ORIGINAL RESEARCH

Resilience and recovery style: a retrospective study on associations among personal resources, symptoms, neurocognition, quality of life and psychosocial functioning in psychotic patients

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Background: Personal resources have been identified as important factors in predicting patient healing or symptoms control in schizophrenia. This observational retrospective study aims to explore the influence of resilience and recovery style on the modalities of clinical presentation of the disease, as well as individual functioning and quality of life.

Methods: Participants were patients affected by schizophrenia spectrum disorders assessed at different mental health facilities. The rating scales considered are the following: Resilience Scale 10-items (RS); Recovery Style Questionnaire (RSQ); Montreal Cognitive Assessment (MoCA); Schizophrenia Quality of Life Scale (SQLS); Life Skills Profile (LSP); Positive and Negative Syndrome Scale (PANSS).

Results: Forty-four patients fulfilled the inclusion criteria. The mean age was 46 years; the average length of the history of the disease at recruitment was 23 years with an average age at first episode of psychosis (FEP) of 23 years. General psychopathology, neurocognition, and integration recovery style can predict psychosocial functioning and explain ~54% of the LSP variance; RS total score and PANSS general psychopathology score can predict and explain ~29% of the LSP variance. A negative association between PANSS general psychopathology and LSP total score supports the need to reduce first the symptomatology, and then successfully apply other types of interventions. A strong positive association between neurocognition and life functioning was detected, showing that deficits in neurocognition have proved to be important predictors of the functional outcome. Integration was also proven to be significantly associated with a good functional outcome. Psychotic symptoms turn out to be a negative predictive factor, whereas resilience can be hypothesized as a protective factor.

Conclusions: Resilience and recovery style "integration" can be considered as two complementary predictive resources for a good outcome; this result supports the need to set up personalized treatments, based on the characteristics of the patients.

Keywords: mental health recovery, psychological resilience, schizophrenia, cognition, life quality, community functioning

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Introduction

In recent years, the stress-vulnerability model has been increasingly used to understand the development and the course of schizophrenia in the context of psychotic disorder treatment. According to this theory, progression of mental illness symptoms would proceed by an interaction between both biological and environmental factors,

such as stressful life events, work difficulties, family, social and relational complications.[1–3] In light of this concept, an integrative approach which includes pharmacological, psychological and socio-educational treatments is becoming increasingly shared as reference model in the treatment of mental disorders, such as schizophrenia, instead of only pharmacological approaches.[4] Several studies published in professional literature have shown that an integrative approach in the treatment of schizophrenia leads to an improvement in the course and outcome of the illness.[5,6] Schizophrenia is a mental illness with a huge health and social impact, determining a significant cognitive impairment, and a worsening in psychosocial functioning of people who suffer from it. The improvement of symptomatology due to psychopharmacological therapy, especially second-generation antipsychotics, partially guarantees a better quality of life, and a greater psychosocial functioning in people affected by psychosis;[7–10] psychological, psychosocial, and rehabilitative treatments are further elements of an integrated program aimed to achieve functional recovery and social reintegration.[11,12] Thus, to identify protective factors against relapses and to study elements promoting symptom remission is one of the goals in the study of schizophrenia treatment. The constructs of resilience and recovery style, in this context, assume significant relevance.[13–17] Resilience is the psychological competence to deal with and go beyond traumatic or stressful events, resulting in being positively changed and strengthened. In other words, resilience is the ability to repair oneself after damage, to cope, to resist something, but also to build and succeed in a positive reorganizing life, despite difficult situations.[18–22] Resilient individuals have the proficiency to rebuild the relations within their environment, enhancing themselves.[23] Literature has highlighted that there are internal protective factors of resilience such as emotional stability, autonomy, adaptability and life planning, and organization skills,[33,34] whereas the existence of a valid family and friendship support, as well as professional satisfaction, representprotective factorsof extra-individual resilience.[24–35] Furthermore, resilience is a dynamic, multi-dimensional construct which helps the individual to cope with stress, referring not only to psychological skills but also to the ability to include family, social, and external support systems.[35–37]

Recovery style indicates instead the strategy by which the subject heals from the illness and represents the set of individual responses produced by adaptation mechanisms that can allow the patient, first, to deal with the symptoms in order to make them more tolerable, and then, to overcome the acute phase of the disease.[15,38,39]

Recovery styles can be identified along a continuum between two opposite poles: "integration" versus "sealing over".[40] Integration is a process by which psychotic experience makes the subject become aware of a continuity between own thoughts and feelings. Sealing over is a mechanism through which psychotic and non-psychotic mental events remain separated and so excluded from awareness by detachment and removal.[39,41,42] Psychotic patients who adopt integration fight against their dysfunctional psychotic characteristics and manage, gradually, to merge these features in a more integrative form. Psychotic thoughts are perceived as stimulating by this kind of patient, and they are considered part of the same individual; moreover, psychosis represents a source of enlightenment for the subject, who may try to transform even more positively the initial health status and behavior. Therefore, this sort of individual presents greater awareness about the care received, offering the possibility to establish a better therapeutic relationship. Integration can allow greater investment in relationships and a better knowledge and tolerance of psychotic symptoms.[43]

Alternatively, psychosis can be sensed by patients who undertake the sealing over mechanism as a stranger and an intrusive object that should be kept separate. Sealer patients also identify more with negative stereotypes of mental illness (stigma) and are significantly affected by subjective alienation and a conviction of not being a member of society, which leads these individuals to experience greater discrimination and isolation and, consequently, a worse psychosocial functioning, a poorer life quality and greater incidence of depressed mood.[15] The psychopathological characteristics potentially related to recovery style are: the mode of onset, the age at the time of the first treatment, the length of the illness, the rate of admission in hospital and thesymptomatologyof the last acute psychotic episode. There is no significant correlation between demographic features and recovery style, except for a higher tendency towards the integration of patients older than 45 years.[40] Recently, recovery styles and resilience have been identified as important factors in predicting patient healing or symptom control, as well as psychosocial functioning and therapeutic adherence, and have begun to be considered as basic elements of recovery strategies.[11,13,14,16,44–48] According to the scientific literature, quality of life and psychosocial functioning in schizophrenic patients are mainly influenced by the clinical

manifestations of the disorder, such as positive, cognitive and negative symptoms. Recently, some studies have shown a correlation between quality of life and functioning with resilience/recovery style. However, this association is not universally shared, and there is little research related to the relationship between resilience/recovery style and clinical manifestation such as onset and intensity of positive, negative and cognitive symptoms.[13,16] The present study arises from the hypothesis that the personal resources mentioned above may be able to influence, directly or indirectly, the modalities of clinical presentation of the disease, as well as individual functioning and quality of life.

The first aim of this research is to identify the potential capacity of resilience, recovery style, psychotic symptoms and neurocognition to influence psychosocial functioning and life quality of people with psychosis.

A secondary aim is to understand if personal resources, psychopathology, and neurocognition were independently associated with psychosocial functioning and quality of life, or through interactions between them.

Materials and methods
Sample
This observational naturalistic retrospective study observed patients assessed at different mental health facilities of the Psychiatric Unit of Varese, Northern Italy (Deliberate no. VIII/4221, February 28, 2007). Data collected were referred to the period between July 2017 and February 2018.

Data from patients who fulfilled the following inclusion criteria were collected: patients must be affected by a schizophrenia spectrum disorder (schizophrenia, schizoaffective disorder and other psychotic disorder) according to the *Diagnostic and Statistical Manual of Mental Disorder - 5*; must be aged between 18 and 65 years; must be a patient of the mental health facilities of the Psychiatric Unit; must sign a general written informed consent to the processing of their personal data; must have a CGI-S score <3; must have a history of illness >5 years; must have adhered to antipsychotic treatment over the previous year; and must have regular psychiatric evaluations.

Exclusion criteria were: incompetence to subscribe a generic informed consent for processing personal data; relevant organic and physical disadvantages or mental deficiency; psychopathological acute phase at first evaluation; current gestation or breastfeeding; current substance abuse.

All participants signed a general informed consent for processing personal data as a component of the normal diagnostic assessment procedure and quality check processes; the evaluation tools and rating scales were carried out by clinicians as part of the clinical routine.

Patient records were sealed in order to prevent the detectability of the participants, based on the Italian legislation (D.L. 196/2003, art. 110–24 July 2008, art. 13). The Provincial Health Ethical Review Board (Ethics Committee of Insubria – Varese, Italy) was previously consulted, and it confirmed that the study did not need authorization from the Board. The study was conducted in conformity with the ethical principles of the Declaration of Helsinki (with amendments) and Good Clinical Practice.

Evaluation tools
The rating scales considered are the following:

- **Resilience Scale (RS), 10-items, Italian version.**[49] The Resilience Scale is the first scale for self-assessment of resilience published by Wagnild and Young in 1993.[50] The initial scale consisted of 50 items, subsequently reduced to 25; subsequently, a 14-item version was elaborated, and also validated in Italian;[51] finally, a short version of 10 items was created, that was widely used internationally. The measurement mode used, regardless of the version used, is a 7-point Likert scale (from 1= "strongly disagree" to 7= "strongly in agreement"). This instrument is built on five different dimensions, for each of which there are 5 or 2 items, respectively, in the 25-item and 10-item versions: perseverance or determination; balance or serenity; uniqueness; significance; self-confidence. The same Wagnild, however, revealed subsequently only two factors, namely personal competence and self-acceptance.[52] RS total score is intended as a comprehensive indicator of resilience: bigger score means greater resilience. In this research we use the 10-item version, a clearer tool for the less well educated people or individuals with cognitive deficiency, like some subjects suffering from schizophrenia spectrum disorders. Cutoff scores for this scale are: less than 48 points reflects low resilience; between 49 and 59 indicates average resilience; higher than 59 indicates high resilience.
- **Recovery Style Questionnaire (RSQ), Italian version.**[53] This questionnaire, compiled by the patient, is aimed at the rapid evaluation of the

method of recovery from psychosis. This tool was originally developed by Drayton, Birchwood and Trower,[44] and later translated and validated in Italian. The questionnaire is composed of 39 items, planned to mirror types expressed by those developed by Mc Glashan et al:[42] these items, in groups of three, refer to the concepts of continuity, belonging, responsibility, curiosity, education, search for help, guilt, cause, optimism, impact, fear, appreciation, and satisfaction. For each item the patient can choose between two different types of answers, one representative of the recovery style "integration" type, the other reflecting the recovery style "sealing over" type. Thirteen scales were therefore computed: for each scale the patient is classified as "sealer" or "integrator", based on the answers given: if two of three answers for each item correspond to a particular recovery style ("integration" or "sealing over"), this style is attributed to the patient. In this study we calculated both scores: RSQ "sealing over" total score and RSQ "integrator" total score.

For this scale, cutoff values or normative scores have never been calculated.

- **Montreal Cognitive Assessment (MoCA).**[54] This is a scale for fast evaluation of mild mental disability and evaluation of neurocognitive abilities. It evaluates eight cognitive aspects: attention and concentration, executive functions, memory, language, visual-constructive abilities, abstraction, calculation, and orientation. The highest score obtainable is 30; an amount equal to or greater than 23.28 is considered normal.[55]

- **Schizophrenia Quality of Life Scale (SQLS).**[56] The SQoL is a tool aimed at assessing life quality, specific for subjects with schizophrenic disorders. It is a short self-assessment scale consisting of 30 items divided into three areas. 1) Psychosocial: 15 items that investigate affecting problems, such as a sensation of loneliness, depression or hopelessness, as well as problems in different collective contexts and concern for future. 2) Motivation and energy: 7 items that investigate motivation, will, and activity. 3) Symptoms and side effects: 8 items that assess aspects such as insomnia, blurred vision, vertigo, muscle contractions or xerostomia that could derive from antipsychotic therapies. The measurement mode used is a 5-point Likert scale, from 0="never" to 4= "always"; greater scores correspond to a worse

quality of life; for patients with a diagnosis of schizophrenia, normative scores are 44.97 points with a standard deviation of 21.23.

- **Life Skills Profile (LSP), Italian version.**[57] This is an assessment scale of global functioning and disability of schizophrenic patients, administered by clinicians. The scale was developed in English by Parker and Rosen,[58] and subsequently adapted in Italian in 1997. The term "life skill" expresses the concepts of basic skills and behaviors that allow an individual to adequately perform the activities of daily life and to be part of society. The scale has 39 questions with four multiple choices scoring from 1 (negative end) to 4 (positive end). The total score can oscillate from 39 to 156 points, whereas concerning the five subscales, each of which refers to specific social proficiencies in everyday life: "self-care" (10 items), "non-turbulence" (12 items), "social contact" (six items), "communicative" (six items), and "responsibility" (five items), higher scorings correspond to a greater competence. For patients with a diagnosis of schizophrenia, normative scores are 118.8 points with a standard deviation of 17.7 points.

- **Positive and Negative Syndrome Scale (PANSS).**[59] This is a 7-point instrument, standardized by Kay et al, and was conceived as an operational method for evaluating positive, negative and general psychological symptoms deriving from a semi-structured clinical assessment and other sources of information, such as clinical records. The scale is mainly used for psychotic spectrum disorders, although it is not diagnosis-specific and it can also be used for affective spectrum disorders. The following areas are investigated: positive symptoms; negative symptoms; and general psychopathology like physical manifestations (tensions, formalisms and posture, excitement, unaffectivity), interpersonal behaviors (poor relationships, lack of collaboration, lack of attention, hostility), verbal cognitive processes (mental disorganization, stereotyped thinking, lack of spontaneity and conversational flow), content of thought (grandiosity, concerns inherent to the physical aspect, feelings of guilt, disappointments), answer to structured interview (disorientation, anxiety, depression, difficulty in abstract thinking) and degree of aggression. For each of the 30 items the degree of intensity is expressed on a scale from 0 (none) to 7 (maximum). The total score and the scores of the single items are

then calculated to define the patient's clinical profile. PANSS is widely used in clinical practice as it has proved useful in resolving particularly difficult diagnostic cases and preparing detailed psychological relationships. It has also proved to be very sensitive to clinical changes related to both pharmacological and non-pharmacological therapies. In this study we used three different scores: positive symptom scoring; negative symptom scoring; and general psychopathology scoring. Normative scores are: 18.20 points with a standard deviation of 6.08 for positive symptoms; 21.02 points with a standard deviation of 6.17 for negative symptoms; 37.74 points with a standard deviation of 9.49 for general psychopathology.

Statistical analysis

We took into consideration continuous variables reporting averages and SD; we presented categorical variables as relative frequencies. We used the Kruskal–Wallis test to assess any statistically significant differences among subjects affected by schizophrenia and those with schizoaffective disorder or other psychotic disorder. General psychopathology (PANSS General Psychopathology Scale), positive psychotic symptoms (PANSS Positive Scale) and negative psychotic symptoms (PANSS Negative Scale), neurocognitive functions (MoCA total score), recovery style (RSQ Integrator and Sealing Over Scale) and resilience (RS total score) were considered as independent variables. Psychosocial functioning (LSP total score) and quality of life (SQoL total score) were considered dependent variables. Based on the data obtained from the Pearson correlation, we used multiple linear regression models to investigate the association among independent variables and psychosocial functioning or life quality. We used a simultaneous linear regression in both cases, inserting only the independent variables statistically correlated with the dependent variables to decrease the ordinary variance among variables and to ban less important variables. In the first analysis, LSP total score was fixed as the dependent variable; in the second analysis, the dependent variable was SQoL total score. Finally, two different generalized linear model were used to identify any statistically significant interactions among the independent variables and to detect any moderators. As in the previous case, in the first analysis, LSP total score was fixed as the dependent variable; in the second analysis, the dependent variable was SQoL total score. Only the independent variables

statistically correlated with the dependent variables were considered as covariate variables. Results were analysed through the IBM® SPSS® Statistics, version 20.0.

Results

Demographic and clinical data

As shown in Table 1, among the 64 subjects evaluated, 44 patients fulfilled the inclusion criteria: 30 patients were male (68%), while the remaining 14 subjects were female (32%). The mean age was 46.48 years (SD 11.53); the mean length of the history of the disease at recruitment was 23.50 years (SD 11.29) with an average age at first episode of psychosis (FEP) of 23.70 years (SD 7.24). In 77% of the patients (n=34) a diagnosis of schizophrenia was observed, 11.5% (n=5) of the sample have a diagnosis of schizoaffective disorder, and in 11.5% (n=5) of the sample a diagnosis of other psychotic disorder was detected.

Descriptive analyses of clinical variables are shown in Table 2. At first evaluation, the mean MoCA total score in the total sample was 21.34 (SD 4.47), the average RS total score was 52.30 (SD 9.68), while the average RSQ integration score and RSQ sealing over score were, respectively, 24.11 (SD 4.70) and 14.89 (SD 4.70); the average PANSS positive scale and negative scale were, respectively, 18.11 (SD 6.80) and 23.09 (SD 8.81), while the average PANSS general psychopathology scale was 45.50 (SD 14.84); the average LSP total score was 117.73 (SD 20.33), and the mean SQoL total rate was 51.93 (SD 13.22).

As reported in Tables 1 and 2, no statistically significant differences among the three different psychotic disorders in any scales and demographic characteristics were observed. Furthermore, despite the small sample size, the clinical data can be considered representative, as evidenced by the comparison with the normative scores, especially regarding positive and negative symptoms, resilience and psychosocial functioning.

Multilinear regression

Pearson correlations are shown in Table 3. As regards the correlations with psychosocial functioning, a statistically significant negative correlation ($p<0.001$) among LSP global score and PANSS positive symptoms scoring and general psychopathology score emerged; however, a weak negative correlation ($p<0.01$) between LSP total score and RSQ sealing over score was described. RSQ integrator

Table 1 Characteristics of the sample

	Total sample (N=44)				Schizophrenia (N=34)				Schizoaffective disorder (N=5)				Other psychotic disorder (N=5)				p
	Male		**Female**		**Male**		**Female**		**Male**		**Female**		**Male**		**Female**		
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Sig**
Gender	30		14		24		10		4		1		2		3		
Age (years)	46.48	11.53			47.21	11.42			45.60	11.86			42.40	13.66			0.778
Education (years)	9.82	2.5			9.88	2.7			9.80	2.04			9.40	1.34			0.966
Age at first psychotic episode (years)	23.70	7.24			24.09	8.01			23.40	3.57			19.40	6.73			0.463
History of disease (years)	23.50	11.29			23.65	11.26			22.40	10.01			23.60	14.91			0.988

Table 2 Data on resilience, recovery style, neurocognition, psychotic symptomatology, quality of life and social functioning

	Total sample (N=44)		Schizophrenia (N=34)		Schizoaffective disorder (N=5)		Other psychotic disorder (N=5)		Normative scores		Cutoff scores	p
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**		**Sig**
MoCA total score	21.34	4.47	21.29	4.98	21.00	2.73	22.00	1.58	-	-	23.28	0.770
RS total score	52.30	9.68	52.26	10.16	48.60	10.33	56.20	3.70	-	-	48–59	0.426
RSQ integrator score	24.11	4.70	23.59	4.80	26.80	5.80	25.00	1.22	-	-	-	0.275
RSQ sealing over score	14.89	4.70	15.41	4.80	12.20	5.80	14.00	1.22	-	-	-	0.275
PANS positive score	18.11	6.80	18.74	6.18	16.80	8.64	15.20	9.52	18.20	6.08	-	0.441
PANS negative score	23.09	8.81	24.65	8.92	16.20	7.75	19.40	4.45	21.01	6.17	-	0.106
PANS general score	45.50	14.84	46.76	15.22	41.40	16.63	41.00	11.04	37.74	9.49	-	0.617
LSP total score	117.73	20.33	118.21	18.18	117.20	30.11	115.00	28.22	118.8	17.7	-	0.993
SQoL total score	51.93	13.22	52.29	13.22	55.20	14.51	46.20	13.08	44.97	21.23	-	0.474

Abbreviations: LSP, Life Skill Profile; MoCA, Montreal Cognitive Assessement; PANSS, Positive and Negative Syndrome Scale; RS, Resilience Scale; RSQ, Recovery Style Questionnaire; SQoL, Schizophrenia Quality of Life Questionnaire.

Table 3 Pearson correlations among RS total score, RSQ "integrator" and RSQ "sealing over" score, MoCA total score, PANSS positive, negative and general psychopathology score; LSP total score and SQoL total score

-	RS	RSQ integrator	RSQ sealing over	MoCA	PANSS positive	PANSS negative	PANSS general	LSP	SQoL
RS	I	0.120	−0.120	0.110	0.074	−0.067	0.057	0.076	0.449**
RSQ integrator	0.120	I	−1.000	−0.225	−0.214	−0.215	−0.096	0.354*	0.246
RSQ sealing over	−0.120	−1.000	I	0.225	0.214	0.215	0.096	−0.354*	−0.246
MoCA	0.110	−0.225	0.225	I	0.083	−0.102	−0.123	0.366**	0.111
PANSS positive	0.074	−0.214	0.214	0.083	I	0.059	0.577**	−0.403**	−0.297
PANSS negative	−0.067	−0.215	0.215	−0.102	0.059	I	0.561**	−0.259	−0.151
PANSS general	0.057	−0.096	0.096	−0.123	0.577**	0.561**	I	−0.587**	−0.317*
LSP	0.076	0.354*	−0.354*	0.366*	−0.403**	−0.259	−0.587**	I	0.330*
SQoL	0.449**	0.246	−0.246	0.111	−0.297	−0.151	−0.317*	0.330*	I

Notes: ** $p \leq 0.01$; * $p \leq 0.05$.
Abbreviations: LSP, Life Skill Profile; MoCA, Montreal Cognitive Assessement; PANSS, Positive and Negative Syndrome Scale; RS, Resilience Scale; RSQ, Recovery Style Questionnaire; SQoL, Schizophrenia Quality of Life Questionnaire.

score and MoCA global scoring were found to be positively correlated with LSP total score, with a significance of $p < 0.01$ and $p < 0.001$, respectively.

Quality of life was significantly and positively correlated with resilience ($p < 0.001$), while a negative correlation with general psychopathology ($p < 0.01$) emerged.

Results from multiple linear regression analysis are provided in Table 4.

LSP global scoring was fixed as the dependent variable; the predictors summed were RSQ integrator score, MoCA total score, PANSS positive symptoms score and PANSS general psychopathology score. RS total score and PANSS negative symptoms score were removed from these analyses since there was no significant correlation with psychosocial functioning; RSQ sealing over score was not entered because its correlation values were reciprocal to those of RSQ integration scores. The model obtained explained 54.0% of the psychosocial functioning variance in the sample being examined (adjusted $R^2 = 0.540$; $F_{(4,39)} = 13.643$, $p < 0.001$). In particular, PANSS general psychopathology score was the most associated variable with LSP total score ($B = -0.607$, beta = -0.443; $p < 0.001$), followed by MoCA total score ($B = 1.840$, beta = 0.405; $p < 0.001$) and RSQ integrator score ($B = 1.650$, beta = 0.381; $p > 0.001$); PANSS positive symptoms score was not statistically associated with LSP total score ($B = -0.297$, beta = -0.443). PANSS general psychopathology score was negatively associated with LSP total score, while the RSQ integration score and MoCA total score were positively associated with LSP total score.

Table 4 Multiple linear regression among LSP and SQoL total score, RS total score, RSQ integrator score, MoCA total score, PANSS positive score, and PANSS general psychopathology score

	Independent variable	B	Beta	R	R^2	Adjusted R^2	(df) = F
LSP	RSQ integrator	1.650**	0.381**	0.764	0.583	0.540	(4,39) =13.643***
	MoCA	1.840**	0.405**				
	PANSS positive	−0.297	−0.099				
	PANSS general	−0.607**	−0.443**				
SQoL	RS	0.640**	0.469**	0.566	0.320	0.320	(2,41) =9.642***
	PANSS general	-0.307*	-0.344*				

Notes: *** $p \leq 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$.
Abbreviations: LSP, Life Skill Profile; MoCA, Montreal Cognitive Assessement; PANSS, Positive and Negative Syndrome Scale; RS, Resilience Scale; RSQ, Recovery Style Questionnaire; SQoL, Schizophrenia Quality of Life Questionnaire.

SQoL total score was fixed as the dependent variable; RS total score and PANSS general psychopathology were added as independent variables, following the principles previously adopted. This model explained only 28.7% of the quality of life variance in the total sample (adjusted R^2=0.287; F (2.41) =9.642; p<0.01): only RS total score was positively associated with SQoL total score (B=0.640, beta=0.469; p<0.01), while general psychopathology score was negatively associated with quality of life (B=−0.307, beta=−0.344; p<0.01).

Generalized linear model

Results of the generalized linear models are reported in Table 5. First, LSP total score was fixed as the dependent variable, while RSQ integration score, MoCA total score, PANSS positive symptoms score, and PANSS general psychopathology score were set as covariate variables. In this analysis, all the independent variables, except PANSS positive symptoms score, present a statistically significant direct effect on LSP total score; however, no statistically significant interactions among the covariate variables were observed. The same results were obtained by inserting SQoL total score as the dependent variable, and RS standardized total score and PANSS standardized general psychopathology score as covariate variables. In both cases, no independent variables act as a moderator to each other as regards the effect on dependent variables.

Discussion

According to the current literature,[14,16,17] a statistically significant correlation among personal resources,

symptomatology, and real-life functioning was observed. Data show that general psychopathology, neurocognition, and integration recovery style can predict psychosocial functioning in people affected by psychosis, and explain ~54% of the LSP variance.

As expected, the association between PANSS general psychopathology score and LSP total score was negative;[60] this is the heavier association with life functioning. This datum is complementary to that of other studies, which have shown the importance of reducing the psychotic symptomatology before successfully applying other types of interventions.[61,62] In contrast, a strong positive association between neurocognition and psychosocial functioning was detected: deficits in psychomotor activity, attention, working memory, and executive functions have proved to be among the strongest predictors of the functional outcome.[14,16,17,63] Precisely for this reason, cognitive remediation strategies are today considered as valuable tools in the treatment of chronic psychoses, especially if they are associated with psychosocial interventions.[63,64] Among the personal resources, the integration recovery style was found to be significantly associated with a good functional outcome: thanks to greater acceptance of their psychotic experience and awareness of the need for support and care, the integrator patients are more likely to maintain their social role and to invest in interpersonal relationships.[14,43] In spite of other research,[14,22] in our study, no significant correlations between resilience and psychosocial functioning emerged, probably due to the use of a measurement tool built exclusively on the basis of individual abilities and predispositions, and not on family and external support too; indeed, some studies have highlighted the

Table 5 Generalized linear model among LSP and SQoL total score, RS total score, RSQ integrator score, MoCA total score, PANSS positive score and PANSS general psychopathology score

Dependent variable	Covariate variable	B	T	F	Sig
LSP	RSQ integrator	0.452	3.414	11.653	0.002
	MoCA	0.469	3.331	11.096	0.002
	PANSS positive	−0.126	−0.844	0.712	0.405
	PANSS general	−0.428	−2.975	8.851	0.005
	RSQ integrator - MoCA	−0.109	−0.859	0.738	0.396
	RSQ integrator - PANSS positive	0.181	0.895	0.801	0.377
	RSQ integrator - PANSS general	−0.112	−0.651	0.424	0.519
	MoCA - PANSS positive	0.183	0.935	0.874	0.356
	MoCA - PANSS genera	−0.022	−0.152	0.023	0.880
SQoL	RS	0.463	3.601	12.964	0.001
	PANSS general	−0.402	−2.901	8.413	0.006
	RS - PANSS general	0.221	1.118	1.249	0.270

Abbreviations: LSP, Life Skill Profile; MoCA, Montreal Cognitive Assessment; PANSS, Positive and Negative Syndrome Scale; RS, Resilience Scale; RSQ, Recovery Style Questionnaire; SQoL, Schizophrenia Quality of Life Questionnaire.

greater importance of intrapersonal resilience factors, such as family and social support, compared to intrapersonal factors in predicting psychosocial functioning.[22]

Intrapersonal resilience factors were instead associated with the life quality of psychotic subjects, together with the general symptomatology: data show that RS total score and PANSS general psychopathology score can predict and explain ~29% of the LSP variance. Also in this case, psychotic symptomatology turns out to be a negative predictive factor, whereas resilience can be considered as a protective factor. In fact, a good opinion of one's own capabilities, a methodic style and a positive perception of the future permit psychotic patients to go beyond symptomatology distress.[25,26,30] The better the self-perception, perspectives for the future, and the ability to design and organize the routine are, the better the perception of their own quality of life will be. Therefore, resilience and recovery style are two complementary personal resources, both important to guarantee a good outcome to psychotic patients, alongside the stabilization of psychotic symptoms with psychopharmacological therapy and the improvement of neurocognitive functions.

Despite the interesting results obtained, the study has some limits: first of all, the small sample size does not allow generalizable results, but only to provide elements for future research. Moreover, although a minority of patients had a diagnosis of psychotic disorder and schizoaffective disorder, a sub-analysis was not made, and this represents another limit of the results. Since we excluded patients with current use of substances, another limitation of the study could be represented by the bias derived from the possible influence on neurocognition and health-related quality of life of past use of psychoactive substances, as shown by recent literature.[65–68]

A future perspective could be the evaluation of a larger sample, inclusion of additional variables (such as stigma and social support) and follow-up research in order to identify causal links.

Conclusions

The present study has confirmed the existence of a strong association among personal resources and life quality and psychosocial functioning in individuals with psychosis. Resilience and recovery style are independent and complementary predictive factors: the first is able to positively influence the real-life functioning, and the second can improve the personal perception of the quality of life; together they allow better results in the treatment of

psychosis, fighting the discomfort arising from the symptoms and cognitive impairment.

These results emphasize the need for tailor-made interventions for people with psychosis: the reduction of symptoms attributable to psychopharmacological therapy and cognitive remediation strategies are not enough to gain a functional outcome. Within psychosocial and rehabilitative interventions, mastering resilience and promoting integration recovery style could improve real-life functioning and ensuring a higher quality of life.[11,46,61]

Disclosure

No conflicts of interests in this work are reported by the authors.

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