RESEARCH ARTICLE

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Quality of life and psychiatric distress in people with serious mental illness, the role of personal recovery

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Abstract

Objectives: When considering the personal recovery of people with serious mental illness (SMI), it is essential to examine their reported psychiatric distress and quality of life (QoL). However, there is no consolidated model in the literature that clearly relates these variables. In this study we first analysed the relationships between QoL, psychiatric distress and recovery, and several sociodemographic variables. Second, we analysed the linear effects of psychiatric distress and recovery on QoL. Third, and most important, we tested two hypotheses that considered personal recovery as a moderator or mediator of the relationship between psychiatric distress and QoL.

Design and Methods: 234 volunteers with a diagnosis of SMI completed three self-report questionnaires, *The Recovery Assessment Scale-24, The World Health Organization QoL* and the *Clinical Outcomes in Routine Evaluation-Outcome Measure,* which showed very good levels of validity and reliability. The PROCESS macro for SPSS developed by Hayes (*Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*, The Guilford Press, 2022) was applied using the Bootstrap method to verify our moderation and mediation hypotheses.

Results: We found a negative linear effect of psychiatric distress on QoL, as well as a positive effect of recovery on said variable. Our results do not confirm the moderating effect of recovery on the relationship between distress and QoL. However, we do confirm the second hypothesis; recovery functioned as a mediating variable between psychiatric distress and QoL.

Conclusions: These findings allow us to reflect on how personal recovery affect the relationship between psychiatric distress and QoL and discuss its theoretical and practical implications as public policies.

KEYWORDS

clinical recovery, mediation model, moderation model, recovery assessment scale, schizophrenia, serious mental illness, subjective recovery

Practitioner Points

- In people with SMI, those with depression or neurotic disorders have the lowest QoL.
- Personal recovery mediates a large proportion of how psychiatric distress impacts QoL.
- Personal recovery does not moderate the relationship between psychiatric distress and QoL.
- Clinical interventions to reduce psychiatric distress are essential to improve QoL.

INTRODUCTION

The National Institute of Mental Health (1987) defines serious mental illness (SMI) as a mental, behavioural, or emotional disorder that results in a functional deficit that severely interferes with one or more of the essential activities of daily living. Although the diagnose usually included in the SMI category is schizophrenia, other diagnoses like affective or personality disorders could also be included in this category. Therefore, this concept is more related to a typology of patients than to a specific diagnosis (Zumsteim & Riese, 2020). In other words, SMI can be considered a trans-diagnostic category (Ruggeri et al., 2000).

In recent decades, the recovery model has articulated the care of people with SMI in Western social and health care systems. The term recovery and the elements that contribute to its meaning are subject to a wide variety of definitions and interpretations. The two main connotations of recovery (Slade et al., 2017) refer, on the one hand, to clinical recovery, the traditional use in medicine, which considers mental illness biological and attempts to eliminate its symptoms to achieve recovery. On the other hand, personal recovery is a much more complex term (Woods et al., 2019) that has developed over recent decades and become one of the most important movements in mental health services today. Anthony (1993) referred to personal recovery as a process of developing new attitudes, values, feelings, roles, life purposes, and meanings despite mental illness and its limitations. Recovery makes a satisfying and hopeful life that can contribute to society possible despite the effects of mental illness. It refers to recovering a life of satisfaction, fulfilment, and joy, in other words, "a life worth living", but at the same time does not expect symptoms to be completely eliminated (Slade et al., 2017, p. 1).

Andresen et al. (2003) designed a four-component five-stage model from this early definition of recovery. Based on a review of articles on experiential accounts of people with SMI and the theoretical literature, they concluded that for the consumer movement, recovery is predominantly psychological. This means a fulfilling and meaningful life with a positive sense of identity, based on hope and self-determination. They identified five stages of recovery, called moratorium, awareness, preparation, rebuilding, and growth, which were related to four different recovery processes: finding hope, re-establishment of identity, finding meaning in life, and taking responsibility for recovery.

Ng et al. (2019), following Andresen et al. (2003), argue that recovery process may be divided into stages which support the holistic recovery approach and its application in clinical practice. In their study, 14 narratives of people with borderline personality disorder were analysed using qualitative interpretative phenomenological analysis. This analysis resulted in differentiating the following three non-linear

stages: (1) being stuck, (2) diagnosis, and (3) improving experience, and four processes: (1) hope, (2) active engagement in the recovery journey, (3) engagement with treatment services, and (4) engaging in meaningful activities and relationships. Other authors (i.e., Lemos-Giráldez et al., 2015; Saiz et al., 2021; Wciórka et al., 2015) also agreed with this stage model applying it in their studies (Andresen et al., 2006, 2013).

Similarly, the conceptual framework of personal recovery by Leamy et al. (2011), based on a systematic review of research, is essentially compatible with this model. It consists of characteristics of the recovery journey, recovery processes, and recovery stages. The five main recovery processes considered relevant to both clinic and research were: "Connectedness", "Hope and optimism about the future", "Identity", "Meaning in life", and "Empowerment" ("CHIME"). Recovery therefore refers here to the subjective experience, in which the creation of new meanings and the reconstruction of identity form the cornerstone of the construct (Saavedra et al., 2022). Both the inductive and deductive analysis broadly validated this conceptual framework.

In this vein, recovery is strongly associated with increments in quality of life (QoL; Slade, 2010; Valiente et al., 2019). Although there is as yet no commonly accepted definition or gold standard for measuring QoL (Katschnig, 2006), the concept has been related to well-being, social and emotional functioning, satisfaction with life, social support, and other variables related to nonmedical features of disease (Bowersox et al., 2012; Kukla et al., 2014). For these reasons QoL has become a privileged field of research in mental health (Berghöfer et al., 2020; Dong et al., 2019; Ho et al., 2010).

Many publications have attempted to define what QoL means to people with mental illnesses, which should be an important part of its measurement. In a systematic review of qualitative research done with populations of people with mood disorders, neurosis and stress related disorders, personality disorders, schizophrenia, schizotypal and delusional disorders, Connell et al. (2012) identified six domains of QoL: well-being and ill-being; control, autonomy, and choice; self-perception; belonging; activity; and hope and hopelessness.

In another review, Hansson (2006) focused on the factors related to subjective QoL in people with various SMI (mainly schizophrenia). The results showed that QoL is primarily associated with psychopathology (especially depression and anxiety symptoms), aspects of the social networks, and personality-related factors, such as self-esteem, mastery, autonomy, and self-efficacy. QoL was also related to staying in community care instead of staying in hospital settings. This author found only weak relationships of subjective QoL with external life conditions (for example: income, housing, employment), sociodemographic variables, and global subjective well-being. Thus, the psychological constructs related to QoL are essential to the definition of personal recovery.

Other authors have also studied the relationship between mental health disorders and QoL. In a two-year study of the impact of mental health disorders, Evans et al. (2007) found that people diagnosed with SMI, mainly psychotic illness, had a lower subjective QoL than healthy population and those with other more common mental disorders (mainly anxiety and depression), using these authors' classification. Differences were also found by type of disorder and severity. These results are supported by a recent study by Berghöfer et al. (2020) in a sample of 935 patients who completed the World Health Organization Quality of Life (WHOQOL)-BREF questionnaire. This rich, widely used instrument, measures QoL dimensions such as physical and psychological health, social relationships, and environment. This study's research sample consisted mainly of patients with affective and schizophrenia-spectrum disorders, which required inpatient care and had very poor social functioning. Their results showed that QoL was significantly lower in this sample than in the community population, especially in patients diagnosed with depression. Other variables including the number of disease episodes, living situation, or age also explained a small part of the variation. Nevertheless, the authors emphasized the importance of promoting aspects of life independent of chronic disease that can increase QoL.

In relation to this, another important concept is psychiatric distress, which can be defined as the subjective negative assessment of one's psychological state (Chadwick et al., 2005) and it is associated with depressive and positive symptoms, that is, symptomatology (Freeman et al., 2014; García-Mieres et al., 2020). The negative relation between recovery and psychiatric distress or symptomatology, in particular affective symptoms, has been widely demonstrated (Austin, 2018; Van Eck, Burger, Schenkelaars, et al., 2018).

Furthermore, several studies have shown intricate interactions between all these variables: symptomatogy and/or psychiatric distress, personal recovery, and QoL of people with SMI (Eack & Newhill, 2007; Hofer et al., 2017; Ordóñez-Camblor et al., 2021). In this sense, components of recovery can directly affect QoL (Ertekin Pinar & Sabanciogullari, 2020) or they may work as mediators or moderators between symptomatology and QoL. For example, Grealish et al. (2017) found that empowerment, one of the mental health recovery components, was a mediator of psychological factors, such as self-efficacy, coping, control and well-being in young people in a nonclinical population. Empowerment seems to be a factor that influences taking care of one's own health, effective interaction with health services, and taking an active role in illness management.

Such mediation is also observed in clinical populations. For example, in preadolescents with attention deficit hyperactivity disorder (Frame, 2003), adults with chronic diseases such as heart disease, lung disease, stroke, or arthritis (Lorig et al., 2001) and heart, lung, or type 2 diabetes (Lorig et al., 2006). Ho et al. (2010) found direct and indirect effects of five components of recovery as agency, sense of optimism, perceived support, and lack of internal stigma and psychosocial symptoms in the QoL of 201 outpatients with schizophrenia spectrum disorders. Kukla et al. (2014), using linear regression showed that subjective recovery moderated the relationship between positive symptoms and QoL in veterans with schizophrenia spectrum disorders. In this sample, those with higher recovery scores had better results in some factors of the Quality of Life Scale (intrapsychic foundations and instrumental role factors). Therefore, personal recovery could be understood as a QoL protective factor.

Summarizing, evaluation of QoL has become an essential complement to the classic evaluation of symptoms and/or psychiatric distress in people diagnosed with SMI (Dong et al., 2019). In fact, it seems that although QoL and psychiatric distress are related, they are different variables, and other factors, such as empowerment, agency, and different concepts related to personal recovery, could mediate or moderate this relationship (Kukla et al., 2014). Therefore, it appears necessary to clarify the type of relationship amongst these three variables: quality of life, psychiatric distress, and recovery. In this vein, our aims in this work were three:

1. To explore the relationship of the level of QoL, psychiatric distress and recovery with sociodemographic factors in a sample of people with SMI.
2. To examine the linear effects of psychiatric distress and recovery on QoL. In accordance with the model presented above, the following hypotheses were tested:
   a) There is a negative linear effect of psychiatric distress on QoL.
   b) There is a positive linear effect of recovery on QoL.
3. Then, our main aim was to explore the mediation or moderation effect of personal recovery in the relationship between psychiatric distress and QoL in a sample of outpatients diagnosed with SMI. Therefore, we tested two hypotheses:
   a) Personal recovery moderates the relationship between psychiatric distress as predictor and QoL as outcome in people diagnosed with SMI. In other words, recovery would influence the level and direction of the relationship between psychiatric distress and QoL in people diagnosed with SMI.
   b) Personal recovery mediates psychiatric distress as a predictor and QoL as outcome in people diagnosed with SMI. In this case, recovery would be a way symptomology impact on QoL. In other words, it would be part of the causal pathway of the effect of psychiatric distress, and it would explain how psychiatric distress influences QoL.

METHOD

Participants

The original sample consisted of 250 participants, 16 of whom were excluded (6.4%) due to incomplete items on dependent or independent variables, leaving a final sample of 234. The statistical power of the

sample with an alpha of .05 and an effect size of 0.1 was 0.99. Therefore, the sample had sufficient statistical power to correctly reject the null hypothesis with a small effect size.

The inclusion criteria were: a psychiatric diagnosis considered SMI which lead to some degree of officially recognized disability, causing difficulties in carrying out the functions of daily life. This SMI must have been diagnosed for at least one year. Also, the participants had to be attending mental health services, particularly in specialized mental health rehabilitation or employment counselling services. Because SMI category focuses on severe impaired functioning, a minority of patients with diagnoses other than schizophrenia, bipolar disorder, or personality disorder, as well 39 participants with missing diagnostic data, were included in the mediation-moderation analysis. The entire sample had an official recognition of disability due to a psychological disorder and were being cared for by specialized support services.

The exclusion criteria were the following: not having the status of disabled person due to a psychological disorder officially recognized by the Regional Ministry of Equality and Social Policies; having a neurological problem; having been diagnosed less than a year ago; having an acute episode of the disease at the time of signing the consent form or completing the instruments; being under 18 years old or being unable to read and write Spanish.

As can be seen in Table 1, the majority of the sample was male (62.8%) and single (75.87%). Regarding nationality, all participants were Spanish. Most of the participants had only compulsory (42.73%) or intermediate studies (34.8%). Also, most of the participants were diagnosed with schizophrenia spectrum disorders. In addition to the participants with personality disorders and bipolar disorder, there was also a small sample of participants with other psychological disorders, such as obsessive–compulsive and depression, and serious dysfunctional problems with varying degrees of disability. They had been hospitalized a mean of 1.7 times (*SD*, 2.32, range 0–15), and 60.8% of the sample had been hospitalized at least once due to their psychological disorder. The participants received no financial compensation and all of them voluntarily signed their informed consent to take part in the study.

Measures

The participants completed three pencil-and-paper self-report questionnaires starting with questions about demographic characteristics. Although none of these instruments were originally developed for the Spanish population, all three were the translated versions adapted to this population, which showed very good validity and reliability (Feixas et al., 2012; Lucas-Carrasco, 1998; Saavedra et al., 2021). Additional instruments were also included; however, these did not relate to the hypothesis of this study and are therefore not discussed. For example, part of this sample was interviewed in order to analyse the meaning of the concept recovery by using qualitative methodology (Saavedra et al., 2022).

The Recovery Assessment Scale-24 (RAS-24) is the most widely used self-report questionnaire for measuring mental health recovery (Biringer & Tjoflåt, 2018; Salzer & Brusilovskiy, 2014). It has 24 items that measure five different factors: Personal Confidence and Hope, Willingness to Ask for Help, Goal and Success Orientation, Reliance on Others, and No Domination by Symptoms (Corrigan et al., 2004). Saavedra et al. (2021) validated this questionnaire in a Spanish clinical sample, with satisfactory fit indices and internal consistency ($a = .93$; $\omega = .95$) for the original five-factor structure. The results for the factors were similar to the original version in a clinical sample (Corrigan et al., 2004).

The World Health Organization QoL (WHOQOL-BREF) consists of 26 items based on the WHO definition of quality of life that measure four different dimensions: Physical Health, Psychological Health, Social Relationships, and Environmental Health, it also has an item about Overall QoL, and other items referring to General Health (Harper et al., 1998; Vahedi, 2010). The important advantage of this questionnaire is its questions on different aspects of QoL. Lucas-Carrasco (1998) validated this questionnaire in a Spanish population, finding satisfactory fit indices and internal consistency, with Cronbach's alpha of .70 to .80 for the original four-factor structure. In the original version the results with the clinical sample were similar (.65–.78 for dimensions; Mas-Expósito et al., 2011).

TABLE 1 Contrast between sociodemographic variables and variables belonging to the model.

	QoL			Psychiatric distress			Recovery		
	M (SD)	F (p)	η_p^2	M (SD)	F (p)	η_p^2	M (SD)	F (p)	η_p^2
Sex		2.65 (.110)			4.24 (.040*)	.018		2.49 (.120)	
Women, $N = 87$	19.56 (3.97)			25.36 (15.44)			92.24 (15.01)		
Men, $N = 147$	20.41 (3.75)			21.17 (14.84)			95.23 (13.40)		
Civil status		4.48 (.012*)	.04		0.46 (.630)			2.36 (.097)	
Single, $N = 173$	20.33 (3.90)			22.47 (15.38)			94.75 (13.56)		
Separated-widowed, $N = 29$	17.96 (2.36)			25.538 (15.03)			88.46 (17.33)		
With pair, $N = 26$	20.12 (4.03)			22.62 (14.24)			94.86 (12.65)		
Educational level		0.04 (.991)			0.48 (.702)			0.35 (.790)	
No studies, $N = 20$	20.15 (3.90)			24.25 (16.70)			96.60 (12.25)		
Basic studies, $N = 97$	20.07 (4.22)			23.587 (15.55)			94.67 (14.74)		
Secondary studies, $N = 79$	20.18 (3.58)			22.25 (14.84)			94.28 (13.43)		
University studies, $N = 31$	19.90 (3.43)			20.23 (13.99)			92.61 (13.65)		
Diagnosis		8.948 (<.001**)	.123		6.654 (<.001**)	.095		8.443 (<.001**)	.117
Schizophrenia spectrum, $N = 106$	20.84 (3.77)			20.35 (14.13)			97.094 (13.64)		
Bipolar spectrum, $N = 22$	20.60 (2.54)			16.50 (14.94)			94.59 (10.30)		
Anxiety Depression, $N = 29$	17.50 (3.98)			30.65 (15.40)			84.58 (15.24)		
Personality disorders, $N = 38$	18.35 (3.50)			27.57 (14.28)			88.50 (13.44)		

*indicates p < .05; **indicates p < .001.

The *Clinical Outcomes in Routine Evaluation-Outcome Measure (CORE-OM)* has 34 items measuring psychiatric distress that provide results in four different dimensions: Well-being, Problems/Symptoms, Functioning, and Risk. In order to avoid possible problems of multicollinearity, for this study only the domains of Problems/Symptoms and Risk were used. From now on, the sum of these two CORE subscales will correspond to our measure of psychiatric distress. Feixas et al. (2012) validated the Spanish version of the scale which has good reliability for all dimensions with a Cronbach's alpha of .77 to .94, similar to the original version of .75 to .94 (Evans et al., 2002). Convergent validity of the questionnaire was also confirmed. Strong correlations in clinical samples have been observed between these dimensions and referential measures: Problems/Symptoms and Symptom Checklist-90-Revised (.87), Risk and GHQ-D General Health Questionnaire (.69), as well as All items and SCL-90-R (.88), amongst others (Evans et al., 2002).

Procedure

After receiving approval by the ethics committee (opinion code: 0339-N-17/12-July-2017), two types of institutions in southern Spain, public employment guidance and community mental health services, were contacted. Then, after these institutions agreed to assist in the research, the coordinator of each service identified participants with at least one diagnosis of SMI and some degree of disability recognized by social services who might be interested in participating in the project. The general objectives were presented, and volunteers were referred to the research team for an appointment. On the day of the meeting with the researcher, any participant doubts were clarified, they gave their written consent for participation and use of their data in the study, and they were informed that they could withdraw at any time. Although participants were asked about their diagnoses, these were confirmed by the health and social services where they were recruited. They then filled in the questionnaires. Data were collected individually in person with the supervision of psychologists, amongst them the authors of this study. All data were collected in the community mental health centers or special employment guidance and support services where they were cared for.

Design and analysis

Our hypotheses were tested with a cross-sectional analysis of data self-reported by people diagnosed with SMI. The internal consistency of each of the scales and their factors was explored. First, the relationship of the sociodemographic variables, sex, education, work experience, marital status, and number of hospital admissions, with the variables involved in the models was studied using analysis of variance or Pearson's correlation when the sociodemographic variables were continuous. For this, the homogeneity of variances and normality were verified by analysing the kurtosis and skewness between the variables. The association between psychiatric distress, recovery and QoL was explored using a zero-order Pearson correlation. The partial eta squared effect size (η_p^2) was calculated for ANOVA results and interpreted following the recommendations of Cohen (1988). Hierarchical regression was performed to explore the combined influence of the independent variables on QoL. To verify the absence of autocorrelation, the Durbin-Watson statistic and the variance inflation factor were used to test for multicollinearity.

The Hayes (2022) PROCESS macro for SPSS with bootstrapping was used to verify our moderation and mediation hypotheses. Two models were estimated, Model 1, which postulates a model with a single moderating variable, and Model 4, with a single mediating variable (Figure 1). The independent variable was psychiatric distress, and the dependent variable was QoL. In these models, recovery was the moderating or mediating variable, depending on the case. The moderation hypothesis was confirmed if the significance of the interaction between the symptomatology and recovery variables was less than .05. The test for highest-order unconditional interaction(s) was used as alternative verification of moderation. This Process macro is based on a likelihood ratio test, comparing the fit of the model that includes the interaction compared to a model that excludes it.

For the mediation analysis, the direct and indirect effects, standard errors and confidence intervals (CI) were estimated based on the bootstrap distribution found with 10,000 bias-corrected resamples. In the mediation model, the indirect effect of IV (psychiatric distress) on DV (QoL) resulted from multiplication of regression coefficients *a* and *b* (ab) (see Figure 2). The mediation hypothesis was accepted if the CI was statistically significant, that is, if the CI (95%) did not include the value zero (Hayes, 2022). The mediation percentage was calculated as the ratio between the indirect effect and the total effect (ab/ab + c'). Furthermore, although Igartua and Hayes (2021) criticize the Sobel test, this method was used to confirm the mediation effect. The Sobel test (Sobel, 1982) calculates the relationship between the point estimate and its standard error. The mediation effect was considered statistically significant if in the Sobel test Z fell outside ±1.96 given a two-tailed alpha of .05, and outside ±2.58 given a two-tailed alpha of .01.
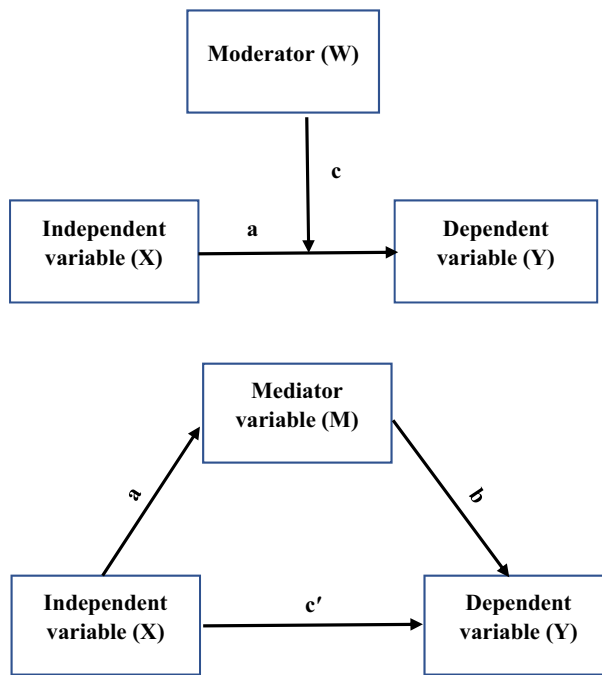
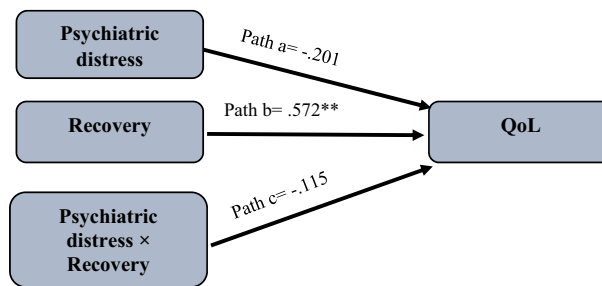**FIGURE 1** Conceptual models of moderation (Hayes Model number 1) and Mediation (Hayes Model number 4).

FIGURE 2 Statistical moderation model: Recovery moderating symptomatology and quality of life. $* < .05$; $** < .001$.

RESULTS

Internal consistency of the scales used was excellent. The Cronbach's Alpha for the total WHOQOL-BREF was .92. The CORE symptom and risk scales used for symptom measurement were .92 and .87, respectively. The total RAS-24, which measures recovery, came to .95. Except for the number of hospital admissions, all the variables, including those in the model, had kurtosis and skewness below 0.8. Homogeneity of variances was confirmed in all comparisons.

Table 1 shows some significant differences in the variables in the model by sociodemographic factors. Women said they suffered more from psychiatric distress, with a small-to-medium effect size ($F_{[1,232]} = 4.24$, $p = .041$). Significant differences in QoL by marital status had a medium effect size ($F_{[2,225]} = 4.48$, $p = .012$). Bonferroni post hoc comparisons found that singles enjoyed more QoL than those who were separated or widowed ($p = .009$).

Significant differences were found with large effect sizes between diagnosis and QoL ($F_{[3,191]} = 8.948$, $p < .001$), Psychiatric distress ($F_{[3,191]} = 6.654$, $p = .001$) and Recovery ($F_{[3,191]} = 8.443$, $p < .001$). Applying the Bonferroni method, it was found that participants diagnosed with schizophrenia spectrum scored

higher in QoL than those with anxiety and depression disorders ($p = .001$) or personality disorder ($p = .001$). Finally, participants diagnosed with bipolar disorder had a higher QoL than those diagnosed with anxiety or depression disorders ($p = .037$).

Participants diagnosed with schizophrenia spectrum and bipolar disorders scored lower on psychiatric distress than those diagnosed with anxiety and depression, with a probability of $p = .005$ and $p = .004$ (*post-hoc* Bonferroni), respectively. Moreover, participants diagnosed with bipolar disorder scored lower on psychiatric distress than those diagnosed with personality disorder, with a probability of $p = .004$.

In the recovery variable, the participants diagnosed with anxiety and depression and personality disorders had significantly worse results than those diagnosed with schizophrenia spectrum disorders ($p < .001$ and $p = .006$, respectively).

Table 2 shows that age correlated negatively and significantly although weakly with QoL and recovery. The number of hospital admissions correlated positively with psychiatric distress and negatively with recovery. The correlations between variables pertaining to the model to be validated were significant with an intensity of .50 to .70. As expected, psychiatric distress correlated negatively with quality of life and recovery, while the last two variables correlated positively. Therefore, there are significant linear effects of recovery and psychiatric distress on QoL Specifically, it was found a negative effect of psychiatric distress, and a stronger positive effect of recovery.

In the moderation model, no statistical significance was found for the interaction (Path c) between the independent variable, psychiatric distress and the moderator, recovery ($\beta = -.12$, $p = .635$; Table 3). The PROCESS macro's test of highest order unconditional interaction confirmed this result. When the independent variable was entered along with the moderator, including their interaction in the equation, only the recovery variable (Path b) was significant ($\beta = .57$, $p < .001$). It may therefore be said that the moderation model (Figure 2) was not statistically significant.

Nevertheless, all the paths in the mediation model were significant (Figure 3 and Table 4). Based on the bootstrap distribution of the indirect effect ($\beta = -.27$, LLCI $= -0.34$, ULCI $= -0.194$), the zero was outside the confidence intervals (CI). The Sobel test confirmed mediation by the recovery variable in the influence of psychiatric distress on QoL ($z = 10.74$, $p < .001$). The percentage of mediation was

T A B L E 2 Correlations amongst sociodemographic variables and variables belonging to the model.

	3	**4**	**5**	**M**	**SD**	**Range**
1. Age				38.16	9.54	44 (19–63)
Pearson correlation	−.230**	−.145*	.027			
p	< .001	.028	.683			
N	232	232	232			
2. Number hospital admissions				1.70	2.33	15 (0–15)
Pearson correlation	−.058	−.149*	.231*			
p	.400	.030	.002			
N	212	212	212			
3. Quality of life				80.37	15.40	94 (26–120)
Pearson correlation		.699**	−.593**			
p		<.001	<.001			
N		234	234			
4. Recovery				94.11	14.06	71 (49–120)
Pearson correlation			−.495**			
p			<.001			
N			234			
5. Psychiatric distress				26.62	15.17	64 (0–64)

*indicates p < .05; **indicates p < .001.

TABLE 3 Paths coefficients of the moderation model.

Model	R^2	Coeff	Std. coeff	SE	t	p	LLCI -	ULCI
1. Psych. distress	.352	23.51	−.59	.013	−11.22	<.001	−0.18	−0.12
2. Psych. distress	.107	−0.08	−.33	.013	−6.59	<.001	−0.11	−0.06
Recovery	.29	0.15	.54	.014	10.83	<.001	0 .12	0.17
3. Path a.								
Psych. distress	.040	−0.05	−.20	.069	−0.74	.458	−0.19	0.08
Path b.								
Recovery	.327	0.16	.57	.024	6.51	<.001	0.11	0.21
Path c.								
Psych.distress*Rec	.013	−0.01	−.12	.017	−0.48	.635	−0.04	0.03
Test(s) of highest order unconditional interaction(s) (Hayes, 2022): Psychiatric distress *Rec								
R^2-chng	F	df1	df2	p				
.001	0.23	1.00	230.00	.635				

Note: Test for highest-order unconditional interaction(s) is based on a likelihood ratio test, comparing the fit of the model of Y that includes the interaction compared to a model that excludes it. For single-degree-of-freedom tests of interactions, this test can produce a *p*-value for the interaction that is different than the *p*-value produced for the ratio of the regression coefficient.
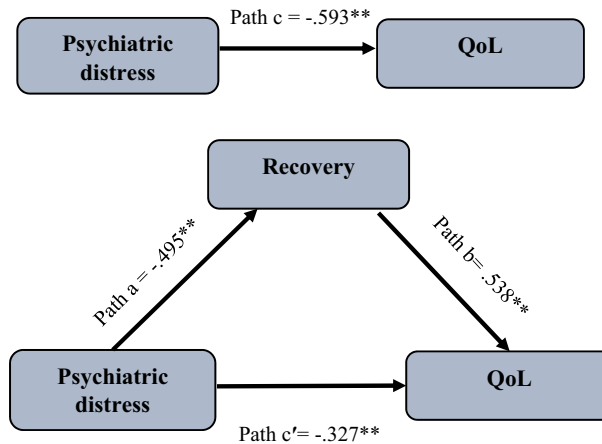

FIGURE 3 Statistical mediation model: Recovery mediating symptomatology and quality of life. * < .05; ** < .001.

0.49. That is, it may be said that nearly half of the effect of psychiatric distress on QoL was mediated by perceived recovery, which may be considered a large mediation effect.

DISCUSSION

The objectives of this study were to explore QoL, psychiatric distress and recovery in a sample of people with SMI and to determine whether recovery functions as moderator or a mediator between psychiatric distress and QoL. We therefore evaluated personal quality of life, recovery, and psychiatric distress in a sample of 234 users of mental health services having some disability, at least one psychological disorder and complying with SMI criteria.

First, to answer our first aim, we will discuss the scores of QoL, psychiatric distress and recovery found in our sample. In agreement with previous studies, we found that participants with SMI scored much lower

T A B L E 4   Paths coefficients and indirect effects of the mediation model.

Path	R^2	Coeff	Std. coeff	SE	t	p	LLCI-ULCI	
a	.24	−0.02	−.49	.002	72.38	<.001	−0.02	−0.01
b	.29	3.53	.54	.326	10.83	<.001	2.88	4.17
c'	.11	−0.08	−.33	.012	−6.59	<.001	−0.11	−0.06
c	.35	0.12	−.59	.013	−11.22	<.001	−0.17	−0.12

Note: Completely standardized indirect effect(s) of X on Y: Std. coeff = −0.27, BootSE = 0.04, BootLLCI = −0.34, BootULCI = −0.19; Sobel test statistic = −10.74; Two tailed probability < .001; Mediation percentage: Pm = ab/ab + c' = ab/c = 0.45.

in QoL than the general population (Berghöfer et al., 2020; Dong et al., 2019; Lucas-Carrasco, 2012). For example, according to the Spanish validation of the WHOQOL-BREF (Lucas-Carrasco, 2012), total QoL in the Spanish community population was 84.56 on a scale of 0–100 and for the population with schizophrenia it was 60.88, around two standard deviations below that. In our sample, the score transformed to the above scale for men was 59 and for women 56.5, very near people with schizophrenia in the Spanish validation. This Spanish validation study of the WHOQOL-BREF is 10 years old. In that time, it is possible that changes in the scores could have occurred. However, we consider that the quality of the study, the breadth of the samples and the fact that it validates exactly the same questionnaire that we used makes the comparison relevant.

Compared to other international studies, our sample of people with SMI had a higher score on QoL. For example, in Germany, Berghöfer et al. (2020) found that people diagnosed with schizophrenia scored 40.5 and with bipolar disorder 43.5. Although it should be mentioned that there are strong cultural differences between the two countries, in the study in Germany, the sample was more severely affected, since all the participants included in it needed hospital care. In our sample, that percentage was only 60%.

Also, in agreement with other studies, the patients with the lowest QoL were those with depression or neurotic disorders. In many studies (e.g. Berghöfer et al., 2020; Rapaport et al., 2005; Saarni et al., 2010), patients diagnosed with anxiety or depression had a low QoL score and significantly lower than those with schizophrenia spectrum disorders. Therefore, QoL is in large part a subjective measure that must not necessarily be associated with the theoretically most severe disorders. Regarding QoL of people diagnosed with schizophrenia, Franz et al. (2000) suggested that they could be comparing themselves with other patients with their same condition or even with more severe characteristics, and not with the general population, contrary to other patients, theoretically less severely affected, which could explain their relatively high scores in QoL.

Those results, as well as the higher score on psychiatric distress and the lower score on recovery of participants diagnosed with personality disorders, obsessive–compulsive disorder (OCD), anxiety, and depression than in those with schizophrenia, may also be explained by other characteristics typical of each group of patients. In our case, the percentage of participants with those diagnoses was low (31%), because the mental health and rehabilitation services focus on those diagnosed with schizophrenia and other psychoses. Therefore, those diagnosed with anxiety, affective or personality disorders who arrive at specialized rehabilitation services belong to a very specific group, have a very strong disability and especially severe symptoms. For example, Adnan Coban and Tan (2021) found that 44% of almost 400 outpatients with OCD had psychopathological symptoms disabling them for work.

Next, aims 2 and 3 will be discussed in an integrated way since the mediation and moderation analysis (aim 3) includes the evaluation of the linear effects of psychiatric distress and recovery on QoL (aim 2). In relation to the second aim, our results show a strong negative association between psychiatric distress and QoL and a positive relationship between recovery and QoL, confirming our two first hypotheses and coinciding with previous studies, such as those by Davis et al. (2013), Hansson (2006), or Eack and Newhill (2007). Specifically, the correlation between recovery and QoL in our study, 0.538, was similar to what was found by Yu et al. (2022) in a sample of 356 people with schizophrenia, 0.46, also using the RAS-24 and the WHOQOL-BREF. Regarding aim three, our results did not confirm a moderating effect of recovery on the relationship between psychiatric distress and QoL, rejecting this hypothesis. That is,

according to our data, recovery did not influence the direction of the relationship between psychiatric distress and QoL. Contrary to our results, Kukla et al. (2014) found a moderating effect of perceived recovery on the relationship between symptomatology and quality of life. A plausible explanation would be that Kukla et al. (2014) assessed symptomatology using the Positive and Negative Syndrome Scale and not psychiatric distress as we did. Although these two variables are directly related, we cannot rule out that they might behave differently.

The second hypothesis of the third aim was confirmed by the results. Recovery functioned as a mediator between psychiatric distress and QoL. In fact, the effect size of the mediation was large, with a mediation percentage of 0.448. This means that nearly half of the effect of psychiatric distress on QoL could be explained by recovery. This result is consistent with those of Davis et al. (2013), who found a recovery-mediating effect on the relationship between psychiatric distress and participation in community activities in a sample of 300 adults with psychological disorders, mainly schizophrenia, bipolar disorder, and depression.

In the debate on the independence of personal recovery measures (or subjective as it is sometimes called) and clinical (or objective) recovery, Roe et al. (2011) did not find any direct correlation between symptoms and recovery. On the contrary, Jørgensen et al. (2015) observed that the changes in subjective and objective dimensions of recovery could mutually influence each other, and therefore, there might be a relationship between the two variables.

In our case, we did not assess symptomatology but psychiatric distress, using a self-administered instrument that evaluates anxiety, depression, trauma, and clinical risk behaviours (Feixas et al., 2012). According to the literature it was expected that the association between our measure and recovery was to be robust (Davis et al., 2013). Moreover, it is noteworthy that our results are in line with Jørgensen et al. (2015) as we found an association in the mediation model between recovery and psychiatric distress of −0.49, practically the same found in their study between symptomatology and recovery. The association between symptoms and recovery in this study is about double the size of that found by Van Eck, Burger, Vellinga, et al. (2018) or Yu et al. (2022), the first by means of meta-analysis of 35 studies. We think, like Roe et al. (2011), that the absence of psychiatric symptoms and, by extension, the decrease in psychiatric distress should not be understood as a direct increase in personal recovery. However, our results show that the two are related and cannot be described as completely independent of each other.

Clinical recovery, understood as elimination or lessening of psychopathological symptoms has traditionally been related to the QoL of people with SMI (Hansson, 2006; Eack & Newhill, 2007). In this sense, psychiatric distress, or symptomatology in people with SMI has also been strongly associated with QoL and recovery (Davis et al., 2013). Furthermore, in recent decades, QoL has become an essential variable in evaluating SMI. In our study, we explored the possible mediation or moderation of personal recovery between these two variables. We are aware of the existence of other factors that could be intervening in this relationship but opted for testing the most parsimonious models that would enable us to clearly interpret what type of relationship, mediation or moderation, was the most robust. Our results show that the effect of psychiatric distress on the QoL of people with SMI is mediated largely by personal recovery. Thus, it is not possible to understand the effect of psychiatric distress on QoL without considering perceived personal recovery. However, our data do not sustain the hypothesis that recovery could counteract or change the direction of the effect of psychiatric distress on QoL. We did not find any interaction between the recovery and psychiatric distress.

Limitations

We used two CORE scales (symptoms and risk) as the measure of psychiatric distress. The short, easily filled out CORE provided us with access to a large sample, which is essential in mediation or moderation analysis. Of the 37 studies included in the meta-analysis done by Van Eck, Burger, Schenkelaars, et al. (2018), only six had samples larger than ours. However, most of the research done has used more

extensive instruments, such as the PANSS (Positive and Negative Syndrome Scale, Kay et al., 1987) or BPRS (Brief Psychiatric Rating Scale, Lukoff et al., 1986) to measure severity of symptoms. As mentioned above, symptomatology and psychiatric distress are intimately linked, nevertheless, it would have been interesting to also use a clinical symptom severity scale and check for possible differences in the models depending on the introduction of one or the other type of variable.

We had 39 participants with missing diagnosis data. Not having diagnosed the participants *in situ* by means of a diagnostic interview can be considered a drawback. Although the diagnoses were cross-checked with information from the socio-health services and our objectives did not include distinguishing between patients within the SMI category, this could be considered a limitation as errors in diagnosis cannot be ruled out. Furthermore, comorbidity was not considered in the sample, which could have led to a more rigorous classification of the participants. Therefore, the results of the analysis of the differences in our variables according to the diagnoses within the SMI category should be taken with caution. The use of a diagnostic interview by researchers would have allowed us to rigorously study the perform of the model according to diagnostic groups and comorbidity.

In this same line, all the participants, at the time the instruments were filled out, were outpatients and all of them lived in a small geographic area. In considering changes in behaviour of the models depending on the nature of the sample, some studies have suggested that the connection between variables such as symptoms and recovery could vary by the cultural context it belongs to (Hofer et al., 2016). Without doubt, the analysis of influence of typology and cultural origin of the samples in the behaviour of these variables is a promising line of research that could explain differences in the results.

CONCLUSIONS

As mentioned in the introduction, personal recovery undoubtedly has characteristics that go beyond simply reducing symptoms and the consequent decrease of psychiatric distress. In fact, some studies have shown that personal and clinical recovery are independent of each other, since the first is more subjective (Van Eck, Burger, Vellinga, et al., 2018). Nevertheless, Price-Robertson et al. (2016) and Saavedra et al. (2022), amongst other authors, have criticized an individualist bias in some conceptions of recovery because it is frequently described as an internal transformation, a change of perspective and patterns, a process of empowerment that leads to personal fulfilment. Thus, from this perspective of recovery, other political, social, relational and clinical factors that could be influencing recovery, and other variables, such as QoL, would be overshadowed.

Our results suggest that increasing the QoL in people with SMI necessarily requires a reduction in psychiatric distress. This reduction would significantly improve personal recovery, which would result in better QoL. Up to 50% of the effect of psychiatric distress on QoL are due to recovery. Although our results point to a linear effect of recovery on QoL, an effective intervention requires addressing psychiatric distress. Therefore, in order to reduce their distress, it is necessary to work on patients' coping strategies and beliefs about their symptoms. At the same time, interventions that increase the perception of social connectedness, hope, and meaning are necessary.

Our mediation model emphasizes, in addition to pharmacological treatment, the essential nature of psychotherapeutic and social interventions, and thereby, the need for effective well-funded public social health systems whose goal is to increase the quality of life of people with SMI.

AUTHOR CONTRIBUTIONS
Javier Saavedra: Conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; supervision; validation; visualization; writing – original draft; writing – review and editing. **Joanna Brzeska:** Data curation; formal analysis; validation; writing – original draft; writing – review and editing. **Jose Antonio Matías-García:** Data curation; investigation; writing – review and editing. **Samuel Arias-Sánchez:** Conceptualization; funding acquisition; investigation; methodology; writing – review and editing.

CONFLICT OF INTEREST STATEMENT

All authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available in the repository of the University of Seville at https://hdl.handle.net/11441/142569.

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