring to the last two weeks. Each item has four possible answers considering the duration of symptoms (never, sometimes, for more than half of the day, nearly every day). The item 9 investigates suicidal ideation, the question is posed in a passive way "do you think it would be better to die or get hurt in some way?". The total score, by adding the scores obtained for all items, corresponds to mild depressive symptoms if the value is between 5 and 9, a score between 10 and 14 is indicative of moderate symptoms, a score of 15 to 19 indicates moderately severe symptoms, greater than 19 points indicates severe symptoms [23 24]. In this study, we chose a cut-off of 5 and/or positivity to item 9 to identify all cases at risk of depression.

Statistical analysis

Statistical analysis was performed using the SPSS 20.0 software package (SPSS Inc., Chicago, IL). A descriptive analysis of the sample was carried out. The variables related to the socio-demographic characteristics (age, marital status, education, employment, housing conditions), and the most common risk factors associated with the development of a depression perinatal (previous psychiatric disorders, previous drug treatments, previous depressive episodes perinatal, family history of mental disorders, stressful life factors such as previous spontaneous abortions, having experienced the L'Aquila 2009 earthquake and have lost their houses), pregnancy related factors (nausea, sleep, fatigue) and protective factors (such as support of friends and family, your partner's support) were evaluated. Pearson's chi square (χ^2) test was performed with respect to these variables between women who experienced depressive symptoms and those that do not, to evaluate factors eventually associated with the development of perinatal depression. Analyses with a p value of .05 or less were considered significant.

Results

During the study period information about psychiatric disorders in pregnancy and post partum was furnished to 280 women; 225 of them signed the informed consent, provided their socio-demographic data and answered the PHQ-9. The minimum age was 18 years, the maximum 44 years, with a mean age of 33.89 years (sd = 4.80). The interview was conducted in the third trimester of pregnancy (mean = 37.14 weeks of gestation; sd = 2.8). More than half of our sample consisted of women with a high school educational level and a steady job, they were married, with a good relationship with their partner. Detailed demographic characteristics are described in Table I.

TABLE I. *Social-demographic characteristics of the total sample. N = 225.*

Variable	Category	Frequences & percentages
Degree of education	Primary school	1 (0.4%)
	Secondary school	12 (5.3%)
	High school	96 (42.7%)
	University	112 (48.8%)
Marital Status	Single	6 (2.7%)
	Married or cohabitant	210 (95.4%)
	Separeted/ divorced	4 (1.8%)
Work	Fulltime	120 (55.6%)
	Partime	33 (15.3%)
	Occasional	3 (1.4%)
	Unemployed	43 (19.8%)
	Housewife	17 (7.9%)
First pregnancy	Yes	129 (58.4%)
	No	92 (41.6%)
Unplanned pregnancy and/ or desired	Yes	208 (94.5%)
	No	12 (5.5%)
Nausea or vomiting during pregnancy	Yes	81 (36.8%)
	No	139 (63.2%)
Spontaneous abortions	Yes	55 (24.9%)
	No	166 (75.1%)
Previous episodes of depression	Yes	70 (32%)
	No	149(68%)
Previous psychopharmacological treatment	Yes	30 (13.6%)
	No	190 (86.4%)
Family history of depression	Yes	57 (25.8%)
	No	164 (74.2%)
Having lived the experience of the earthquake of 6 April 2009	Yes	162 (73.6%)
	No	58 (26.4%)
Losing your home	Yes	55 (26.1%)
	No	156 (73.9%)
Good relationship with partner	Yes	211(95.5%)
	No	10 (4.5%)
Good quality of sleep	Yes	128 (59.3%)
	No	88 (40.7%)
Support of family or friends	Yes	216 (97.7%)
	No	5 (2.3%)

218 pregnant women fully answered the PHQ-9 test; 70 of them (31.1%) reached the threshold for our screening with a score ≥ 5. Seven women affirmatively answered to the item 9, investigating the suicidal ideation.
The 70 women with positive depressive symptoms, were visited by a psychiatrist and 39 of them reported a diagnosis of major depression according to the criteria of DSM-5. Unfortunately only 16 of them (7.35%) agreed to receive a treatment and it was a pharmacological, a psychotherapeutic or an integrated, pharmacological and psychotherapeutic, one (respectively: 3,8 and 5 women), according to the clinical judgment of the specialist.
182 mothers took part to the phone interview 40 days after the childbirth;18 of these (8%) reported depressive symptoms (PHQ > 5). At the six months postpartum interview, among the 167 mothers studied, only 6 (1.8%) showed the presence of depressive symptoms. Among these cases, 11 women were already depressed during pregnancy, while we found 7 new cases of postpartum depression. Among the women who received a treatment during pregnancy only one continued to show depressive symptoms throughout the observation period.
Comparing women who experienced depressive symptoms and those that did not, the Pearson chi-square test (χ^2) highlighted some major risk factors associated with the development of depressive symptoms, such as having suffered from nausea or vomiting, having got previous spontaneous abortions, having taken psychopharmacological therapy in the past for previous depressive episodes, living in poor housing conditions following the L'Aquila 2009 earthquake (Table II).

Discussion

Our study revealed a prevalence of depressive symptoms in pregnancy up to 31,1%, evaluated with a PHQ - 9 equal or greater than 5. This prevalence seems to be higher where compared to a recent systematic review of the literature [25], where values are distinguished for gestational age. In the first quarter of pregnancy it was = 7.4%, in the second = 12.8% and in the third one = 12.0%. Such difference, beside to be explained by dissimilar sample and evaluation method, may reflect the gestational period in which the interview was made. Our 225 women in fact were interviewed at the end of pregnancy, where the exertion or the fear of the childbirth could have affected their humor, especially if primiparous mothers, the 58.4% of our sample. If we consider only the women diagnosed with major depression by the psychiatrist, the prevalence of depressive disorders is reduced to 17.3% of the sample. In this way we can exclude the false positive results, probably determined by the presence of somatic symptoms, investigated by the questions 3, 4 and 5 of PHQ-9 (to have problems falling asleep, to feel themselves tired or with little energy, to have little appetite or to eat too much), that can be considered physiological at the end of the pregnancy. This last datum, in addition to be in line with the data of the international literature, confirms the evidences of other studies that investigate the prevalence in Italy of the depression in pregnancy [26 27].
Even if we consider the methodological limits of our study (the sample uniformity concerning the educational and the social-cultural level and the two different way we administered the PHQ-9 during the pregnancy and in the postpartum), the prevalence of depressive symptoms at 40 days and 6 months from the birth, results equal or smaller than that described by the literature, reporting values among 6.5% and 12.9% [28 29]. However the percentage of depressed women treated early during the pregnancy (7.1%) needs to be considered and we can also suppose that participating in our screening and information programme have contributed to the decrease of the depressive symptom prevalence. This hypothesis is supported by a recent randomized study that shows that taking part in a screening programme for post-partum depression improves the women's health and reduces the prevalence of the disorder [30].
In accord with the literature also in our study the percentage of women that developed a post-partum depression (8%) had already manifested depressive symptoms in pregnancy [31].
The percentage of depressed women in pregnancy that refused the treatment and did not manifest depressive symptoms in the post-partum, shows how the prenatal

TABLE II. *Risk factors associated with depressive symptoms during pregnancy.*

	χ^2	p	Phi
Nausea or vomiting	4.242	0.039	-.139
Spontaneous abortions	4.723	0.030	-.146
History of psychopharmacological treatment	5.789	0.016	-.162
Lost home during the earthquake in 2009 and live in temporary accommodation	7.216	0.007	.185

depression can recovery without any treatment along the natural history of the illness [32].

The variables we showed to be most strongly associated to perinatal depression (positive psychopharmacological anamnesis, previous miscarriages and previous stressful events of life) are in line with the literature [12 13 15 33 34].

A specific risk factor detected in our population was the L'Aquila 2009 earthquake. Literature data confirm in fact that natural disasters can have a negative impact on the mental health of people exposed to the traumatic event [35]. The women we investigated were still suffering for the loss of their house and for the consequent displacement [35 36], although 5 years went by since the event.

Conclusions

This study shows that perinatal depression is a very frequent complication of the pregnancy. Consequently it is very important to meet all the pregnant women in the services devoted to maternity, in order to offer them a precocious screening of psychiatric symptoms that can arise during pregnancy and post-partum. By considering the women belonging to the middle-high social class, the number of dropout and the refusal to be treated, we can conclude that among women still persist a stigma about mental illness. This reinforces even more the certainty that an information campaign is necessary.

Conflict of interest

None.

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Inter-rater reliability of the Italian Translation of the Structured Clinical Interview for *DSM-5* Personality Disorders (SCID-5-PD): a study on consecutively admitted clinical adult participants

Summary

Objectives

The aim of the present study was to evaluate the inter-rater reliability of the Italian translation of the Structured Clinical Interview for DSM-5 Personality Disorders (SCID-5-PD) in a sample of clinical adult participants.

Methods

A sample of 104 in- and outpatients who were consecutively admitted to the Clinical Psychology and Psychotherapy Unit of San Raffaele Turro Hospital, Milan, Italy, were administered the SCID-5-PD by trained graduate clinical psychologist using a pairwise interview design.

Results

In the present study, intraclass correlation coefficient (ICC) values ranged from .88 (Dependent PD and Histrionic PD) to .94 (Avoidant PD) for dimensional SCID-5-PD interview dimensional ratings (median ICC value = .94). Adequate Cohen k values were observed for SCID-5-PD dichotomous ratings of presence of clinically significant subthreshold features (median κ value = .78, SD = .06), as well as for SCID-5-PD interview categorical PD diagnoses (median κ value = .89, SD = .11).

Conclusions

The present study findings suggest that the Italian translation of the SCID-5-PD is likely to yield reliable assessment of both dimensional and categorical PD diagnoses, at least in a sample of clinical adults who volunteered to ask for psychotherapy treatment.

Key words
Inter-rater reliability • SCID-5-PD • Clinical adult participants

Introduction

Notwithstanding various concerns with the personality disorder (PD) categories in use since the third edition of Diagnostic and Statistical Manual of Mental Disorders (*DSM-5*) [1] – for example, lack of empirically validated cutoffs, extensive comorbidity, and temporal instability [2] – the *DSM-5* [3] retained traditional PD symptom criteria in Section II, which reprints *DSM–IV* [4] Axis II PD symptom criteria (although an hybrid, dimensional-categorical Alternative Model of PDs was provided in *DSM-5* Section III).

After the publication of *DSM-5*, work began on revising the Structured Clinical Interviewed for *DSM-IV* Axis II Personality Disorders (SCID-II) [5]. SCID-II has been renamed the Structured Clinical Interview for *DSM-5* Personality Disorders (SCID-5-PD) [6] to reflect the fact that PDs are no longer listed on Axis II given the elimination of the multiaxial system in *DSM-5*. Over the years, the SCID-II has been widely used in PD research. For instance, some studies have used it to investigate patterns of PD co-

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occurrence with other mental disorders [7-10] or medical conditions [11 12]. SCID-II has also been used [13-15] to select groups of study subjects with a particular PD diagnosis (e.g., Antisocial PD, Borderline PD, etc.). Finally, other studies relied on the SCID-II to investigate the underlying structure of personality pathology [e.g., 16] and for comparison with other assessment methods for PDs [e.g., 17-19].
The Italian translation of the pre-publication edition of the SCID-II showed adequate inter-rater reliability, as it was indicated by Cohen κ coefficient values ranging from .48 (Mixed PD diagnosis) to .98 (Narcissistic PD diagnosis) for *DSM-IV* axis II PD categorical diagnoses, and by intraclass correlation coefficient (ICC) values ranging from .90 (Depressive PD) to .98 (Antisocial PD) for PD symptom counts 20.
Although the *DSM-IV* PD criteria are unchanged in *DSM-5*, the SCID-5-PD is the updated version of the former SCID-II. The SCID-5-PD interview questions have been thoroughly reviewed and revised to optimally capture the construct embodied in the diagnostic criteria. First and colleagues thoroughly revised each SCID-5-PD question in order to ensure that question wording accurately captures the corresponding *DSM-5* PD criterion construct; this revision process ended in a number of major wording changes (i.e., although *DSM-5* Section II PD criteria are identical to *DSM-IV* axis II PD criteria, several questions in SCID-5-PD are markedly different from SCID-II questions assessing the same PD criterion) [6]. In addition, a dimensional scoring component has been added to the SCID-5-PD. Finally, the assessment of the *DSM-IV* research categories Passive-Aggressive (Negativistic) PD and Depressive PD were removed from the SCID-5-PD, given their elimination as research categories in *DSM-5*.
The SCID-5-PD provides at least one question for each diagnostic criterion of the 10 PD diagnoses that are listed in the *DSM-5* (i.e., Avoidant PD, Dependent PD, Obsessive-Compulsive PD, Paranoid PD, Schizotypal PD, Schizoid PD, Histrionic PD, Narcissistic PD, Borderline PD, and Antisocial PD); the SCID-5-PD allows also for Other Specified (i.e., Mixed) PD categorical diagnosis. Ordinarily the entire SCID-5-PD is administered; however, it is also possible to evaluate only those PD that are of particular interest to the clinician or researcher. Different from the SCID-II, after having administered the SCID-5-PD, for each PD, the interviewer first indicates whether the categorical threshold has been met (e.g., at least 5 out of 9 criteria for Borderline PD). If the categorical threshold has not been met for a particular PD, the interviewer is asked to indicate the presence of clinically significant subthreshold features of that PD.
Finally, the SCID-5-PD allows the interviewer to make a dimensional rating for each of the *DSM-5* PDs by summing up the individual scores for the ratings and circling the appropriate number. Although this is not an official feature of the *DSM-5* Section II PD classification, the idea of dimensionalizing the PD categories in this way has been proposed by researchers as a potentially useful addition to the categorical classification [21]. For each disorder, the interviewer sums up all of the ratings (i.e., "*0*" = *Absent*, "*1*" = *Subthreshold*, and "*2*" = *Threshold*), producing a dimensional score for that disorder that reflects both threshold and subthreshold ratings for the criteria. It should be observed that the highest possible dimensional score for each PD is twice the total number of possible criteria. Different from SCID-II, the SCID-5-PD does not explicitly allow the interviewer to report the symptom count for each PD on the scoring sheet.
Consistent with the SCID-II, SCID-5-PD is also provided with a true/false, self-report personality questionnaire (SCID-5-SPQ) as a screening tool to shorten the time that it takes the clinician to administer the instrument. The SCID-5-SPQ acts as a low-threshold screening device with intentionally high rates of false positives [6]. Each of the 106 questions in the SCID-5-SPQ corresponds to an initial interview question in the SCID-5-PD (identified by numbers in the left-hand column of both instruments), with the exception of adult Antisocial PD criteria that are not listed in the SCID-5-SPQ. Subjects usually need about 20 minutes to complete the SCID-5-SPQ. Afterward, the SCID-5-PD interview is administered, with the clinician needing to inquire only about the items screened positive (i.e., "YES" answers) on the SCID-5-SPQ. To minimize the risk for false negatives, the interviewer is encouraged to explore items for which any evidence emerges during the SCID-5-PD interview, regardless of the subject's response on the SCID-5-SPQ (e.g., asking about suspiciousness if the subject acts suspicious during the interview even though the subject may have denied it on the SCID-5-SPQ). Recently, the SCID-5-PD has been translated into Italian [22].
Thus, starting from these considerations, we aimed at testing the inter-rater reliability of the Italian translation of the SCID-5-PD in a sample of consecutively admitted clinical adult participants using a pairwise interview design. Although other methods are available for assessing inter-rater reliability of psychiatric diagnoses that may yield accurate estimates of actual diagnostic agreement (e.g., independent interview designs) [23], in the present study we relied on pairwise interview design because it allows comparability of our findings with previous data on SCID-II inter-rater reliability e.g., [20], while being akin to typical training to diagnostic assessment (i.e., being provided with ecological validity). In order to extend previous data on the psychometric properties of the SCID-II, and to put the SCID-5-PD to a "risky test" of its psychometric characteristics, we included in

the present study only interviewers with limited clinical experience in the assessment of PDs.

Method

Participants

The sample was composed of 104 adult participants who were consecutively admitted to the Clinical Psychology and Psychotherapy Unit of San Raffaele Turro Hospital from September 2016 to March 2017.

Fifty-five (52.9%) participants were female and 49 (47.1%) were male; participants' mean age was 44.30 years, *SD* = 14.60 years. Fifty-one (49.0%) participants were single, 37 (35.6%) participants were married, 13 (12.5%) participants were divorced, and two (1.9%) participants were widows/widowers. Nineteen (18.3%) participants had junior high school degree, 53 (51.0%) participants had high school degree, and 32 (30.7%) participants had university degree. Nineteen (18.3%) participants were unemployed; white collar (*n* = 33, 31.7%), free-lance professional (*n* = 20, 19.2%), and university student (*n* = 12, 11.5%) were the most frequently reported occupations. Fifty-nine (56.7%) participants were inpatients, and 45 (43.3%) were outpatients. Fifty eight (55.8%) participants received at least one *DSM-IV* axis I diagnosis; in this sample, mood disorders (*n* = 44, 42.3%) were the most frequently diagnosed *DSM-IV* axis I diagnosis. *DSM-IV* psychiatric disorder diagnoses were assessed by the clinicians who were following the participants in treatment or by trained clinical psychologists during their initial assessment interviews; since axis I diagnoses were not assessed using standardized interviews and were not the primary focus of this research, they were used mainly for descriptive purposes in the current study.

Psychiatric disorder diagnoses were assessed by the clinicians who were following the participants in treatment or by trained clinical psychologists during their initial assessment interviews; since psychiatric disorder diagnoses were not assessed using standardized interviews and were not the focus of this research, they were used only for descriptive purposes in the current study.

All participants were admitted to the Clinical Psychology and Psychotherapy Unit in order to receive psychotherapy treatment for interpersonal difficulties and/or problems with behavior and emotional regulation on a strictly voluntary basis; inpatient participants were referred to the Unit by the clinicians who were following them in treatment.

Potential participants were screened for the following exclusionary criteria: (1) age less than 18 years; (2) IQ less than 80; (3) diagnosis of schizophrenia, schizoaffective disorder, schizophreniform disorder, or delusional disorder according to *DSM-IV* diagnostic criteria; (4) diagnosis of dementia or organic mental disorder according to *DSM-IV* diagnostic criteria; and (5) education level lower than elementary school. All participants in the current research passed this screen.

Participants with psychiatric disorder diagnoses were administered the SCID-5-PD after acute symptom remission according to the judgment of the clinicians who were following them in treatment to avoid confounding effects of psychiatric disorders on these measures [24]. The absence of acute symptom remission was considered an exclusion criterion from the study.

All participants volunteered to take part in the study after being presented with a detailed description and all were treated in accordance with the Ethical Principles of Psychologists and Code of Conduct; none of the participants received an incentive, either directly or indirectly for participating, and were administered all measures as part of their routine clinical assessment.

Participants were administered the SCID-5-PD as part of routine clinical assessment and blind to the aim of the present study; interviewers were also kept blind to the aim of the study (they were required to perform pairwise interviews with independent rating as part of their routine training).

Measures

All participants were administered the Italian translation of the SCID-5-PD [22] In the translation process, the authors closely followed Denissen and colleagues' indications [25]. First, the SCID-5-PD was translated into Italian by one of the authors (A.S.) after obtaining official permission for this translation. The guiding principle was to respect the items' original meaning; then, two of the coauthors (A.F., S.B.) reviewed the translation independently. After reaching a consensus, a native English professional translator translated the Italian version back into English. When the latest version differed from the English original, the first author, the second author and the professional translator come to an agreement on the definitive Italian translation. Then, the consensus translation was sent to the authors for their comments; this process was iteratively carried until final approval of the official Italian translation of the scale.

Structured Clinical Interview for DSM-5 Personality Disorders (SCID-5-PD) [6]. The SCID-5-PD is a 119-item semi-structured interview designed to assess the 10 *DSM-5* PDs in Clusters A, B, and C. The SCID-5-PD can be used to make PD diagnoses, either categorically (present or absent) or dimensionally (summing the ratings [0, 1, or 2] for each diagnosis and treating these sums as dimensions). In the present study, the SCID-5-PD was preceded by the administration of its self-report screening questionnaire (SCID-5-SPQ). The validity of the personality questionnaire as a measure for screening SCID-II PD psychopathology has been previously reported [26], and SCID-5-PD enables direct probing of

negative SCID-5-SPQ answers when this is considered clinically rerating assessment for the 10 *DSM-5* PDs. In the present study, the number of positively answered items on the SCID-5 SPQ for each PD showed moderate, albeit positive and significant correlations (i.e., Pearson *r* values) with the SCID-5 dimensional rating for the corresponding PD; in particular, these convergent validity values ranged from .30 (Schizotypal PD) to .67 (Histrionic PD), median *r* value = .51, 25th percentile = .35, 75th percentile = .56, all *ps* <.01. On average, discriminant validity coefficients of the SCID-5 SPQ (i.e., median *r* value between the number of positively answered items on the SCID-5 SPQ for a given PD and a SCID-5 dimensional rating for the other PDs) were all small, ranging from -.11 (Histrionic PD) to .23 (Avoidant PD), with a median *r* value of .01.

Procedures

Since 12 graduate psychologists in their first year of training as clinical psychologists trained in administering the SCID-5-PD participated in the present study, we used a pairwise interview design in order assess the inter-rater reliability of the SCID-5-PD diagnoses. Raters were paired randomly. Each rater served approximately equally as interview and observer. The participant attribution to interview-observer pairs was randomized by consecutive admission.

Data analyses

SCID-5-PD dimensional scores inter-rater reliability was assessed using Shrout and Fleiss's one-way ANOVA intraclass correlation coefficient (1,1) (ICC 1,1) [27]. Repeated measure ANOVA was used to assess differences in mean scores on dimensional assessed personality disorder ratings. Cohen simple κ coefficient [28] was used to measure interrater reliability of SCID-5-PD categorical judgements; the marginal homogeneity test was used to assesses differences in marginal frequencies. κ coefficient was computed only for PDs that were diagnosed at least two times by either interviewer or observer. Cohen κ coefficient was used also to evaluate the inter-rater reliability of the presence of clinically significant subthreshold features of a given PD.

Results

In the present study, the average administration time for SCID-5-PD interview was 90 minutes, *SD* = 17.90 minutes (min. = 60 minutes, max. = 180 minutes). In the present study, the average number of SCID-5-PD interview PD diagnoses was 0.70 (min. = 0 PD diagnosis, max. = 4 PD diagnoses), *SD* = 0.73, for Rater 1 and 0.64, *SD* = 0.75 for Rater 2, ICC(1,1) = .81, 95% confidence interval = .73-.87.

Descriptive and inter-rater reliability statistics for SCID-5-PD dimensional ratings are listed in Table I.

TABLE I. *The Italian translation of the Structured Clinical Interview for DSM-5 Personality Disorders: descriptive and inter-rater reliability statistics for dimensional personality disorder ratings in a sample of consecutively admitted clinical adult participants (N = 104).*

	Rater 1 (Interviewer)		Rater 2 (Observer)			
	M	*SD*	*M*	*SD*	*ICC*	*95% CI*
APD	1.81[a]	2.41	1.88[a]	2.40	.94	.91 - .96
DPD	2.51[a]	2.91	2.50[a]	2.83	.88	.83 -.92
OCPD	2.17[a]	2.80	2.21[a]	2.84	.93	.89 - .95
PPD	1.49[a]	2.37	1.56[a]	2.58	.94	.91 - .96
SZPD	0.69[a]	2.19	0.79[a]	2.25	.96	.94 - .97
SPD	0.19[a]	0.76	0.22[a]	0.79	.96	.94 -.97
HPD	2.39[a]	3.39	2.20[a]	3.14	.88	.83 - .92
NPD	4.36[a]	4.93	4.22[a]	4.77	.92	.89 - .95
BPD	2.88[a]	3.98	2.63[a]	3.68	.89	.85 - .93
ASPD	0.50[a]	1.95	0.56[a]	2.18	.73	.69 - .86

SCID-5-PD: Structured Clinical Interview for DSM-5 Personality Disorders; ICC: Intraclass correlation coefficient (1,1); 95% CI: 95% confidence interval for ICC (1,1); PD: Personality disorder; APD: Avoidant PD; DPD: Dependent PD; OCPD: Obsessive-compulsive PD; PPD: Paranoid PD; SZPD: Schizotypal PD; SPD: Schizoid PD; HPD: Histrionic PD; NPD: Narcissistic PD; BPD: Borderline PD; ASPD: Antisocial PD. Means with different superscripts are different according to repeated measure ANOVA.

Cohen κ coefficient values for SCID-5-PD presence of clinically significant subthreshold features and categorical PD diagnoses are listed in Table II.The number of participants with individual *DSM-5* PD diagnoses exceeded the number of participants who received any PD diagnoses because of multiple PD diagnoses. Cohen κ coefficient was computed only for conditions that were rated as present for at least two participants by either Rater 1 (i.e., interviewer) or Rater 2 (i.e., observer). Confidence intervals were computed only for ICC(1,1) and Cohen κ coefficient values that were greater than 0.00 and lower than 1.00.

Unfortunately, only κ coefficient values $0.00 < \kappa < 1.00$ (i.e., only κ coefficient values for which we were able to compute the corresponding SE estimates) could be compared with those that were reported in Maffei and colleagues' study [20] on the psychometric properties of the Italian translation of the pre-publication edition of the SCID-II. When we computed the appropriate chi-square statistic for comparing two independent κ coefficients (Fleiss, 1981), we observed no significant difference for Avoidant PD, $\chi^2(1) = 1.90$, $p > .10$, Dependent PD, $\chi^2(1) = 1.89$, $p > .10$, Obsessive-Compulsive PD, $\chi^2(1) = 0.38$, $p > .50$, Paranoid PD, $\chi^2(1) = 0.26$, $p > .60$, Narcissistic PD, $\chi^2(1) = 2.74$, $p > .05$, and Borderline

TABLE II. *The Italian Translation of the Structured Clinical Interview for DSM-5 Personality Disorders: descriptive and inter-rater reliability statistics for the presence of clinically significant subthreshold features and categorical PD diagnoses in a sample of consecutively admitted clinical adult participants (N = 104).*

	SCID-5-PD Presence of Clinically Significant Subthreshold Features						SCID-5-PD Categorical PD Diagnoses					
	Rater 1 (Interviewer)		Rater 2 (Observer)				Rater 1 (Interviewer)		Rater 2 (Observer)			
	N	%	*N*	%	*k*	95% CI	*N*	%	*N*	%	*k*	95% CI
APD	38	36.5[a]	45	43.3[b]	.82	.71 - .93	3	2.9[a]	3	2.9[a]	.66	.21 - 1.00
DPD	47	45.2[a]	55	52.9[b]	.81	.70 - .92	5	4.8[a]	5	4.8[a]	.58	.21 - .95
OCPD	43	41.3[a]	51	49.0[b]	.77	.65 - .89	6	5.8[a]	5	4.8[a]	.90	.72 - 1.00
PPD	35	33.7[a]	37	35.6[a]	.75	.61 - .88	4	3.8[a]	3	2.9[a]	.85	.57 - 1.00
SZPD	18	17.3[a]	19	18.3[a]	.77	.61 - .93	2	1.9[a]	2	1.9[a]	1.00	--
SPD	7	6.7[a]	8	7.7[a]	.93	.69 – 1.00	0	0.0	0	0.0	--	--
HPD	40	38.5[a]	44	42.3[a]	.78	.63 - .89	6	5.8[a]	6	5.8[a]	1.00	--
NPD	57	54.8[a]	63	60.6[a]	.73	.59 - .86	21	20.2[a]	19	18.3[a]	.88	.76 - .99
BPD	46	44.2[a]	49	47.1[a]	.79	.67 - .91	11	10.6[a]	9	8.7[a]	.89	.74 - 1.00
ASPD	8	7.7[a]	9	8.7[a]	.68	.42 - .94	3	2.9	3	2.9	1.00	--
OSPD	--	--	--	--	--	--	19	18.3[a]	18	17.3[a]	.84	.70 - .98
Any PD	--	--	--	--	--	--	63	60.6[a]	61	58.7[a]	.82	.70 - .93

SCID-5-PD: Structured Clinical Interview for DSM-5 Personality Disorders; κ Cohen κ coefficient (1,1); 95% CI: 95% confidence interval for κ coefficient; PD: Personality disorder; APD: Avoidant PD; DPD: Dependent PD; OCPD: Obsessive-compulsive PD; PPD: Paranoid PD; SZPD: Schizotypal PD; SPD: Schizoid PD; HPD: Histrionic PD; NPD: Narcissistic PD; BPD: Borderline PD; ASPD: Antisocial PD; OSPD: Other Specified PD; --: Statistic not computed. The number of participants with individual DSM-5 PD diagnoses exceeded the number of participants who received any PD diagnoses because of multiple PD diagnoses. Proportions with different superscripts are significantly (i.e., p <.05) different according to marginal homogeneity test.

PD, $\chi^2(1) = 0.05$, $p > .80$; rather, the Cohen κ value that we observed in the present study for SCID-5-PD Other Specified PD diagnosis (κ = .84) was significantly larger than the κ value that was reported by Maffei and colleagues [20] for SCID-II Not Otherwise Specified (Mixed) PD diagnosis (κ = .46), $\chi^2(1) = 62.14$, $p < .001$.

Discussion

Consistent with previous findings concerning the Italian translation of the pre-publication edition of the SCID-II [20], the Italian translation of the SCID-5-PD seemed to be provided with adequate inter-rater reliability, at least in a clinical sample of adults who voluntarily asked for psychotherapy.

The SCID-5-PD dimensional ratings of *DSM-5* Section II PDs seemed to yield reliable scores in clinical adult subjects, as it was evidenced by *ICC*(1,1) values ranging from .88 (Histrionic PD and Dependent PD) to .96 (Schizotypal PD and Schizoid PD), with a median *ICC*(1,1) value of .94. These *ICC*(1,1) values are suggestive of excellent inter-rater reliability by conventional standards [29 30], although care should be used in relying on arbitrary cut-offs to evaluate effect size [30]. Interestingly, in our study no significant differences on SCID-5-PD dimensional scores between interviewers and observers. As a whole, our findings indicate that SCID-5-PD may help clinicians in assessing the continuities between adaptive personality features and pathological personality traits. Since SCID-5-PD dimensional ratings do not yield merely symptom counts for the individual *DSM-5* Section II PDs, our *ICC*(1,1) values could not be compared with those that were reported in Maffei and colleagues' study [20], which were based on the number of criteria met by a given subjects on the SCID-II.

Although marginal homogeneity assumption was not met for Avoidant PD, $z_{MH} = 2.33$, $p < .05$, Dependent PD, $z_{MH} = 2.53$, $p < .05$, and Obsessive-Compulsive PD, $z_{MH} = 2.31$, $p < .05$, all Cohen κ values suggested that SCID-5-PD dichotomous ratings of presence of clinically significant impairment for subthreshold features were provided with at least adequate inter-rater reliability (median κ value = .78, *SD* = .06). These findings suggested that the Italian translation of the SCID-5-PD may allow clinicians to reliably assess subthreshold personality pathology, which is deemed clinically relevant by

the interviewer. Of course, this result does not mean that subthreshold features that are considered as clinically relevant by SCID-5-PD interviewers actually predict subject's level of impairment. In other terms, our study was designed to provide data on the inter-rater reliability of SCID-5-PD ratings; future studies should give evidence on the clinical validity of SCID-5-PD dimensional ratings, as well as of SCID-5-PD dichotomous ratings of presence of clinically relevant subthreshold features.
As it was expected on previous reliability studies based on the SCID-II [6 20], the Italian translation of the SCID-5-PD yielded categorical diagnoses of *DSM-5* Section II PDs that were provided with good-to-excellent inter-rater reliability by conventional standards [29 30]. Although in our sample the base rate was excessively small to yield stable agreement rate estimates for Schizotypal PD, Avoidant PD, and Antisocial PD, whereas Schizoid PD was never rated as present by either interviewers and observers, our data suggest that the Italian translation of the SCID-5-PD may help clinicians to reliably diagnose *DSM-5* Section II PD categories (median κ value = .89, *SD* = .11), including the controversial category of Other Specified PD diagnosis (which corresponds to *DSM-IV* Mixed PD diagnosis).
Of course, we are aware that κ coefficient values may be influenced by a number of issues, including marginal homogeneity and disorder base rate [31-33]; these issues stress the need for further studies on the inter-rater reliability of SCID-5-PD categorical diagnoses based on different samples of clinical participants. The sensitivity of Cohen κ statistic to PD base rate indicates that comparisons between κ coefficient values that were obtained in different samples should be considered with extreme caution [31-33].
Even considering this limitation, our data suggested that the Italian translation of the SCID-5-PD yielded inter-rater reliability indices for the 6 *DSM-5* Section II PD categories that could be compared that were not significantly different from those that were reported in Maffei and colleagues' SCID-II study [20]. Rather, we observed a κ coefficient value for the SCID-5-PD Other Specified PD diagnosis that was significantly larger than the corresponding κ coefficient value that was reported in Maffei and colleagues' study [20] for SCID-II Mixed PD diagnosis.
Of course, our data should be considered in the light of several limitations. Pairwise interview designs are known to yield excessively optimistic estimates of the actual measurement reliability [23]; however, it should be observed that pairwise interview designs represent the most commonly used approach to inter-rater reliability assessment because of their simplicity and ecological validity (they are closely akin to the typical training to clinical diagnosis). Our sample was of moderate size, and it was largely composed of participants with Narcissistic PD, Borderline PD, and Other Specified PD diagnosis. Sample with different clinical and demographic characteristics may yield different results. Moreover, we relied on adult participants; this limits the generalizability of our findings on the inter-rater reliability of the Italian translation of the SCID-5-PD to clinical adolescent populations, as well as to elderly populations. In our study, we focused only on inter-rater reliability of the SCID-5-PD dimensional and categorical ratings, because clinician agreement remains a major aim of *DSM-5* Section II diagnostic criteria. Further studies are badly needed to yield data on test-retest reliability of SCID-5-PD ratings, as well as on the validity of SCID-5-PD dimensional/subthreshold ratings. In our study, the low base rate for selected PD diagnoses prevented us from formally assessing the inter-rater reliability of Schizoid PD; thus, further studies are needed before drawing definitive conclusions on the Italian translation of the SCID-5-PD.
Even keeping these limitations in mind, we feel that our data support the hypothesis that the Italian translation of SCID-5-PD is provided with adequate inter-rater reliability, at least among clinical adult participants who voluntarily asked for psychotherapy treatment.

Appendix

Interrater Reliability

Before any measurement instruments or interviews can be used for research or clinical applications, their reliability must be established. When the measurement method requires raters, as in the case of the SCID-5-PD, the reliability coefficient should take measurement error due to raters into account. Measurement of the extent to which raters assign the same score to the same variable is called inter-rater reliability. In other words, interrater reliability reflects the variation between two or more raters who assess the same group of subjects.
For continuous data, the intraclass correlation coefficient (ICC) is often used to assess interrater reliability. It is the correlation between two measurements made on same subject. Each subject assessed by multiple raters, and ICC helps to answer the question: "To what extent are the ratings within a subject homogeneous?". Ideally, we want raters to be interchangeable. The higher the ICC values the higher the interrater reliability. When two raters are responsible for measuring a variable on a categorical scale (e.g., presence/absence of a disorder, as in the case of categorical PD diagnoses), Cohen's κ represent a useful measure of inter-rater agreement. The higher Cohen's κ value, the better the agreement.

Conflict of interest

None.

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Original article

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Cognitive functioning in patients with schizophrenia and bipolar disorder under chronic treatment: an observational study

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Summary

Objective

Clinical practice usually considers schizophrenia and bipolar disorder as two distinct nosological entities. Nevertheless, research over the past decades has shown similar impaired cognitive profiles in patients with schizophrenia and bipolar disorder. The objective of the present study was to verify whether the diagnostic distinction between these disorders effectively accounts for clinical, cognitive and functional profiles.

Materials and Methods

42 patients (mean age 44.3; 36% female), with diagnosis of schizophrenia (n = 23) or bipolar disorder (n = 19) in charge of an outpatient psychiatric public service were recruited. Cognitive abilities were measured with the MCCB. Clinical (BPRS, CGI) and functional (VGF, QL-index) scales were also administered. Linear regressions were conducted investigating whether the diagnosis could predict neurocognitive outcomes and examining the effects of neurocognitive performances on functional outcome.

Results

Both groups showed comparable performances in all cognitive domains and diagnosis was not a significant predictor of any cognitive variable. Moreover, lower scores in working memory and speed of processing predicted worse functioning.

Conclusions

The present findings support the perspective of a continuum between schizophrenia and bipolar disorder and further underline the importance of neurocognitive examination in psychiatric diseases, in light of its fundamental role in predicting daily functioning.

Key words

Cognition • Psychosis • Schizophrenia • Bipolar disorder • MATRICS

Introduction

Current psychiatric classification still refers to the so called "Kraepelinian dichotomy" between schizophrenia (SZ) and bipolar disorder (BD), which consider these two illnesses as separate nosological entities. Nevertheless clinical practice often clashes with this strict categorical approach. Findings from various areas of research, including neuroimaging, neuropathology and molecular genetics, have demonstrated the inadequacies of the dichotomous view, and highlighted the importance of better classifying cases with both psychotic and affective symptoms [1]. There is a growing consensus regarding the importance of incorporating cognitive deficits into the major diagnostic systems [2,3]. Research in SZ over the past decades has shown a global cognitive impairment, which involves memory, attention, executive functions, language and intelligence [4,5]. In the last years cognitive deficits have also been found in BD [6-8]. Data indicate that these deficits are prominent during acute depressive and manic episodes

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but do not entirely resolve between episodes [9], and that these persistent deficits may contribute to the development of functional impairment in BD patients.
A recent review comparing cognitive impairment in SZ and BD reported that overall patients share similar impaired cognitive profiles, albeit with different degrees of deficits [10]. In particular, individuals with SZ show more severe and pervasive cognitive deficits in comparison with individuals with BD, which present a milder and more confined impairment. The difference between these groups of patients seems therefore to be quantitative rather than qualitative.
Significant overlap is observed in both SZ and BP also in social cognitive performance deficits, affecting the capacity to recognize facial expressions of emotions and to infer the mental states of others [11 12]. For instance, in a recent study both SZ and BD groups showed extensive impairment in social as well non-social cognitive domains when assessed in an ecological context, although SZ performances resulted worse than BD in the majority of the investigated domains [13].
Another study compared cognitive performances of individuals with SZ and BD and their relatives: the authors found a generalized cognitive impairment in multiple domains, again more pronounced in SZ and less consistent in BD [14].
On the other hand there is a large literature reporting no differences in neurocognition between these diagnostic groups [15-18] or differences in some measures but not in others [19 20].
Whether SZ and BD can be distinguished on the basis of their cognitive performances still remains a matter of debate. The high variability across studies, and in particular the heterogeneity in the choice of neuropsychological instruments adopted to test cognitive abilities, hampers generalization of results. The Measurement and Treatment Research to Improve Cognition in Schizophrenia (MATRICS) Initiative developed a consensus cognitive battery (MATRICS Consensus Cognitive Battery - MCCB) assembled to assess key cognitive domains in SZ [21 22]. Recent findings suggest that the MCCB, together with additional measures of executive functions, may represent a promising consensus-based tool also in cognitive trials for BD [23-26].
Cognition in psychotic disorders needs further research, not only for its role in the debate about categorical and dimensional psychiatry, but also for its importance in clinical practice. In fact, there is evidence of a relationship between cognition, symptoms and functional capacity in psychotic disorders [27 28], suggesting that cognitive performance appears as a fundamental longitudinal predictor of functioning [29]. The objective of the present study was to contribute to expand the exisiting literature about similarities and differences between SZ and BD and to study whether the actual diagnostic distinction effectively accounts for clinical, cognitive and functional profiles of patients in the context of clinical practice. In particular, cognitive characteristics of outpatients with SZ or BD under chronic treatment were assessed by means of the MCCB, and the relationships between neurocognitive performances, clinical features and everyday functioning were investigated.

Methods

Participants

Forty-two patients with diagnosis of SZ (n = 23; 55%) and BD (n = 19; 45%) were recruited in an outpatient psychiatric public service of ASST Fatebenefratelli-Sacco Hospital in an urban area of Milan (Italy). Participants were between the ages of 19 and 71 (mean age 44,3, s.d. 12,1); 64% were male, 36% female.
All participants were patients in treatment at a daily outpatient service. Inclusion criteria were a current diagnosis of SZ or BD (including BD I, BD II and BD NOS) according to the ICD-10 classification system, age ≥ 18. Exclusion criteria were recent acute psychotic, depression or mania episodes, mental retardation or other neurological brain diseases, current substance, alcohol or benzodiazepines abuse or dependence. Informed consent was obtained for the participation in the study, performed in accordance with the Declaration of Helsinki. All patients gave their written informed consent to the processing of personal information.

Materials

All participants were administered the following clinical scales: the Brief Psychiatric Rating Scale (24 items) [30]; the Clinical Global Impressions (CGI) [31]; the Quality of Life Index (QL-Index) [32]; the Global Assessment of Functioning (VGF) [33]
Neurocognitive and social cognitive assessment were conducted through the administration of MCCB (Italian Language version, provided by MATRICS Assessment INC), including the following domains: speed of processing (Trail Making Test A, Brief Assessment of Cognition in Schizophrenia, Symbol Coding, Category Fluency), attention/vigilance (Continous Performance Test: Identical Pairs), working memory (Wechsler Memory Scale Spatial Span, Letter Number Span), verbal learning (Hopkins Verbal Learning Test), visual learning (Brief Visuospatial Memory Test), reasoning/problem solving (Neuropsychological Assessment Battery: Mazes), social cognition (Mayer-Salovey-Caruso Emotional Intelligence Test: Managing Emotions).
Clinical and cognitive assessments were conducted in the same day. Trained psychiatrists managed clinical assessment and therapy, and the administration of clini-

cal scales. Thereafter, a trained psychologist administered the MCCB.

Statistical analysis

Results of neurocognitive tests of MCCB, both for the composite score and for sub-test scores, were reported as t-scores. Data were analyzed using SPSS package (SPSS Statistics 23, IBM Corporation 1989, 2015). Comparisons of demographic, clinical and neurocognitive variables were performed with independent sample t-tests and chi-square analysis. Linear regressions were conducted to examine the effects of diagnosis on neurocognitive outcomes. Demographic variables were also included in the linear regression model. Linear regressions were then performed to examine the effects of neurocognitive performances on functional outcome (QL-Index, VGF) while covarying for clinical variables (BPRS and CGI).

Results

SZ and BD groups differed on age (p = 0.003), age of onset (p = 0.003) and duration of AP treatment (p < 0.001). The other examined demographic characteristics (gender, education and duration of illness) were not significantly different between groups (Table I). Clinical assessment showed significant differences between groups. SZ obtained higher scores in comparison to BD in BPRS (p = 0.009) and CGI (p = 0.036), and lower scores in VGF (p = 0.028). No significant difference was observed in QL-index (Table I).

As regards to neurocognitive examination, a look at percentile scores of both groups revealed that all patients showed poor performances in all domains of MCCB. In particular, SZ group performed below 1.5 *sd* in the subtest Speed and Attention, while both groups performed below 1.5 *sd* in Social Cognition in the composite score (Table II).

Interestingly, although percentile scores obtained by SZ group were overall lower than percentile scores obtained by BD group, statistical comparisons performed on t-scores revealed that SZ and BD obtained comparable results in the composite score and in all sub-test scores of MCCB, with a lack of significant differences between groups (Table II, Fig. 1).

The effects of diagnosis on neurocognitive outcomes were analyzed with linear regressions, which revealed that the diagnosis was not a significant predictor of any cognitive variable. When including all demographic variables in the regression model, results showed that the lower level of education predicted worse cognitive functioning in the following subscales: Speed (t(41) = 2,71, p = 0,010), Attention (t(41) = 2,24, p = 0,031), Working Memory (t(41) = 3,08, p = 0,004), Verbal Memory (t(41) = 2,15, p = 0,039), Composite (t(41) = 2,98, p = 0,005). Gender was a predictor of Reasoning score (t(41) = -2,42, p = 0,021), with males performing better and longer duration of AP treatment predicted lower verbal memory performances (t(41) = -2,34, p = 0,025). Finally, linear regressions were performed to analyze whether cognitive functioning can predict community functioning while covarying for clinical symptomatology. Results indicated that lower scores obtained in Working Memory subtest was a significant predictor of lower VGF scores (t(41) = 2,423, p = 0,020) and lower Speed of performance predicted lower QL-index (t(41) = 2,064, p = 0,046).

TABLE I. *Demographic and clinical characteristics of schizophrenic and bipolar groups*

	SZ (n = 23)	BD (n = 19)	Statistics
Age (y)	39,4 ± 10,5	50,3 ± 11,4	t = -3,21 p = 0,003
Gender (female)	8 (42,1)	7 (30,4)	χ^2 = 0,62 n.s.
Education (y)	13,8 ± 3,1	13,1 ± 4,2	t = 0,60 n.s.
Age of onset (y)	25,9 ± 7,9	37,5 ± 15,2	t = -3,18 p = 0,003
Duration of illness (y)	12,7 ± 11,2	13,5 ± 9,5	t = 0,23 n.s.
AP treatment (y)	11 ± 7,4	2,8 ± 6,5	t = -3,84 p < 0,001
BPRS (%)	60,1 ± 16,2	46,7 ± 14,1	t = 2,82 p = 0,007
CGI (%)	4,3 ± 1,1	3,6 ± 1	t = 2,16 p = 0,036
VGF (%)	59,9 ± 18,7	71,6 ± 13,7	t = -2,28 p = 0,028
QL-index (%)	5,8 ± 2,6	6,5 ± 2,3	t = -0,90 n.s.

Values are presented as mean ± standard deviation (sd) or number. y = years; AP = antipsychotic.

Discussion

The present study examined the clinical, functional and neurocognitive characteristics of outpatients with SZ or BD. Results revealed that the two groups show different clinical features, but they share common neurocognitive impairments. Only education modulated cognitive performance on several subtest and the duration of AP treatment, which may be related to the severity of illness, had an impact on verbal memory performances. In addition, regression analyses revealed that cognitive deficits in the domain of working memory and speed of

TABLE II. *Neurocognitive evaluation of schizophrenic and bipolar groups.*

MCCB	Percentiles		t-scores		Statistics
	SZ (n = 23)	BD (n = 19)	SZ (n = 23)	BD (n = 19)	
Speed of processing	*9,4 ± 11,9	17,3 ± 24,1	31,4 ± 10,3	35,1 ± 12,3	t = -1,08 n.s.
Attention/Vigilance	*12,2 ± 17,6	21,1 ± 22,6	32,3 ± 12,3	35,8 ± 14,1	t = -0,85 n.s.
Working memory	25,6 ± 25,5	25,5 ± 22	40,7 ± 10,2	41,1 ± 9,4	t = -0,13 n.s.
Verbal Learning	28,7 ± 26,1	31,5 ± 24,3	42,6 ± 9,4	43,3 ± 9	t = -0,24 n.s.
Visual learning	37,2 ± 35,4	34,1 ± 33,7	41,4 ± 16,6	42,4 ± 15,2	t = -0,19 n.s.
Problem Solving	36,9 ± 33,8	42 ± 28,3	44,9 ± 11,8	47,6 ± 9,3	t = -0,80 n.s.
Social Cognition	*8,5 ± 14,2	*12,4 ± 15,6	30 ± 10,8	32,1 ± 13,3	t = -0,58 n.s.
Composite	*9,8 ± 12,9	*15,3 ± 19,4	29,9 ± 12,9	32,9 ± 14,3	t = -0,73 n.s.

Values are presented as mean percentiles and t scores ± standard deviation. Statistics are referred to t-scores.
** Asterisks indicate scores below the 16th percentile*

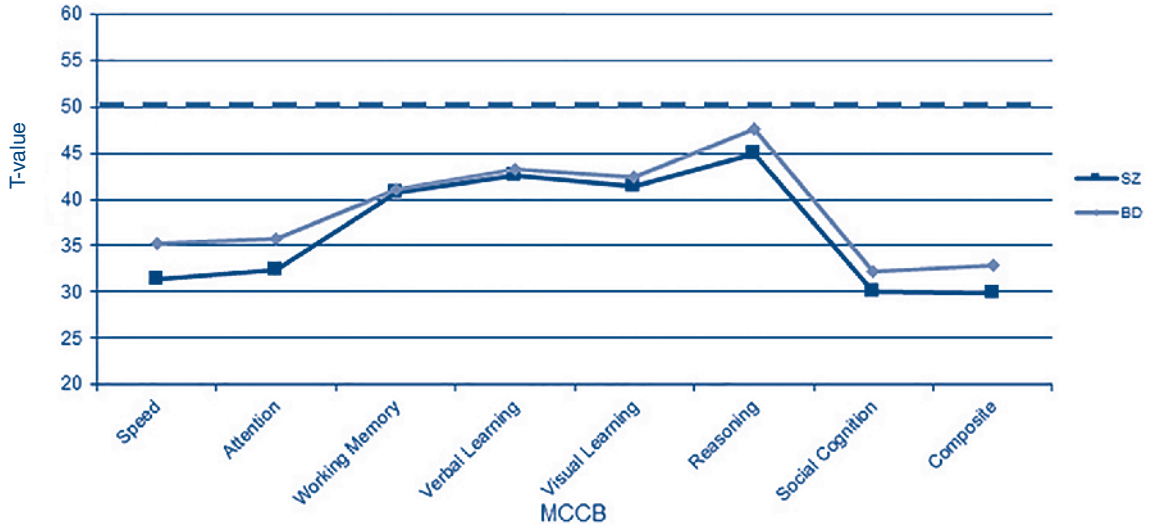

FIGURE 1. *Performances of SZ and BD groups (T-scores) in MCCB subtest and composite score. Both SZ and BD showed poor performances, with scores below the mean t-score (dotted line) in all sub-tests of the MCCB and in the composite score, without any significant statistical difference between groups.*

processing are closely related to everyday functioning.
In the last decade a sustained debate has grown about the need to rethink psychiatric classification systems, to account for increasing evidence of discrepancies between the categorical approach of the diagnostic classifications and the observations of everyday clinical practice (see for example the Research Domain Criteria Project) [34]. Kraepelinian division of major psychoses into dementia praecox (later identified as SZ) and manic depressive psychosis (BD) is now subject matter of discussion. Recent literature comparing SZ and BD actually redefine these psychiatric disorders as lying along a continuum of psychotic disorders [20] as confirmed by the results of numerous neurobiological investigations, which indicate common genetic susceptibilities [35] and neuroanatomical and neurochemical similarities [36]. In fact, findings from the large-scale Bipolar-Schizophrenia Network on Intermediate Phenotypes (B-SNIP) Study, comparing social and cognitive deficits across psychotic proband groups and their first-degree relatives, indicate the existence of a continuum of severity underlying psychotic disorders, ranging from BD to SZ [37].
Neurocognitive impairments have been reported to be one of the core symptoms in SZ and growing literature is demonstrating that cognitive deficits are consistent

also in BD along the course of illness [38]. Nevertheless, it is still matter of debate whether individuals with SZ and BD show impairments in the same cognitive domains and with the same severity, so that an increasing number of studies is searching for boundaries able to discriminate between these psychopathologies.

Results from the present study, indicating common neurocognitive deficits in SZ and BD, substantially support the perspective of a continuum between these disorders. Specific features of the sample composition could have influenced our results. In particular, it has to be noted that all participants were recruited in the context of an outpatient psychiatric public service [39], where more disabling conditions assemble. It can be supposed that our sample was constituted by highly severe pathologies and that this condition interfered with the emergence of eventual subtle differences in cognitive abilities between SZ and BD groups. Nevertheless, our groups of patients significantly differed in terms of severity of illness as revealed by clinical assessment and by the length of AP treatment. The overlap between cognitive performances of BD and SZ found in this study could be ascribed to a particular subgroup of patients with BD in our sample presenting more pronounced cognitive deficits. In fact, Burdick and colleagues [6] found evidence for three distinct, cognitively homogeneous subgroups in a wide sample of BD patients, ranging from normal cognitive functioning like healthy controls, to severe cognitive impairment comparable to SZ patients.

Other characteristics of the sample could have interfered with our results. In fact, our groups of patients significantly differed on several demographic characteristics (age, age of onset), which can significantly influence cognitive performances. Indeed, neuropsychological deficits have been documented to be more pronounced among older relative to younger individuals with BD [40]. In addition, it has been documented that later onset of SZ is related to better social cognition, whereas patients' older age is related to a worse performance across multiple cognitive domains [41].

The present study further underline the importance of neurocognitive examination in psychiatric diseases, in light of its fundamental role in predicting daily functioning. In fact our results evidence that not only the severity of clinical symptomatology can affect community functioning, but also cognitive deficits in the domain of working memory and speed of processing are highly predictive of worse levels of global functioning and lower indexes of quality of life.

This finding is in line with previous studies which evidenced that neuropsychological performance seems to be a fundamental longitudinal predictor of functioning in both disorders [28 42], even separately from mood symptomatology [43-46]. These results also suggest that the inclusion of the cognitive dimension in the assessment of severe mental disorders could facilitate the introduction of therapeutic and rehabilitative strategies more effective and strictly related to everyday difficulties encountered by patients.

It is noteworthy that in the present research cognitive functioning was assessed by the administration of the MCCB. The majority of previous studies comparing SZ and BD populations employed different cognitive batteries and the heterogeneity of measures employed in the past may account for differences in findings [20]. The adoption of cognitive assessment batteries specifically developed for individuals affected by severe mental disorders could help future research to better discriminate differences and commonalities among psychiatric populations.

The results of the current study are to be considered in light of some limits. The influence of negative symptoms was not controlled for and the limited sample size might have biased results, in particular because all patients were recruited out of acute episodes, but in treatment at a daily outpatients service. This underlines the severity of bipolar disorders included and would require higher numbers to validate, without bias risk, the hypothesis of an overlapping in cognitive performances of the two samples. Moreover, the need for antipsychotic therapy in bipolar disorders may be related to the severity of illness, due to the fact that this is more frequently prescribed in patients with mood episodes with psychotic features, in particular manic episodes. This might be a negative marker, in particular among patients with multiple episodes, of a possible subtype of bipolar disorder more related to cognitive deterioration or in relationship to the total amount and/or lenght of antipsychotic treatment. In this study we analyzed the effect of antipsychotic treatment length, but data on number and polarity or quality (psychotic/non psychotic) episodes or cumulative antipsychotic doses were not available. Nevertheless, the current study expands upon previous investigation thanks to its adherence to "real-world" mental illness, with data coming from patients with long history of disease in charge of an outpatient psychiatric public service, to be considered as a value in terms of clinical relevance [47].

In conclusion, we found that SZ and BD showed similar cognitive impairment and that cognitive profile can predict actual functioning and quality of life independently from clinical symptomathology. We can argue that patients with BD received in the context of psychiatric public services probably represent a subgroup characterized by a severe cognitive impairment not different from patients with SZ. These findings are in accordance with the current hypothesis about the existence of a spectrum of neurocognitive impairments across psy-

chotic diseases and support the development of a "dimensional psychiatry" using cognitive phenotypes as markers of independent subgroups across diagnostic boundaries [42]. Our findings also suggest that cognitive disabilities should be considered as essential factors in clinical practice for their relevance in everyday functioning and in a better definition of the needs of care and efficacy of treatments undertaken in psychiatric services.

Conflict of interest

None.

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Logical inference and visual memory frailty in patients suffering from borderline personality disorder: a contribution from cognitive psychopathology

Summary

Objective

Borderline Personality Disorder (BPD) is a severe psychiatric condition which causes an impairment of the individual's global mental functioning and serious social stigma. BPD patients present typical affective and cognitive features. Our study aims at clarifying which memory and executive subdomains are primarily affected in BPD patients and at exploring the connection between executive functions and impulsive/disruptive behaviours.

Methods

25 Borderline Personality Disorder (BPD) outpatients were administered Diagnostic Interview for BP-Section II investigating impulsive behaviours. Memory profile of BPD patients on Wechsler Memory Scale-IV was compared to that of a schizophrenia group (n. 25) and that of a non-clinical group (n. 50). BPD patients were also tested by Picture Interpretation Test, Stroop Test and Tower of London-Drexel version. A correlation between executive and clinical measures was performed, too.

Results

BPD patients obtained lower scores than controls in all memory tasks, except for auditory memory. They also performed better than patients with schizophrenia in auditory memory, immediate and delayed memory, but not in the critical domains of visual memory and visual working memory. Logical inference in BPD was more deteriorated than planning abilities that were associated to impulsive behaviours.

Conclusions

Visuospatial memory domain is frequently impaired in BPD. Logical inference frailty might be referred to thought process disturbances whereas planning abilities would represent a crucial dimension of BPD construct.

Key words

Borderline personality disorder • Cognitive psychopathology • Self-injurious behaviour

Introduction

Borderline Personality Disorder (BPD) is a severe psychiatric condition which causes an impairment of the individual's global mental functioning and serious social stigma [1]. People suffering from BPD often exhibit behaviours that can have dangerous consequences for themselves and for their significant others (e.g. overdoses, reckless driving and self-injuring) [2 3] in so far that, from a Public Mental Health Service perspective, treating these patients constitutes a difficult challenge [4]. They may present a typical neuropsychological dysfunction of certain cognitive domains, probably involved into behavioural excesses. To this end, the present study aims at clarifying which memory and executive subdomains are primarily affected in BPD patients and at exploring the con-

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nection between executive functions and impulsive/disruptive behaviours.

Repeated suicidal threats, gestures and behaviours, together with self-mutilation are one of the most distinctive and alarming symptoms of BPD, a real "fingerprint" of the disorder. Borderline patients usually experience a unique mixture of non-suicidal self-injury (NSSI) [5 6]) and chronic suicidal ideation, with suicidal threats and low-lethality suicide attempts [7]). Clinical responses to NSSI for borderline patients include a number of interventions including improving emotion regulation, aiding recovery from dissociative states and encouraging a compromise solution to not kill oneself and to stay alive [7]). In addition, some theoretical models have tried to further clarify the role and the development of self-injuring episodes. According to the Emotional Cascade Model [8]), people suffering from BPD enter a disturbing emotional-cognitive loop where rumination and negative feelings become progressively more intolerable. Deregulated behaviours, such as NSSI, may represent a way-out from this emotional-cognitive climax [8]). In the light of the Self-Regulation Model 7), self-injurious behaviours and suicide attempts help the patient to regulate consuming feelings and uncontrollable thoughts: self-disruptive acts permit the person to gain control on them and get relief from suffering.

Considering the neurobiological correlates of BPD, it has been observed that people with a diagnosis of BPD who injure themselves show a decrease of the white matter microstructural integrity in the inferior parts of frontal brain regions, including the orbitofrontal cortex [9], as well as hypoactivation of the hypothalamic-pituitary-adrenal axis [10]. Interestingly, there is growing evidence suggesting the role of the endogenous opioid system in the pathogenesis of self-injurious behaviour [11], which could involve reduced basal opioid levels and an increased number of opioid receptors [12]. Moreover, a reduced glucose metabolism of several brain regions in BPD patients (i.e., prefrontal, premotor and anterior cingulate cortex, thalamus, caudate and lenticular nuclei) has been identified [13]. These findings have led researchers to suggest that BPD might be due to a failure of frontal cortical activation in modulating limbic activity [14]. More specifically, many core features of BPD may be underpinned by dysfunctional brain circuitry involving hippocampus, amygdala and dorsolateral, anterior cingulate and orbitofrontal cortex [15]. According to Bazanis et al. [2], repeated, self-damaging behaviour occurring in the context of borderline personality disorder may reflect impairments in decision-making and planning cognition.

As far as the neuropsychological profile of BPD is concerned, the identification of the neurocognitive strengths and weaknesses that characterise the disorder has turned out to be a fascinating challenge, as both memory and executive subdomains have been implicated in BPD [16]. Many studies have suggested that borderline patients might present deficits referred to a frontotemporal dysfunction which affects the right hemisphere more critically [17 18]. People suffering from BPD show an impairment of the memory system, both in dealing with visuospatial memory on the one hand and autobiographical memory on the other one [19 20]. Controversy arises in literature about the specific nature of the impairment regarding visual memory. According to some studies, borderline patients exhibit core deficits in nonverbal information encoding and perceptual material organization [18 21].

Interestingly, visuospatial memory deficiency seems to play an important role in BPD neurocognitive profile [16 18]. Beblo et al. [17] have hypothesized that visuospatial memory abilities impairment may constitute the core deficit of BPD neuropsychological profile. Furthermore, it has been suggested that visual perception may negatively influence performances of BPD patients on visuospatial memory tasks [22]. Perceptual speed has also been noted to be impaired in this disorder [23 24]. These findings suggest a possible relation between mnestic, visuospatial and perceptual deficits in this psychiatric condition. Deficits in visual memory and visual working memory have also been noted in schizophrenia, too [25-27], accounting for difficulties in visuospatial discrimination and attention deficits (i.e. focusing on irrelevant stimuli).

As for autobiographical memory, people suffering from BPD seem to show "overgeneral" mnestic profiles [28]: BPD patients develop a persistent scarce specificity of autobiographical memory that leads them to categorical memories about unspecific repeated events [29]. This could be due to negative early life experiences and could be protective by helping emotion regulation and limiting access to traumatic memories. This reduced specificity consists of "sterilized memories" in which subjective participation becomes objective, contrary to Marcel Proust's description of *madeleines* (i.e. every single sensorial element of the memory leads to its retrieval). This tendency towards the "semanticization" of memory is also present in other psychopathological disorders in which self-coherence and sense of agency are particularly affected, such as schizophrenia and obsessive-compulsive disorder [30]. In contrast to BPD patients, patients with schizophrenia show impairment of autobiographical memory due to a lack of autonoetic awareness and self-coherence [30 31]. In these patients, declarative memory impairment represents a core feature and it is strongly linked with a less present and more compromised sense of self, accounting for a more severe range of memory deficits

than borderline patients. Furthermore, autobiographical memory deficits seem to co-occur with an alteration of cultural life scripts (i.e. culturally shared expectations regarding the order and timing of life events in a prototypical life course within a given culture) in BPD patients, but it is not clear yet whether it might be due to their typical identity disturbance or to their negative life experiences [32]. The link between the sense of the self and memory (especially episodic one) is even clearer if we consider the peculiar role of memory system impairment that we can widely find in schizophrenia. Following the brilliant intuitions by Gazzaniga [33], we can consider that episodic memory is strictly responsible for the creation of self-awareness and the stability of the self. Because of its information processing method, which consists in encoding events in spatial and temporal coordinates, episodic memory forms "the sense of the self" as the sense of the one who commits the action in "his space" and in "his time". Encoding "my space" and "my time" are fundamental functions of episodic memory that together determine the unique sense of self and the stability of the identity across the space and the time.

Episodic memory has a pivotal role also in the creation of the sense of agency. The lack of the sense of agency is fundamental in schizophrenia, as described by Happé and Frith [31]. They suggest that the core problem in schizophrenia could be a disorder within the self-monitoring processes, a multilevel system which permits the awareness of what is originated from the self and the discrimination of what is not. These elements are summarized in what Sass and Parnas [30] called *ipseity disturbance*. This kind of phenomena can be found also in BPD patients. This is the conjunction between BPD and schizophrenia, and this could underline the common psychotic core of the two diseases. In fact, we can easily find ipseity disturbance aspects in a large amount of BPD patients, even if they are not so severe as in patients with schizophrenia.

In BPD, a deficit of executive functioning has also been identified, regarding a wide range of cognitive processes. More specifically, BPD neuropsychological profile was proven to be impaired regarding both "cold functions", such as planning, working memory and cognitive flexibility [16 34], and "hot functions", such as decision-making [24 35]. With reference in particular to "cold functions", Haaland et al. [36] have suggested that low planning abilities, cognitive flexibility, verbal fluency and sensitivity to interference constitute a selective weakness of BPD neuropsychological profile, and Hagenhoff et al. [37] have pointed out a selective deficit in working memory when patients are administered an increasing load of cognitive tasks. However, data about cognitive load effects are still controversial themselves [23]. It has also been suggested that a higher executive control and visual memory performance may predict treatment adherence in borderline outpatients [38].

On the basis of the reported literature, we assumed that BPD patients should present specific memory impairments that allow to clearly differentiate them from patients with schizophrenia and that their executive dysfunction may play a critical role for impulsive/disruptive behaviours. To this end, we initially tested a group of BPD patients on a memory battery assessing auditory memory, visual memory, visual working memory, immediate and delayed memory and then compared their performances with a group of patients with schizophrenia and healthy controls. Then, we evaluated BPD executive abilities and finally investigated their association to impulsive/disruptive behaviours.

Materials and Methods

Subjects

25 BPD and 25 patients with schizophrenia were recruited from the Mental Health Service of Pisa (Area vasta Nord Ovest Toscana, Italy). In addition to the clinical groups, a control group of healthy volunteers (CG, n = 50) was recruited from the community. All the participants gave written informed consent. At the time of evaluation, BPD patients received pharmacological treatment (as well as patients with schizophrenia), mainly consisting of typical and atypical antipsychotic drugs, benzodiazepines and antidepressants. Each BPD patient was evaluated and prospectively followed for 3 years to identify psychotic episodes, hospitalization, treatment adherence and assistance needs by two case managers (one psychiatrist and one psychologist).

Neuropsychological assessment

The borderline patients were administered neuropsychological tests and clinical measures in 120 minutes *per* session, including:

- *Brief Neuropsychological Exam (BNE)* [39]: this is a screening battery that consists of the following tests: Digit Span; Memory of Prose (Immediate and Delayed tasks); Memory with Interference (-10" and -30" tasks); Trail making Test (A and B tasks, TMT); Token Test; Verbal Fluency; Abstraction; Cognitive estimations; Embedded Figures Test; Copy Drawing; Spontaneous Drawing; Clock Drawing Test; Praxis. Each raw score was calculated and then compared to its corresponding age and education-adjusted cut-off value. Raw scores inferior to cut-offs (with the exception of the TMT scores) are suggestive of poor performances;
- *Wechsler Memory Scale-IV (WMS-IV)* [40]: this broad

battery provides a deep evaluation of memory system and consists of different subtests evaluating specific abilities, listed as follows: Logical Memory (LM) (Immediate and Delayed): strategic learning; Verbal Paired Associates (VPA) (Immediate and Delayed): associative learning; Designs (DE) (Immediate and Delayed): spatial memory; Visual Reproduction (VR) (Immediate and Delayed): visual memory; Spatial Addition (SA): visuospatial working memory; Symbol Span (SSP): visual working memory. Raw scores were transformed into Scaled Scores (m = 10; *SD* = 3), which were summed up and then transformed into Index Scores (m = 100; *SD* = 15). Index Scores provide information about patients' global performances and are listed as follows: Auditory Memory (AMI): LM I and II, VPA I and II; Visual Memory (VMI): DE I and II, VR I and II; Visual Working Memory (VWMI): SA and SSP; Immediate Memory (IMI): LM I, VPA I, DE I, and VR I; Delayed Memory (DMI): LM II, VPA II, DE II and VR II. This memory battery was also administered to patients with schizophrenia and healthy controls;

- *The Tower of London-Drexel University version (TOL^{DX})* [41]: this is a planning task in which several parameters are considered: Total Move Score, Total Initiation Time, Total Problem-Solving Time, Total Execution Time, Total Time Violations and Total Rule Violations. Raw scores of TOL^{DX} were converted into percentiles according to examinees' age and then transformed into Equivalent Scores (ES) [42] ranging from 0 to 4, by following the correspondence to them (Table I);
- *Picture Interpretation Test (PIT)* [43]: the PIT is a test for the evaluation of logical inference abilities. The PIT was performed by using the picture proposed by Bisiach and colleagues in 1983, a small scale colour reproduction (19 x 13 cm) of a picture by Giacomo Favretto (Figure 1) representing a domestic scene in which three girls are standing on chairs and a boy is searching for something on the floor. The room is in a mess and one of the girls is pointing to something behind a piece of furniture. The examinee has to guess that a mouse is being hunted by girls within a time period of 3 minutes. The task completion time is transformed into the corresponding ES;
- *Stroop Test-Brief Version* [44]: this famous task assesses the ability of inhibiting interferences. Time and Error Interference effects are calculated and then turned into ES.

TABLE I. *Equivalent Scores (ES) and their corresponding percentiles, ability levels and clinical evaluation of the performances*

Equivalent Scores (ES)	Corresponding percentiles	Ability level	Clinical evaluation of the performance
4	≥ 50°	Medium-Superior	Normal
3	49°-36°	Medium-Inferior	Modest
2	35°-20°	Medium-Inferior	Modest
1	19°-5°	Medium-Inferior	Modest
0	≤ 4°	Poor	Poor

Clinical assessment

- *The Modified Overt Aggression Scale (MOAS)* [45 46] was used to investigate the presence and the severity of several types of aggressive behaviour (physical aggression, verbal aggression, auto-aggression, aggression against property). Raw scores were transformed into a scaled score whose total quantifies the global grade of the patient's aggressiveness.
- The *Diagnostic Interview for Borderline Patients (DIB)* [47] was administered to evaluate the main psychopathological features of BPD. For the purposes of this research, only Section II investigating impulsive, self- and hetero-disruptive behaviours was administered.

Statistical analysis

Statistical analysis was conducted by using SPSS 23.0 IBM software. Descriptive analysis of BPD patients on BNE was first reported. BPD memory performances on the WMS-IV were compared to those of a schizophrenia group and those of a non-clinical group with a One-Way ANOVA (Scheffé post-hoc). The *p value* was set at $p < .01$. Then, Pearson *r* correlations between executive measures and clinical variables of BPD group were calculated. Finally, a Wilcoxon Sign-Rank Test (Bonferroni corrected) was used to make comparisons between BPD patients' performances on executive measures.

Results

With reference to the main qualitative results from BNE (Table II), we found that BPD patients' performances on Memory with Interference Tasks -10" and -30", on the TMT B and on the Entangled Figures Test (high education group), as well as performances on the TMT B,

on the Verbal Fluency task and on the Entangled Figures Test (low education group), were below cut-off values [39]. Such findings are in line with previous research suggesting both an impairment in "cold" executive functioning (i.e. working memory, divided attention, cognitive flexibility) [36-38] and in visuoperceptual information organization [18].

According to the principles for interpreting performances of WMS-IV included in the technical and interpretative manual [48], the examination of BPD patients' memory profile highlighted that they have mild difficulties in visual memory performances (as evidenced by VMI and VWMI scores), while patients with schizophrenia show a clear impairment of auditory memory (AMI), immediate and delayed memory (IMI, DMI) and visual memory (VMI) and a deficiency of visual working memory (VWMI) (Table III).

All the participants were demographically matched in terms of age (30.4 ± 9.2 in BPD, 34.7 ± 8.7 in SCH, 32.4 ± 8 in CG) (BPD *vs* SCH, t = -1.298, p = .205; BPD *vs* CG, t = -0.651, p = .520; SCH *vs* CG, t = 1.407, p = n.s.), education (11 ± 4 in BPD, 10.9 ± 2.3 in SCH, 12.5 ± 1.8 in CG) (BPD *vs* SCH, t = 0.109, p = .914; BPD *vs* CG, t = -1.928, p = .057; SCH *vs* CG, t = -2.691, p = .061) and gender (M:F in BPD = 9:16; in SCH = 11:14; in CG 28:22, χ^2 = 1.473, p = .225). Mean illness duration was 11.6 (± 8.7) for BPD patients and 10.4 (± 2.3) for patients with schizophrenia.

BPD patients significantly obtained lower scores than CG in all Indexes of the WMS-IV (p < .01), except for AMI (Table III). Moreover, BPD patients performed significantly better than patients with schizophrenia in Auditory Memory, Immediate Memory and Delayed Memory Indexes (p < .01), but not in the critical domains of visual memory and visual working memory (p = n.s.).

In the BPD group, a significant correlation between TOL^{DX} Total Problem-Solving Time (in seconds) and DIB Section II total score was found (r = .623, p < .05); no significant correlations were found between DIB Section II and the other executive measures as well as between MOAS and all the executive measures.

To end with, BPD patients' performance on the logical inference task (PIT) was lower than that on the planning task (TOL^{DX} Total Initiation Time) (p = .006) (Table IV).

Discussion

The neurocognitive profile of borderline patients is characterized by specific mnestic and executive deficits primarily affecting visual memory and logical inference domains, respectively.

TABLE II. *Descriptive statistics of BPD patients' performances on BNE.*

Subtests	BNE scores high education group		BNE scores low education group	
	M	SD	M	SD
Digit Span	5.6	1	5	1.4
Memory of Prose - Immediate Recall	16.8	5.8	14	11.3
Memory of Prose - Delayed Recall	17.6	5.2	12.5	14.8
Memory with Interference - 10 sec.	7.2 *	2.2	7.5	2.1
Memory with Interference - 30 sec.	6.9 *	2.9	7	2.8
Trail Making Test A (sec.)	50.5	16	59	26.8
Trail Making Test B (sec.)	181 *	126.8	109*	0
Token Test	4.9	0.2	5	0
Verbal Fluency	12.3	4.9	7.9 *	0.4
Abstract Thinking	5.6	0.8	4.5	2.1
Estimations	4.5	0.7	4	0
Entangled Figures Test	28.2 *	8.7	31.5*	6.3
Copy	1.8	0.4	1	0
Spontaneous Drawing	2	0	2	0
Clock Drawing Test	9.1	1.1	8	2.8
Praxis	5.8	0.4	5.5	0.7

*BPD: borderline personality disorder; * Subtests below cut-off values.*

TABLE III. *Means ± SD of WMS-IV Indexes and Scheffé post-hoc inter-groups comparisons on WMS-IV Indexes.*

WMS-IV Index	BPD	SCH	CG	BPD *vs* CG SCH *vs* CG BPD *vs* SCH
AMI	96.7 ± 20.8	69.5 ± 18.9	104.1 ± 16	n.s.>.01>.01
VMI	80.3 ± 15.8	71.1 ± 15.3	103 ± 14.9	>.01>.01 n.s.
VWMI	80.3 ± 16	76.2 ± 13.3	102.7 ± 14.8	>.01>.01 n.s.
IMI	85.2 ± 18.9	67.7 ± 16.9	103.7 ± 15	>.01>.01>.01
DMI	88.5 ± 19	67.2 ± 15.3	104.9 ± 17.4	>.01>.01>.01

AMI: Auditory Memory Index; VMI: Visual Memory Index; VWMI: Visual Working Memory Index; IMI: Immediate Memory Index; DMI: Delayed Memory Index; BPD: borderline personality disorder patients; SCH: patients with schizophrenia; CG: control group.

BPD performances on WMS-IV are intermediate between those of controls and patients with schizophrenia. In particular, auditory memory seems to be borderline patients' neurocognitive profile strength, as corroborated by the comparison with the clinical and the non-clinical group. By contrast, poor performances in visual memory and visual working memory tasks may reflect a deficiency in the elaboration of visuospatial information, as suggested by several studies [18 21]. In particular, BPD patients show difficulties in complex cognitive tasks involving non-verbal material and visual perception. This might be due to their inability to solve visual discrimination and filter information affecting memory for spatial location and visual details. Visual acuity deficits and working memory dysfunction have been recognized as critical factors that may influence visual memory performances on WMS-IV [48].

We would stress that a significant difference between BPD and patients with schizophrenia does exist in relation to auditory, immediate and delayed memory. Patients with schizophrenia present a severe deficit in verbal memory and in the ability to recall (verbal and visual) information in immediate and delayed conditions, because of the deep crumbling of self, which is typical of the disorder [49]. The concept of self is strictly linked to the development of episodic memory [50]. Patients with schizophrenia manifest a severe damage of the sense of self and a lack of autonoetic awareness with negative implications for memory consolidation and retrieval [51]. Borderline patients' self is not so severely impaired, even if some "cracks" are present and responsible for identity disturbances. Consequently, the integrity of episodic memory and self-awareness can be sufficiently maintained. Therefore, our findings confirm previous literature on the relationship between (impaired) self and (impaired) episodic memory processes.

Moreover, very intriguing facts emerge. The positive correlation between TOL^{DX} Total Problem-Solving Time and DIB Section II Total Score might indicate that planning abilities are a factor underlying a crucial dimension of the BPD construct (i.e. impulsivity), which includes the accomplishment of self-disruptive behaviours but is not limited to them. TOL^{DX} Total Problem-Solving Time evaluates overall executive planning as mainly related to problem-solving speed.

Impulsivity represents a multidimensional construct and a common feature in BPD and can be conceptualized

TABLE IV. *Mean Rank of BPD patients and p values from executive tests comparison.*

Neuropsychological tests	BPD patients Mean Rank	Executive tests comparisons	p values
Picture Identification Test	2.92	PIT *vs* Stroop Int./Time	.021
TOLDX Total Initiation Time	5.92	PIT *vs* TOLDX Total Initiation Time	.006
TOLDX Total Execution Time	3.33	PIT *vs* TOLDX Total Execution Time	.317
TOLDX Total Problem-Solving Time	3.79	PIT *vs* TOLDX Total Problem-Solving Time	1.57
Stroop Interference/Time	5.04	Stroop Int./Time *vs* TOLDX Total Initiation Time	.271
-	-	Stroop Int./Time *vs* TOLDX Total Execution Time	.035
-	-	Stroop Int./Time *vs* TOLDX Total Problem-Solving Time	.132

BPD: borderline personality disorder; TOLDX: Tower of London Drexel University version; PIT: Picture Identification Test; Stroop Int./Time: Stroop Interference/Time. Differences are significant for $p < .05$ (Bonferroni corrected).

as actions with no foresight, lacking adequate control over cognitive and behavioural response to emotions. Such a result might reflect a failure in the ability to plan efficiently in a limited period of time that expires in playing out impulsive behaviours as a direct consequence of a compromised ability. TOL^{DX} performances, indeed, are largely poor in BPD patients [36 52]. However, logical inference -as thought process consisting of deriving logical conclusions from premises assumed to be true- was less efficient even than planning ability (i.e. TOL^{DX} Total Initiation Time).

This study observed the frailty of memory and executive subdomains in BPD patients. Such findings have relevant implications, given that performances on tests evaluating executive functions and visual memory may predict treatment adherence in BPD outpatients [38]. Our findings first point out the failure of a logical inference capacity because of patients' inability to communicate what is happening in the portrayed scene they see, accounting for a difficulty in the ability to explore complex stimuli visually and to attribute meaning to them. This could reflect some thought process disturbances (i.e. paranoid ideation, dichotomous thinking) that crucially depict the disorder Second, they highlight that impulsivity and planning abilities are intimately connected to how patients respond to negative emotions: the time they take to execute moves correctly to reach a solution in TOL^{DX} tasks might be indicative of BPD patients' difficulty to select the most adaptive behaviour in relation to their inner instability and rapid mood shifts. However, these results should be replicated with a more rigorous methodology mainly including a larger sample size. Thus, caution should be adopted by researchers in the interpretation of the results due to the small size of psychiatric samples.

Conclusion

We have reported the initial results of the comparison of performances among BPD patients, patients with schizophrenia and controls on WMS-IV and the use of PIT for the assessment of logical inference in BPD. The first is not a simple memory battery to be administered in the case of psychiatric patients and represents a reliable tool for researchers and clinicians interested in identifying the strengths and the weaknesses of the whole memory system profile in clinical and non-clinical populations from which cognitive trainings can be set up. To date, studies on cognitive remediation for BPD are very limited. As recently suggested by Vita et al. [53], cognitive remediation currently represents a feasible intervention especially in multimodal treatments of BPD and it is effective in ameliorating specific cognitive abilities related to the executive domain, such as working memory, that may positively affect psychosocial functioning and symptom severity. Despite these encouraging preliminary results, more research is needed to manage this disabling clinical condition starting from a reliable and complete cognitive assessment. The latter is a suitable test not commonly used for the examination of pre-frontal patients with a very quick and effortless administration. It has been associated to specific lateral areas of the frontal lobe, more related to strategy building, and to ventromesial ones, more involved in behaviour initiation and general activation [43]. Intriguingly, given the findings on the dual-process accounts for reasoning and on deduction paradigms [54 55], future research should better disentangle the links between BPD neuropsychological (i.e. working memory) and psychopathological features and the cognitive systems underlying reasoning processes. Furthermore, as the relationship between thought abnormalities (which also include obsessive-compulsive symptoms) and impaired sense of self and coping abilities in BPD was reported [56], future research should also aim at better clarifying the role of self disturbances in psychopathological conditions, as well as their mutual influences (e.g. co-morbid diagnoses). To end with, a recent meta-analysis by Unoka and Richman [24] has confirmed that an impaired executive functioning in BPD patients is linked to BPD symptomatology, especially for impulsivity, emotional liability and poor self-control and it is sustained by evidence of abnormalities in brain structure, function and neurochemistry, by mostly pointing out prefrontal areas hypometabolism.

The main limitation of the present study consists of a reduced number of BPD patients. It should be implemented with the collection of more extensive data to allow researchers to clarify and differentiate BPD neurocognitive profile from that of the other psychiatric disorders in order to improve knowledge on cognitive phenotypes characterizing mental disorders. Moreover, the influence of pharmacological treatment on cognitive performances not taken into account and the lack of a comparison between BPD and schizophrenia performances on executive measures constitute other constraints of our investigation.

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Conflict of Interest

None.

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The relationship between somatoform dissociative symptoms and psychotic symptoms in patients with schizophrenia

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Objectives

Dissociative disorders have been previously subsumed under the diagnostic construct of hysteria, which has been described the occurrence of various unexplained medical symptoms, without evidence of tissue pathology that can adequately or solely account for the symptoms [1 2]. Typically dissociative symptoms include paralysis, abnormal movements, inability to speak, blindness, deafness, pseudoseizures, memory loss and detachment from one's own mental processes, body or environment [3]. According to the current (fifth) edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-V) the essential feature of dissociation is a disruption of the normal integrative functions of consciousness, memory, identity and perception of the environment [4]. Over recent years researchers have proposed to name the latter manifestations of dissociation psychological dissociation [5]. Clinical observations also indicate that dissociation can manifest in somatoform ways, which is called somatoform dissociation [6-8]. Although somatoform disorders are not conceptualized as dissociative disorders in the DSM-V, the strong correlation between dissociative and somatoform disorders [9] indicates that dissociation and particular somatization symptoms may be manifestations of a single underlying principle [1]. Moreover, the International Classification of Diseases, Tenth Edition [10] includes somatoform dissociation within dissociative disorders of movement and sensation. Somatoform dissociation designates dissociative symptoms that phenomenologically are related to body, and psychological dissociative symptoms are those that phenomenologically involve psychological variables [1].

Dissociative phenomena are commonly related to prior traumatization; Initial description was that mental functions can be separated from conscious awareness in response to psychologic stress [3]. This relationship was confirmed by a number of studies [11-15]. Other studies, however, have related dissociative symptoms to concurrent psychiatric disease rather than trauma [16]. Few studies have examined the effect of current psychiatric illness on dissociative symptoms. This is surprising since there is consistent evidence that dissociative symptoms are highly correlated with psychopathology [12]. However a 29% prevalence of dissociative symptoms in the psychiatric population has been reported [17], which is high compared with a 5% rate of dissociation in the general population. Dissociative phenomena in schizophrenia is reported with a prevalence of up to 60% [18] which is an intermediate extent, i.e. less than in other entities such as personality disorder and posttraumatic stress disorder and more than in controls [17 19 20].

The level of dissociative symptoms reported for patients with schizophrenia spectrum disorders varies substantially. Schafer at al. examined 30 female patients with schizophrenia spectrum disorders at admission and several weeks later when they were stabilized. They detected a significant decrease of the "Dissociative Experiences Scale" DES mean score from 21.0 at admission to 11.9 at the second interview [21]. Investigations including schizophrenic patients irrespective of the stage of their illness consistently find higher mean DES scores between 15.7 and 28.5 [17-20 22 23]. Studies

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including patients in remission generally reported lower DES scores ranging between 9.9 and 15.3 [24-26]. Obviously, the stage of the disorder seems to play an important role on DES scores. Therefore changing levels of dissociative symptoms as a result of the severity of the current disease merit some attention. Other studies suggest that dissociation is not generally associated with psychoticism, and it is only related with specific features contributing to the broad construct of psychoticism. Analyzing a schizophrenic sample, Spitzer et al found a close association between dissociative symptoms and positive symptoms of schızophrenia as measured by positive and negative syndrome scale. Patients with a predominance of positive symptoms of schizophrenia had significantly higher DES mean scores compared with patients with a predominance of negative symptoms (mean 21.1 vs 9.2). Delusions and hallucinations were strongly and positively related to the DES score. However, among the negative symptoms only passive social withdrawal shows a significant correlation to the DES [20].

Importantly, empirical data suggest that there is a complex and important relationship between trauma, dissociation and psychosis [18 22 27-33]. Recently a study was demonstrated that high-dissociators reported elevated rates of childhood trauma, more positive symptoms and more negative symptoms of schizophrenia but to a lesser degree [18]. Vogel et al investigated the association between trauma, posttraumatic stress disorder (PTSD) and dissociation in patients diagnosed with schizophrenia. Their results revealed no association of either trauma or PTSD with high dissociation, and their results also showed that those with high dissociation were also confronted with a more severe episode of schizophrenia [16]. Schäfer et al. examined a large sample of patients with schizophrenia spectrum disorders, and they found that positive symptoms were the best predictor of dissociation at admission, but when patients were stabilized childhood sexual abuse was the best predictor of dissociative symptoms [34].

The dissociation is initially used as a means of defense or an attempt to adapt to the pain; if the extent of the abuse is sufficient, then the dissociative response regularly becomes relied on as a defense mechanism. For example dissociation plays a significant role in posttraumatic syndromes in which amnesia makes the individual unaware of prior trauma. Amnesia might be a coping mechanism from the stressful event. Therefore, schizophrenic symptoms (hallucination, delusion) could be stressful events that may provide an opportunity for dissociative symptoms as a coping mechanism from these schizophrenic symptoms. We asked the question of, whether psychotic symptoms itself is associated independently from trauma and pathological posttraumatic conditions with dissociative symptoms. We suggested that psychopathological distress as a result of 1- subsequent to re-experiencing hallucinations, delusional beliefs, 2- social withdrawal namely leaving patients in social isolation, so providing less opportunity for reality testing, might cause dissociative symptoms as a coping mechanism. Moreover psychological and neurobiological coping mechanisms may be significantly impaired by schizophrenia itself; hence dissociation occurs in schizophrenic patients.

The findings in studies published to date reveal an association between greater dissociation and severity of schizophrenia symptoms. These studies investigated psychological dissociative symptoms, somatoform manifestation of dissociative process have not been considered. All empirical studies to date used DES to assess dissociative experiences among patients with schizophrenia. However DES may not be a valid instrument to screen for dissociative symptoms among schizophrenic patients [35 36].

We aim to investigate the level of dissociation by somatoform dissociation questionnaire in schizophrenic out patients without trauma or self-reported posttraumatic symptoms. Although various studies evaluating association between positive and negative symptoms of schizophrenia and dissociation, there is no empirical data about the relationship between the insight in schizophrenic patients and dissociative phenomena. The second purpose of the present investigation is to further examine whether there is a significant difference of the insight of schizophrenia between patients with high scores of somatoform dissociation and low scores of somatoform dissociation.

Method

Patients and Methods

Fıfty patients diagnosed with schizophrenia without trauma or self-reported posttraumatic symptoms according to the Diagnostic and Statistical Manual of Mental Disorder, Fifth Edition (DSM-V) criteria gave their written informed consent and participated in the study. Patients were required to meet the following selection factors: age between 18 and 65 years, definite exclusion of any organic disorder, cognitive impairment (low intelligence level), or severe drug or alcohol abuse for the last six months. Two patients were excluded as a result of low intelligence level. The study was approved by the responsible ethics committee (The ethic committee of Eskisehir State Hospital). The final sample included 48 patients comprised of 30 men (62.5%) with a mean age of 38.2 years (SD, 11.2) and 18women (37.5%) with a mean age of 38.7 years (SD, 7.8). The mean duration of illness was 13.3 years (SD, 9.1). Psychotic symptoms were measured using the

Scale for the Assessment of Positive Symptoms (SAPS) and the Scale for the Assessment of Negative Symptoms (SANS) and clinical global inventory (CGI). The insight concerning psychotic symptoms was measured using the Brown Assessment of Beliefs Scale (BABS). Furthermore patients were assessed by an expert to complete the somatoform dissociation questionnaire, and the expert was blind to the results of the positive and negative symptoms of schizophrenia, clinical global inventory and brown insight scale in all cases. We performed a statistical comparison of values in schizophrenia patients with higher (SDQ ≥ 30) and lower (SD < Q30) dissociation. This criterion was chosen because the SDQ values of 30 or above are used as cut-off score for somatoform dissociation [37].

Assessment Instruments

Scale for the Assessment of Positive Symptoms (SAPS), Scale for the Assessment of Negative Symptoms (SANS): SANS and SAPS [38] were administered via semi structured interview, to elicit information about the presence and severity of positive and negative psychotic symptoms. The SAPS is split into 4 domains and assesses the presence of hallucinations, delusions, bizarre behavior and positive formal thought disorder. The Turkish version of SAPS has satisfactory internal consistency (Cronbach 's alpha = 0. 84), high test-retest reliability (r = 0.87) [39]. The SANS is split into 5 domains and assesses the affective blunting, alogia, avolition/apathy, anhedonia/asociality and disturbance of attention. The Turkish version of SANS yields good to excellent statistical parameters (Cronbach's alpha = 0.91, test-retest coefficient = 0.94) [40]. Both of the assessments (SANS and SAPS) are conducted on a six point scale (0 = not at all to 5 = severe).

Clinical Global Inventory (CGI): CGI [41], is a clinical assessment for the severity of mental illness, and it is rated by a clinician who is experienced with the disease. The assessment is rated on the following seven point scale: 1 = normal, not at all ill; 2 = borderline mental ill; 3 = mildly ill; 4 = moderately ill; 5 = markedly ill; 6 = severely ill; 7 = among the most extremely ill patients.

Somatoform Dissociation Questionnaire (SDQ): SDQ [5] evaluates the severity of somatoform dissociation. The 20 items of SDQ were derived from a pool of 75 items describing clinically observed somatoform dissociative symptoms that in clinical settings had appeared upon reactivation of particular dissociative parts of the personality and that could not be medically explained. The items are supplied with a Likert type 5 point scale; ranging from 1 = this applies to me not at all, to 5 = this applies to me extremely. Sar explored the psychometric characteristics of SDQ in Turkish people. The assessment has satisfactory internal consistency (Cronbach alpha = 0.94, test-retest coefficient r = 0.95) [42].

Brown Assessment of Beliefs Scale(BABS): BABS [43] was designed to assess delusions across a wide range of psychiatric disorders. Investigators proposed that insight spans a continuum ranging from good insight, in which patients clearly recognize the excessiveness and/or senselessness of their beliefs, to poor insight or delusional conviction, in which the beliefs are considered realistic and reasonable. BABS evaluates insight concerning delusions or psychotic symptoms. BABS has been shown to have excellent internal consistency (Cronbach alpha = 0.90) and good test- retest reliability (r = 0.80) among the Turkish population [44].

Statistical Analysis

The statistical analysis of the data was computed using the Statistical Package for the Social Sciences (SPSS, version 21). In order to establish correlation between the different psychopathological dimensions Pearson's coefficient was calculated. For statistical group comparison between patients with higher somatoform dissociation (SDQ ≥ 30) and lower somatoform dissociation (SDQ < 30), the independent samples T test was used.

Results

The schizophrenic study sample is characterized in Table I. Table II shows the results described by Pearson correlation coefficients. Positive symptoms which were assessed by SAPS display significant correlation with the dissociative symptoms which is assessed by SDQ (r = 0.29, p < 0.05). Negative symptoms which is assessed by SANS, and insight which is assessed by BABS did not show any statistically correlation with dissociative symptoms (SDQ). However, the severity of schizophrenia shows a significant correlatıon wıth the scores of SDQ (r = 0.31, p < 0.05) (Table II).

The criteria used to divide the participants into two groups resulted in the loss of no participants from the analysis: 26 individuals were low dissociators with scores under 30 on the SDQ and the remaining 22 participants scored above 30 on the SDQ were high dissociators. The high dissociators had an average score on the SDQ of 36 compared to 24 for the low dissociators (p < .00001). When the psychotic symptoms; BABS, CGI, SAPS and SANS scores were compared between two groups, results of independent t test do not show statistically significant differences between the two groups on the BABS scores (t = 1.7, p > 0.05) and SANS (t = 0.2, p > 0.05) scores. On the other hand SAPS scores and severity of the disease display significant differences between the low dissociators and high dissociators (t = 2.5, p ≤ 0.01; t = 2.6, p ≤ 0.01, respectively) (Table III).

Moreover we explore whether there is a relationship between psychotic symptoms and somatoform dissocia-

TABLE I.

	Low Dissociation 26 (54.2%)	High Dissociation 22 (45.8%)	Whole Sample 48 (100%)
Female	9 (34.6)	9(40.9)	18 (37.5)
Male	17 (65.4)	13 (59.1)	30 (62.5)
Marital Status			
Single	15 (57.7)	15 (68.2)	30 (62.5)
Married	8 (30.8)	5 (22.7)	13 (27.1)
Divorced	3 (11.5)	2 (9.0)	5 (10.4)
School			
No school	0	1 (4.5)	1(2.1)
< 9classes	14 (34.6)	15 (36.4)	29(60.4)
9-12classes	10 (19.2)	6 (27.3)	16(33.3)
university	2 (7.7)	0	2(4.2)
Occupation			
Jobless	19 (73.1)	17 (77.2)	36 (75.0)
Full-time	5 (19.2)	3 (13.2)	8 (16.7)
Part-time	1 (3.8)	2 (9.1)	3 (6.3)
Pension	1 (3.9)	0	1 (2.0)

TABLE II. *Pearson correlation statistics for severity of psychotic symptoms and dissociation*

	SAPS	SANS	BABS	CGI
Dissociation symptoms (SDQ)	0.29*	0.003	0.15	0.31*

** Significant at the 0.05 level (one- tailed).*

TABLE III. *Correlation between low and high dissociation, respectively, by means T- test*

	Low dissociation SDQ ≤ 30		High dissociation SDQ > 30		t	P
	mean	SD	mean	SD		
CGI	3.5	0.9	4.3	1.2	2.6	0.016
SAPS	19.7	14.2	33.5	21.6	2.5	0.013
SANS	32.4	18.8	33.6	16.4	0.2	0.82
BABS	13.1	6.8	16.1	4.8	1.7	0.08

tive phenomena. Analysis of the relationship between specific schizophrenic symptoms and dissociative features illustrates another aspect (Table IV). Only certain symptoms are significantly correlated with various dissociative dimensions. Delusions are significantly correlated with the most of the items of SDQ and the total score of SDQ. None of other psychotic features are correlated with the various dissociative levels.

Discussion

The present cross-sectional study investigates the relationship of categorical findings of somatoform dissociative symptoms and psychotic symptoms in patients diagnosed with schizophrenia. In our study we found that somatoform dissociation was associated with more severe symptoms of schizophrenia. These findings are

TABLE IV. *Correlation between subgroups of saps, cgi and the items of SDQ.*

	Hallucinations	Delusions	Bizarre behavior	Positive formal thought disorder	CGI
SDQ1; I have trouble urinating	-0.24	0.19	-0.26	0.10	0.15
SDQ2; I dislike tastes that I usually like	0.23	0.21	0.23	0.19	0.25
SDQ3; I hear sounds from nearby as if they were coming far away	0.24	0.36*	0.25	0.24	0.20
SDQ4; I have pain while urinating	0.16	0.17	0.16	0.20	0.42**
SDQ5; My body or a part of it feels numb	0.19	0.32*	0.25	0.16	0.16
SDQ6; I have pain while urinating	0.16	0.26	0.12	0.22	0.24
SDQ7; I have an attack that resembles an epileptic seizures	0.12	0.36*	0.05	0.08	0.14
SDQ8; My body or a part of it, are insensitive to pain	0.17	0.30	0.19	0.07	0.18
SDQ9; I dislike smells I usually like	0.12	0.34	0.19	0.21	0.30
SDQ10; I feel pain in my genitals	-0.06	0.08	-0.19	0.16	0.06
SDQ11; I cannot hear for a while as I am a deaf	-0.04	0.35*	0.07	0.14	0.13
SDQ12; I cannot see for a while as I am a blind	-0.12	0.11	-0.07	0.14	0.03
SDQ13; I see things around me differently than usual	0.18	0.10	0.12	0.11	0.02
SDQ14; I am able to smell much better or worse	0.06	0.22	0.02	0.05	0.05
SDQ15; It is as if my body, or part of it, has disappeared	-0.04	0.10	0.09	0.22	-0.11
SDQ16; I cannot swallow, or can only swallow with great difficulty	-0.04	0.08	0.02	0.14	-0.04
SDQ17; I cannot sleep for nights on end, but remain very active during the day.	-0.23	-0.05	-0.15	-0.20	0.18
SDQ18; I cannot speak (or only with great effort) or I can only whisper	0.13	0.30*	0.22	0.19	0.31*
SDQ19; I am paralyzed for a while	0.11	0.33*	0.13	0.19	0.09
SDQ20; I grow stiff for a while	0.16	0.09	0.01	0.29	0.25*
Total SDQ					

** Significant at the 0.05 level (one- tailed); ** Significant at the 0.01 level (one- tailed).*

consistent with the studies that revealed high dissociation were also confronted with a more severe episode of schizophrenia [16 18 20]. In our study we also find a close relationship between positive symptoms of schizophrenia and somatoform dissociative symptoms [18 20 45]. Some authors hypothesize that the findings of consistently elevated scores on DES in schizophrenic sample with high positive symptoms may not be reliable, it could be the result of shared item content [34]. Moreover, some authors suggested that delusional patients can have problems in understanding the items of DES, and it can be difficult to distinguish dissociative phenomena from delusions [35]. Another issue is that when DES is used, somatoform manifestations of dissociative processes have not been considered [34].

As a result of these comments in our study we used the SDQ (Somatoform Dissociative Questionnaire) to measure dissociative symptoms more appropriately and also to cover somatoform manifestation of dissociative symptoms. Our findings on SDQ are confirming the previously reported assumption that high dissociation was also confronted with a more severe episode of schizophrenia and there is a relationship between the positive symptoms of schizophrenia and dissociative symptoms.

The correlation between delusions and some items of the SDQ reported by our sample merit some attention. Janet had reportedly viewed, dissociation as being intrinsically pathological and causally bound to unresolved traumatic memories [46]. Freud proposed in collaboration with Breuer that the dissociative process was

the result of repression of traumatic material in unconscious [46]. In our study we suggest that the impact of delusions on a particular individual might cause stressful events as similar as to unresolved traumatic memories. The degree of experienced distress may depend on many variables, including the degree of current psychiatric illness. As a result of distress that is caused by delusions somatoform dissociative symptoms occur as a coping mechanism. For example authors recommend that in amnestic dissociation amnesia occurs as a coping mechanism for the trauma. In our study it is interesting to see that there is a correlation between delusions and the items 'I cannot hear for a while as I am a deaf', 'I cannot speak or I can only whisper', 'I am paralyzed for a while'. According to this correlation dissociation may be functional, providing a source of resilience or response to schizophrenic symptoms. Cases were reported where even severe dissociative symptoms such as alternate personalities and amnesic episodes disappeared when the psychotic disorder was successfully treated [47]. Moreover Giese et all proposed that dissociation might arise as a defense against the "disorganizing pressure of abnormal affect" in patients with psychotic mood disorders or that psychotic symptoms might lower the threshold for the expression of dissociation [48]. As a result of our findings we suggest that especially positive symptoms of schizophrenia may cause distress on individuals and because of this distress accompanying somatoform dissociative symptoms may increase. Psychotic experiences itself might be stressful events that cause somatoform dissociative symptoms. Another possible explanation might be that both psychotic and dissociative manifestations could be an independent result of congenital vulnerability. Walker et al hypothesized that some congenital vulnerability for schizophrenia may be associated with impaired coping mechanisms [49]. Thus, an individual who is at risk for schizophrenia may also be at risk for more somatoform dissociative experiences. Given of the reports on dissociation in schizophrenia, our findings could resemble the previously reported assumption that psychological and neurobiological coping mechanisms may be significantly impaired by schizophrenia itself and also dissociative phenomena might be possible inherence in schizophrenia[26]. One obvious clinical implication is that all clients with psychotic symptoms or diagnoses should be asked about dissociative experiences. Although there are many studies that research the association between positive and negative symptoms of schizophrenia and dissociation, there is no systematic study that evaluate the association between insight of schizophrenia and dissociation. In our study we aimed to investigate the association between insight of schizophrenia and dissociation as well. The existing findings suggest that dissociative symptoms are related to severe psychotic symptoms. In the present study we investigate whether there is any differences concerning insight between participants with greater dissociation and low dissociation in schizophrenic population. In our study we reveal that there is no difference of insight among the participants with higher levels and lower levels of dissociative symptoms.

Studies published to date all identify a substantial subgroup of individuals in treatment for schizophrenia who exhibit high dissociation scores. Even carefully interpreting our data, there is no significant association between insight of schizophrenia and somatoform dissociative experiences; therefore no differences are accepted about insight in the subgroup of schizophrenia which includes high dissociators. Investigating whether psychotic symptoms are related to the development of somatoform dissociative symptoms is not only important theoretically but has crucial clinical implication in relation to the accurate assessment, formulation and treatment of psychotic disorders. Determination of the relationship between somatoform dissociative symptoms and psychotic symptoms is also important to develop an appropriate intervention. For example if delusions seems to be related to maintenance distress that cause somatoform dissociation as a coping mechanism, then these beliefs could be targeted in therapy. Moreover, it would also appear to be important to assess for the presence of somatoform dissociative symptoms in individuals presented with schizophrenia symptoms. Subsequent interventions could then focus on teaching different strategies for reducing the distress of symptoms. While the results of the present study are intriguing, its limitations should also be noted. In our study patients with emotional abuse could not be objectively determined.

Clearly, there is a need for further research to expand upon the initial findings observed in the present study.

More specifically, there is a need for research to replicate this study using a sample with posttraumatic stress disorder (PTSD) and trauma history, to map the relationship between somatoform dissociation and specific types of schizophrenia symptoms in more detail and to explore how dissociation and insight towards psychotic experiences are related.

Future studies employing two groups; one of them is consisting of people with schizophrenia diagnoses with trauma or post-traumatic stress disorder and the other group is consisting of people with schizophrenia diagnoses but without trauma or post-traumatic stress disorder are needed to compare and to develop our understanding.

Conflict of interest

None.

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