

Resilience and Quality of Life in People with Mental Illness: A Systematic Review and Meta-Analysis

Shu Ping Chuang¹, Jo Yung Wei Wu², Chien Shu Wang³

¹Department of Psychiatry, Zuoying Branch of Kaohsiung Armed Forces General Hospital, Kaohsiung, Taiwan; ²Good-Day Psychology Clinic, Tainan, Taiwan; ³Department of Psychiatry, Kaohsiung Armed Forces General Hospital, Kaohsiung, Taiwan

Correspondence: Shu Ping Chuang, Department of Psychiatry, Zuoying Branch of Kaohsiung Armed Forces General Hospital, No. 553, Jiunshiau Road, Zuoying District, Kaohsiung, 81342, Taiwan, Tel +886-7-5817121#3352, Fax +886-7-5818816, Email xota5139@gmail.com; s86924034@gs.ncku.edu.tw

Purpose: Resilience is viewed as an individual's positive adaptation and experiences of adversity. The maintenance and recovery of mental health in people with mental disorder is considered a sign of coping with adverse conditions. The purpose of the present meta-analysis was to examine the association between resilience and quality of life in individuals with mental disorders.

Methods: Studies were included if research reported measures of association with resilience, as assessed using self-reported resilience scale and quality of life. A systematic literature search was conducted in PubMed and PsycINFO.

Results: Eight studies involving a total of 1439 patients were included in the meta-analysis. Assuming a random-effects model, the weighted mean Pearson correlation between resilience and quality of life was $r = 0.551$ (95% confidence interval [0.370; 0.691], $p < 0.001$). This association was moderate, although the heterogeneity among individual effect sizes was substantial ($I^2 = 93.35\%$).

Conclusion: Despite substantial heterogeneity across included studies, the findings suggest a strong association between resilience and quality of life in people with mental disorders. In clinical practice, the promotion of resilience is important to enhance the quality of life among people with mental illness.

Keywords: resilience, quality of life, mental health

Introduction

In recent years, the concept of resilience has increased importance in the field of mental illness as the process of adapting positively to an adversity such as illness.¹ In this context, resilience is defined as having the potential or the capacity to maintain or regain mental health or in the context of significant challenges, trauma or adversity. Mental illness commonly indicated that patients with depression and/or anxiety disorders may suffer significantly with a state of failed or lower levels of resilience compared to non-affected participants.^{2,3} Moreover, further studies suggested that high resilience reduced the risk of suicide in participants with schizophrenia and mood disorders, and had a positive impact on the long-term recovery in schizophrenia.⁴⁻⁷ A study found that lower levels of resilience were associated with an increased number of depressive episodes and higher levels of impulsivity in participants with bipolar disorder.⁸ Resilience is a dynamic and time-specific process and may vary throughout life.⁹⁻¹³ Resilience plays an important role in the prevention and recovery of psychiatric disorders,^{14,15} thus, there is a need to examine resilience in people with mental illness.

Quality of life is a broad construct developed to evaluate health status, perceived levels of general well-being and satisfaction in the context of a specific health condition or life as a whole.¹⁴ The improvement and maintenance of quality of life were relevant predictors for remission and recovery in people with schizophrenia.¹⁵⁻¹⁷ Past studies have shown that a higher level of resilience is correlated with better quality of life in individuals with mental illness.¹⁸⁻²⁰ Other studies found resilience and quality of life to be lower among participants with bipolar disorder compared to the healthy control group.^{21,22} Hayas and colleagues (2015)¹³ found that resilience contributed to helping individuals cope positively with illness and promote better quality of life and improve recovery. Resilience was related to the factors with high levels

of quality of life, including spirituality and purpose of life.³ Therefore, improving quality of life has been an important outcome for health-related interventions and positive impact on depression, well-being and psychosocial functioning.^{23,24}

The present review examined the resilience and quality of life among people with mental illness. The relationship between resilience and quality of life are acquired and assessed. The goal of this review is to collect data that can help health professionals promote or improve resilience and quality of life in people with mental illness.

Methods

Search Strategy

This study was conducted in compliance with the PRISMA statement.²⁵ Relevant articles were identified by searching PubMed and PsycINFO for the publication dates from January 1, 2002, to March 25, 2022, with a combination of keywords. Articles in English available in peer-reviewed journals and resilience and quality of life evaluated by a standardized questionnaire were included in the systematic review. For the systematic search, text word search terms were used as search criteria: (resilience) AND (quality of life OR well-being) AND (mental disorder OR psychiatric disorder OR mental illness). A total of 214 articles were retrieved from two databases, PubMed and PsycINFO. After the exclusion of duplicates ($n = 10$), review study ($n = 1$) and on the basis of content and participants ($n = 32$), 18 records were screened and in total 8 studies were included. The characteristics of the included studies are summarized in [Table 1](#) and an overview of the study selection process is shown in [Figure 1](#). The inclusion criteria for the studies were the following: 1. Mainly investigating the resilience and quality of life in people with a diagnosis of mental disorders. Self-reported using questionnaire on resilience and quality of life and measure of association (correlation coefficient/standardized regression coefficient) were included. 2. Articles were published in scientific journals indexed in JCR and in English.

Data Synthesis and Analysis

Meta-analyses were conducted in Comprehensive Meta-Analysis (CMA) version 2.2. The outcomes across studies, Cohen d and Pearson product-moment correlation coefficient were calculated for the pooled effects. The Pearson product-moment correlation coefficient was chosen as effect size measure (ie correlation coefficient/standardized regression coefficient) or a measure which can be converted into such measure). The weighted mean effect size for the association between resilience and quality of life was calculated using a random-effects model.²⁶ Finally, the pooled Fisher's z values were converted back to Pearson correlations to improve interpretability. All effect size estimates are stated with 95% confidence intervals [CI]. The magnitude of effect sizes above 0.5 is assumed to be large, 0.30 as moderate, and 0.10 or less to be small.²⁷ Heterogeneity was calculated with Q and I^2 . $I^2 > 75\%$ was considered as high heterogeneity, 50% as moderate heterogeneity and 25% as low heterogeneity.²⁸ The potential publication bias on the determined mean effect was evaluated and subgroup and meta-regression were performed. The publication bias used funnel plot, trim-and-fill analysis and Egger's regression test.^{29,30} Any disagreements of study selection and data extraction were resolved by two authors.

Results

Participants

In the present systematic review study, the total number of participants included in the 8 articles consisted of 1439 participants with mental disorders. The smallest sample consisted of 44 participants³¹ and the largest sample had 575 participants.³² The average age was from 29 years to 46 years. In 7 of the 8 studies, the diagnosis of the participants was specified. In three studies, most of the sample had a diagnosis of major depressive disorder or bipolar disorder.^{20,33,34} Participants from two studies had a diagnosis of schizophrenia or schizophrenia spectrum disorder.^{19,31} Participants from two studies had a diagnosis of borderline personality disorder³⁵ and a blend of major depressive disorder, bipolar disorder and schizophrenia, respectively.³⁶ Participants were mostly given a diagnosis by psychiatrists according to DSM IV, DSM V, or ICD-10^{19,20,31,33–36} In one study, the diagnosis of participants was not specified.³² Most studies included stable or remitted patients, and one study included patients with acute symptoms,³³ two studies did not specify the symptoms of their participants.^{32,35} Five studies included healthy participants as a comparison group.^{19,20,33–35} In one of

Table 1 Summary of Characteristics and Associations Between Resilience and Quality of Life in the Included Studies

Author, Year	Study (Design; Country)	Participants	Outcome Measures	N	r	95% CI	p
Wartelsteiner et al ¹⁹ , 2016	Cross sectional; Austria	Schizophrenia stable patients	1.The resilience scale-25(RS-25) (Wagnild and Young, 1993) 2. Lancashire quality of life (105 items)	52	0.481	[0.240; 0.666]	0.000
Post et al ²⁰ , 2018	Cross sectional; Austria	BD-I stable patients	1.The resilience scale-25(RS-25) (Wagnild and Young, 1993) 2. Lancashire quality of life (105 items)	60	0.680	[0.515;0.796]	0.000
Zizolfi et al ³¹ , 2019	Cross sectional; Italy	Stable schizophrenia spectrum disorder	1.The resilience scale-10 (Wagnild and Young, 1993) 2.Schizophrenia quality of life scale (30 items)	44	0.449	[0.176;0.658]	0.002
Mejia-Lancheros et al ³² , 2021	Longitudinal study(6-year follow-up); Denmark	Patients with homeless and mental disorders	1.25-item Connor-Davidson Resilience scale 2.Lehman's 20-item QOL interview(global quality of life)	575	0.230	[0.151; 0.306]	0.000
Pardeller et al ³³ , 2020	Cross sectional; Austria	MDD or BD-I acutely depressive symptoms patients	1.Resilience scale-25 (RS-25) (Wagnild and Young, 1993) 2.WHOQOL-BREF(28 items)	60	0.362	[0.119; 0.564]	0.004
Lee et al ³⁴ , 2017	Cross sectional; South Korea	BD-I, BD-II, BD NOS, remitted depressive, hyomanc or manic symptoms patients	1. 25-itemConnor-Davidson Resilience scale 2.WHOQOL-BREF(28 items)	68	0.820	[0.723;0.885]	0.000
Guillen et al ³⁵ , 2021	Cross sectional; Spain	BPD patients receiving psychotherapy for six months	1.The resilience scale-15 (Wagnild and Young, 1993) 2.Quality of life index(10 items)	196	0.740	[0.658;0.804]	0.000
Nunes et al ³⁶ , 2022	Cross sectional; Brazil	Stable severe mental disorder patients (MDD, BD and schizophrenia)	1.The resilience scale-25(RS-25) (Wagnild and Young, 1993) 2. WHOQOL-BREF(28 items)	384	0.406	[0.319;0.486]	0.000
Mean effect size				1439	0.551	[0.370;0.691]	0.000

Abbreviations: MDD, Major depressive disorder; BD-I, Bipolar I disorder; BD-II, Bipolar II disorder; BD NOS, Bipolar disorder, not otherwise unspecified; WHOQOL-BREF, WHO quality of life-BREF; QoL, Quality of life; BPD, Borderline personality disorder.

the studies, psychotherapy was applied to investigate the effect of treatment on the relationship between resilience and quality of life³⁵ and one study used a longitudinal design to investigate the long-term effect of resilience on quality of life.³² In 6 studies, psychological resilience was measured using the original or a translated version of Connor-Davidson Resilience scale³⁷ or Wagnild and Young Resilience scale³⁸ with 25 items.^{19,20,32–34,36} Two studies used the short version with 10 to 15 items.^{31,35}

Results of Resilience and Quality of Life of Included Studies

The measures of association in the individual studies varied between $r = 0.230$ ³² and $r = 0.820$ ³⁴ and showed considerable heterogeneity ($Q = 105.259$, $p < 0.001$, $I^2 = 93.35\%$) (Figure 2). All individual effect sizes were significant and all study effects showed a significant positive association between resilience and mental health. In five studies a medium effect, and in three studies a large effect was identified.²⁷ The weighted mean correlation across all studies was $r = 0.551$; (95% confidence interval: [0.370; 0.691], $p < 0.001$ (Table 1).

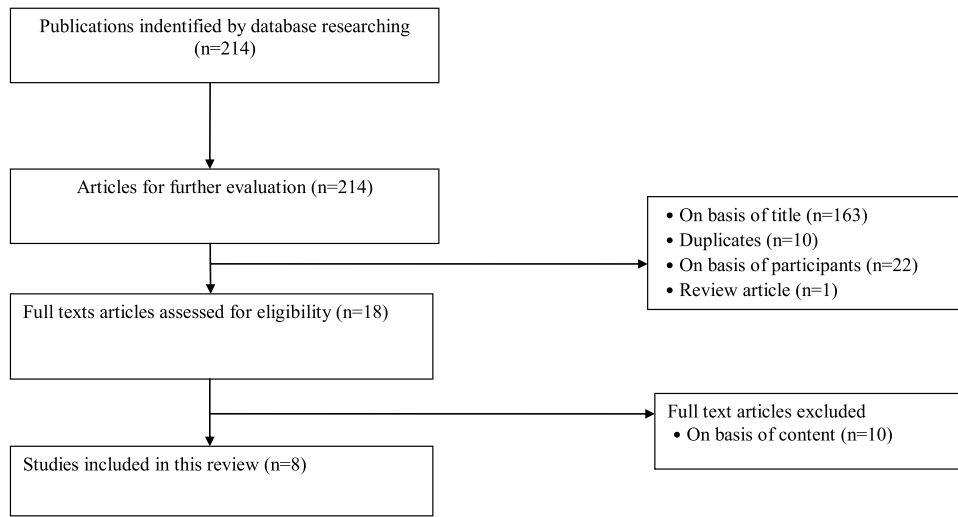


Figure 1 Selection process of included studies using PRISMA flow diagram.

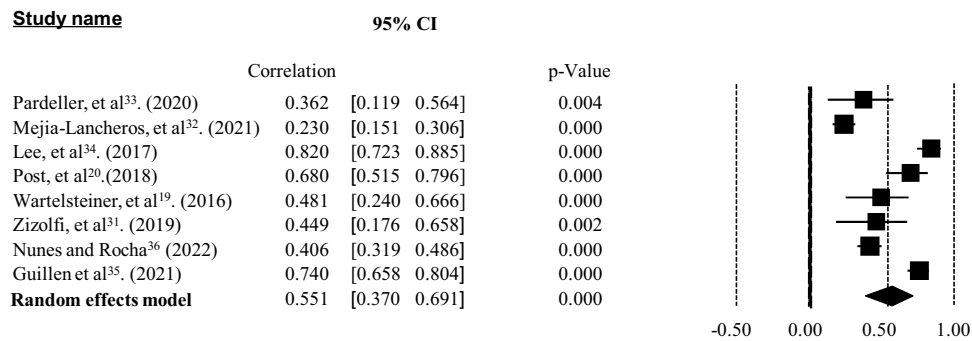


Figure 2 Forest plot of the relationship between resilience and quality of life ($Q = 105.259$, $p < 0.001$, $I^2 = 93.35\%$).

Publication Bias

Under a random-effects model, visual evaluation of the funnel plot revealed no absence of publication bias. The trim-and-fill analysis indicated that 4 studies were missing. The mean effect size adjusted for these studies was $r = 0.55$. The left-sided test for the asymmetry of the funnel plot using Egger’s regression test was not significant ($p = 0.05124$) (Figure 3).

Additional Analyses

In addition, other analysis for intervening variables was conducted which could have an effect on the association between resilience and quality of life and may explain the heterogeneity of study effects. A significant negative effect of sample size was identified: The larger the study sample, the weaker the association between resilience and quality of life ($p = 0.0364$). There was a positive effect of proportion of female study participants ($p = 0.0074$) and symptoms status ($p < 0.001$) between resilience and quality of life, respectively, suggesting that female participants and individuals with stable mental disorder symptoms were more likely to have a positive association between resilience and quality of life (Table 2).

Quality of Assessment of Included Studies

In terms of the reliability of instruments, a majority of included studies had a low risk of bias reporting, gaining a good reliability. All studies applied appropriate analysis and satisfactory reporting (Table 3).

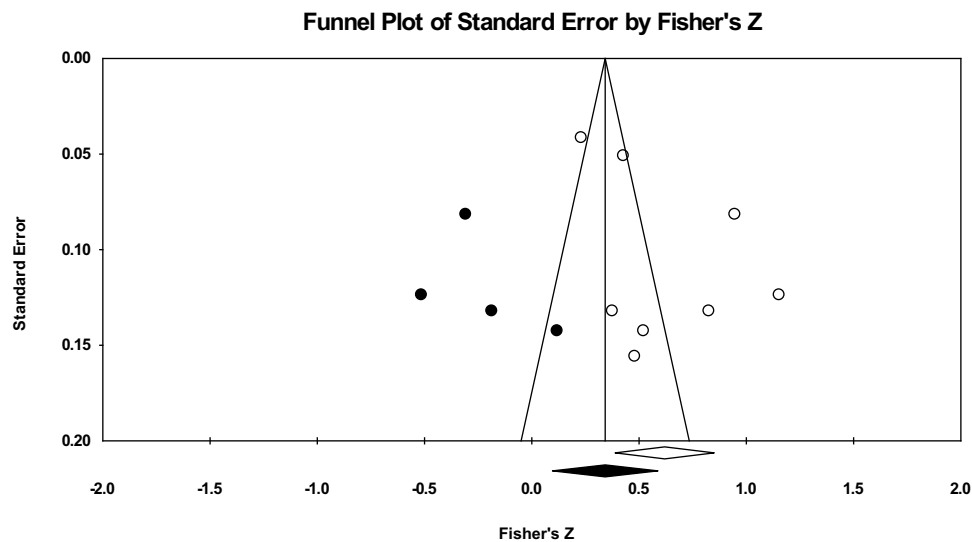


Figure 3 Random-effect funnel plot of Fisher's Z by standard error detaining publication bias in the studies reporting resilience and quality of life.

Discussion

The present review found an association between resilience and quality of life in people with mental disorders. Across the included studies, a significant effect of $r = 0.551$ was determined representing a moderate correlation. Individuals with mental disorders who reported having a higher resilience considered their quality of life to be better. The main result of our meta-analysis was consistent with previous findings on the association between higher resilience and quality of life.^{18,19,39} The resilience scale proved to be a reliable instrument in the included studies. Our findings indicated the association between resilience and quality of life and future studies should examine the efficacy of resiliency training programs to increase levels of quality of life for individuals with mental disorders. The findings were also consistent with previous studies that suggested that increasing quality of life may be a vehicle to achieving recovery.⁴⁰ From a theoretical view, resilience is considered as a process which will ultimately have a positive effect on subjective satisfaction with aspects of quality of life. Therefore, resilience is a process that is influenced by the physical, social and psychological

Table 2 Results of Subgroup and Meta-Regression

Variable	Beta	SE	95% CI	p
Mean age	-0.0333	0.0204	[-0.0732; 0.0066]	0.1020
Proportion of female study participants	0.0135	0.0050	[0.0036; 0.0233]	0.0074
Publication year	-0.0628	0.0565	[-0.1735; 0.0478]	0.2659
Sample size	-0.0009	0.0004	[-0.0017; -0.0001]	0.0364
Number of items of resilience scale	-0.0073	0.0204	[-0.0473; 0.0326]	0.7185
	n	r	95% CI	p
Symptoms status				<0.001
Acute	1	0.362	[0.119; 0.564]	
Stable	5	0.593	[0.376; 0.748]	

Notes: Beta, standardized regression coefficient; n, number of included studies (insufficient information in two studies).

Abbreviations: SE, standard error; 95% CI, 95% confidence interval.

Table 3 Quality Assessment of the Included Studies

Reliability of Assessments	n	%
Acceptable reliability/ low risk of bias	7	87.5
Questionable reliability/ high risk of bias	0	0
Insufficient information/ unclear risk of bias	1	12.5
Data analysis		
Appropriate analysis/ low risk of bias	8	100
Inappropriate analysis / high risk of bias	0	0
Reporting		
Satisfactory reporting/ low risk of bias	8	100
Incomplete reporting/ high risk of bias	0	0

Notes: n, number of included studies; data analysis, it refers to the methods used appropriately for data analysis; reporting, it refers that the author were specific in their reporting about hypotheses and statistical findings.

status of individuals.⁴¹ Other studies indicated that interventions based on mindfulness or resilience reinforcement program can contribute to the strengthening of feelings in acceptance and competence.^{42–46}

The main weakness of the meta-analysis results from the research designs of the included studies, because associations identified in most cross-sectional studies do not have causal inferences about the association between resilience and quality of life. Overall, very few prospective studies were available; of these, only one study reported associations between resilience and quality of life for a follow-up.³² Another limitation results from the statistical heterogeneity of the individual study effects which makes it more difficult to generalize the results to people with all mental disorders. However, all studies found positive associations and most were interpreted as moderate to strong. There is no consistent understanding to define resilience as a state or trait. While some researches view resilience as a personality trait, others consider it to be a dynamic and changeable process. Thus, various outcome-based approaches of assessment and operationalization are needed to measure the construct, and longitudinal studies are important to assess for the causality.⁴⁷ Lastly, meta-analysis findings should be interpreted with caution due to the limited number of included studies in the meta-analysis and included criteria, including criterion type, study design, instruction and participants' characteristics.⁴⁸

Conclusion

Despite the limitations mentioned above, the results of the present meta-analysis indicate that a higher level of resilience is associated with better quality of life in people with mental disorders. This study is the first to provide a statistical integration of the effects and the study makes a contribution to resilience research. Resilience appears to be an important factor in the context of psychopathology and improvement of quality of life. On the path to recovery, resilience has its importance and impact on the quality of life of individuals with mental disorders. High resilience does not necessarily prevent mental illness, but it has a significant contribution as part of a comprehensive therapy in the treatment of depression and other psychiatric disorders.¹¹

Prospective studies are needed to clarify the causal nature of the association between resilience and quality of life. Future research should aim to identify individuals with low resilience in clinical practice and offer them support or training, in terms of external resources, to enhance their quality of life.⁴⁹

Acknowledgment

This study was supported by grant from Zuoying Armed Forces General Hospital, Kaohsiung, Taiwan (KAFGH-ZY-D-111034).

Disclosure

All authors declare no competing interests in this work.

References

1. American Psychological Association. The road to resilience; 2010. Available from: <http://www.apa.org/helpcenter/road-resilience.aspx/>. Accessed February 20, 2023.
2. Waugh CE, Koster EHW. A resilience framework for promoting stable remission from depression. *Clin Psychol Rev*. 2015;41:49–60. doi:10.1016/j.cpr.2014.05.004
3. Min JA, Jung YE, Kim DJ, et al. Characteristics associated with low resilience in patients with depression and/or anxiety disorders. *Quality Life Res*. 2013;22:231–241. doi:10.1007/s11136-012-0153-3
4. Johnson J, Gooding PA, Wood AM, Taylor PJ, Pratt D, Tarrrier N. Resilience to suicidal ideation in psychosis: positive self-appraisals buffer the impact of hopelessness. *Behav Res Thera*. 2010;48:883–889. doi:10.1016/j.brat.2010.05.013
5. Min JA, Lee CU, Chae JH. Resilience moderates the risk of depression and anxiety symptoms on suicidal ideation in patients with depression and/or anxiety disorders. *Comprehens Psychiatry*. 2015;56:103–111. doi:10.1016/j.comppsy.2014.07.022
6. Nruham L, Holen A, Sund AM. Associations between attempted suicide, violent life events, depressive symptoms, and resilience in adolescents and young adults. *J Nerv Ment Dis*. 2010;198:131–136. doi:10.1097/NMD.0b013e3181cc43a2
7. Torgalsboen AK. Sustaining full recovery in schizophrenia after 15 years: does resilience matter? *Clin. Schizophren Relat Psychos*. 2012;5:193–200. doi:10.3371/CSRP.5.4.3
8. Choi JW, Cha B, Jang J, et al. and impulsivity in euthymic patients with bipolar disorder. *J Affect Disord*. 2015;170:172–177. doi:10.1016/j.jad.2014.08.056
9. Herrman H, Stewart DE, Diaz-Granados N, Berger EL, Jackson B, Yuen T. What is resilience? *Can J Psychiatry*. 2011;56:258–265. doi:10.1177/070674371105600504
10. Masten AS. Resilience in children threatened by extreme adversity: frameworks for research, practice, and translational synergy. *Dev Psychopathol*. 2011;23:493–506. doi:10.1017/S0954579411000198
11. Shrivastava A, Desousa A. Resilience: a psychobiological construct for psychiatric disorders. *Ind J Psychiatry*. 2006;58:38–43. doi:10.4103/0019-5545.174365
12. Stainton A, Chisholm K, Kaiser N, et al. Resilience as a multimodal dynamic process. *Early Intervent Psychiatry*. 2019;13:725–732. doi:10.1111/eip.12726
13. Las Hayas C, Padierna JA, Muñoz P, et al. Resilience in eating disorders: a qualitative study. *Women Health*. 2016;56:576–594. doi:10.1080/03630242.2015.1101744
14. Berger ML, Binglefors K, Hedblom EC, Pashos CL, Torrance GW. *Health Care Cost, Quality, and Outcomes*. Lawrenceville NJ: ISPOR Book of Terms; 2003.
15. Lambert M, Schimmelmann BG, Naber D, et al. Early- and delayed antipsychotic response and prediction of outcome in 528 severely impaired patients with schizophrenia treated with amisulpride. *Pharmacopsychiatry*. 2009;42:277.
16. Boden R, Sundstrom J, Lindstrom E, Lindstrom L. Association between symptomatic remission and functional outcome in first-episode schizophrenia. *Schizophr Res*. 2009;107:232–237. doi:10.1016/j.schres.2008.10.004
17. Lambert M, Karow A, Leucht S, Schimmelmann BG, Naber D. Remission in schizophrenia: validity, frequency, predictors, and patients' perspective 5 years later. *Dialogues Clin Neurosci*. 2010;12:393–407. doi:10.31887/DCNS.2010.12.3/mlambert
18. Mizuno Y, Hofer A, Suzuki T, et al. Clinical and biological correlates of resilience in patients with schizophrenia and bipolar disorder: a cross-sectional study. *Schizophrenia Res*. 2016;175:148–153. doi:10.1016/j.schres.2016.04.047
19. Wartelsteiner F, Mizuno Y, Frajo-Apor B, et al. Quality of life in stabilized patients with schizophrenia is mainly associated with resilience and self-esteem. *Acta Psychiatrica Scand*. 2016;134:360–367. doi:10.1111/acps.12628
20. Post F, Pardeller S, Frajo-Apor B, et al. Quality of life in stabilized outpatients with bipolar I disorder: associations with resilience, internalized stigma, and residual symptoms. *J Affect Disord*. 2018;238:399–404. doi:10.1016/j.jad.2018.05.055
21. Hofer A, Mizuno Y, Frajo-Apor B, et al. Resilience, internalized stigma, self-esteem, and hopelessness among people with schizophrenia: cultural comparison in Austria and Japan. *Schizophr Res*. 2016;171:86–91. doi:10.1016/j.schres.2016.01.027
22. Hofer A, Mizuno Y, Wartelsteiner F, et al. Quality of life in schizophrenia and bipolar disorder: the impact of symptomatic remission and resilience. *Eur Psychiatry*. 2017;46:42–47. doi:10.1016/j.eurpsy.2017.08.005
23. Kuehner C. Subjective quality of life: validity issues with depressed patients. *Acta Psychiatrica Scand*. 2002;106:62–70. doi:10.1034/j.1600-0447.2002.02204.x
24. Ay-Woan P, Sarah CP, LyInn C, Tsyng-Jang C, Ping-Chuan H. Quality of Life in Depression: predictive Models. *Quality of Life Res*. 2006;15:39–48. doi:10.1007/s11136-005-0381-x
25. Moher D, Shamseer L, Clarke M, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Syst Rev*. 2015;4(1):1. doi:10.1186/2046-4053-4-1
26. Hedges LV, Olkin I. *Statistical Methods for Meta-Analysis*. 7 ed. San Diego: Academic Press; 1999.
27. Cohen J. *Statistical Power Analysis for the Behavioral Sciences*. second ed. Hillsdale, NJ: Lawrence Erlbaum Associates; 1988.
28. Higgins JPT, Thompson SG, Deeks JJ, Altman DG. Measuring inconsistency in meta-analyses. *BMJ*. 2003;327(7414):557–560. doi:10.1136/bmj.327.7414.557
29. Duval S, Tweedie R. Trim and Fill: a simple funnel-plot-based method of testing and adjusting for publication bias in meta-analysis. *Biometrics*. 2000;56:455–463. doi:10.1111/j.0006-341X.2000.00455.x
30. Egger M, Smith GD, Schneider M, Minder C. Bias in meta-analysis detected by a simple, graphical test. *Br Med J*. 1997;315:629–634. doi:10.1136/bmj.315.7109.629

31. Zizolfi D, Poloni N, Caselli I. Resilience and recovery style: a retrospective study on associations among personal resources, symptoms, neurocognition, quality of life and psychosocial functioning in psychotic patients. *Psychol Res Beh Manag.* 2019;12:385–395. doi:10.2147/PRBM.S205424
32. Mejia-Lancheros C, Woodhall-Melnik J, Wang R, Hwang SW, Stergiopoulos V, Durbin A. Associations of resilience with quality of life levels in adults experiencing homelessness and mental illness: a longitudinal study. *Health Qual Life Outcomes.* 2021;19:74. doi:10.1186/s12955-021-01713-z
33. Pardeller S, Kemmler G, Hoertnagl CM, Hofer A. Associations between resilience and quality of life in patient experiencing a depressive episode. *Psychiatry Res.* 2020;292:113353. doi:10.1016/j.psychres.2020.113353
34. Lee D, Cha B, Park CS, et al. Effects of resilience on quality of life in patients with bipolar disorder. *J Affect Dis.* 2017;207:434–441. doi:10.1016/j.jad.2016.08.075
35. Guillén V, Tormo ES, Fonseca-Baeza S, et al. Resilience as a predictor of quality of life in participants with borderline personality disorder before and after treatment. *BMC Psychiatry.* 2021;21:305. doi:10.1186/s12888-021-03312-0
36. Nunes KG, Da Rocha NS. Resilience in severe mental disorders: correlations to clinical measures and quality of life in hospitalized patients with major depression, bipolar disorder, and schizophrenia. *Qual Life Res.* 2022;31:507–516. doi:10.1007/s11136-021-02920-3
37. Connor KM, Davidson JRT. Development of a new resilience scale: the Connor-Davidson Resilience Scale (CD-RISC). *Depress Anxiety.* 2003;18:76–82. doi:10.1002/da.10113
38. Wagnild G, Young H. Development and psychometric evaluation of the Resilience Scale. *J Nurs Meas.* 1993;1:165–178.
39. Laird KT, Lavretsky H, Paholpak P, et al. Clinical correlates of resilience factors in geriatric depression. *Int Psychogeriatr.* 2019;31:193–202. doi:10.1017/S1041610217002873
40. Mitchison D, Dawson L, Hand L, Mond J, Hay P. Quality of life as a vulnerability and recovery factor in eating disorders: a community-based study. *BMC Psychiatry.* 2016;16:328. doi:10.1186/s12888-016-1033-0
41. Windle G. What is resilience? A review and concept analysis. *Rev Clin Gerontol.* 2011;21:152–169. doi:10.1017/S0959259810000420
42. Wanden-Berghe RG, Sanz-Valero J, Wanden-Berghe C. The application of mindfulness to eating disorders treatment: a systematic review. *Eat Behav.* 2010;19:34–48.
43. Chou LN, Hunter A. Factors affecting quality of life in Taiwanese survivors of childhood cancer. *J Adv Nurs.* 2009;65:2131–2141. doi:10.1111/j.1365-2648.2009.05078.x
44. Xu J, Ou L. Resilience and quality of life among Wenchuan earthquake survivors: the mediating role of social support. *Public Health.* 2014;128:430–437. doi:10.1016/j.puhe.2014.03.002
45. Alriksson-Schmidt AI, Wallander J, Biasini F. Quality of life and resilience in adolescents with a mobility disability. *J Pediatr Psychol.* 2007;32:370–379. doi:10.1093/jpepsy/jsl002
46. Mueser KT, Penn DL, Addington J, et al. The NAVIGATE program for first-episode psychosis: rationale, overview, and description of psychosocial components. *Psychiatr Serv.* 2015;66:680–690. doi:10.1176/appi.ps.201400413
47. Kunzler AM, Gilan DA, Kalisch R, Tüscher O, Lieb K. Aktuelle Konzepte der Resilienzforschung [Current concepts of resilience research]. *Nervenarzt.* 2018;89:747–753. German. doi:10.1007/s00115-018-0529-x
48. Antes AL, Murphy ST, Waples EP, et al. A meta-analysis of ethics instruction effectiveness in the sciences. *Ethics Behav.* 2009;19(5):379–402. doi:10.1080/10508420903035380
49. Hu T, Zhang D, Wang J. A meta-analysis of the trait resilience and mental health. *Pers Individ Dif.* 2015;76:18–27. doi:10.1016/j.paid.2014.11.039

Neuropsychiatric Disease and Treatment

Dovepress

Publish your work in this journal

Neuropsychiatric Disease and Treatment is an international, peer-reviewed journal of clinical therapeutics and pharmacology focusing on concise rapid reporting of clinical or pre-clinical studies on a range of neuropsychiatric and neurological disorders. This journal is indexed on PubMed Central, the 'PsycINFO' database and CAS, and is the official journal of The International Neuropsychiatric Association (INA). The manuscript management system is completely online and includes a very quick and fair peer-review system, which is all easy to use. Visit <http://www.dovepress.com/testimonials.php> to read real quotes from published authors.

Submit your manuscript here: <https://www.dovepress.com/neuropsychiatric-disease-and-treatment-journal>