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Contents

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Dyslexia and psychopathological symptoms in Italian university students: a higher risk for anxiety disorders in male population?

Summary

Objectives

Although socio-emotional problems are well documented in children and adolescents with dyslexia, little is known about the psychopathological consequences that the dyslexia may have in university students. It is possible to hypothesize a significant discouragement in dyslexics enrolled at university, as a result of their learning difficulties, which may result in psychopathological disorders secondary to these difficulties. This study, for the first time, administered the Self Administrated Psychiatric Scales for Children and Adolescents (SAFA) test to university students and investigated whether male and female university students with dyslexia demonstrated more psychopathological symptoms than males and females without dyslexia.

Methods

This study involved a total of 80 monolingual Italian university students: 27 students with dyslexia (16 males and 11 females) and 53 non-dyslexic students (21 males and 32 females). The mean age of the dyslexic group was 19.87 (SD = 1.21) and that of the control group was 21.51 (SD = 1.27). Psychiatric symptoms were examined with the standardized SAFA test. We administered to our groups the Anxiety, Depression, Obsessive-compulsive disorders, Psychogenic eating disorders, Somatic symptoms and hypochondria scales and subscales. Mann-Whitney tests were conducted to assess potential differences in the SAFA scales and subscales both between male university students with dyslexia and without dyslexia and between females with dyslexia and without dyslexia.

Results

Relative to males without dyslexia, the male students with dyslexia obtained significantly higher scores on SAFA Total Anxiety scale and on Social Anxiety, School/university Anxiety and Insecurity subscales. No significant differences were found on the SAFA scales and subscales between the two group of female university students. Examining the number of university students who fell within pathological range we found a higher number of male students with dyslexia that appeared to show psychopathological disorders on almost all the SAFA scales and subscales, relative to the control group.

Conclusions

Despite our findings should be considered as preliminary results, our study provides evidence that the psychopathological consequences of the dyslexia appear to be life-long. The present work had the strength of focusing on university students with dyslexia, that have been under-investigated to date, and of examining male and female university students with dyslexia separately. The males appear at higher risk for anxiety disorders than females with dyslexia. Thus, our results call attention to the importance of separately considering male and female university students with dyslexia when their psychiatric symptoms are investigated. Finally, our preliminary data seem to provide support to the effectiveness of the SAFA test for the identification of psychopathological conditions and for suggesting deeper examination and specific interventions in young adults.

Key words

Dyslexia • Italian university students • psychopathological symptoms • male and female

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Introduction

Although socio-emotional problems are well documented in reading disabilities in children and adolescents, little is known about the psychological features of young adults with dyslexia, especially in Italy. Thus, in the present study we focused on young adults enrolled at university. Here, we decided to use the Self Administrated Psychiatric Scales for Children and Adolescents (SAFA) test [1]. SAFA test is a standardized measure widely-used in the Italian clinical contexts for evaluating children and adolescent aged 8 to 18. This study, for the first time, adapted and administered the SAFA test to university students aged 18 to 25 and investigated whether Italian university students with dyslexia demonstrated more psychopathological symptoms than students without dyslexia.

Dyslexia is a specific learning disorder, classified among the neurodevelopmental disorders in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) [2]. Dyslexic individuals generally demonstrate slow and/or inaccurate reading, with weaknesses in decoding and spelling. Recent evidence shows improvements in phonological awareness and partial compensation of the reading difficulties occurring in adolescence and early adulthood [3 4]; nevertheless, dyslexic individuals continue to take longer to complete reading and writing tasks in academic or professional situations [5]. In today's society, fluent reading is a necessary skill for academic success and for solving various problems of everyday life [6]. Thus, individuals with dyslexia face various difficulties during their schooling and life and also typically manifest lower educational attainment and earnings in adulthood [7]. In light of these persistent reading and writing difficulties that seem to characterize the young adults with dyslexia, it is possible to hypothesize a significant discouragement in dyslexics enrolled at university, as a result of their learning difficulties, which may result in heightened anxiety and depressive symptomatology secondary to these difficulties.

Surprisingly, little research has focused on the psychological features in university students with dyslexia. Thus, in the present study we focused on this specific population. Most of the studies focused on children and adolescents, providing evidence that the reading disorder was often associated with multiple dimensions of psychopathology, such as attention deficit, anxious and depressive symptoms, psychosocial problems and externalizing behaviors [8-11]. For example, Mammarella and colleagues [12] compared Italian children with nonverbal learning disabilities (NLD), with reading disabilities (RD) and typically developing children (TD) and found that the NLD children reported more severe anxiety about school and separation than TD, and children with RD had worse depressive symptoms than those with NLD

or TD. Some authors found that Italian children with Specific Learning Disorder (SLD) [13] and with dyslexia [12 14] more often had a clinically significant level of anxiety using SAFA test, with respect to TD peers. Bonifacci and colleagues [15] evaluating the psychological profiles of Italian children with SLD, found that these children had lower self-esteem than TD children; the parents of the SLD group also rated their children as more anxious and depressed, relative to parents of control group. In a study by Scorza and colleagues [16] children and adolescents with SLD, aged between 9 and 14, obtained significantly higher internalizing and externalizing scores, relative to their peers without SLD.

Few recent studies investigated cognitive, reading and psychological features of university students with dyslexia. Hatcher and colleagues [5] found no differences on cognitive skills and significant differences in reading and writing skills between a group of university students with dyslexia and control group, with the dyslexics performing more poorly than control group. These students, relative to their peers without disabilities, have also demonstrated academic-related problems beyond their reading difficulties, including study skills [17] and note-taking skills [18]. A study conducted by Re and colleagues [19] reported significantly poorer performances in words, non-words and text reading task in Italian university students with dyslexia relative to normal reading students; despite their reading difficulties the students with dyslexia did not demonstrate difficulties in text comprehension.

Relatively little is known about anxiety and depressive symptoms specifically in young adults with dyslexia and the few studies concerning this topic show mixed results. Some studies found in adults with dyslexia elevated anxious and/or depressive symptoms relative to control groups without dyslexia [8 20 21]. Results of a recent meta-analysis by Klassen and colleagues [22] indicated that adults with dyslexia and other SLDs demonstrated higher rates of internalizing symptoms than controls, with no differences between dyslexics who were enrolled in university and who were employed and between males and females. Raised levels of apprehension and reduced levels of self-confidence, self-esteem and stability have been reported among adults with SLD [23]. The comorbidity between dyslexia and other disorders, such as dyscalculia, dysorthography, and attention deficit/hyperactivity disorder (ADHD), correlated with more severe psychological impairments [8], and a study reported that the more severe the dyslexia was, the higher the levels of obsessive-compulsive symptoms, somatization and anxiety were [24]. By contrast, some authors found equivalent psychological features between adults with and without dyslexia [23 25]. One follow-up study of children with SLD [26] found that 42% had psychological

difficulties classifiable under the Diagnostic and Statistical Manual of Mental Disorders, but those difficulties did not present until adulthood. Bruck [27] found that children with learning disabilities longitudinally followed to adulthood demonstrated improved socioemotional adjustment. As suggested by Nelson and Liebel [21], adulthood may be a time of improved emotional functioning for individuals with dyslexia.

To our knowledge, only two studies [28] [29] have investigated psychopathological problems in Italian university students with dyslexia, founding lower level of self-esteem and more depressive symptoms, somatic complaints, social difficulties [28] and attentional problems [28] [29] in these students, relative to controls; by contrast, no differences emerged between students with dyslexia and control group in terms of anxious features [28] [29].

Mixed results from a small number of empirical studies on university students with dyslexia indicate the need for further research on this topic. The present study aimed to gain more in-depth knowledge about the presence of psychiatric symptoms (i.e., anxious, depressive, obsessive-compulsive, psychogenic, and somatic symptoms) in Italian university students with dyslexia, using SAFA test. We compared these students with a control group, separating males and females. We expected that both males and females with dyslexics would exhibit significantly higher scores on the SAFA scales (on scales of anxiety, depression and somatic symptoms in particular), relative to males and females without dyslexia. We also expected that a higher number of students with dyslexia would show pathological scores on one or more SAFA scales and subscales.

Materials and methods

Participants

This study involved a total of 80 monolingual Italian university students: 27 students with dyslexia and 53 non-dyslexic students.

The group of students with dyslexia was recruited at the university center for the students with learning disabilities (Accoglienza Studenti Disabili, ASD) of the Modena and Reggio Emilia University. These students voluntarily contacted the center to receive specific information and services that the center provides to students with learning disorders. The control group was composed of students of the Modena and Reggio Emilia University who voluntarily participated in the study.

The mean age of the dyslexic group was 19.87 (SD = 1.21; range 18.75-22.42) and the group included 16 males and 11 females. The mean age of the control group was 21.51 (SD = 1.27; range 18.92-25.08) and included 21 males and 32 females. The two groups did not differ significantly on gender [$\chi2(1, n = 80) = 2.78$,

$p = .096$]. The two groups differed in age [$t(78) = -5.56$; $p = < .001$]. All students had no history of major cerebral damage, congenital malformations, visual and hearing impairments, or educational deficits. All of these students had never been seen by a neuropsychiatrist or psychologist on suspect of any neuropsychiatric disorder.

Dyslexia diagnosis met the requirements of the DSM-5 2 complied with the guidelines typically adopted by Italian clinical services [30], namely: they had normal level of general intelligence (IQ above 85), but reading performance at a clinical level. The diagnoses were distributed as follows: two (13%) males and four (36%) females had only dyslexia, and fourteen (87%) males and seven (64%) females had dyslexia combined with dysorthography and/or dyscalculia. With regard to severity of the dyslexia, five (31%) males and six (55%) females had a mild/middle dyslexia, and eleven (69%) males and five (45%) females had severe dyslexia. Severe dyslexia was defined as standardized score > 4 SD below the mean on reading tasks, which is a clinical cut-off [31].

The study was conducted in accordance with the Declaration of Helsinki. Students were informed in detail about the aims of the study, the voluntary nature of their participation, their right to withdraw from the study at any time and provided their informed written consent for participation in the study, data analysis, and data publication. According to the above-mentioned conditions, this project was not submitted to an ethical committee for approval.

Procedure

Psychiatric symptoms were examined with the standardized self-report questionnaire *Self-Administered Psychiatric Scales for Children and Adolescents* (SAFA) [1]. The SAFA test, produced and validated in Italy, is commonly used in Italian clinical contexts to assess psychopathological symptoms in subjects from 8 to 18 years, and the structure and the content of the items are very strictly related to the culture of the country [32]. This test allows a preliminary but sufficiently broad assessment of psychiatric conditions. It includes scales for Anxiety (A), Depression (D), Obsessive-compulsive disorders (O), Psychogenic eating disorders (P), Somatic symptoms and hypochondria (S), and Phobias (F). Each scale consists of different versions calibrated according to the age. In the present study, we used the version for individuals aged 11-18 years. To adapt the test to university students, we only modified the structure of the items that referred to the school, changing the word "school" with "university" (e.g., the item "When I have to go to school I often feel very nervous" was changed to "When I have to go to university I often feel very nervous"). We did not administer the Phobias scale because we were not interested in this topic.

The Anxiety Scale (SAFA-A) is composed by 50 items and it allows to assess four components of anxiety (subscales), i.e. generalized anxiety, social anxiety, separation anxiety, and school anxiety (called "school/university anxiety" in our study). The Depressive Scale (SAFA-D) is composed by 56 items and consists of seven subscales, i.e. depressed mood, anhedonia and disinterest, touchy mood, sense of inadequacy and low self-esteem, insecurity, guilt, and hopelessness. The Obsessive-compulsive symptoms scale (SAFA-O) is composed by 38 items and consists of five subscales, i.e. obsessive thoughts, compulsions and rituals, rupophobia and contamination, order and control, and doubt and indecision. The Psychogenic eating disorders scale (SAFA-P) is constituted by 30 items and four subscales, i.e. bulimic behavior, anorexic behavior, acceptance and evaluation of one's own body, and other psychological aspects (perfectionism and inadequacy). The Somatic symptoms and hypochondria scale (SAFA-S) is composed by 25 items and it allows to assess somatic symptoms (i.e. symptoms related with cardiac, gastrointestinal and respiratory systems, asthenia, sleep, general cenesthesis, and memory/concentration) and hypochondria. With regard to the psychometric properties of the battery, internal consistence and stability are respected, as SAFA shows a Cronbach's α coefficient and a split half > 0.80, while indices of each scale at the one week test–retest procedure showed a p < .01. Convergent validity and discriminatory validity were respected (p < .001).

Participant is asked to tick one among the possible answers on a 3-point scale (true, false, and partly true). The raw scores of each scale and subscale can be converted into T scores according to normative tables for age and sex. A SAFA score is considered borderline if the T score ranges between 60 and 69, while T score > 70 highlights pathological condition.

Statistical analyses

All statistical analyses were carried out using SPSS 21.0 for Windows with an alpha level of 0.05. Prior to conducting analyses, data were checked for violation of assumptions using the Kolmogorov-Smirnov test. Because distributions for some of the dependent variables were not normal, Mann-Whitney tests were conducted to assess potential differences in the SAFA scales and subscales both between male university students with dyslexia and without dyslexia and between females with dyslexia and without dyslexia. Effect sizes (r) for Mann-Whitney U tests were calculated using the formula

$$r = \frac{z}{\sqrt{N}}$$

where N is the total number of participants in the whole sample; the standard values of r for small, medium, and large effect sizes are 0.1, 0.3, and 0.5 respectively.

We also conducted a descriptive analysis of the number of university students who fell within pathological range (defined as T score > 70) on SAFA scales and subscales. Since the normative data used to convert the raw scores into T scores referred to a lower age than that of the sample considered in the present study (i.e. age 17-18 for each SAFA scale, age 14-18 for each SAFA subscale), it is important to consider this analysis as explorative.

Results

Descriptive data on all of the SAFA scales and subscales and results of statistical comparisons using Mann-Whitney tests for male university students are presented in Tables I and II.

Relative to control group, the male students with dyslexia obtained significantly higher Anxiety Total scores. Analyses of the SAFA-A subscales revealed that the scores on the Social Anxiety and School/university Anxiety were significantly higher for male students with dyslexia compared to non-dyslexic males (see Table I). No significant differences were found between the two groups on Depression Total score. Analyses of the SAFA-D subscales revealed significantly higher scores on Insecurity subscale in male students with dyslexia relative to control group (see Table I). No significant differences were found between the two groups of male students on the Obsessive-compulsive symptoms scale and subscales, on Psychogenic eating disorders scale and subscales, and on Somatic symptoms and hypochondria scale and subscales (see Table II).

Descriptive data on all of the SAFA scales and subscales and results of statistical comparisons using Mann-Whitney tests for female university students are presented in Tables III and IV.

The inspection of these data reveals that in the group of female students with dyslexia the scores on all of the SAFA scales and subscales were higher than those of females without dyslexia. Nevertheless, no significant differences were found on the SAFA scales and subscales between the two group of female students (see Tables III and IV).

The explorative examination of the number of university students who fell within pathological range (defined as T score > 70) on SAFA scales and subscales is presented in Tables V and VI. The raw scores of each scale were converted into T scores according to normative tables for 17-18 years of age; the raw scores of each subscale were converted into T scores according to normative tables for 14-18 years of age. A higher number of male students with dyslexia fell within pathological range on almost all the SAFA scales and subscales, relative to the control group. Since the normative data used to convert the raw scores into T scores referred to

TABLE I. *SAFA results (raw scores) for Anxiety (SAFA-A) and Depression (SAFA-D) Scales of male university students with dyslexia and without dyslexia.*

SAFA scales and subscales		Dyslexic group (n = 16)			Control group (n = 21)			Mann-Whitney test		
		M	SD	range	M	SD	range	U	p	r
Anxiety (SAFA-A)	Anxiety total score	14.63	12.39	0-46	6.67	6.85	0-20	95	**.024**	.37
	Generalized anxiety	3.38	4.66	1-16	1.81	2.52	0-8	131	.225	.20
	Social anxiety	5.63	4.96	0-16	1.81	2.18	0-8	88.5	**.012**	.41
	Separation anxiety	1.25	2.41	0-8	1.62	2.58	0-10	149	.501	.11
	School/university anxiety	4.38	4.69	0-14	1.43	2.77	0-10	89	**.009**	.43
Depression (SAFA-D)	Depression total score	14.00	15.85	0-50	8.10	7.71	0-24	136	.322	.16
	Depressed mood	1.75	3.26	0-12	0.67	1.46	0-6	140.5	.294	.17
	Anhedonia and dis-interest	1.00	1.79	0-6	0.67	1.32	0-4	154.5	.595	.09
	Touchy mood	1.88	2.25	0-8	2.67	2.99	0-10	149	.537	.10
	Sense of inadequacy and low self esteem	2.00	4.00	0-14	0.38	1.02	0-4	136	.173	.22
	Insecurity	5.00	4.56	0-14	2.10	3.00	0-12	99.5	**.029**	.36
	Guilt	1.25	2.52	0-8	1.05	1.75	0-4	166	.937	.01
	Hopelessness	1.13	2.83	0-10	0.57	1.12	0-4	164	.864	.03

Significant results are in bold.

Discussion

The novel contribution of the present study was to administer SAFA test to university students aged 18-25 and to compare male and female dyslexic students with control males and females respectively, on this self-report measure.

With respect to SAFA normative data available for 14-18 years of age, our males and females of the control group showed generally lower raw scores in the SAFA scales and subscales. This result is in line with the literature that shows psychological adjustments in adult age [33]. Moreover, descriptive examination of the raw scores obtained by males and females of the control group indicated that the female students showed higher scores than male students in all of the SAFA scales. These preliminary data are consistent with the SAFA normative data available for 14-18 years of age and with the literature that reports health adult females showing generally higher scores in multiple psychological dimensions (e.g., anxious features) than adult males [34].

a lower age than that of the sample considered in the present study, we underline the only descriptive value of these data.

The major finding of this study has to do with the differences between university students with dyslexia and control group observed in male population. Male university students with dyslexia showed significantly higher levels of total anxiety, relative to controls; this high score on the SAFA anxiety scale in male dyslexics appeared to be due to social and school/university anxiety problems. In effect, the examination of SAFA anxiety subscales indicated that the male students with dyslexia reported significantly higher levels of social anxiety, relative to males without dyslexia. This result is in line with other reports of young adults with dyslexia [20,21] and Italian university dyslexics [28] having social problems, including difficult relationships with peers, such as fear of being unappreciated by others. This is the first study that seems to show that social problems might affect more males than females with dyslexia enrolled at university.

The male university students with dyslexia showed significantly higher levels of school/university anxiety, relative to males without dyslexia. This result seems to suggest that male university students with dyslexia may encounter several difficulties when their academic work demands good reading and writing skills, and this can

TABLE II. *SAFA results (raw scores) for Obsessive-compulsive symptoms (SAFA-O), Psychogenic eating disorders (SAFA-P) and Somatic symptoms and hypochondria (SAFA-S) Scales of male university students with dyslexia and without dyslexia.*

SAFA scales and subscales		Dyslexic group (n = 16)			Control group (n = 21)			Mann-Whitney test		
		M	SD	range	M	SD	range	U	p	r
Obsessive-compulsive symptoms (SAFA-O)	Obsessive-compulsive symptoms total score	9.38	9.51	0-30	6.57	8.25	0-28	134	.290	.17
	Obsessive thoughts	2.75	5.05	1-18	0.95	2.42	0-8	135	.195	.21
	Compulsions and rituals	2.25	2.72	0-8	1.81	2.52	0-8	149.5	.542	.10
	Rupophobia and contamination	0.38	1.50	0-6	1.05	1.75	0-6	125.5	.070	.30
	Order and control	1.00	1.79	0-6	1.05	1.96	0-6	165.5	.924	.02
	Doubt and indecision	3.00	2.83	0-10	1.71	2.85	0-8	116.5	.088	.28
Psychogenic eating disorders (SAFA-P)	Psychogenic eating disorders total score	7.13	8.79	0-36	5.05	4.22	0-14	154.5	.675	.07
	Bulimic behavior	1.13	2.53	0-10	1.90	2.05	0-6	118.5	.094	.28
	Anorexic behavior	1.25	2.62	0-10	0.48	1.08	0-4	145.5	.358	.15
	Acceptance/evaluation of the body	1.00	2.42	0-8	0.57	1.43	0-4	159	.667	.07
	Other psychological aspects	3.75	3.64	0-14	2.10	2.49	0-8	113	.078	.29
Somatic symptoms and hypochondria (SAFA-S)	Somatic symptoms and hypochondria total score	4.50	5.49	0-20	1.90	3.32	0-14	118	.102	.27
	Somatic symptoms	4.50	5.49	0-20	1.71	2.85	0-12	117	.095	.27
	Hypochondria	0.00	0.00	0-0	0.19	0.60	0-2	152	.211	.21

generate fear and worry concerning academic activities and achievement when they compare their university performance with that of their peers without dyslexia. The female university students with dyslexia did not significantly differ by the female students without dyslexia on this subscale; thus, as for the social anxiety, the university performance anxiety appears to affect the male university population with dyslexia. Furthermore, the percentages of male students who fell within pathological range in the SAFA anxiety scale and subscales appeared somewhat higher in the dyslexic group than those seen in male control group. The most frequent psychiatric disorders among male students with dyslexia appeared to be social and school/university anxiety. Despite this descriptive analysis seems to yield suggestive results of the presence of more psychiatric disorders among male university students with dyslexia with respect to controls, these results should

be interpreted carefully. In effect, the classification of the participants in a pathological category on the basis of normative data that refer to a lower age group may be risky. Nevertheless, it remains interesting the relative comparison between male dyslexic students and male non-dyslexic students: in relative terms, a higher number of males with dyslexia appears to show a more severe symptomatology in the SAFA test, relative to males without dyslexia. Considering also the psychological adjustments that characterize the adult age [32], it is possible to hypothesize that the male dyslexic students falling within clinical range in the SAFA scales and subscales (on the basis of normative data available for 14-18 years of age) would fall within clinical category if their T scores were calculated on the basis of normative data referred to adult age group.
With regard to the SAFA depressive scale and subscales, we found that the male university students with

TABLE III. *SAFA results (raw scores) for Anxiety (SAFA-A) and Depression (SAFA-D) Scales of female university students with dyslexia and without dyslexia.*

		Dyslexic group (n = 11)			Control group (n = 32)			Mann-Whitney test		
SAFA scales and subscales		M	SD	range	M	SD	range	U	p	r
Anxiety (SAFA-A)	Anxiety total score	18.36	19.41	0-56	14.36	11.92	2-42	164	.737	.05
	Generalized anxiety	5.27	7.66	0-20	5.81	6.63	0-20	152.5	.502	.10
	Social anxiety	6.18	5.33	0-14	3.88	3.48	0-12	136	.257	.17
	Separation anxiety	1.82	3.16	0-8	2.25	2.58	0-10	133.5	.208	.19
	School/university anxiety	5.09	5.01	0-14	2.44	3.76	0-14	118	.089	.26
Depression (SAFA-D)	Depression total score	12.18	12.70	0-38	9.06	7.57	0-28	169.5	.855	.03
	Depressed mood	1.82	3.74	0-12	0.63	1.39	0-4	156	.433	.12
	Anhedonia and disinterest	0.91	1.64	0-4	0.25	0.67	0-2	146	.193	.20
	Touchy mood	2.18	1.89	0-6	2.38	2.56	0-10	172.5	.919	.02
	Sense of inadequacy and low self esteem	0.91	2.07	0-6	0.50	1.83	0-10	164	.579	.08
	Insecurity	5.64	6.38	0-14	4.75	3.62	0-14	162.5	.702	.06
	Guilt	0.55	0.93	0-2	0.13	0.49	0-2	139	.064	.28
	Hopelessness	0.18	0.60	0-2	0.38	0.94	0-4	164	.579	.08

dyslexia showed significantly higher levels of insecurity, relative to the males without dyslexia. This finding is consistent with other authors' reports of Italian university students with dyslexia having depressive symptoms [28] and stress again the need to separate male and female university students with dyslexia when their psychological features and psychiatric symptoms are investigated. In contrast with other studies that found low levels of self-esteem and high levels of depressive mood in young adults with dyslexia [22][23] and university dyslexic students [28], we did not find differences between our groups in these emotional features. It is worth noting that a pathological level of depression was reported by higher number of males with dyslexia with respect to control group; among male students with dyslexia, the most frequent psychiatric disorders detected on the SAFA depressive scale and subscales appeared to be sense of inadequacy/low self-esteem and insecurity. However, this classification of our participants in clinical range has only a descriptive value and should be treated with caution, because it was performed on the basis of normative data that referred to a lower age group.

The discrepancy that we highlighted between the males and females with dyslexia may be due to differences in the severity of their reading disability [24]. In effect, among the male dyslexics only five students had a mild/middle dyslexia (*vs* six females), while eleven male students had a severe dyslexia (*vs* five females). The higher percentage of male dyslexics showing comorbidity between dyslexia and other disorders (i.e. dysorthography and/or dyscalculia), relative to females with dyslexia, also might explain the more severe psychopathological impairments that seem to characterize the male students [8]. Another possible explanation may have to do with differences in the way to express the emotional states [35][36] and differences in the coping ability. Some studies have shown women to exhibit a wider repertoire of coping strategies than men [37] and more women than men to play multiple social roles [38]. Cheng and colleagues [33] suggested that the positive association between coping flexibility and psychological adjustment was stronger for women (*vs* men). It is also possible to hypothesize that the males with dyslexia were more worried about their academic achievements and professional future than females, with negative consequences on their emotional functioning, being the professional realization an important life purpose in the male population in general. Thus, the question remains open and further research is needed to explain why more psychological problems could affect male university students with dyslexia with respect to female students.

No differences emerged between our male and female university students with dyslexia and males and females without dyslexia respectively in terms of obsessive-compulsive, psychogenic and somatic symptoms. These data are in contrast with other studies that found higher levels of obsessive-compulsive symptoms and somatization in young adults with dyslexia [24]

TABLE IV. *SAFA results (raw scores) for Obsessive-compulsive symptoms (SAFA-O), Psychogenic eating disorders (SAFA-P) and Somatic symptoms and hypochondria (SAFA-S) Scales of female university students with dyslexia and without dyslexia.*

SAFA scales and subscales		Dyslexic group (n = 11)			Control group (n = 32)			Mann-Whitney test		
		M	SD	range	M	SD	range	U	p	r
Obsessive-compulsive symptoms (SAFA-O)	Obsessive-compulsive symptoms total score	10.18	12.50	0-42	6.63	7.17	0-26	157.5	.599	.08
	Obsessive thoughts	1.82	3.16	1-10	0.56	1.16	0-4	143	.230	.18
	Compulsions and rituals	2.18	3.52	0-12	1.63	2.98	0-12	149	.397	.13
	Rupophobia and contamination	0.55	0.93	0-2	0.56	1.27	0-4	165.5	.680	.06
	Order and control	2.18	3.28	0-8	1.44	2.11	0-6	167.5	.788	.04
	Doubt and indecision	3.45	4.82	0-10	2.31	2.92	0-10	171.5	.891	.02
Psychogenic eating disorders (SAFA-P)	Psychogenic eating disorders total score	8.00	5.66	0-18	7.25	6.64	0-28	153	.518	.10
	Bulimic behavior	1.27	2.41	0-6	1.13	2.03	0-8	173.5	.932	.01
	Anorexic behavior	1.64	1.96	0-4	1.75	2.31	0-8	175.5	.988	.00
	Acceptance/evaluation of the body	0.91	1.38	0-4	2.00	2.87	0-8	148.5	.394	.13
	Other psychological aspects	4.18	2.60	0-8	2.38	2.98	0-10	109.5	.054	.29
Somatic symptoms and hypochondria (SAFA-S)	Somatic symptoms and hypochondria total score	4.73	6.47	0-22	3.63	4.35	0-16	160	.645	.07
	Somatic symptoms	4.00	5.93	0-20	3.38	3.98	0-14	175.5	.988	.00
	Hypochondria	0.73	1.01	0-2	0.25	0.67	0-2	134	.083	.26

or observed more somatic complaints in Italian university students with dyslexia [28] relative to controls. This discrepancy between the present results and findings reported elsewhere in the literature may be due to differences in sample size, sample criteria selection, or task used to assess psychopathological symptoms. Also the differences between our dyslexic and control groups in terms of age may have influenced these results. Our students with dyslexia were assessed at the start of their university careers, before taking any exams and experiencing academic failure, and they consequently could still show positive attitudes to their university courses [28], differently by the students without dyslexia that were assessed during the first years of university studies.

This heterogeneity in terms of age represents the first limitation of the present study; it may have impacted the ability to detect differences on some SAFA scales and subscales between male and female students with dyslexia and control groups. There is a need for longitudinal studies aimed to understanding the extent to which the university career of dyslexic students may impact on their psychopathological outcomes. Second limitation of this work has to do with the sample size that was small; thus, the generalizability of our findings should be carefully considered. Replication of the present preliminary findings with larger samples is clearly needed in the future to test the presence of more psychiatric disorders in male university students with dyslexia, relative to the female students with dyslexia. Third, the classification of the participants in a pathological range was performed on the basis of normative data that referred to a lower age group and thus this classification may not represent a realistic description of the severity of the

TABLE V. *Number of male and female university students with and without dyslexia showing T-scores > 70 (clinical range performed on the basis of normative data for 14-18 years of age) on the SAFA Anxiety and Depression scales and subscales.*

SAFA scales and subscales		Male dyslexic group (n = 16) N	Male control group (n = 21) N	Female dyslexic group (n = 11) N	Female control group (n = 32) N
Anxiety (SAFA-A)	Anxiety total score	-	-	-	-
	Generalized anxiety	1	-	-	-
	Social anxiety	3	-	1	-
	Separation anxiety	-	1	-	-
	School/university anxiety	3	-	-	-
Depression (SAFA-D)	Depression total score	-	-	-	-
	Depressed mood	1	-	-	-
	Anhedonia and disinterest	1	-	-	-
	Touchy mood	-	-	-	-
	Sense of inadequacy and low self esteem	2	-	-	1
	Insecurity	2	1	-	-
	Guilt	1	-	-	-
	Hopelessness	1	-	-	-

psychopathology. Future research should provide SAFA standardized scores for young adults, since the SAFA test is a measure widely-used in Italian clinical contexts and to date its standardization is available only for children and adolescents up to 18 years of age. Four, the associations between the psychopathological symptoms that we found among male dyslexic students and the severity of their dyslexia was not examined. This issue merits further exploration in future research, as well as investigating other factors that could explain the higher risk for psychiatric disorders in male dyslexics or why female university students with dyslexia appear less affected by psychological distress.

Conclusions

Despite these limitations and our findings should be considered as preliminary results, our study provides evidence that the psychopathological consequences of the dyslexia appear to be life-long. The present work had the strength of focusing on university students with dyslexia, that have been under-investigated to date, and it differed from previous studies because it examined separately male and female university students with dyslexia. Thus, our results call attention to the importance of separately considering male and female university students with dyslexia when their psychological features and psychiatric symptoms are investigated. Finally, our preliminary data seem to provide support to the effectiveness of the SAFA test as valuable method for the evaluation of psychopathological conditions and for suggesting referring points for further investigations not only in children and adolescents [32] but also in university students with dyslexia.

TABLE VI. *Number of male and female university students with and without dyslexia showing T-scores > 70 (clinical range performed on the basis of normative data for 14-18 years of age) on the SAFA Obsessive-compulsive symptoms, Psychogenic eating disorders and Somatic symptoms and hypochondria scales and subscales.*

SAFA scales and subscales		Male dyslexic group (n = 16)	Male control group (n = 21)	Female dyslexic group (n = 11)	Female control group (n = 32)
		N	N	N	N
Obsessive-compulsive symptoms (SAFA-O)	Obsessive-compulsive symptoms total score	-	-	-	-
	Obsessive thoughts	1	-	-	-
	Compulsions and rituals	-	-	-	-
	Rupophobia and contamination	-	-	-	-
	Order and control	-	-	-	-
	Doubt and indecision	1	2	-	-
Psychogenic eating disorders (SAFA-P)	Psychogenic eating disorders total score	1	-	-	-
	Bulimic behavior	1	-	-	-
	Anorexic behavior	1	-	-	-
	Acceptance/evaluation of the body	1	-	-	5
	Other psychological aspects	1	-	-	-
Somatic symptoms and hypochondria (SAFA-S)	Somatic symptoms and hypochondria total score	-	-	-	-
	Somatic symptoms	1	-	-	-
	Hypochondria	-	-	-	-

Conflict of Interest

The authors are no conflict of interests.

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Reliability of the Italian version of the Brief (21-item) Prodromal Questionnaire (IPQ-B) for psychosis risk screening in a young help-seeking population

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Summary

Objective

Among current screeners for psychosis-risk mental states, the Prodromal Questionnaire-Brief (21 items) (PQ-B) is used. We aimed to assess reliability of the Italian version of the PQ-B in a young help-seeking sample. Methods – We included 151 individuals, aged 13-35 years, seeking help at the Reggio Emilia outpatient mental health services in a large semirural catchment area (550.000 inhabitants). Participants completed the Italian version of the PQ-B (iPQ-B) and were subsequently evaluated with the Comprehensive Assessment of At-Risk Mental States (CAARMS). We examined test-retest reliability, internal consistency and diagnostic accuracy (i.e. sensitivity, specificity, positive and negative predictive values, and positive and negative likelihood ratios) between PQ-B and CAARMS UHR-defined criteria using coefficient of stability (k), Cronbach's alpha and Cohen's kappa, respectively.

Results

The iPQ-B showed excellent short term test-retest reliability (k = 0.891), high internal consistency (α = 0.876) and acceptable diagnostic accuracy (sensitivity = 91.4% at the proposed cut-off of ≥ 6 on total distress score).

Conclusions

Psychometric properties of the iPQ-B were satisfactory. The iPQ-B is a suitable screening tool for routine use in mental health care services. Indeed, it is short and therefore easy to implement in routine assessment of early psychosis.

Key words

Ultra-High Risk • Prodrome • Early Detection • Screening • Psychosis • Schizophrenia • Assessment

Introduction

Specialist treatment for Ultra-High Risk (UHR) mental states of psychotic disorders can effectively reduce psychosis conversion rate [1]. However, identifying individuals with UHR remains a significant challenge [2]. Focusing mainly on attenuated positive symptoms, McGorry et al. (2003) [3] proposed the following UHR criteria: (a) Attenuated Psychotic Symptoms (APS), which represent subthreshold positive symptoms; (b) Brief Limited Intermittent Psychotic Symptoms (BLIPS), which are transient positive symptoms that spontaneously disappear within 1 week; and (c) Genetic Risk and Functioning Deterioration syndrome (GRFD), a trait/state risk condition characterized by a history of psychosis in first-degree family members or a schizotypal personality disorder in the subject together with a low functioning for at least 1 month [4]. Translating the early detection/intervention research framework into clinical care pathways relies, in part, on the recognition of these young people at the earliest point in their help-seeking trajectory [5][6].

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Although structured interviews, such as the Comprehensive Assessment of At-Risk Mental States (CAARMS) [4] or the Structured Interview for Prodromal States (SIPS) [7], can reliably diagnose UHR states [8], they generally require extensive training to be administered and can take hours to be completed [9]. Therefore, an array of self-report screening tools has been developed to preselect potential UHR individuals for subsequent in-depth clinical assessment [10]. Accumulating empirical evidence suggests that these self-report instruments are sufficiently sensitive and specific to detect the majority of those subjects that merit a more comprehensive evaluation for UHR or First-Episode Psychosis (FEP) [11]. The 92-item Prodromal Questionnaire (PQ-92) [12] is the most commonly used screener for psychosis risk in the literature [10]. However, this instrument remains rather time-consuming for routine screening [9]. Thus, Loewy et al. (2011) [13] developed a Brief 21-item version (PQ-B), focusing on the positive symptom items of the PQ-92, since they are the essential ones for interview-based diagnoses of symptomatic prodromal syndromes (i.e. APS and BLIPS). A cut-off of ≥ 6 on the PQ-B total distress score predicted SIPS-UHR/psychosis diagnosis with high sensitivity (88%) and good specificity (68%) [13]. Overall, early intervention in young people at UHR for developing psychosis are less widespread in Italy than in other European countries [14]. In particular, some pilot programmes have focused specifically on early detection and intervention in UHR young adults, aged 18-30 years (see Cocchi et al., 2008: "Programma 2000") [15]. Therefore, translating an easy and suitable self-report screening instrument (such as the PQ-B) into Italian language could lead to the implementation of specific services for UHR individuals within the framework of Italy's National Health Service. To the best of our knowledge, no psychometric evaluation study on the PQ-B in an Italian clinical sample has been reported in the literature to date. Thus, the current study was designed to test the reliability of the Italian version of the PQ-B (iPQ-B) in identifying young people at UHR of psychosis in a help-seeking community population.

Materials and methods

Setting
As detailed in Raballo et al. (2014) [16], the "Reggio Emilia At-Risk Mental States" (ReARMS) project is an early detection/intervention infrastructure implemented under the aegis of the "Regional Project on Early Detection and Intervention in Psychosis" in the Reggio Emilia Department of Mental Health. This project aims: (a) to identify people with FEP and individuals at high clinical risk according to UHR criteria [4] among help-seeking adolescents and young adults (13-35 years) through a mul-

ti-step procedure, and (b) to provide evidence-based interventions that are supposed to be effective in UHR/FEP subjects (i.e. intensive case management, family psycho-education, individual cognitive-behavioral therapy, pharmacological treatment [as appropriate]). The first filtering step included a pre-clinical triage service, conducted by trained non-medical personnel, using the "Screening Schedule" for Psychosis (SS) [17]. Such triage was mainly meant to maximise appropriate referrals to the ReARMS project and avoid over-inclusion of subjects clearly outside the severity threshold for presumed psychosis risk spectrum. The second step included a comprehensive multidimensional battery including the iPQ-B, followed by the administration of the CAARMS to define the clinical status (i.e. psychosis risk, psychosis, or neither) and the consequent access to the ReARMS clinical-therapeutic pathways [16]. Complying with the declaration of Helsinki, relevant ethical approvals were locally sought for the study.

Participants
For the purpose of the study (i.e. field-testing the reliability of the iPQ-B in identifying UHR mental states), we focused on adolescent and young adult help-seekers, aged 13-35 years, who were consecutively referred to all of child/adolescent and adult mental health services of the Reggio Emilia Department of Mental Health between September 2012 and September 2017. In the present research, inclusion criteria were: (a) specialist help-seeking; (b) age between 13 and 35 years; and (c) presence of UHR criteria defined by the CAARMS (i.e. APS, BLIPS, and/or GRFD) [4] at the initial assessment. Individuals who were below the CAARMS UHR threshold were considered as CAARMS-UHR negative cases. The exclusion criteria were modeled on the psychometric approach adopted by Loewy et al. (2011) [13] in the validation study of the original version of the PQ-B: (a) history of past frank psychotic episodes, either affective or schizophrenic (as described in the DSM-5) [18]; (b) history of previous exposure to antipsychotics; (c) current substance dependence; (d) severe learning disability or known mental retardation (Intelligence Quotient < 70); (e) neurological disease or any other medical disorder associated with psychiatric symptoms; (f) poor fluency in the Italian language; and (g) residence outside the catchment area. All these exclusion criteria have been applied after the SS administration in order to select a sample comparable to one assessed by Loewy et al. (2011) [13].

All help-seekers entering the ReARMS project agreed to participate to the research and gave their informed consent to the psychopathological evaluation, composed – among others [16] – by the CAARMS (approved Italian translation by Raballo et al., 2013 [CAARMS-ITA]) [19] and the PQ-B (authorized Italian version by Preti and Rabal-

Io, 2011 [iPQ-B]) [20] (Appendix I). While in chronological terms the iPQ-B was administered after the SS for psychosis, the meaning of its administration was different (i.e. zooming in on prodromal experiences before the CAARMS-based interview) and the CAARMS assessors were blinded to the iPQ-B scores.

Appendix I
The Italian version of the Brief (21-item) Prodromal Questionnaire (iPQ-B)

(Source: Loewy RL, Pearson R, Vinogradov S, et al. *Psychosis risk screening with the Prodromal Questionnaire-Brief version (PQ-B)*. Schizophr Res 2011;129:42-6).
(Authorized Italian version by Preti A, Raballo A. Studio CAPIRE. *Cagliari Psychosis: Investigation on Risk Emergence*, 2011).

Per cortesia, indica se hai avuto i seguenti pensieri, sentimenti ed esperienze <u>nel corso dell'ultimo mese</u> segnando "Sì" o "No" per ciascuna domanda. **Non tenere conto di esperienze che si verificano sotto influenza di alcol, droghe o farmaci che non ti erano stati prescritti**. Se rispondi "Sì" a una domanda indica anche quanto disagio ti ha causato quell'esperienza [quanto spiacevole è stata per te quell'esperienza].

1.   Capita talvolta che gli ambienti abituali ti sembrino strani, confusi, minacciosi o irreali?
☐ **SI**   ☐ **NO**   *Se Sì:* Quando capita, mi sento spaventato, preoccupato, o comunque la cosa mi crea problemi: ☐ Fortemente in disaccordo   ☐ In disaccordo
☐ Indifferente   ☐ D'accordo   ☐ Fortemente d'accordo

2.   Hai mai sentito suoni insoliti come esplosioni, schiocchi, sibili, schianti o squilli nelle tue orecchie?
☐ **SI**   ☐ **NO**   *Se Sì:* Quando capita, mi sento spaventato, preoccupato, o comunque la cosa mi crea problemi: ☐ Fortemente in disaccordo   ☐ In disaccordo
☐ Indifferente   ☐ D'accordo   ☐ Fortemente d'accordo

3.   Le cose che vedi ti appaiono differenti dal modo in cui sono abitualmente (più luminose o più scure, più larghe o più piccole, comunque cambiate in qualche modo)?
☐ **SI**   ☐ **NO**   *Se Sì:* Quando capita, mi sento spaventato, preoccupato, o comunque la cosa mi crea problemi: ☐ Fortemente in disaccordo   ☐ In disaccordo
☐ Indifferente   ☐ D'accordo   ☐ Fortemente d'accordo

4.   Hai avuto esperienze con la telepatia, le forze psichiche o la predizione del futuro?
☐ **SI**   ☐ **NO**   *Se Sì:* Quando capita, mi sento spaventato, preoccupato, o comunque la cosa mi crea problemi: ☐ Fortemente in disaccordo   ☐ In disaccordo
☐ Indifferente   ☐ D'accordo   ☐ Fortemente d'accordo

5.   Ti sei sentito come se non avessi controllo sulle tue idee o pensieri?
☐ **SI**   ☐ **NO**   *Se Sì:* Quando capita, mi sento spaventato, preoccupato, o comunque la cosa mi crea problemi: ☐ Fortemente in disaccordo   ☐ In disaccordo
☐ Indifferente   ☐ D'accordo   ☐ Fortemente d'accordo

6.   Hai difficoltà a spiegarti, perché fai troppe digressioni o devi dal filo del discorso quando parli?
☐ **SI**   ☐ **NO**   *Se Sì:* Quando capita, mi sento spaventato, preoccupato, o comunque la cosa mi crea problemi: ☐ Fortemente in disaccordo   ☐ In disaccordo
☐ Indifferente   ☐ D'accordo   ☐ Fortemente d'accordo

7.   Hai l'impressione o la convinzione di essere dotato in modo particolare o di possedere un talento speciale?
☐ **SI**   ☐ **NO**   *Se Sì:* Quando capita, mi sento spaventato, preoccupato, o comunque la cosa mi crea problemi: ☐ Fortemente in disaccordo   ☐ In disaccordo
☐ Indifferente   ☐ D'accordo   ☐ Fortemente d'accordo

8.   Hai l'impressione che altre persone ti stiano tenendo d'occhio o parlino di te?
☐ **SI**   ☐ **NO**   *Se Sì:* Quando capita, mi sento spaventato, preoccupato, o comunque la cosa mi crea problemi: ☐ Fortemente in disaccordo   ☐ In disaccordo
☐ Indifferente   ☐ D'accordo   ☐ Fortemente d'accordo

9.   Hai talvolta sensazioni strane sulla pelle o appena al di sotto, come insetti che camminano?
☐ **SI**   ☐ **NO**   *Se Sì:* Quando capita, mi sento spaventato, preoccupato, o comunque la cosa mi crea problemi: ☐ Fortemente in disaccordo   ☐ In disaccordo

10. Ti capita talvolta di essere distratto all'improvviso da suoni distanti dei quali generalmente non sei consapevole? [ai quali normalmente non presti attenzione]
☐ **SI**   ☐ **NO**   *Se Sì:* Quando capita, mi sento spaventato, preoccupato, o comunque la cosa mi crea problemi: ☐ Fortemente in disaccordo   ☐ In disaccordo
☐ Indifferente   ☐ D'accordo   ☐ Fortemente d'accordo

11. Hai la sensazione che qualche persona o forza ti stia accanto anche se tu non puoi vederla?
☐ **SI**   ☐ **NO**   *Se Sì:* Quando capita, mi sento spaventato, preoccupato, o comunque la cosa mi crea problemi: ☐ Fortemente in disaccordo   ☐ In disaccordo
☐ Indifferente   ☐ D'accordo   ☐ Fortemente d'accordo

12. Ti preoccupi talvolta del fatto che qualcosa nella tua mente non funzioni correttamente?
☐ **SI**   ☐ **NO**   *Se Sì:* Quando capita, mi sento spaventato, preoccupato, o comunque la cosa mi crea problemi: ☐ Fortemente in disaccordo   ☐ In disaccordo
☐ Indifferente   ☐ D'accordo   ☐ Fortemente d'accordo

13. Hai mai avuto la sensazione di non esistere, o che il mondo non esiste, o di essere morto?
☐ **SI**   ☐ **NO**   *Se Sì:* Quando capita, mi sento spaventato, preoccupato, o comunque la cosa mi crea problemi: ☐ Fortemente in disaccordo   ☐ In disaccordo
☐ Indifferente   ☐ D'accordo   ☐ Fortemente d'accordo

14. Qualche volta ti sei sentito confuso sulla natura reale o immaginaria di un'esperienza?
☐ **SI**   ☐ **NO**   *Se Sì:* Quando capita, mi sento spaventato, preoccupato, o comunque la cosa mi crea problemi: ☐ Fortemente in disaccordo   ☐ In disaccordo
☐ Indifferente   ☐ D'accordo   ☐ Fortemente d'accordo

15. Hai delle idee o delle convinzioni che altre persone troverebbero insolite o bizzarre?
☐ **SI**   ☐ **NO**   *Se Sì:* Quando capita, mi sento spaventato, preoccupato, o comunque la cosa mi crea problemi: ☐ Fortemente in disaccordo   ☐ In disaccordo
☐ Indifferente   ☐ D'accordo   ☐ Fortemente d'accordo

16. Senti che parti del tuo corpo sono cambiate in qualche modo, o che funzionano in modo diverso?
☐ **SI**   ☐ **NO**   *Se Sì:* Quando capita, mi sento spaventato, preoccupato, o comunque la cosa mi crea problemi: ☐ Fortemente in disaccordo   ☐ In disaccordo
☐ Indifferente   ☐ D'accordo   ☐ Fortemente d'accordo

17. I tuoi pensieri sono talvolta così forti che puoi quasi udirli?
☐ **SI**   ☐ **NO**   *Se Sì:* Quando capita, mi sento spaventato, preoccupato, o comunque la cosa mi crea problemi: ☐ Fortemente in disaccordo   ☐ In disaccordo
☐ Indifferente   ☐ D'accordo   ☐ Fortemente d'accordo

18. Ti capita di provare sfiducia o essere sospettoso riguardo alle altre persone?
☐ **SI**   ☐ **NO**   *Se Sì:* Quando capita, mi sento spaventato, preoccupato, o comunque la cosa mi crea problemi: ☐ Fortemente in disaccordo   ☐ In disaccordo
☐ Indifferente   ☐ D'accordo   ☐ Fortemente d'accordo

19. Hai visto oggetti insoliti come bagliori, fiamme, lampi accecanti o figure geometriche?
☐ **SI**   ☐ **NO**   *Se Sì:* Quando capita, mi sento spaventato, preoccupato, o comunque la cosa mi crea problemi: ☐ Fortemente in disaccordo   ☐ In disaccordo
☐ Indifferente   ☐ D'accordo   ☐ Fortemente d'accordo

20. Hai visto cose che altri non riescono a vedere o non sembrano notare?
☐ **SI**   ☐ **NO**   *Se Sì:* Quando capita, mi sento spaventato, preoccupato, o comunque la cosa mi crea problemi: ☐ Fortemente in disaccordo   ☐ In disaccordo
☐ Indifferente   ☐ D'accordo   ☐ Fortemente d'accordo

21. Capita talvolta che le persone abbiano difficoltà a capire quello che stai dicendo?
☐ **SI**   ☐ **NO**   *Se Sì:* Quando capita, mi sento spaventato, preoccupato, o comunque la cosa mi crea problemi: ☐ Fortemente in disaccordo   ☐ In disaccordo
☐ Indifferente   ☐ D'accordo   ☐ Fortemente d'accordo

Measures

The CAARMS is a semi-structured clinical interview designed to cover different aspects of attenuated psychopathology as well as functioning (via the integrated Social and Occupational Functioning Assessment Scale [SOFAS] module) [4]. It takes approximately 1-1.5 hours to be administered and consists of 27 items (each one scored in terms of frequency/duration [0-6] and intensity [0-6]). Those items are clustered in seven subscales: (a) "Positive Symptoms", (b) "Cognitive Change, Atten-

tion and Concentration", (c) "Emotional Disturbance", (d) "Negative Symptoms", (e) "Behavioral Change", (f) "Motor/Physical Changes", and (g) "General Psychopathology". The CAARMS "Positive Symptoms" subscale, which covers delusions, hallucinations and thought disorder, is used to determine the UHR criteria [4]. UHR status is defined as follows: (a) GRFD group: schizotypal personality disorder in the subject or history of psychosis in a first-degree family member associated with 30% drop in functioning for ≤ 1 month or chronic low functioning (the decline in functioning is estimated by subtracting the current SOFAS score from the highest SOFAS score in the past year); (b) APS group: subthreshold positive psychotic symptoms within the past 12 months; and (c) BLIPS group: criteria for psychotic disorder met for < 7 day and remitting spontaneously (i.e. without antipsychotic medication).

CAARMS interviews are conducted by specialized personnel including clinical psychologists and psychiatrists, who underwent collective supervision by the main author of the approved Italian translation [19], who was trained at Orygen, the National Youth Research Center in Melbourne, Australia. The inter-rater reliability of these assessments was ensured by regular CAARMS scoring workshops and supervision sessions.

The PQ-B13 is a self-report questionnaire used to screen individuals for the risk of psychosis. It only takes approximately 4 minutes to be completed and comprises of 21 items recording positive symptoms experienced over the past month. For each endorsed symptom, responders rate whether they found it distressing or impairing, ranging from 1 ("strongly disagree") to 5 ("strongly agree"), with a 4 or 5 indicating distress [13]. The PQ-B has been adopted as a screening tool using the total number of items endorsed ("symptom total score"), the number of items that are identified as distressing ("distressing item total score") (both range 0-21), and the total distress score (range 0-105), with the latter method recommended by Loewy et al. (2011) [13]. In a recent systematic review on psychosis risk screening using the PQ in its different iterations, Savill et al. (2017) [21] examined eight diagnostic accuracy studies using the PQ-B. Of these, one evaluated the number of distressing symptom endorsed in an UHR/psychosis-enriched sample and found a threshold of ≥ 4 distressing items as optimal cut-off [22]. Six studies examined the total distress score for screening: in samples with a very high prevalence (~ 80%) of UHR/psychosis individuals, a total distress score of ≥ 6 was supported [13], whereas in similar settings with a much lower prevalence (< 40%), a total distress score ≥ 18 was recommended [22,23]. Finally, four studies adopted the total number of symptoms endorsed as cut-off: in a sample with a very high proportion of UHR/psychotic participants, a cut-off score

of ≥ 3 symptoms endorsed was supported13, whereas in a lower prevalence sample from a similar setting, a higher threshold of ≥ 9 was identified (albeit below 75% sensitivity) [22].

Statistical analysis

Data were analyzed using the "Statistical Package for Social Science" (SPSS) 18.0 for Windows [24]. For the specific purposes of this study, the sample was dichotomized as follows: UHR+ (i.e. those who were above CAARMS UHR threshold [that is APS, BLIPS and/ or GRFD]), and UHR- (i.e. those who are below such threshold) [4]. The two subgroups were compared on socio-demographic, clinical, and psychopathological parameters. Categorical data were analysed using Chi-squared test with Yates' correction. Quantitative variables were examined using the Mann-Whitney's U test or the Student's t-test – as appropriate –.

Following the psychometric approach adopting by Kotzalidis et al. (2017) [25] in the validation study of the Italian version of the PQ-92 in order to compare their and our results, in the present research we measured short-term test-retest reliability of the iPQ-B over two weeks calculating the coefficient of stability [26] on a subsample of 15 participants who had scored ≥ 6 on the iPQ-B total distress score (i.e. the best recommended original cut-off proposed by Loewy et al., 2011) [13] at the baseline assessment. This rather short-time interval was chosen to limit the possible impact of both symptomatic changes and memory effects [27]. According to Heise (1969) [26], we interpreted test-retest reliability coefficients as follows: ≥ 0.90 excellent reliability, 0.81-0.90 good reliability, 0.71-0.80 acceptable reliability, 0.61-0.70 questionable reliability, 0.51-0.60 poor reliability, and ≤ 0.50 unacceptable reliability.

Moreover, we examined long-term test-retest reliability of the iPQ-B calculating the coefficient of stability within all the participants who had scored ≥ 6 on the iPQ-B total distress score at the initial assessment (n = 123).

As additional measure of reliability, the internal consistency of the iPQ-B was assessed using the Cronbach's α statistics within the total sample. A score above 0.65 represented a sufficient internal consistency [6]. We also examined how each PQ-B item correlated with the recommended total score (i.e. the total distress score). Correlations less than r = 0.30 indicated that the item might need to be removed from the questionnaire to make it more reliable [28]. Finally, we were interested in Cronbach's alpha value if each iPQ-B item was deleted. If this score went up after item deletion, removal should be considered to ameliorate screening tool reliability of the instrument [28].

Furthermore, we investigated the concurrent validity of the iPQ-B by comparing its results to CAARMS outcomes. In the total sample, we examined diagnostic accuracy

measures (i.e. sensitivity, specificity, positive and negative predictive values [PPV and NPV], and positive and negative likelihood ratios [LR+ and LR-], that balance sensitivity against specificity). As an additional measure of concurrent validity, the correspondence of positive results on the iPQ-B (i.e. a total distress score ≥ 6 or, as alternatives, the recommended symptom total score ≥ 3 or item distressing total score ≥ 4) and on the CAARMS (i.e. a score ≥ 3 on at least one positive symptom item) was also examined by Cohen's kappa statistics.

Finally, to explore which iPQ-B items were likely to be more predictive of CAARMS UHR diagnosis, we employed a forward stepwise logistic regression analysis, with iPQ-B item scores as independent varables and dichotomized CAARMS diagnoses (i.e. UHR- vs UHR+) as dependent variable.

Results

Over the course of the study, 151 individuals (79 females and 72 males; mean age ± Standard Deviation [SD] = 20.00 ± 5.78) consecutively participated at the intake interview within the ReARMS protocol. Table I shows screening outcomes and demographic characteristics of the total sample and the two subgroups, i.e. UHR+ (n = 70) and UHR- (n = 81). No significant differences were found in terms of gender, ethnic group, mother tongue, age, years of education, and Duration of Untreated Illness (DUI) [6].

In comparison with UHR-, UHR+ individuals showed significantly higher iPQ-B scores (Tab. I). To calculate short-term test-retest reliability, the iPQ-B was re-administered to 15 participants who had scored ≥ 6 on total distress score at the first assessment. Their sociodemographic characteristics were comparable to those of the total sample, with a mean age of 19.94 years and a SD of 4.89 years. Eight (53%) participants were females. The coefficient of stability was 0.891 for iPQ-B total distress score, indicating good to excellent short-term test-retest reliability [26].

To examine long-term test-retest reliability, the iPQ-B was administered over 1 year to 123 individuals who had scored ≥ 6 on total distress score at the baseline. Their demographic features were comparable to those of the entire sample, with a mean age of 20.10 years and a SD of 5.01 years. Sixty-three (51.2%) subjects were females. The coefficient of stability was 0.395, indicating unacceptable long-term test-retest reliability [26]. Across the total sample, the iPQ-B total distress score showed a Cronbach's alpha of 0.876. All item-total correlations were higher than 0.30, with the exception of item [9] ("Do you sometimes get strange feelings on or just beneath your skin, like bugs crawling?") (r = 0.213) (Tab. II). Therefore, most item appeared to be worthy of retention, resulting in a decrease in the alpha if deleted. Exception to this was item 9, whose deletion increased Cronbach's alpha up to the value of 0.879. Thus, removal of this item can be considered.

TABLE I. *CAARMS criteria, demographic and clinical data.*

	Total sample (n = 151)	UHR- (n = 81)	UHR+ (n = 70)	χ^2/t/Z
Gender (female)	79 (52.3%)	41 (50.6%)	38 (54.3)	0.203
Ethnic group (Caucasian)	130 (86.1%)	69 (85.2%)	61 (87.1%)	0.012
Mother tongue (Italian)	138 (91.4%)	76 (93.8%)	62 (88.6%)	0.735
Age	20.00 (5.78)	20.26 (6.44)	19.54 (4.53)	0.541
Years of Education	11.34 (2.39)	11.47 (2.40)	11.19 (2.38)	0.726
DUI (in weeks)	69.59 (51.00)	66.39 (54.65)	(47.34)	-0.572
iPQ-B symptom total score (range 0-21)	7.31 (4.90)	5.68 (4.42)	9.24 (4.76)	-4.467*
iPQ-B total distress score (range 0-105)	24.80 (18.98)	18.14 (15.95)	32.65 (19.37)	-4.717*
iPQ-B distressing item total score (range 0-21)	3.85 (3.83)	2.66 (3.07)	5.25 (4.17)	-3.966*

* p < 0.001.
Frequencies and percentages, mean (standard deviation), chi-squared (χ2) test (with Yates correction), Student's t test, and Mann-Whitney U test (Z) values are reported.

TABLE II. *Internal consistency of iPQ-B.*

PQ-B item	Item-total correlation	Cronbach's alpha if item deleted
1. Do familiar surroundings sometimes seem strange, confusing, threatening, or unreal to you? (PQ-B1)	.628	.857
2. Have you heard unusual sounds like banging, clicking, hissing, clapping, or ringing in your ears? (PQ-B2)	.477	.862
3. Do things that you see appear different from the way they usually do (brighter or duller, larger or smaller, or changed in some other way)? (PQ-B3)	.548	.860
4. Have you had experiences with telepathy, psychic forces, or fortune telling? (PQ-B4)	.379	.865
5. Have you felt that you are not in control of your own ideas or thoughts? (PQ-B5)	.521	.860
6. Do you have difficulty getting your point across because you ramble or go off the track a lot when you talk? (PQ-B6)	.454	.863
7. Do you have strong feelings or beliefs about being unusually gifted or talented in some way? (PQ-B7)	.340	.866
8. Do you feel that other people are watching you or talking about you? (PQ-B8)	.514	.861
9. Do you sometimes get strange feelings on or just beneath your skin, like bugs crowling? (PQ-B9)	**.213**	**.879**
10. Ti capita talvolta di essere distratto all'improvviso da suoni distanti dei quali generalmente non sei consapevole? (PQ-B10)	.509	.861
11. Hai la sensazione che qualche persona o forza ti stia accanto anche se tu non puoi vederla? (PQ-B11)	.424	.864
12. Ti preoccupi talvolta del fatto che qualcosa nella tua mente non funzioni correttamente? (PQ-B12)	.429	.864
13. Have you ever felt that you don't exist, the world does not exist, or that you are dead? (PQ-B13)	.377	.865
14. Have you been confused at times whether something you experienced was real or imaginary? (PQ-B14)	.551	.859
15. Do you hold beliefs that other people would find unusual or bizarre? (PQ-B15)	.504	.861
16. Do you feel that parts of your body have changed in some way, or that parts of your body are working differently? (PQ-B16)	.412	.864
17. Are your thoughts sometimes so strong that you can almost hear them? (PQ-B17)	.472	.862
18. Do you find yourself feeling mistrustful or suspicious of other people? (PQ-B18)	.367	.866
19. Have you seen unusual things like flashes, flames, blinding lights, or geometric figures? (PQ-B19)	.450	.863
20. Have you seen things that other people can't see or don't seem to see? (PQ-B20)	.555	.859
21. Do people sometimes find it hard to understand what you are saying? (PQ-B21)	.400	.865

iPQ-B: Italian Prodromal Questionnaire-Brief version.
Correlation r coefficients and Cronbach's alpha values are reported.

At the proposed PQ-B total distress score cut-off of ≥ 613, 125 participants (82.7%) scored positive; of these, 64 (50.4%) also scored ≥ 3 on any positive CAARMS item (i.e. meeting the UHR threshold). Altogether, 6 participants (8.6%) with any CAARMS positive score ≥ 3 were missed by this PQ-16 cut-off, and 61 (49.6%) were falsely identified. Cohen's kappa was 0.141, consistent with a slight agreement [29]. With regard to the diagnostic accuracy at the proposed PQ-B cut-off of ≥ 6 on total distress score, sensitivity was 91.4%, specificity 24.7%, PPV 51.2%, NPV 76.9%, LR+ 1.21, and LR- 0.35. Thus, at this threshold, the iPQ-B total distress score was slightly better in ruling out than in ruling in possible UHR status, changing post-test probability to a small (but sometimes important) degree [30]. Considering the proposed PQ-B cut-off of ≥ 3 on symptom total score [13], sensitivity was 91.4%, specificity 28.4%, PPV 52.4%, NPV 79.3%, LR+ 1.28, LR- 0.30, and Cohen's kappa 0.177. Finally, examining the diagnostic accuracy measures of the recommended PQ-B cut-off threshold of ≥ 4 on distressing item total score [21], sensitivity was 61.4%, specificity 75.3%, PPV 68.2%, NPV 69.3%, LR+ 1.89, LR- 0.51, and Cohen's kappa 0.356 (consistent with a fair agreement) [29].

Using a conditional forward stepwise method, five items (iPQ-B5, iPQ-B6, iPQ-B8, iPQ-B9, and iPQ-B13) were entered into the regression model with a statistically significant power (Tab. III). Although iPQ-B 5, 6, 8, and 13 had

TABLE III. *Logistic regression of dichotomized CAARMS UHR diagnoses by iPQ-B items.*

iPQ-B item	B	SE	Wald	df	p	OR
PQ-B5	0.195	0.089	4.849	1	0.028	1.216
PQ-B6	0.189	0.097	3.795	1	0.048	1.208
PQ-B8	0.401	0.089	20.115	1	0.000	1.493
PQ-B9	-0.443	0.116	14.522	1	0.000	0.642
PQ-B13	0.237	0.135	3.113	1	0.045	1.268
Constant	-0.226	0.229	1.240	1	0.285	0.775

Overall model fit test → $\chi 2$ = 62.653, p = 0.000
Associated strength → Cox-Snell R2 = 0.228, Negelkelke R2 = 0.319

iPQ-B: Italian Prodromal Questionnaire – Brief version, CAARMS: Comprehensive Assessment of At-Risk Mental States; UHR: Ultra-High Risk mental states; B: regression coefficient; SE: standard error; Wald: Wald statistic value; df: degree of freedom; p: statistical significance; and OR: odd ratio

positive regression coefficients, iPQ-B 9 showed a negative one. The percentage of correct diagnosis using this model for predicting CAARMS UHR diagnosis was 76.7%.

Discussion

Aim of the current was to evaluate the reliability of PQ-B in an Italian clinical sample of young people at UHR of psychosis. Introducing and promoting the routinary use of the Italian version of a validated assessment tool to detect UHR subjects in the general help-seeking population (such as the iPQ-B) could positively impact on the implementation of specific services for early detection and intervention on UHR individuals within the framework of Italy's National Health Service. In the current study, we therefore examined test-retest reliability and internal consistency of the iPQ-B in consecutive young help-seekers attending all of child/adolescent and adult mental health services of the Reggio Emilia Department of Mental Health.

In comparison with UHR-, UHR+ individuals showed significantly higher iPQ-B total scores. On a dimensional level – as expected on the basis of the PQ-B item composition - these findings suggest that increasing PQ-B scores are associated with the severity of both psychotic and general psychopathology, as well as the intensity of distress related to prodromal symptoms.

We found excellent reliability of the iPQ-B with regard to internal consistency of the total distress score (α = 0.876). Removal of item 9 ("Do you sometimes get strange feelings on or just beneath your skin, like bugs crawling?"), which resulted in a slight increase in Cronbach's alpha value up to 0.879, can be considered. Similarly, in a comparable adolescent/young adult help-seeking sample (age between 12 and 35 years), Loewy et al. (2011) [13] found an excellent PQ-B internal consistency with a Cronbach's alpha of 0.853. Moreover, Xu et al. (2016)31 showed an overlapping internal consistency (α = 0.897) in Chinese help-seeking individuals (aged 15-45 years) visiting a general mental health setting. Therefore, PQ-B appears to be reliably good in different samples and cultures. Moreover, in our sample, iPQ-B demonstrated a Cronbach's alpha value that we consider as satisfactory internal consistency for a screener that has to come before a clinical interview [6]. In a recent validation study of the Italian version of the PQ-92, Kotzalidis et al. (2017) [25] re-administered the instrument to 15 individuals two weeks after first assessment and found excellent short-term test-retest reliability(coefficient of stability = 0.942 for PQ-92 total score). Similarly, we found a coefficient of stability equal to 0.891, indicating a good to excellent short-term (two-week) test-retest reliability of the iPQ-B.

Based on what Kotzalidis et al. (2017) [25] suggested, we also addressed longer term test-retest reliability administering the iPQ-B over 1 year to all the participants who had scored ≥ 6 on total distress score at first assessment. We found a coefficient of stability = 0.395, indicating unacceptable long-term test-retest reliability. According to Michel et al. (2014) [27], this finding suggests that the self-report screening questionnaire assessed a fluctuating condition rather than a trait characteristic, i.e. a condition itself that varied between test and retest. When examining these results, some methodological peculiarities of the current study shall be considered. Indeed, ReARMS is a clinically project providing evidence-based interventions that are supposed to be effective in UHR individuals (i.e. intensive

case-management, family psycho-education, individual cognitive-behavioral therapy within the framework of assertive community treatment). Precisely because providing the optimal treatment for the help-seekers was the main ethical mandate in our clinical setting, our treatments were not controlled (e.g. against placebo group or other treatments), but evenly delivered to all UHR participants [6].

In the original study validating the PQ-B, Loewy et al. (2011) [13] observed a good to excellent concurrent validity with CAARMS diagnoses in a sample of adolescent and young adult help-seekers attending to an Early Intervention Psychosis (EIP) service. A cut-off of ≥ 6 on total distress score had a high sensitivity (88%) and good specificity (68%) in discriminating between people with UHR/psychosis and individuals without CAARMS diagnosis.

With regard to the diagnostic accuracy at the proposed PQ-B cut-off of ≥ 6 on total distress score [13], sensitivity in our sample (91.4%) was substantially in line with previously reported for the PQ in its various versions [10]. However, this result was much higher to that (62%) observed by Kotzalidis et al. (2017) [25] in the validation study of the Italian version of the 92-item PQ. Moreover, at the proposed PQ-B cut-off of ≥ 6, our PPV (51.2%) was consistent with previously reported, with values ranging between 29% and 44% [21]. In particular, PPV was equal to 38% in the validation study of the Italian version of the 92-item PQ [25]. The difference between these findings may be the result of differences in selection procedures. In fact, first screening procedure in the ReARMS protocol included a triage service using the SS for psychosis [17], which probably excluded a certain amount of true negative cases.

In our sample, specificity (approximately 25%) was lower than previously reported. Indeed, specificity values were good to excellent in the original study validating the PQ-B at a cut-off of ≥ 6 on total distress score [13] and in the validation study of the Italian version of the 92-item PQ [25] (68% and 82%, respectively). Likewise, our NPV (approximately 77%) was good, but slightly lower than previously reported, with values ranging between 90% and 100% [2 21]. In this regards, Kotzalidis et al. (2017) [25] found a NPV of 91% in the validation study of the Italian version of the 92-item PQ. The difference between these findings may be the result of the same differences in selection procedures previously mentioned.

However, according to Loewy et al. (2011) [13], for screening purposes, greater weighting should be given to sensitivity over specificity as part of a two-step screening process. Indeed, low sensitivity scores mean that a certain number of people who would appropriate for early intervention are not being identified. Consequently, in most cases, having a few more false positives is less of an issue than missing appropriate individuals from a clinical perspective.

Compared to the PQ-B cut-off of ≥ 6 on total distress score, the proposed ≥ 3 threshold on symptom total score (range 0-21) [13] slightly increased specificity value up to 28.4%, while maintaining a 91.4% sensitivity. Finally, using the recommended PQ-B cut-off of ≥ 4 on distressing item total score (range 0-21) [21], even if specificity increased to 75.3%, a sensitivity value of 61.4% is quite low and means that a relevant number of people who would appropriate for early intervention services are not being identified.

Among all iPQ-B items, five symptoms (i.e. iPQ-B5 ["Have you felt that you are not in control of your own ideas or thoughts?"], iPQ-B6 ["Do you have difficulty getting your point across because you ramble or go off the track a lot when you talk?"], iPQ-B8 ["Do you feel that other people are watching you or talking about you?"], iPQ-B9 ["Do you sometimes get strange feelings on or just beneath your skin, like bugs or crawling?"], and iPQB13 [("Have you ever felt you don't exist, the world does not exist, or that you are dead?")]) correctly predicted UHR- vs UHR+ diagnoses (76.7% of correct diagnostic ascription in the logistic regression model). It should be noted that iPQ-B9 showed a significant negative correlation coefficient, thus making its absence full of meaning. This is in line with the above mentioned result emerging from Cronbach's statistics, which concluded for the removal of iPQ-B item 9. Although this item is intended to be an attenuated psychotic symptom, the results of the logistic regression suggest that on a group-level, subjects endorsing it might actually report paresthesic sensations (e.g. feelings of pins and needles is when their arms or legs "fall asleep") or somato-vegetative expressions of anxiety. In their early pilot study, Yung et al. (1996) [32] reported that three kinds of attenuated positive symptoms (i.e. perceptual abnormalities, suspiciousness, and delusional mood) could account for 62%, 71%, and 62%, respectively, of symptoms that prodromal individuals experienced.

Limitations

Firstly, a possible limitation of this study is that the iPQ-B was completed in a population plausibly "enriched" for the target diagnoses, i.e. young help-seekers with clinical features of possible psychosis. Therefore, the current field-test of the iPQ-B was not meant to identify cut-offs applicable to the general population, in which the psychometric endorsement of so-called psychotic-like experiences might occasionally occur, yet with transient temporal pattern, not necessarily accompanied by distress or treatment seeking, and not inevitably followed by a transition to psychosis [2 14]. Indeed, a certain number of false positives would be identified.

Another limitation is that since the SS for psychosis [17] was used in the eligibility triage for the ReARMS protocol (i.e. before the iPQ-B administration), this is likely to

impact the generalizability of our findings. Indeed, the PQ would ideally be used as the first step in a 2-stage screening process [13]. Therefore, by excluding a certain amount of true negative cases in the pre-PQ step, this would reduce the specificity of the screener.

Finally, although the ability of the iPQ-16 to include cases appears to be less than its ability to exclude them, it may still miss some cases worthy of further investigation [27]. In this respect, Loewy et al. (2011) [13] included 4-point scale questions on distress following each PQ-B item to examine if this enhanced the PPV of the instrument.

Conclusions

The Italian version of the PQ-B showed satisfying psychometric properties, comparable to 92-item homologue [25]. However, yet optimal cut-off to improve concurrent validity and, consequently, economic and clinical usefulness has still to be determined through multi-centric testing. Moreover, the iPQ-B seems to be a suitable screening tool for routine use in mental health care services. Indeed, it is short (taking only few minutes to be completed) and therefore easy to implement in routine assessment. Finally, the iPQ-B can be helpful in identifying potential psychotic symptoms for further exploration in an early phase, especially in young adults and adolescents with low functioning.

Acknowledgements

Conflict of Interest

The authors are no conflict of interests.

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Pathological narcissism measures as predictors of self-reported physical aggression among 310 consecutively-admitted Italian outpatients

Summary

Objectives
There is still a dearth of studies on the relationships between pathological narcissism and physical aggression (PA), particularly among psychiatric adult subjects. The present study aimed at assessing the relationships between PA, pathological narcissism, and clinician's ratings and self-reports of DSM-5 Section II Narcissistic Personality Disorder (NPD).

Methods
Three-hundred and ten consecutively admitted Italian outpatient participants were administered the Italian translations of the Aggression Questionnaire (AQ), the Five Factor Narcissism Inventory (FFNI-SF), the Pathological Narcissism Inventory (PNI), the Personality Diagnostic Questionnaire (PDQ-4+) and the Structured Clinical Interview for DSM-5 Personality Disorders (SCID-5-PD), as part of their routine clinical assessment. Multiple regression analyses and hierarchical multiple regression analyses were performed in order to assess the relationships between physical aggression and pathological narcissism.

Results
The PNI and FFNI-SF yielded significant and non-negligible bivariate associations with self-reports of PA. Pathological narcissism measures explained from 13.0% (PNI total score) to 24.0% (FFNI-SF-SF total score) in the AQ PA scale score. Notably, moderation analyses did not evidence any significant role of participant's gender as moderator variables. Our multiple regression analysis findings showed that both grandiose and vulnerable features of pathological narcissism may be relevant for understanding self-reported PA among psychotherapy outpatients; however, this relationship was observed only when the FFNI-SF scale scores were used as predictors in multiple regression models. Rather, only the PNI vulnerable narcissism scale scores showed a significant association with the AQ PA score in multiple regression analyses. Hierarchical regression models documented that both PNI and FFNI-SF measures added a significant amount of information in predicting AQ PA scale scores to the information that was provided by both the PDQ-4+ NPD scale and the SCID-5-PD NPD scale.

Conclusions
As a whole, our findings suggest that both the PNI and the FFNI-SF should be used in assessing pathological narcissism features that may be relevant for understanding self-reported disposition towards physical aggression, at least in subjects who voluntarily asked for treatment.

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Introduction

Although a unitary definition of aggression is still missing, the large majority of conceptualization do not consider aggression as unidimensional construct [1]. Among components of aggression, physical aggression seems to represent a particularly relevant characteristic because of its

link to violence, couple aggression, crime, suicidal risk, homicide, and even sexual aggression, at least in men [2]. Although the Conflict Tactics Scale (CTS) [3] represents a measure of physical aggression (PA) which has been widely used in the social psychology literature, the Aggression Questionnaire (AQ) [4] represents one of the few self-report instruments that provides a scale directly assessing (PA).

Considering personality disorder (PD) research, historically a heightened risk for committing acts of violence has been described for antisocial PD, borderline PD, and psychopathy [5]. More recent data examined the associations between Narcissistic PD (NPD) and aggression [5-7]; however, there is still a dearth of studies on the relationships between pathological narcissism and PA, particularly among psychiatric adult subjects. Interestingly, NPD and pathological narcissism have been linked also to psychopathy and antisocial behavior [8]. This may represent a consequence of the recent re-definition of the pathological narcissism construct to include both vulnerable and grandiose components [6 7]. Indeed, the DSM definition of NPD has been criticized for being related only with the grandiose dimension of narcissism, yielding an inaccurate representation of narcissism [6-9]. To overcome the difficulties in the assessment of the vulnerable and grandiose dimensions of narcissism, Pincus and colleagues [7] and Glover and colleagues [6 10] developed two self-report measures – namely, the Pathological Narcissism Inventory (PNI) and the Five Factor Narcissism Inventory (FFNI), respectively. Although they were developed according to different theories of personality, currently the FFNI and PNI represents the most widely used measures of narcissism measuring both grandiose (GN) and vulnerable (VN) component of pathological narcissism. Indeed, the PNI was developed according to a dynamic model, which consider grandiosity and vulnerability as two alternating states [7]; rather, the FFNI is rooted in the Five Factor Model of personality, and NG and NV are conceived as orthogonal dimensions [6 10]. Notably, the reliability and validity of Italian translations of the PNI [11] and the Short Form of the FFNI (FFNI-SF) [12] have been recently documented; moreover, the official Italian translation of the PNI has been published [13].

Starting from these considerations, in the present study we aimed at assessing: (a) if the PNI total scores were associated with the AQ PA total scores over and above clinician's ratings and self-reports of DSM-5 Section II NPD; (b) if the FFNI-SF total score were associated with the AQ PA total scores over and above clinician's ratings and self-reports of DSM-5 Section II NPD; and (c) if the FFNI-SF total score remained a significant predictor of AQ PA total score in hierarchical regression model when the PNI total score was entered in the first step of the model, as well as the reverse model. The same sequence of hypotheses was tested for the role of PNI GN and VN scales and FFNI-SF GN and VN scales, respectively, in predicting the AQ PA scale scores. In all regression models the possible moderation role of gender was taken into account. Consistent with available evidence on the dimensional structure of PDs [14], in the present study we relied on continuously-assessed (i.e., number of symptoms) measures of DSM-5 Section II NPD, as well as of pathological narcissism. In the present study we relied on the Structured Clinical Interview for DSM-5 Personality Disorders (SCID-5-PD [15]) as a clinician-rated measure of DSM-5 Section II NPD. Since DSM-IV (APA, 1994) axis II PD criteria were retained unchanged from in the DSM-5 Section II, in the present study the Personality Diagnostic Questionnaire-4+ (PDQ-4+ [16]) was used as a self-report measure of DSM-5 Section II NPD.

Methods

Participants

Three-hundred and ten Italian adult outpatient participants who were consecutively admitted from January 2014 to December 2017 to the Clinical Psychology and Psychotherapy Unit of the San Raffaele Hospital of Milan were administered the Italian translations of the SCID-5-PD [15], FFNI-SF [10], PNI [7 13], PDQ-4+ [16] and AQ [4] as part of their routine clinical assessment. In our sample, participant's mean age was 42.04 years, SD = 13.56 years; 166 (53.5%) participants were female, 144 (46.5%) participants were male. None of the participants reported missing data.

According to SCID-5-PD, the most frequently diagnosed PDs were Narcissistic PD, n = 64, 20.6%, PD with Other Specification (i.e., Mixed PD), n = 61, 19.7%, Borderline PD, n = 36, 11.6%, Dependent PD, n = 15, 4.8% and Histrionic PD, n = 14, 4.5%. One hundred seventy-eight (57.4%) participants received at least one DSM-5 non-PD psychiatric disorder diagnosis; mood disorders (n = 98, 31.6%) were the most frequently diagnosed DSM-5 non-PD psychiatric disorders. Non-PD 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. Because non-PD 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. All participants gave their informed consent to participate in the study after ob-

taining a detailed description of the study. The present study was performed in accordance with the principles of the 1983 Declaration of Helsinki.

Potential participants were screened for the following exclusionary criteria: (1) do not speak Italian as their first language; (2) age less than 18 years; (3) IQ less than 80; (4) diagnosis of schizophrenia, schizoaffective disorder, schizophreniform disorder, or delusional disorder according to DSM-5 diagnostic criteria; (5) diagnosis of dementia or organic mental disorder according to DSM-5 diagnostic criteria; or (6) education level lower than elementary school. All participants in the current research passed this screening.

Participants with psychiatric disorder diagnoses were administered the AQ, the PDQ-4+, the SCID-5-PD interview, the PNI, and the FFNI-SF by expert trained raters 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 [17]. All questionnaires were administered and scored blind to SCID-5-PD assessment results, as well as the SCID-5-PD administration was blind to all questionnaires' scores.

Measures

Reliability coefficient values for all measures are listed in Table I (main diagonal).

Buss-Perry Aggression Questionnaire (AQ) [4]. The AQ is a 29 item, Likert type, self-report questionnaire that was specifically developed to assess aggression, including physical aggression (PA) [4]. The Italian translation of the AQ showed adequate reliability and construct validity [18]. In the present study, we relied on the AQ PA scale as a measure of physical aggression.

Structured Clinical Interview for DSM-5 Section II Personality Disorders (SCID-5-PD) [15]. The SCID-5-PD is a 106-item semi-structured interview designed to assessment of DSM-5 PDs. The SCID-5-PD was preceded by administration of its self-report screening questionnaire. In order to obtain clinician's rating scores consistent with self-report scores of NPD (i.e., dimensional scores obtained as a sum of the criteria met by each participant) in the present study, we focused only on NPD dimensional (i.e., number of criteria) scores. The interrater reliability (IRR) of the Italian translation of the SCID-5-PD in clinical participants has been demonstrated [19]. The IRR of SCID-5-PD symptom count was assessed using a pairwise interview design on the first 150 participants. One-way ANOVA intraclass r (absolute agreement) was used as an IRR estimate (see Table I).

Personality Diagnostic Questionnaire-4+ (PDQ-4+) [16]. The PDQ-4+ is a 99-item true/false self-report measure that assesses DSM-IV PD symptoms; each individual item corresponding to a single DSM–5 diagnostic criterion. The PDQ-4+ is scored by summing the number of criteria endorsed for each PD. Additionally, it yields a total score consisting of the total number of pathological traits endorsed. The Italian translation of PDQ-4+ showed adequate reliability and construct validity [20].

TABLE I. *Aggression Questionnaire-Physical Aggression Scale, Personality Diagnostic Questionnaire-4+ Narcissistic Personality Disorder Scale, Structured Clinical Interview for DSM-5 Section II Personality Disorders Narcissistic Personality Disorder Scale, Five Factor Narcissism Inventory-Short Form Vulnerable and Grandiose Narcissism Scales and Pathological Narcissism Inventory Vulnerable and Grandiose Narcissism Scales: Descriptive Statistics, Reliability Coefficients (Cronbach α/intraclass r) and Measures Intercorrelations (i.e., Pearson r Coefficients).*

			Pearson r Coefficients								
	M	SD	1	2	3	4	5	6	7	8	9
1. AQ Physical Aggression Scale	17.85	7.12	.82								
2. PDQ-4+ NPD Dimensional Score	2.25	1.77	.36*	.79							
3. SCID-5-PD NPD Dimensional Score	1.97	2.14	.25*	.36*	.91						
4. FFNI-SF Total Score	139.75	29.62	.49*	.63*	.38*	.91					
5. FFNI-SF Grandiose Narcissism Score	91.49	23.54	.46*	.59*	.40*	.93*	.91				
6. FFNI-SF Vulnerable Narcissism Score	48.26	11.57	.32*	.40*	.15	.67*	.35*	.84			
7. PNI Total Score	2.01	.81	.36*	.56*	.24*	.74*	.57*	.73*	.95		
8. PNI Grandiose Narcissism Score	2.06	.83	.31*	.51*	.22*	.71*	.65*	.51*	.86*	.88	
9. PNI Vulnerable Narcissism Score	1.98	.86	.37*	.52*	.23*	.67*	.47*	.76*	.96*	.68*	.93

Note. AQ: Aggression Questionnaire; PDQ-4+: Personality Diagnostic Questionnaire-4+; NPD: Narcissistic Personality Disorder; SCID-5-PD: Structured Clinical Interview for DSM-5 Section II Personality Disorders Scales; FFNI-SF: Five Factor Narcissism Inventory-Short Form; PNI: Pathological Narcissism Inventory. Reliability coefficient estimates (i.e., Cronbach α/intraclass r) are reported on the main diagonal.
Correlation coefficient significant at Bonferroni-corrected p < .002.

In the present study, we relied only the PDQ-4+ NPD scale.

Five Factor Narcissism Inventory-Short Form (FFNI-SF) [10]. The FFNI-SF is a 60-item, self-report measure of 15 traits – namely, Acclaim-Seeking, Arrogance, Authoritativeness, Distrust, Entitlement, Exhibitionism, Exploitativeness, Grandiose Fantasies, Indifference, Lack of Empathy, Manipulativeness, Need for Admiration, Reactive Anger, Shame, and Thrill-Seeking – related to vulnerable and grandiose narcissism. Vulnerable narcissism is the sum of Cynicism/distrust, Need for Admiration, Reactive Anger, and Shame. Grandiose narcissism is the sum of the remaining scales. The FFNI-SF yields also a total score indexing subject's overall level of pathological narcissism. The FFNI-SF showed adequate reliability and validity [10] also in its Italian translation [12].

Pathological Narcissism Inventory (PNI) [7 13]. The PNI is a 52-item, Likert type, multidimensional self-report measure of pathological narcissism that assesses characteristics of grandiose and vulnerable narcissism. The PNI yields scores for narcissistic grandiosity (GN), narcissistic vulnerability (VN), and a total score measuring the overall level of pathological narcissism (i.e., the PNI total score). The reliability and validity of the Italian translation of the PNI have been documented [11 13].

Results

Descriptive statistics, reliability coefficients (Cronbach α/intraclass r), and Pearson r values for all measures used in the present study are listed in Table I.

All multiple regression analysis models in which our narcissism scale scores were entered as predictors of AQ PA scale scores, as well as moderated regression analysis results are summarized in Table II.

Only independent variables that proved to be significant predictors of the AQ PA score in multiple regression models were retained for hierarchical multiple regression analyses.

Hierarchical regression analysis results of PDQ-4+ NPD scale scores, SCID-5-PD Section II NPD scores, FFNI-SF total score, FFNI-SF Vulnerable Narcissism and Grandiose Narcissism scales, PNI total score, PNI Vulnerable Narcissism and Grandiose Narcissism scales as predictors of the AQ PA scale scores are listed in Tables III, IV and V, respectively.

TABLE II. *Personality Diagnostic Questionnaire-4+, Narcissistic Personality Disorder Scale, Structured Clinical Interview for DSM-5 Section II Personality Disorders Narcissistic Personality Disorder Scale, Five Factor Narcissism Inventory-Short Form Vulnerable and Grandiose Narcissism Scales, and Pathological Narcissism Inventory Vulnerable and Grandiose Narcissism Scales as Predictors of the Aggression Questionnaire-Physical Aggression Scale: Multiple Regression Analysis and Moderated Regression Analysis Results.*

	Aggression Questionnaire Physical Aggression		Gender moderation Interaction effect
	ß	VIF	R^2_{change}
PDQ-4+ Continuously-scored NPD	.31‡	1.15	.00
SCID-5-PD Continuously-scored NPD	.14*	1.15	.00
Adjusted R^2	.14‡		
FFNI-SF Total Score	.49‡	1.00	.00
Adjusted R^2	.24‡		
FFNI-SF Grandiose Narcissism Score	.39‡	1.14	.00
FFNI-SF Vulnerable Narcissism Score	.19‡	1.14	.00
Adjusted R^2	.23‡		
PNI Total Score	.36‡	1.00	.00
Adjusted R^2	.13‡		
PNI Grandiose Narcissism Score	.10	1.19	.00
PNI Vulnerable Narcissism Score	.31‡	1.19	.00
Adjusted R^2	.14‡		

Note. PDQ-4+: Personality Diagnostic Questionnaire-4+; NPD: Narcissistic Personality Disorder; SCID-5-PD: Structured Clinical Interview for DSM-5 Section II Personality Disorders Scales; FFNI-SF: Five Factor Narcissism Inventory-Short Form; PNI: Pathological Narcissism Inventory.
* p < .05; † p < .01; ‡ p < .001

Discussion

Confirming and extending the available literature on the relationship between narcissism and aggression [5-10], our findings showed that all measures of narcissistic personality pathology that were included in our study yielded significant and non-negligible bivariate asso-ciations with self-reports of physical aggression in a large sample of consecutively-admitted psychotherapy patients, at least as it was operationalized in the AQ PA scale.

Consistent with previous reports [6-13], our data suggested that pathological narcissism could be reliably

TABLE III. *Personality Diagnostic Questionnaire-4+ Narcissistic Personality Disorder Scale, Structured Clinical Interview for DSM-5 Section II Personality Disorders Narcissistic Personality Disorder Scale and Five Factor Narcissism Inventory-Short Form Vulnerable and Grandiose Narcissism Scale as Predictors of the Aggression Questionnaire-Physical Aggression Scale: Hierarchical Regression Analysis Results.*

	Aggression Questionnaire Physical Aggression		Gender moderation Interaction effect
Step 1	**ß**	**VIF**	**R^2_{change}**
PDQ-4+ Continuously-scored NPD	.31†	1.15	.00
SCID-5-PD Continuously-scored NPD	.14*	1.15	.00
Adjusted R^2	.14‡		
Step 2			
PDQ-4+ Continuously-scored NPD	.08	1.70	.00
SCID-5-PD Continuously-scored NPD	.07	1.20	.00
FFNI-SF Total Score	.41‡	1.71	.00
Change in Adjusted R^2	.10‡		
Overall Adjusted R^2	.24‡		
Step 1			
FFNI-SF Total Score	.49‡	1.00	.00
Adjusted R^2	.24‡		
Step 2			
FFNI-SF Total Score	.41‡	1.72	.00
PDQ-4+ Continuously-scored NPD	.08	1.70	.00
SCID-5-PD Continuously-scored NPD	.07	1.20	.00
Change in Adjusted R^2	.00		
R^2	.24‡		
Step 1			
PDQ-4+ Continuously-scored NPD	.31†	1.15	.00
SCID-5-PD Continuously-scored NPD	.14*	1.15	.00
Adjusted R^2	.14‡		
Step 2			
PDQ-4+ Continuously-scored NPD	.08	1.70	.00
SCID-5-PD Continuously-scored NPD	.07	1.23	.00
FFNI-SF Grandiose Narcissism Score	.32‡	1.67	.00
FFNI-SF Vulnerable Narcissism Score	.17†	1.22	.00
Change in Adjusted R^2	.10‡		
Overall Adjusted R^2	.24‡		

Note. PDQ-4+: Personality Diagnostic Questionnaire-4+; NPD: Narcissistic Personality Disorder; SCID-5-PD: Structured Clinical Interview for DSM-5 Section II Personality Disorders Scales; FFNI-SF: Five Factor Narcissism Inventory-Short Form.
* p < .05; † p < .01; ‡ p < .001

TABLE IV. *Personality Diagnostic Questionnaire-4+ Narcissistic Personality Disorder Scale, Structured Clinical Interview for DSM-5 Section II Personality Disorders Narcissistic Personality Disorder Scale, and Pathological Narcissism Inventory Vulnerable and Grandiose Narcissism Scales as Predictors of the Aggression Questionnaire-Physical Aggression Scale: Hierarchical Regression Analysis Results.*

	Aggression Questionnaire Physical Aggression		Gender moderation Interaction effect
Step 1	**ß**	**VIF**	**R^2_{change}**
PDQ-4+ Continuously-scored NPD	.31‡	1.15	.00
SCID-5-PD Continuously-scored NPD	.14*	1.15	.00
Adjusted R^2	.14‡		
Step 2			
PDQ-4+ Continuously-scored NPD	.19*	1.57	.00
SCID-5-PD Continuously-scored NPD	.13*	1.15	.00
PNI Total Score	.23‡	1.45	.00
Change in Adjusted R^2	.04‡		
Overall Adjusted R^2	.18‡		
Step 1			
PDQ-4+ Continuously-scored NPD	.31‡	1.15	.00
SCID-5-PD Continuously-scored NPD	.14*	1.15	.00
Adjusted R^2	.14‡		
Step 2			
PDQ-4+ Continuously-scored NPD	.19†	1.58	.00
SCID-5-PD Continuously-scored NPD	.13*	1.15	.00
PNI Grandiose Narcissism Score	.03	2.00	.00
PNI Vulnerable Narcissism Score	.22†	2.02	.00
Change in Adjusted R^2	.04‡		
Overall Adjusted R^2	.18‡		

Note. PDQ-4+: Personality Diagnostic Questionnaire-4+; NPD: Narcissistic Personality Disorder; SCID-5-PD: Structured Clinical Interview for DSM-5 Section II Personality Disorders Scales; PNI: Pathological Narcissism Inventory.
* p < .05; † p < .01; ‡ p < .001

and validly assessed, at least in psychotherapy outpatients. Indeed, reliabilities were greater than .70 for all pathological narcissism measures. With the exception of the FFNI-SF VN scale, the SCID-5-PD NPD dimensional scores correlated significantly and moderately with all the measures of narcissism that were used in this study. The PDQ-4+ NPD scale scores showed substantial, positive correlations with all other non-DSM-5 pathological narcissism measures, whereas adequate convergent validities were observed between the PNI scale scores and the FFNI-SF scale scores (although the discriminant validity of the PNI GN scale was suboptimal).

Our regression findings showed that pathological narcissism may represent a non-negligible factor in understanding the dispositional risk for physical aggression, at least as it was measured using self-reports based on the AQ PA scale. Pathological narcissism measures ex-

plained from 13.0% (PNI total score) to 24.0% (FFNI-SF-SF total score) in the AQ PA scale score. Interestingly, moderation analyses did not evidence any significant role of participant's gender as moderator variables, thus suggesting that the non-negligible and significant role of pathological narcissism as predictor of self-reported physical aggression held equally in female outpatients and in male outpatients.

Although the pathological narcissism measures that were used in our study showed adequate convergent validities, our regression analysis findings documented that they were not interchangeable in predicting self-reported physical aggression. Extending available information [5 9], our multiple regression analysis findings showed that both grandiose and vulnerable features of pathological narcissism may be relevant for understanding self-reported physical aggression among psychotherapy outpatients; however, this relationship was ob-

TABLE V. *Five Factor Narcissism Inventory-Short Form Vulnerable and Grandiose Narcissism Scales and Pathological Narcissism Inventory Vulnerable and Grandiose Narcissism Scales as Predictors of the Aggression Questionnaire-Physical Aggression Scale: Multiple Regression Analysis and Moderated Regression Analysis Results.*

	Aggression Questionnaire Physical Aggression		Gender moderation Interaction effect
Step 1	**ß**	**VIF**	**R^2_{change}**
PNI Total Score	.36‡	1.00	.00
Adjusted R^2	.13‡		
Step 2			
PNI Total Score	.01	2.22	.00
FFNI-SF Total Score	.49‡	2.22	.00
Change in Adjusted R^2	.10‡		
Overall Adjusted R^2	.23‡		
Step 1			
FFNI-SF Total Score	.49‡	1.00	.00
Adjusted R^2	.24‡		
Step 2			
FFNI-SF Total Score	.49‡	2.22	.00
PNI Total Score	.01	2.22	.00
Change in Adjusted R^2	.01		
Overall Adjusted R^2	.23		
Step 1			
PNI Grandiose Narcissism Score	.10	1.19	.00
PNI Vulnerable Narcissism Score	.31‡	1.19	.00
Adjusted R^2	.14‡		
Step 2			
PNI Grandiose Narcissism Score	-.17*	2.53	.00
PNI Vulnerable Narcissism Score	.20*	3.30	.00
FFNI-SF Grandiose Narcissism Score	.43‡	1.74	.00
FFNI-SF Vulnerable Narcissism Score	.10	2.36	.00
Change in Adjusted R^2	.11‡		
Overall Adjusted R^2	.25‡		

Note. FFNI-SF: Five Factor Narcissism Inventory-Short Form; PNI: Pathological Narcissism Inventory.
* $p < .05$; † $p < .01$; ‡ $p < .001$

served only when the FFNI-SF scale scores were used as predictors in multiple regression models. Rather, only the PNI VN scale score showed a significant association with the AQ PA score in multiple regression analyses; this finding was consistent with previous studies suggesting that the PNI GN scale may manifest construct validity problems [9]. Interestingly, these findings support the hypothesis that VN should not misunderstood with "covert" or "hypervigilant" narcissism [7]; rather, it represents a vulnerability towards an uprising of dysregulated negative emotions – including anger and rage – in

response to threat to the inflated self, which may end in physically aggressive acts [7].
Mostly, hierarchical regression models documented that both PNI and FFNI-SF measures added a significant amount of information in predicting AQ PA scale scores to the information that was provided by both the PDQ-4+ NPD scale and the SCID-5-PD NPD scale. In particular, the FFNI-SF GN and VN scale scores seemed to convey all relevant information of pathological narcissism as predictor of self-reported physical aggression that may be contained in both PDQ-4+ NPD scale

and SCID-5-PD NPD scale. Indeed, when the FFNI-SF GN and VN scales were entered in hierarchical regression models, they led to non-significance the contribution of both interview-based and self-report measures of DSM-5 Section II NPD. This finding was largely consistent with recent considerations suggesting the need for a trait-based, dimensional assessment of personality dysfunction [21].

In our study, hierarchical regression analysis results seemed to indicate that PNI and FFNI-SF represented complementary measures, rather than alternative instruments in explaining the variation in AQ PA scores. Indeed, FFNI-SF GN scale seemed to represent the strongest predictor of self-reported physical aggression in our hierarchical regression models. This finding was largely consistent with previous data showing that narcissistic grandiosity – i.e., a dysfunctional personality feature characterized by selfishness, deceitfulness, oppositionality, callousness, assertiveness, high activity level, and attention seeking/exhibitionism – may represent a major risk factor for physically aggressive behaviors, even characterized by severe sequalae for the victim (including the narcissistic subject in self-destructive acts) and/or legal consequences [7 9 13].

However, the PNI VN scale scores remained significantly associated with the AQ PA scale scores in hierarchical regression models, while reducing to non-significance the contribution of the FFNI-SF VN scale scores. Thus, the relative contribution of vulnerable narcissistic features, including entitlement rage, to understanding the risk for self-reported physical aggression could be best assessed using the PNI VN scale scores. Thus, our findings suggest that both the PNI and the FFNI-SF should be used in assessing pathological narcissism features that may be relevant for understanding self-reported disposition towards physical aggression, at least in subject who voluntarily asked for treatment.

Of course, the results of our study should be considered in the light of several limitations. Our sample was composed only of participants who were voluntarily seeking for psychotherapy treatment; this inherently limits the generalizability of our findings to other clinical samples. We relied on two sound measures of pathological narcissism, as well as on two measures of DSM-5 Section II NPD. Although were adopted a multiple-measure perspective on narcissism assessment, it should be observed that different measures of pathological narcissism and NPD exist; our data should not be uncritically generalized to these alternative definitions and measures of the construct. Moreover, the AQ PA scale, the PDQ-4+ NPD scale, the FFNI-SF, and the PNI were self-report measures of the corresponding constructs. Thus, their reciprocal associations may have been inflated by shared-method variance. Berkson [22] nicely demonstrated that clinical samples are likely to be biased by participants' severity levels, treatment-seeking attitude, treatment availability, etc. Thus, Berkson's [22] bias limits the generalizability of our results, while indicating the need for further studies on this topic. We relied on the AQ as a measure of aggressive behavior; however, different models and measures of PA exist. Thus, our findings should not be uncritically extended to other models/instruments assessing PA.

Even keeping these limitations in mind, findings suggest that pathological narcissism is a significant and non-negligible predictor of self-reported physically aggressive behavior even in psychotherapy outpatients. Fortunately, easy-to-administer and inexpensive measures of pathological narcissism exist, which may be used in routine and/or targeted clinical assessment.

Conflict of Interest
The authors have no conflict of interests.

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Response to Rorschach test in autism spectrum disorders in adulthood: a pilot study

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Summary

Objective

Patients with Autism Spectrum Disorders (APA – DSM5) presenting an higher functioning level are often hardly recognized during childhood and it is not infrequent for the first diagnosis to be made during adolescence/adulthood. Thus, it is highly probable for the first psychological and psychiatric evaluation of adolescents and adults affected by level 1 ASD (in particular what was defined in the DSM IV TR as Asperger syndrome) to happen in non-specialized centers due to comorbidities (e.g. anxiety, depression) and not due to the actual disorder. The focus of this pilot study was to use the Rorschach test to explore the response modality and the eventual variation in the test administration in ASD. This study highlights the potential efficacy of the Rorschach inkblot test in ASD.

Method

Forty patients (age = 30 ± standard deviation). All patients responded to DSM-5 criteria used to define the high functioning Level 1 ASD. Patients present spontaneously at the clinic (Autism Adult Center – Local Health Unit ASL To2) or conducted by their families to receive a clinical psychological-psychiatric evaluation. The method used to score the test followed the method of the French School.

Results

From a relationship point of view, all patients approached the test with a collaborative attitude and they often manifested an open interest for the diagnostic material. The Rorschach administration was conducted without any irregularity. 45% of the patients gave more than 20 answers, 65% of the patients gave a number of Detail answers inferior to the normative range, 65% of the test presented a number of human content in the normative range. In 52% of the patients, the index intimate resonance (T.R.I.) index was extensive.

Conclusions

Rorschach test is useful with ASD patients because it doesn't present classic problems that they usually encounter in other test, like: the tendency to interpret verbal items or written questions in a literal way; the difficulty in answering questions that are not directly related to them; the difficulty of focusing their attention on the test; the length of the test. The Rorschach test could be one of the most useful diagnostic tools to explore personality traits, eventual psychopathologic problems and the psychological functioning of the ASD patients.

Key words

Autism Spectrum Disorders • Rorschach Test • Adulthood

Introduction

Patients with Autism Spectrum Disorders (ASD) [1] presenting an higher functioning level are often hardly recognized during childhood and it is not infrequent for the first diagnosis to be made during adolescence/adulthood [2][3].

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Indeed, patients' unawareness of the disorder lasts until its communication through the diagnosis and causes an inadequate social impact and reactive comorbidities like anxiety, depression, substance abuse (in particular alcohol) and even psychosis [4-8].

Thus, it is highly probable for the first psychological and psychiatric evaluation of adolescents and adults affected by level 1 ASD (in particular what was defined in the DSM IV TR as Asperger syndrome) to happen in non-specialized centers due to comorbidities (e.g. anxiety, depression) and not due to the actual disorder.

Still, classical diagnostic tools used in clinical psychology have not been thoroughly studied in the ASD population. The lack of these studies can cause the possible misinterpretation of the psychological test results due to the particular modality, typical of the autistic mind, of examining reality that presents: coherence deficits deriving from mirror neurons and executive functions deficits, iper-attention to details, literal reading of the situations [9-12].

It is also fundamental for the personnel who works with ASD patients to ascertain the presence of psychopathological aspects associated with autism, knowing however the specific use and response modality of the test. Furthermore, even though the DSM-5 defines the ASD evaluation as a general diagnostic category, it is necessary to investigate the structural psychological functioning to have a complete evaluation of the single patient.

To this end, the focus of this pilot study was to use the Rorschach test to explore the response modality and the eventual variation in the test administration in the ASD population afferent to the Regional Center for Autism Spectrum Disorders (RCA). The Rorschach test [13] is a structural investigation instrument, used to understand patients' personality, that describes the patient's way of being, in relation to external as well as internal solicitations, creating a description that can be considered a condensation, a synthesis, a summary of the patient's way to approach the world [14]. The Rorschach test has been defined by Nina Rush de Traubemberg a "relational space" where it is possible to realize a fundamental human tendency: the self-representation [15].

The Rorschach test is a projective test composed of 10 tables: starting from a deliberately ambiguous and undefined stimulus (the inkblots), the subject has the possibility to express parts of himself, his own ways of perceiving, his cognitive-affective tendencies and some aspects of the own personality. Inkblots are likely to work as a stimulus because they are relatively ambiguous or poorly structured; therefore they allow a great variety of possible answers.

Materials and methods

Participants

Forty patients (age = 30 ± 10 standard deviation) have been recruited for this study.

Patients present spontaneously at the clinic (Autism Adult Center – Local Health Unit ASL To2) or referred by their families to receive a clinical psychological-psychiatric evaluation. The Informed consent was signed by the patients themselves during the first meeting at the clinic. The Rorschach test has been administrated by a psychologist at the Autism Adult Center.

All patients responded to DSM-5 criteria used to define the high functioning Level 1 ASD. Level 1 of DSM 5 [1], "Requiring support", It includes subjects who, without supports in place, have deficits in social communication that cause noticeable impairments. Difficulty initiating social interactions, and clear examples of atypical or unsuccessful response to social overtures of others. May appear to have decreased interest in social interactions. For example, a person who is able to speak in full sentences and engages in communication but whose to- and-fro conversation with others fails, and whose attempts to make friends are odd and typically unsuccessful. Rituals and repetitive behaviors (RRB's) cause significant interference with functioning in one or more contexts. Resists attempts by others to interrupt RRB's or to be redirected from fixated interest. Inflexibility of behavior causes significant interference with functioning in one or more contexts. Difficulty switching between activities. Problems of organization and planning hamper independence.

Level 1 ASD diagnosis has been confirmed by a QIT score > 70 evaluated with the WAIS-R test [16] and by the administration of the following test: ADI-r [17], ADOS [18] and RAADS [19]. For a clearer description of evaluation protocol for the minimal diagnosis of ASD patients (with supposed low necessity for support – Level 1, DSM-5) (Tab. I).

Only male patients were included in this pilot study to have a more homogenous sample, since there is an elevated prevalence of male patients, in respect to females, in the Level 1 ASD [20].

38 patients graduated from high school and 2 from university. 39 patients were, at the time of the study, unemployed and only 1 had a stable occupation. All patients received an informed consent form.

Test administration

The Rorschach inkblot test have been administered to all patients. Before administering the test to the patients of the sample, a pre-test phase where the inkblot test was administered to other ASD patients was performed in order to rule out possible difficulties in the administration. The method used to score the test followed the method of the French School [15 21], applying the normative scores

TABLE I. *Evaluation protocol for the minimal diagnosis of ASD patients (with supposed low necessity for support – Level 1, DSM-5).*

Clinical meetings with the patient (i.e. one meeting to know the patient + two meetings to have an in-depth clinical overview of the patient)
Anamnestic data collection from the family, in particular data relative to the first years after birth
Evaluation with ADI-r with the parents
Evaluation with specific test related to ASD (ADOS-RAADS)
Evaluation with the Rorscach inkblot test

of the Italian sample from Passi Tognazzo (medium and normative values of Rorschach indexes in an Italian sample of 736 subjects between 18 and 65 years [22]).

Results

Of the 40 administered test, 36 were considered valid (because the total number of answer given by patients was > 18). 45% of the patients gave more than 20 answers (i.e. the average number answers in the Italian sample).

From a relationship point of view, all patients approached the test with a collaborative attitude and they often manifested an open interest for the diagnostic material. The Rorschach administration was conducted without any irregularity, following the usual practice, without changing in any way the directions [22].

In respect to the *locations* (that indicate where, in the card, each subject perceived what he interpreted and represent how each subject approaches reality and how they organize their thought), 65% of the patients gave a number of Detail answers inferior to the normative range, associated to an high tendency (85%) to give Global answers, thus they manifest the tendency to orient themselves toward an abstract and synthetic kind of thought, not always denoted by good quality.

In all the valid test did not appear a significant number of Dbl (white detail), Do (rarely isolated detail) and Dd (small detail) answers that could lead to the so-called interior insecurity syndrome.

Analyzing the *determinants* (that indicate what, in the card, structured patients' perceptions into answers), it is possible to observe that 77% of the protocols presents a percentage of responses from the shape determinate that could be considered in the normative range or slightly above and it indicates a discrete formal reasoning skill, control over the situations and ability to adapt to them in an organized way. This result indicates that ASD patients try to rationalize experiences, thus they try to use reasoning in their experiences but this attempt does not always end well. Indeed, 62% of the patients present a formal quality inferior to the normative range and, thus, show a superficiality in the approach toward

situations, a reduced efficacy of their reasoning skill, an inefficient critic skill and a judgment skill that sometimes tends to decrease. A lack of formal quality can also indicate a poor quality of thought and the presence of pathological aspects that interfere with the intellectual functioning.

Fifty percent of the patients gave an adequate number of kinesthetic human answers, an important aspect because the determinant kinesthetic represents internal creative skills, dynamism, reflexive and introspective skills as well as affective stability. The presence of this determinant implies an identification mechanism and it is interesting to note that, from a qualitative point of view, actions perceived by patients tended to be socially acceptable and positively connoted. 25% of the protocols presented, however animal and object kinesthetic answers: a tendency that is related to a minor integration, less adaptation to concrete reality, less realization skill and thus a reduction or non-evolution of the individual realization skill (De Traubemberg, 1999). Animal's kinesthetic answers determinants are related to a childhood affective predisposition toward egocentrism and instinctive nature that does not take into account the context's demands and adaptation necessities. Object's kinesthetic answers determinants, instead, represent an high and very profound affective power, that, however, does not reach a socialized way to express itself. These two aspects are coherent with the difficulties encountered by these patients during their everyday life.

To the colored inkblots, that represent an index on how patients answer to external emotional *stimuli* and measure the affective adaptation, 42% of the patients answered with more certain responses mainly from the color, in respect to responses certain mainly from the form, a relationship that is not proper of an equilibrated affectivity. Color's answers are in fact an index of a scarcely controlled affectivity where the emotion is instable, less integrated and relations with other persons are inconstant and empathy is scarce. These answers, present in 35% of the patients, are expression of an affectivity where impulsiveness predominates and where intense emotions are present but not controlled. How-

ever, it is worth noticing that another 65% of patients presented an adequate number of color answeres, representing evolved relational skills but also adequate affective adaptation and the ability to control emotions. This last result is an index of a good affective resonance and represents the ability in Level 1 ASD patients to get in contact with other people and understand their needs and interests.

In 52% of the patients, the index intimate resonance (T.R.I.) index was *extratensive*. This result, usually, is related to a possible suggestibility end egocentrism on a background composed by lability and iper-affectivity that could translate into high impulsivity and is also associated to a low number of kinesthetic answers[15].

Sixty five percent of the test presented a number of responses with human content in the normative range or higher than the norm. Answers of this kind (human) are index of socialization, interest in the others and ability to identify and differentiate one own self.

It is important to note that in every protocol considered in the study, there is at least one human answer, even though in 63% of the cases the majority of these answers were composed by de-realized human unreal answers and partial answers. These data indicates the possibility, in these patients, of a desire to socialize and to be in contact with others that, in many cases, remains partial or just fantasized, leaving ASD patients with feelings of anxiety, difficulty and inhibition during their relationships. Interpersonal relationships, thus, can be imagined instead of realized and can be constructed by patients' own criteria or just idealized. Since the peculiarity of the human content in the Rorschach protocol and its tight relation with relationships and identity, it is still surprising that ASD patients produced human answers in their protocols, even though with characteristics linked to their pathology.

In the analyzed protocols there are numerous contents related to nature and in particular answers where the content is an object. In 70% of the protocols, this last content prevails on human contents and in 40% of the protocols, there is an higher number of this content in comparison to human and animals contents. This category (object) indicates a low index of representation and can contain regressive connotations or signals a stressful situation, hard to manage at a conceptual level. In the protocols with higher psychotic characteristics, there are also anatomical, sexual and blood related answers that, however, do not reach a significant number. 27% of the protocols presents a number of answers with animal content in the normative range. This content indicate the thought's automatisms and mental processes present in the ASD patients, thus they indicate an adaptive and socializing factor. In another 42% of the protocols, however, the number of animal contents is higher than the normative range and indicates stereotypic and poor thought, conformism and rigidity. In the remaining 31% under the normative range, it is possible to observe in the patients a difficulty in sharing schemes and automatisms.

Forty-seven percent of the patients gave an adequate number of banal contents, indicating the ability to give shared interpretations in a social context and represent an ability to intellectually adapt and a good understanding of the collectivity. In the V inkblot, the banal content has been described by all patients (The banality of a response refers to its statistically high frequency. An answer is "banal" when it is given by at least 1 in 6, 17%. Each school brings its list of banal responses because some platitudes are constant in every cultures in every age and reach frequencies between 70% and 90%, others vary depending on the geographic area, the type of culture, and of the historic moment or age of the persons examined. Medium and normative values of Rorschach indexes in an Italian sample of 736 subjects between 18 and 65 years [22].

Discussion

From the data collected in this pilot study, it is possible to observe that Level 1 ASD patients (DSM -5 [1]) are able to stay in a relational space created during the test and they are capable, during the test, of projecting parts of themselves and their internal world. From the Rorschach test's administration it can be observed the test validity even with these patients: indeed, the number of answers is in the normative range, furthermore the test have been completed in an adequate time and received good feedbacks from the patients.

Comparing the data obtained in every single protocol with the data obtained during the clinical sessions it was possible to observe how the test is capable to delineate certain personality traits of the ASD patients with extraordinary precision and could shed light on the possible comorbidities or problematic areas of the single patient. It is, thus, possible to observe how each protocol is different from the others, reflecting the specific patients' characteristics. Not every protocol presents the same problems: where social adaptation is optimal and there is no comorbidity, the test indicates, as for the neurotipic patients, adaptive personality traits. In other cases, the test has proved to be useful to underline psychotic nuclei or the presence of pathological anxiety or depression: fundamental aspects to set up a specific treatment [23] [24].

From the analysis of the different protocols it is possible to find data correlated with ASD specific characteristics, but also data strictly linked to the individual characteristics of the single patient (e.g. the presence of anxiety, anguish, depression).

Particular attention needs to be paid on the card number III, usually defined as the relational card, where the spatial disposition of the human figures (that in this card are prominent) indicates the need of representing one own self in respect to the other and also the kind of relationship sought by the patient. Given the known relationship difficulties of ASD patients, it was expected, in this patients, the impossibility to perceive the human figure and thus the impossibility to interpret the card number III. However, in this card, 43% of the patients could still perceive human figures and these figures were described as relating with each other. In the same card, 64% of the ASD participants individuated a human even though some of them formulated an unreal human answer or partial. Finally, 36% of the ASD patients did not give an answer with human content in in the first attempt, but during the *enquiry phase* only two participants failed while testing the limits. This result highlights the ASD patients' ability to represent humans in the test, with all the difficulties characterizing their pathology, and also to represent themselves and the others even though with a still problematic or partial contact modality.

Within the *particular phenomena* observed in the sample, it is important to note the lack of interpretative awareness, the perseverations and the devitalizations. Awareness of the interpretative attitude is weak in some patients and it manifests with verbalizations where patients tell to the psychologist that the inkblot is showing "exactly" the expressed content (e.g. "this is really the sacral bone!", "… but those are bones!").

In the protocols, different perseverations have been observed. These phenomena are usually associated to repetitions of what's being called "patients' expertise islands" but in some cases they have been related to repetition of the same content (e.g. butterfly, flying animals, humans).

In some protocols, ASD patients reported also confabulations and contaminations, phenomena related to the psychotic functioning, and devitalizations (present in 50% of the protocols), more related to a depressive dimension. Mutilations have been perceived only in two patients and no choc phenomenon, an highly nevrotic element, has been observed.

Conclusions

This pilot study, that needs to amplify the sample to achieve normative data on ASD patients, highlights the potential efficacy of the Rorschach inkblot test used within the standard protocols for the diagnosis of autism. Furthermore, different aspects of the test are suitable for ASD patients:

- fast administration (one hour maximum);
- atmosphere free of judgments;
- simplicity of the indications given to ASD patients;
- easy to execute: there are no specific comprehension and problem solving issues or multiple choice answers involved;
- the Rorschach test, thanks to its less-structured *stimuli* (i.e. inkblots) permits to investigate how these patients perceive reality without posing specific questions;
- projections mechanisms permit to evade communication's obstacles and thus, in this sense, the Rorschach test could be one of the most useful diagnostic tools to explore personality traits, eventual psychopathologic problems and the psychological functioning of the ASD patients.

Rorschach test is useful with ASD patients because it doesn't present classic problems that they usually encounter in other test, like:

- the tendency to interpret verbal items or written questions in a literal way;
- the difficulty in answering questions that are not directly related to them;
- the difficulty of focusing their attention on the test;
- the length of the test.

Within this population, thus, the use of the Rorschach test could be important to better understand the patient and investigate his personality traits or a possible associated psychopathology. Furthermore, knowing how ASD patients approach the test is useful to avoid mistakes during diagnosis, specifically if the diagnosis is being made by non-experts in the field of autism.

Conflict of Interest

The authors are no conflict of interests.

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Mental health, work and care: the value of multidisciplinary collaboration in psychiatry and occupational medicine

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Summary

Objectives
To investigate the relation between work and mental health in a multidisciplinary fashion.

Methods
This overview is based on books and articles purposely extracted from national and international literature published in the fields of psychiatry, occupational medicine, economics and labor law, written in Italian and English, without time limits; it is part of the BUDAPEST-RP Project launched in 2010 to study the effects of the economic crisis on the Italian population.

Results
Some features of work and the labour market in the context of the Fourth Industrial Revolution (desynchronization of time, increased external control, need of orderliness in the work relationships – i.e., decreased tolerance of work-conflicts, e.g., between the employer and the Unions –, hypernomia and heteronomy) mirror some psychopathological aspects of the pre-morbid personality prone to develop depression, and may act as environmental risk factors. This, coupled with increased unemployment and precariousness, especially affecting the young, prompt to finding evidence-based strategies to promote employment of people affected by mental disorders, seriously hit by unemployment in the years following the Great Recession.

Conclusions
Work organization is the common denominator between the work environment conceived as a risk or protective factor for psychiatric disorders and the use of work in the field of psychiatric rehabilitation, by means of vocational rehabilitation programs. Given the intrinsic complexity of this common ground, networking is required between professionals of different backgrounds, to develop a multidisciplinary approach in the fields of care, research and education, and to foster a better integration between occupational health and psychiatry.

Key words
Psychiatry • Occupational medicine • Work • Mental health • Care

Introduction

The relation between work and mental health may be symbolized by the two sides of a coin. On the one, there are all work features able to promote the onset of psychiatric disorders (or to protect from it), such as work environment, type of work, flexibility required, and so forth. On the other, work may be used to promote recovery by means of vocational rehabilitation programs (VRPs) in the context of psychiatric services, to promote social reintegration of people affected by severe psychiatric disorders. This paper addresses both issues, starting with work as a factor able to prevent or promote psychic suffering. In order to achieve this goal, we will first summarise the evolution of work organisation paradigms in the last

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hundred years, we will then link these changes to the emergence of specific psychopathological problems, we will present a research program studying VRPs optimal features, and we will end proposing possible ways forward.

Work and mental health in times of economic and production changes

The failure of the American bank Lehman Brothers on September 15, 2008 is generally recognized as the beginning of the Great Recession, the worst economic downturn since the 1929 Great Depression. The cover of the Economist published on September 20, 2008 announced this economic turmoil by depicting a vortex that sucked people, animals and things, accompanied by the question: "What next?". From this moment on, the discussion concerning the relation between work and mental health became crucial, and research on this topic increased, as indicated by an excess of at least 800 studies published between 2008 and 2015 with respect to the previous time-trend. To deal with such an important issue, an overview concerning the main changes occurred in the production paradigms over the last century is useful, since production systems produce not only goods, but also human relations [1]. More details on this topic may be found elsewhere [2-4].

The industrial production of the first two decades of the 2000s is apparently far from the Taylor-Fordism (or classic Fordism) paradigm which dominated the early Twentieth Century, represented by the H. Ford's automobiles factory and mass production processes, and featured by monotony and repetitiveness of work. In classic Fordism, which represented the height of the Second Industrial Revolution, the factory was a total institution, closed and self-referential, able to provide for all phases of its own sustenance: from electricity production to the storage of the goods produced. Yet, the arrival of the 1929 Great Depression determined a crisis in this system, peculiarly in the United States, where it had widely spread during the "roaring twenties" in an atmosphere of economic miracle that Italy experienced only at the end of the 1950s. Franklin Delano Roosevelt's 'New Deal' represented the response to help the United States cope with the Depression, and inaugurated a new phase in the American economy, based on a form of state interventionism inspired by the economic theories developed by the British economist John M. Keynes [5 6]. The Keynesian economy was progressively adopted by the Western countries, especially after the end of the Second World War, when a new social, political and economic phase started, featured by the spread of democracy, increased wealth, a positive and fruitful match between the entrepreneurial capitalist

drive and the Keynesian interventionist state policies, and the collaboration between social partners (such as the Unions and labour parties), large companies and State. This led, in the most virtuous cases, to the foundation of social welfare pillars, as the Italian National Health System (Act 833/1978). Since the decades from 1946 to 1973 were featured by increasing employment, wealth and peace, in the West, they were named the "thirty glorious" years, which correspond to the "mature" phase of Fordism. Yet, in the early 1970s, namely after the 1973 oil crisis and the adoption of austerity policies, even "mature" Fordism entered a phase of crisis and rethink. This crisis was also due to the fact that thirty years of Keynesian policies had led to a severe stagflation, i.e., increasing prices in the context of stagnating economies.

Thus, during the 1980s the Western countries looked for strategies to promote economic growth and leave behind the economic crisis of the previous decade. From the production standpoint, some principles developed in Japan since the 1960s by the automobile industry (namely, Toyota) were progressively adopted by the Western industries, though with noticeable differences (e.g., with respect to type and duration of employment contract). The concepts of total quality, just-in-time, lean production and so forth spread from country to country, from market to market, characterizing this phase of capitalism, known as Post-Fordism. This shift in the production paradigm was accompanied by a noticeable shift in the political and economic ideology. The Keynesian policies, that had characterized the "thirty glorious", were replaced by neoliberalism, which rejects any form of state intervention, in the name of the markets freedom and their supposed ability to self-regulate. In terms of international politics this shift, facilitated by the financial instability due to the Vietnam war, the oil crises of 1973 and 1977, and the stagflation that hit the world economy in the same years, was marked by the administrations led by Ronald Reagan and Margaret Thatcher, in the United States and Great Britain respectively [7]. From an historical and economic perspective, this represented the middle of the Third Industrial Revolution.

While mature Fordism had shown a degree of continuity with the previous years, Post-Fordism significantly broke with the past. This cleavage was partly due to the concomitant development of the intercontinental transports and of the Information and Communication Technologies. In such a climate, a new productive paradigm spread, featured by the relocation of production to developing countries, prompted by lower labour costs and lower labour protection and regulation systems. This decentralisation of production, made possible by the new technologies, was accompanied by the affirmation of globalization as Weltanschauung, peculiarly in the

first half of the 1990s, during the Clinton administration. This vision of the world, beyond industrial production, is based on the concept of 'flexibility' as a sort of motto of the lean production, that aims at reducing waste, thanks to the help of robotization and automation of production processes.

With the full affirmation of the Post-Fordism, the "solid" modernity featuring Fordism and "mature" Fordism was replaced by "liquid" modernity [8], this being symbolized by the transition from the Ford "total" factory to the "lean", globalized factory, where the various functions (e.g., planning, production, commercial, managerial, and so forth) are no longer vertically integrated, in the same place (the factory) and often at the same time (production cycles and shifts), rather they spread horizontally in the space and time of the "global village".

The so-called Fourth Industrial Revolution started in the early 2000s, favoured by the increasing spread of the Internet, which allows to interconnect machines, personnel and production processes in one or more connected production units. On the one hand, production gained unimaginable potentialities in terms of quality, punctual deliveries and absence of waste. Also, it was possible to avoid direct exposure of the worker to dangerous processes (with a consequent change of the professional risks and with implications also for health and safety tasks within the company). On the other hand, work adopted growing characteristic of hetero-directivity; differently than Fordism, when the human being controlled and governed machines within the production processes, now it is the worker who undergoes a growing control by the information he/she receives, just in time, from the ultra-computerized and interconnected systems, even because the complexity of production processes often goes beyond the capacity of the human being to govern them. This paved the road to the reappearance in the production systems of some features of Fordism, for this named Neo-Fordism, which currently coexists with Post-Fordism (Tab. I).

Psychopathology issues related to the changes in the production paradigms

This brief review concerning the main changes in the production paradigm is useful to point out the changes featuring work (with respect to time, space, relations, goods, employment contracts, bargaining power etc.) and the worker: the latter is required more and more network awareness, flexibility, interpersonal and communication skills, ability to teamwork, and so forth [2-4]. These aspects may have an important impact on the workers' identity, that, typically in Western societies, may significantly overlap to individual identity [9]. Unlike previous periods, in Post-Fordism a progressive con-fusion of spaces (places) and working hours (times) is noticeable: the barriers between private life and working life become more and more permeable, with noticeable implications. On the one hand, these new characteristics open the way to approaches such as teleworking, and, possibly, to a greater degree of autonomy and independence for the worker; on the other hand, they make the worker hyper-connected and potentially reachable at any time, creating new forms of subordination, both on the organisational and management level, and on the contractual one, with potential consequences in terms of work-related stress. Notably, this con-fusion of private and working spaces and times is featured by high levels of hypernomia and heteronomy, i.e., a request of "an exaggerated norm adaptation and external norm receptiveness", respectively [10]. Workers, on the one hand, adhere to labour standards and regulations laid down by others, on which they have very little opportunity to intervene [11]: they are forced to accept them as such, otherwise they may lose their jobs. This condition of heteronomy is reflected in the numerous debates that have concerned, in the very last years, the working methods of big companies like Ryanair and Amazon, and in the strikes that have affected the Ikea factories, for example. On the other hand, workers deal with the need to hyper-adhere to these heteronomic standards,

TABLE I. *Main features of the four industrial revolutions, and the related production paradigm.*

	When	Where	Production paradigm	Features
1st Industrial Revolution	18th Century	Great Britain	(Not clearly defined)	Mechanization, water power, steam power
2nd Industrial Revolution	Late 19th Century – first half of the 20th Century	The West and the Soviet Union	Fordism	Mass production, assembly line, electricity
3rd Industrial Revolution	Second half of the 20th Century	The West	Post-Fordism	Lean production; computer and automation
4th Industrial Revolution	Early 21st Century	The World	Neo-Fordism / Post-Fordism	Cyber-physical systems

unrelated to their locus of control, which often they do not share but to which they may not oppose, otherwise they risk exclusion from both employment and society [3 5]. It stems out that desynchronization, heteronomy and hypernomia are features of today's labour market. In the era of the Fourth Industrial Revolution – the most advanced phase of Post-Fordism – reflections about psychology and psychopathology are urgently needed. Those working in the field of mental health know that desynchronization, heteronomy and hypernomia are key psychopathological features of depression. Traditionally, hypernomia and heteronomy are described, along with rigid perfectionism and orderliness, characteristics of the pre-morbid (and inter-morbid) personalities of people at risk of developing a depressive disorder [12 13]. With all the proper precautions of the case, we hypothesize that contemporary society includes aspects intrinsically linked to the psychopathology of depression, and that these may act as possible environmental risk factors, in the context of a biopsychosocial frame [14 15]. This "social psychopathological approach" seems particularly relevant in the light of the results of the Global Burden of Disease research initiative, indicating that in 2010 psychiatric disorders represented, globally, the first cause of years lived with disability (YLDs). Moreover, in the same year depressive disorders caused 40.5% of all years of disability-adjusted life years (DALYs) due to psychiatric disorders [16 17]. These data are difficult to explain only in the light of biological or genetic causes, and encourage the search for possible contributory causal agents also at an environmental level, i.e., with respect to work organization in the Western world, and, in general terms, in the organization of society deriving from it. A possible cause has already been investigated, namely hypernomia and heteronomy featuring work, with its psychopathological implications. A further environmental factor capable of acting con-causally in determining psychological suffering and, over the edge, a frank psychiatric disorder, is represented by the progressive change of relations within the working class, which has increasingly assumed the characteristics of a multitude, without social, representative and political cohesion [8 11]. This weakening of social ties, accompanied by a virtualisation of the relationships fostered by the new technologies and their use (e.g., social networks) further reduces the possibilities that the social context may buffer the individual crisis, which can therefore more easily assume the connotations of illness, rather than crisis (Tab. II). Certainly, what has been presented so far is not meant to be an exhaustive explanatory model, nor it is meant

TABLE II. *Some features of work in the 21st Century that are potential risk factors for depression.*

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Main features		**Consequences**
1) Desynchronization of time	Con-fusion of spaces (places) and working hours (times); the barriers between private life and working life become permeable	Teleworking, higher degree of autonomy and independence for the worker, VS hyper-connection and risk to be potentially reachable at any time, creating new forms of subordination; risk of increased work-related stress
2) Need of orderliness in the work relationships	Decreased tolerance of work-conflicts, e.g., between the employer and the Unions	Internalization of conflicts; Unions and unionization are less tolerated within the work environment
3) Hypernomia	Request of an exaggerated norm adaptation	Norms are unrelated to workers' locus of control, though they generally cannot refuse/criticize them
4) Heteronomy	Request of external norm adaptation, increased external control	Norms are unrelated to workers' locus of control, and frequently are not shared by them
Other features		**Consequences**
5) Changed relations within the working class	Decreased social cohesion, weakening of social ties	The social context is less able to buffer an individual's crises
6) Increased unemployment (peculiarly among the young)	Reduced income, increased sense of precariousness	Increased social exclusion
7) Virtualisation of the relationships fostered by the new technologies	Con-fusion of spaces (places) and working hours (times); life becomes more permeable, globally	Paradoxically, increased loneliness/isolation

to suggest an etiopathogenetic hypothesis of psychiatric disorders exclusively based on social causes; rather, it was conceived as an invitation to reflect on some aspects of our contemporaneity that may be linked to important outcomes in terms of mental health.

Work and mental health in psychiatry and occupational health

In 2010 our group at the University of Modena and Reggio Emilia started a research project, named BUDAPEST-RP Project (Burden of Disease Attributable to Problems in the Economic Situation and Treatments Required for the Population) after the name of the city where the first results were made public [18]. The aim of this project was to study the effects of the economic crisis on the health of the Italian population, at national [19][20] and local level [11], and to develop specific clinical interventions and training initiatives. With respect to the local level, we focused on the ceramic tile district of Sassuolo (in the Province of Modena) [21], which greatly suffered from the recent economic crisis [11]. For this reason, in collaboration with the Occupational Health Unit of the Sassuolo S.p.A. Hospital, we realized a qualitative study, that involved occupational health physicians operating in the industrial area of Sassuolo. This first collaboration launched a stable liaison between occupational physicians and psychiatrists operating in the Province of Modena and led to a series of multidisciplinary events. The first was held in Sassuolo in June 2016 [22]. The second took place in the same year in Castelfranco Emilia (Modena) during the Sixth Mental Health Week of the Mental Health Department of Modena, and was titled "From work-related stress to vocational rehabilitation programmes". The third was organized in 2017 during the Seventh Week of Mental Health of the Province of Modena, and was titled "Mental health and occupational medicine: many common things, many things to do"; 128 auditors took part to the seminar, including occupational physicians, psychiatrists, nurses, educators, psychiatric rehabilitation technicians, medical students [23]. All these events attended by occupational and mental health professionals showed a strong commitment of the various professionals to promote a full integration between the two medical disciplines (in a multidisciplinary fashion), and not simply a juxtaposition of knowledge and skills.

Mental health and work: from vocational rehabilitation programs to recovery

The other issue linking mental health to work ("the other side of the coin"), as mentioned at the beginning, is represented by the use of work for rehabilitation purposes within psychiatric services, peculiarly in Community Mental Health Centres (CMHCs). A recent study concerning the years of the economic crisis showed a worrying increase in unemployment rates in the population affected by psychiatric disorders, twice those recorded in the general population not affected by mental disorders [24]. This is even more relevant considering that in the years of the crisis the possibility and the availability of companies to employ users of mental health services involved in VRPs, especially by means of the effective placement (Act 68/1999), decreased. On the other hand, studies are available pointing out that active labour programs involving people with psychotic disorders may determine a reduction of hospitalization (up to 54% of days) [25][26]. In the light of the above, it is essential to optimize VRPs, by favouring their positive outcome. For this reason, our research group carried out two studies in a CMHC placed in the Province of Modena.

The first study is a qualitative research. A group of users and professionals involved in VRPs were asked about the positive and negative aspects of such programs [27]. Two macro-areas stemmed out from the qualitative analysis: positive reinforcements and negative reinforcements, further characterized by sub-codes. Work environment and relationships with co-workers were identified as able to influence VRPs both positively and negatively. Among the positive reinforcements, the following elements were coded: users' expectations and motivation, the VRP seen as a resource and an important life opportunity by the user, and the supportive network offered by the CMHC. Differently, among the negative reinforcements, the following aspects were coded: increasing requests from the company, a certain lack of information concerning rules and rights concerning the workplace, and stigma in the work environment. This study suggests to address such issue by means of a group psychoeducational intervention, aiming at supporting the users during the VRPs [28-30]. Furthermore, since some topics emerged during the focus group involve both psychiatry and occupational medicine, the participation of an occupational health physician at specific modules of the psychoeducational intervention may help realize a full integration between mental health and occupational health services.

The second study was a retrospective research, in which a group of fifty users who were successfully employed at the end of their VRP were compared with a group of fifty users who dropped out during the VRP [31]. Aim of the study was to identify clinical and socio-demographic variables associated with the outcome of VRPs. The analysis identified two variables significantly associated with the outcome (employment): type and duration of the programme. VRPs oriented toward competitive labour market (e.g., type C apprenticeships as defined by the Emilia-Romagna Regional Law 14/2015) were asso-

TABLE III. *Take-home message.*

- Work organization determines the ability of the work environment to promote mental disorders or protect from them, as well as to favor vocational rehabilitation programs able to foster social inclusion of people affected by severe psychiatric disorders
- Some features of work organization in the context of the Fourth Industrial Revolution mirror some psychopathological aspects of the pre-morbid personality prone to develop depression, and may act as environmental risk factors
- Given the intrinsic complexity of work organization, a multidisciplinary approach is needed, peculiarly between mental health and occupational professionals

ciated with increased probability of employment. Similarly, short-term programmes (in our sample, no longer than six months) were associated with better outcomes. From the point of view of translational research, these two variables (typology and duration of vocational rehabilitation programmes) may be easily monitored to get a practical and immediate feed-back of VRPs success, helping to avoid exposing the users to useless failures.

A tentative conclusion

Starting from the metaphor of the two-sided coin, the present contribution focused on the relation between work and mental health on the one hand, and mental health and work on the other. Our view is that an important and neglected mediator of these two sides is represented by work organization. The latter may promote workers' health and well-being, as well as foster the inclusion of psychiatric services users attending VRPs in the social and economic body (Tab. III). Yet, it may act in the opposite way, by increasing work-related stress and mental disorders, and further promoting the exclusion of those who are already excluded. Work organization is certainly a complex issue influenced by different dimensions, e.g., economic, managerial, legal, health, etc. For this reason, a multidisciplinary approach is needed to better understand those links and change work organization, to make it healthier. At the same time, it is necessary to foster networking between professionals with different backgrounds, operating in different fields: mental health, occupational medicine, local health authorities and universities, and so forth. In this sense it appears important to promote a better integration between occupational health and psychiatry in care, research and education.

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Conflict of Interest

The authors have no conflict of interests.

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Presence of isolated catatonic signs in chronic psychosis: is chronic catatonia under-recognised? A case series

Introduction

Catatonia is a complex syndrome of specific motor abnormalities associated with various psychiatric disorders. Historically, more than 50 clinical signs have been described in catatonia, however, it is now confined to the 23 signs mentioned in the Bush-Francis Catatonia Rating Scale [1]. In clinical practice we are apt to recognise catatonia in its stuporous form presenting in emergency with risks due to compromised food and water intake and immobility. Excited catatonia is often missed or diagnosed in hindsight when it presents with manic excitement [2]. In this case series we want to highlight that the presence of a few catatonic signs may often be missed as has been pointed out earlier [3]. This under-recognition may account for the discrepancy between findings in literature [4]. In the International Pilot Study of Schizophrenia (IPSS) though catatonic signs were noted in 96 patients only a few among them were diagnosed as catatonic schizophrenia. Conversely, most of the 55 patients diagnosed as having catatonic schizophrenia did not have catatonic symptoms [5].

In this case series, we would like to present three patients with persistent catatonic symptoms occurring during their psychotic illnesses. The catatonic signs were recognized on clinical evaluation. The signs specifically responded to treatment with lorazepam and in two of the cases, drug default or attempts to taper the dose; led to resurgence of catatonic symptoms.

Case series

1. A 23-year old male presented with a 1 year duration of illness with disorganized behaviour, apathy, alogia, asociality and persecutory delusion. He also had echolalia, echopraxia and sudden bursts of pacing behaviour during in-patient stay. A diagnosis of unspecified non-organic psychosis was made. We stabilized him on Tab. olanzapine 12.5 mg. He showed significant resolution of disorganized behaviour and was discharged. He continued to have echolalia, echopraxia and sudden unexplained pacing behaviour at follow-up. Initially thought to be part of psychotic excitement, these behaviours were now recognized as catatonic symptoms and a trial of lorazepam 4 mg was given. There was good response after 3 weeks. On two attempts to taper lorazepam catatonic symptoms recurred.

2. A 35-year-old male with 9 year duration of chronic psychosis characterized by predominant negative symptoms and auditory hallucination, was treated with risperidone 6 mg. Hallucinations were well controlled, but he had ambitendency, mutism and negativism for last 6 months. The symptoms had not worsened to catatonic stupor and he was otherwise able to perform his daily chores. He was started on 4 mg of lorazepam as an out-patient for these catatonic symptoms. He showed marked improvement after 3 weeks and is currently under follow up with the same dose of lorazepam.

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3. A 37-year-old male with chronic psychosis presented with a relapse of symptoms characterized by withdrawn behaviour, mannerisms, touching and tapping nearby objects. Patient was started on lorazepam 8 mg and risperidone 5 mg. He responded well to medications in 2 weeks. On tapering lorazepam below 4 mg in out-patient follow up after 4 weeks, mannerisms and tapping behaviour alone reappeared without any psychotic symptom. Presently, the patient is being continued on lorazepam 4 mg in view of the reemergence of catatonic signs on tapering lorazepam.

Discussion

Catatonia is easily recognized when a patient presents with catatonic stupor. However, more subtle or persistent signs of catatonia are often missed. In this case series catatonic signs persisted during the maintenance phase in an otherwise chronic course of psychotic illness.

All three patients required and responded well to lorazepam trial. In all the patients, default of medications or attempts to taper lorazepam were met with re-emergence of catatonic signs. There have been previous reports of possible need for longer duration of lorazepam treatment in a subset of patients with catatonic stupor [6], though other trials have failed to show improvement of chronic catatonic symptoms with lorazepam [7]. In the present series, we are laying emphasis on subtle manifestations of catatonic signs that may present social and personal discomfort rather than with potential for medical complications seen due to catatonic stupor. Catato-

nia, as described or defined by Kahlbaum, Kraepelin, ICD-10 and Diagnostic and Statistical Manual of Mental Disorders, Fifth edition (DSM V) list 27, 23, 9 and 12 catatonic symptoms respectively. However, Leonhard's system operated with 57 signs and symptoms of catatonia. This decrease in the number of signs that are recognised as catatonic is due to the reduced emphasis on phenomenology and psychopathology in modern psychiatry in contrast to the meticulous description of the catatonic symptoms in the earlier literature [8]. This could have led to a slight delay in diagnosis.

In the three patients, the catatonic behaviour was persistent despite antipsychotic medications. On the other hand, one must be aware of the possibility of emergence or worsening of catatonic symptoms due to the use of antipsychotics. This phenomenon is especially marked with typical antipsychotics [9]. Patients whose psychotic symptoms such as hallucinations or delusions are in remission (as in the above three cases), we must attempt a reduction in antipsychotic dose and use lorazepam to treat catatonic symptoms. We must prefer atypical antipsychotics over typical antipsychotics. Moreover, the cases described above justify the current nosological status of catatonia as a distinct clinical entity rather than being a subtype of schizophrenia [10]. The patient's behaviour also caused significant social embarrassment to the family members requiring specific remedy. Thus, the use of lorazepam was justified as it helps to reduce stigma and relieve the patient of symptoms. Moreover, leaving catatonic symptoms untreated may also have the risk of worsening into a frank catatonic stupor in some cases and hence warrants specific treatment.

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