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Longitudinal Associations between Resilience and Quality of Life in Eating Disorders

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Abstract

Objective

This study examined the longitudinal reciprocal associations between resilience factors, quality of life (QoL) domains, and symptoms of eating disorders (EDs). Hypotheses included predictive paths from resilience factors of "acceptance of self and life" and "personal competence" to increased QoL and predictive paths from previous levels of QoL to resilience.

Method

A total of 184 patients with EDs (mean age = 29.55, SD = 9.17, 94.8% women) completed measures of resilience, QoL, and EDs symptoms over three waves spaced six month apart. Hypotheses were tested by path analysis.

Results

Resilience factors predicted improvements in psychological health and social relationship domains of QoL and a reduction of ED symptoms over time. In addition, psychological health increased acceptance of self and life consistently over time, whereas physical health increased the competence component of resilience.

Discussion

The relationships between resilience factors and QoL are reciprocal, with several mediational paths. A spiral of recursive influences between resilience factors and QoL can take place in people with EDs. This possibility offers new perspectives to understanding the process of recovery in patients with ED.

Keywords

Eating disorders; resilience; quality of life; anorexia nervosa; bulimia nervosa

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1. Introduction

Eating disorders (EDs) are a severe psychiatric problem with an extremely negative impact on the quality of life (QoL) of those diagnosed (Harrison et al., 2014; Wade et al., 2012). QoL has been defined as perceived satisfaction and role functioning in the mental, physical and social domains of life, which is influenced both by societal values and norms and individual goals and expectations (World Health Organization [WHO] Quality of Life Group, 1998). The evaluation of QoL provides an indicator of both the satisfaction with life as perceived by people with EDs and of their recovery level (Mitchison et al., 2016). Several studies have repeatedly reported that individuals with EDs score low on QoL levels and on health related quality of life as a result of their disorder (De la Rie et al., 2007; Jenkins et al., 2011).

Research also shows that there is great heterogeneity in the course of EDs (Zerwas et al., 2013; Keski-Rahkonen et al., 2014). As some reviews indicate, approximately one-third of people with anorexia nervosa (AN) recover within 4 years of ED onset, whereas around 25% show a chronic course or continuous relapse (Berkman et al., 2007). About half of people with bulimia nervosa (BN) and more than three-quarters of those with binge eating disorder (BED) will report no symptoms of an ED after 5 years (Fairburn et al., 2000). Given that several ED diagnosed patients reach recovery, it is important to identify the factors that predict the improvement of QoL and the reduction of ED symptoms in ED diagnosed individuals. It would aid providers in tailoring treatment to reinforce the patient's unique protective factors for recovery.

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Resilience emerges as a key concept, which can contribute to explaining the course of QoL and symptoms over time.

The concept of resilience has been described in the field of mental illness as the process of adapting positively to an adversity such as illness (American Psychological Association, 2010). It is understood as a strength that can be fostered and built to promote the recovery process (Las Hayas et al., 2015). Resilience factors are dynamic and can change throughout life (Luthar et al., 2000; Windle, 2011). Thus, it is important to identify the resilience assets of individuals that can help them cope positively with illness and promote better QoL and even recovery (Las Hayas et al., 2015).

Although several studies have displayed the beneficial role of resilience factors in other mental illnesses such as depression, anxiety, schizophrenia, and bipolar disorder (Min et al., 2012, 2015; Torgalsbøen, 2012; Echezarraga et al., 2017), the study of resilience factors that can promote the reduction of symptoms and improve QoL in individuals with EDs is scarce. One study (Las Hayas et al., 2014) found that people diagnosed with EDs scored lower than recovered individuals on two resilience factors measured using the Resilience Scale 25 (Wagnild and Young, 1993). These factors were "personal competence", described as the subjective perception of being capable to withstand life stressors, and "acceptance of self and life", described as the subjective perception of being capable to thrive and derive meaning from challenges (Wagnild and Young, 1993).

In the current research study we extended the above study by Las Hayas et al. (2014) and examined the longitudinal reciprocal predictive associations between resilience factors, QoL domains, and symptoms of EDs. Whereas the study by Las Hayas et al. provided data about the cross-sectional correlations between resilience

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factor and QoL, the current longitudinal study allows determining the directionality of the associations between resilience and QoL, which is important for interventions and for theory. For interventions, it is important to determine which factors predict the increase of quality of life and the reduction of EDs as simple correlations only indicate that the variables are associated and several alternative explanations for these correlations are possible. The identification of resilience factors that predict ED recovery and improvement of QoL has several potential benefits because interventions could promote and reinforce the development of these resilience factors and thus contribute to shortening illness and preventing chronicity (Zerwas et al., 2013). From a theoretical point of view, resilience is proposed as a process that will ultimately have a positive impact on the subjective satisfaction with the areas of quality of life. Thus, we hypothesized that the resilience factors of acceptance of self and life and personal competence would predict an increase of QoL and a reduction of ED symptoms over time. In addition, because resilience is considered a process that changes over time and that is influenced by the social, physical and psychological status of the individual (Windle, 2011), we hypothesized that previous levels of QoL would predict also resilience factors. The hypothesized reciprocity between variables included the possibility of several mediational mechanisms in which resilience led to better QoL, and positive QoL in turn led to more resilience. In contrast with the numerous longitudinal studies that examined risk factors for ED, to our knowledge there are no previous longitudinal studies on the role of resilience in ED.

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2. Methods

In this study, we focused on the dimensions of physical health, psychological health, and social functioning of QoL because of their relevance for EDs (Mitchison et al., 2016). We included a specific measure of ED symptoms to control the course of

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illness over time (2 years). Finally, because chronicity can influence both QoL and symptoms, we also controlled for the number of years since ED onset.

2-1. Patients

Four public mental health centers in Spain - specialized in the treatment of patients with EDs - participated in the recruitment of patients. Inclusion criteria to participate in the study for active patients were to be above 18 years old and to be receiving therapy at the time of the study because of a diagnose of ED according to the DSM-IV-TR. Inclusion criteria for patients in recovery were to be above 18 years old, having been discharged at least for a year, and according to the medical records not to have any symptoms of ED at time of discharge nor had they demanded further therapy from the center.

Following ethical codes, the psychiatrists were who invited their patients who had been diagnosed with an ED to participate in the study. The psychiatrists gave 318 patients a stamped addressed envelope and an informed consent form that included study information and requested contact information for the patient. A total of 239 provided informed consent (75.16%), and 184 (76.99%) of these completed measurements in at least two of the three study waves (W1–W3) and constituted the final sample of the study. Attrition rates were 30 and 33% at W2 and W3, respectively. We compared participants who completed at least two waves with those that did not complete in variables at W1. There were not statistically significant differences in any

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variable of the study. Participants' age ranged from 16 to 71 years (Mean = 29.55, *SD* = 9.17, 94.8% women). According to reports from their psychiatrists, 79.7% were active patients, whereas 20.3% were in recovery. The latter were included because the longitudinal nature of the study included the possibility of relapse throughout the study. The mean age at onset of the disease was 18.18 years (SD = 5.96, range = 8–40) and patients averaged 10.13 years since ED onset (SD = 8.39, range = 1–46). The most frequent diagnosis was AN (41.6%), followed by BN (28.1%) and mixed cases (12.4%).

2-2. Procedure

In order to protect confidentiality, data collection was centralized in one place [masked name] and two separate databases were developed. One database stored and protected identification information retrieved from the informed consent form: name/surname, contact details and a code of identification (participants were requested to create a nick name and use it as identification for the battery of tests). In case participants forgot their nickname, they could get in contact with the main researcher who had access to the database and regain their nickname. A second data base was created to store the nickname together with responses to the battery of tests. Participants were followed up during three waves (at 6-month intervals). They completed measures of all variables at each wave. In order to facilitate participation in the study, participants were offered three means of participation: online version of the battery of tests, paper version at their location or over the phone being interviewed by a trained psychologist. 51.50% of the patients chose the online version, 44.20% the paper version, and only 4.3% choose completing the questionnaires by phone. The study was approved by the Ethics Committee of [masked-name] and the research and ethics committees of all

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participating health centers. Each participant received a gift card of 20€ to spend in a mall as compensation.

2-3. Materials

The WHO Quality of Life (WHOQOL)-BREF (Skevington, Lotfy, and O'Connell, 2004) was used to evaluate QoL. It comprises 26 items. The response scales are ordinal, with five response options that indicates different levels of QoL for each item. Higher scores indicate better QoL for each scale. We focused on the psychological health (6 items; e.g., *How often do you have negative feelings such as blue mood, despair, anxiety, depression*?), physical health (7 items; e.g., *Do you have enough energy for everyday life*?), and social relationship (3 items; e.g., *How satisfied are you with the support you get from your friends*?) domains of QoL. For this study the Spanish version validated by Espinoza et al. (2011) was used. In this study, Cronbach's alpha ranged from .91 to.92 for psychological health, from .80 to .85 for physical health, and from .76 to .81 for social relationships.

The Resilience Scale – 25 (RS-25; Wagnild and Young, 1993) consists of 25 items that measure two attributes of resilience: "personal competence" (17 items; e.g., *I usually manage one way or another*) and "acceptance of self and life" (8 items; e.g., *My life has a meaning*). Each item is responded by means of a seven-option response scale, from 1 (*it does not describe me*) to 7 (*it describes me perfectly*). Concurrent validity has been extensively supported with hypothesized and statistically significant associations with morale, self-esteem, life satisfaction, depression, and perceived stress (Wagnild, 2009). The Spanish version has demonstrated excellent psychometric properties in a sample of women with EDs (Las Hayas et al., 2014). Cronbach's alpha ranged from .89 to .91 for acceptance of self and life, and was .93 at all waves for personal competence.

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The Eating Attitudes Test (EAT-26; Garner, Olmsted, Bohr, and Garfinkel, 1982) is a 26-item scale designed to assess the attitudes and behaviors related to eating disorders, (i.e., ED symptoms). Items are responded using a 7 point Likert scale. In terms of calculating the scoring, items 1-25 are scored as follows: Always = 3; Usually = 2; Often = 1; Never = 0. Item 26 needs to be reversed before scoring. In this study, we used the total score (range = 0–78), where higher scores reflect higher ED symptoms. Examples of items are *I am very afraid to weigh too much* and *I do a lot of exercise to burn calories*. The Spanish version of the EAT-26 has been used in several studies. For instance, in a study the EAT-26 displayed excellent internal consistency both in clinical and non-clinical samples, and good specificity and moderate sensitivity to detect ED (Rivas, Bersabé, Jiménez, and Berrocal, 2010). In the same study, support for a unidimensional structure was obtained. In the current study, Cronbach's alpha was .94 at W1 and .96 at W2 and W3.

2-4. Data analytic plan

The hypotheses of the study were tested by means of path analysis with LISREL 9.2. We used the robust maximum likelihood method, which requires an estimate of the asymptotic covariance matrix of the sample variances and covariances and includes the Satorra-Bentler scaled χ^2 index (Chou et al., 1991). The goodness of the model fit was evaluated using the comparative fit index (CFI), the nonnormative fit index (NNFI), and the root mean square error of approximation (RMSEA). CFI and NNFI values of .90 or higher and RMSEA values lower than .06 indicate adequate fit (Little, 2013). Missing values were imputed using the expectation-maximization imputation algorithm.

3. Results

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Table 1 displays the correlation coefficients among all variables, as well as descriptive statistics for W1, W2, and W3. Most of the correlations were statistically significant and high. Resilience factors in ED participants were positively associated with QoL domains and negatively associated with ED symptoms in all three waves.

The predictive mediational model was estimated via path analysis. The model included autoregressive paths joining all repeated measures of the variables (resilience, QoL, and ED symptoms) over time. All variables at W1 were allowed to correlate to control overlapping between variables. In addition, the model included predictive cross-lagged paths from all variables measured at W1 to all W2 variables and from all W2 variables to all W3 variables. We also controlled the role of age and the number of years since the onset of the ED.

Initially we included in the same model both resilience factors (acceptance and competence). However, due to multicollinearity (i.e., the correlation coefficient between both resilience factors ranged between .81 and .89 through the waves of the study), we decided to estimate separate models for each resilience factor. Regarding the acceptance factor model, at W1, acceptance was positively associated with all QoL domains and negatively with ED symptoms. All autoregressive paths were high and statistically significant, indicating stability over time of acceptance, QoL domains, and ED symptoms over time. W1 acceptance predicted higher scores on W2 mental health and social QoL, and the same pattern emerged from W2 to W3. In addition, W1 acceptance predicted a reduction of W2 ED symptoms. Greater years since ED onset predicted lower scores in the W3 social dimension of QoL. W1 psychological health QoL predicted an improvement in acceptance between W1 and W2 and between W2 and W3. Finally, W1 ED symptoms predicted lower scores on W2 psychological health, and W2 ED symptoms predicted lower scores on W3 QoL physical health. Age was not

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significantly associated with changes in the rest of the variables. The model obtained excellent fit indexes, Satorra-Bentler χ^2 (65, n = 184) = 113, RMSEA = .06 [90% CI = .044–.083], CFI = .99, NNFI = .99. The model explained the following percentages of variance of W3 variables: Qol physical health (47%), QoL psychological health (66%), QoL social (41%), ED symptoms (74%), and acceptance (61%). Figure 1 displays the model. Unstandardized coefficients and their standard errors are displayed because they are recommended when structural equation modeling is used to test mediational effects with longitudinal data (Cole and Maxwell, 2003).

A similar model was estimated for the competence factor of resilience. The model was almost identical, except in the following paths: W1 competence predicted a higher score on W2 QoL physical health, and W2 QoL physical health in turn predicted an increase in competence at W3. In addition, the paths from QoL psychological health to competence were not statistically significant at any time. The model obtained excellent fit indexes, Satorra-Bentler χ^2(65, n = 184) = 133, RMSEA = .07 [90% CI = .06–.09], CFI = .99, NNFI = .98. The model explained the following percentages of variance of W3 variables: Qol physical health (57%), QoL psychological health (65%), QoL social (38%), ED symptoms (74%), and acceptance (64%). Figure 2 displays the model.

The preceding findings suggest several potential mediational mechanisms. Thus, the significance of the mediational paths was examined via 5,000 bootstrapping samples (Shrout and Bolger, 2002). The results indicated that W1 QoL psychological health predicted higher W3 QoL psychological health through an improvement of acceptance at W2 (0.045; 95% CI [.044, .046]), and that W1 acceptance predicted higher W3 acceptance through an improvement of QoL psychological health at W2 (0.45; 95% CI [.044, .047]). W1 acceptance indirectly predicted an improvement of W3 QoL physical health through a reduction of symptoms of ED at W2 (0.01; 95% CI [.01, .02]). W1

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competence predicted higher W3 competence through an improvement of QoL physical health at W2 (0.047; 95% CI [.046, .048]), and W1 competence predicted indirectly an improvement of W3 QoL physical health through a reduction of symptoms of ED at W2 (0.004; 95% CI [.004, .005]).

4. Discussion

Previous research indicates that there is great variability in the course of ED with some individuals displaying recovery and better QoL than others (Keski-Rahkonen et al., 2014). Thus, the identification of resilience factors associated with improvement of QoL and reduction of symptoms of ED is important to inform interventions. In the current study, we examined the longitudinal (1 year follow up) reciprocal associations between two resilience attributes (i.e., acceptance of self and life and personal competence), QoL domains, and symptoms of ED.

We expected that resilience factors would predict an improvement of QoL and a reduction of ED symptoms. This hypothesis was supported for QoL because both resilience factors predicted an increase in the psychological health and social relationship domains of QoL consistently from W1 to W2 and from W2 to W3. In addition, the competence factor predicted an increase of physical health domain of QoL from W1 to W2. Regarding the reduction of ED symptoms over time, the effect was more limited as both resilience factors predicted a reduction of ED symptoms from W1 to W2 but not from W2 to W3. These findings are consistent with those of studies that indicate a positive role of resilience factors in QoL and recovery in other psychological problems (Min et al., 2012, 2015; Torgalsbøen, 2012; Echezarraga et al., 2017).

We also hypothesized that previous levels of QoL would predict an improvement of resilience because resilience has been conceptualized as a dynamic process that can

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be built when the individual copes successfully with adverse conditions (APA, 2010). Findings were specific for each resilience factor. On the one hand, the psychological health domain of QoL increased acceptance of self and life consistently over time (from W1 to W2 and from W2 to W3). This finding indicates that those patients that experience less psychological symptoms, such as depressive and anxiety symptoms, are more able to accept themselves and their lives. This finding can be explained by the tendency to ruminate and to interpret events in a negative way that is associated to depressive affect. When depressive affect is reduced, the individual is able to do more positive interpretations of the circumstances and to accept things as they are. As described previously, acceptance in turn improves QoL in the psychological and social facets. On the other hand, the physical health domain of QoL increased the competence component of resilience. The competence component includes items such as "I have enough energy to do what I have to do." Thus, it appears that having better physical health (i.e., better mobility, functional capacity, energy, less pain, and more sleep) leads to increased feelings of personal competence.

The preceding findings suggest that the relationships between resilience factors and QoL are reciprocal. Mediational paths provided support for these bidirectional paths between variables. For example, physical health QoL improved competence, and competence in turn improved physical health QoL. Thus, as proposed for the relationships between risk factors and illness (Masten et al., 2005), a spiral of recursive influences between resilience factors and QoL can affect people with EDs. This possibility provides new perspectives for understanding the process of recovery in patients with EDs. The findings are also consistent with those studies that indicate that rather than simply being a product of recovery, enhancing QoL may be a vehicle toward achieving recovery (Mitchison et al., 2016)

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The main limitation of the study is the exclusive use of self-report measures, which can overestimate the association between variables because all the measures share the same response source. Attrition was also an important limitation. Although there were not differences in variables at W1 between those participants who abandoned the study and those who completed at least two waves, it is possible that participants who presented a worse course of illness could have more likely abandoned the study. Finally, the recovery from an ED can be a long process and in some cases it can perpetuate for years. Thus, the one year follow-up used in this study could be not enough to capture the long-run longitudinal associations between variables. Future studies should include longer periods of time. However, the study also has important strengths. This study is the first three-wave longitudinal study that examines reciprocal paths between QoL domains, resilience, and symptoms in EDs patients. Moreover, the inclusion of autoregressive paths allowed the study to obtain indicators of the unique contribution of each variable beyond the variance explained by previous levels of the same variable.

Findings have important implications for interventions. Current interventions for EDs could benefit from including the improvement of resilience factors in patients. For instance, interventions based on mindfulness can contribute to the development of acceptance and to strength feelings of competence. Preliminary findings suggest that they can be useful in individuals with EDs (Wanden-Berghe et al., 2010). Finally, understanding the reciprocity between these factors and QoL domains is also important for patients because they can gain a better insight into the recovery process and the dynamics involved.

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Tables:

Table 1. Correlation coefficients between the study variables and descriptive statistics

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 W1	1																	
2 W1	.81*	1																
3 W1	.63*	.64*	1															
4 W1	.68*	.80*	.78*	1														
5 W1	.56*	.64*	.56*	.66*	1													
6 W1	–	–	–	–	–	1												
7 W2	.77*	.63*	.53*	.59*	.45	–	1											
8 W2	.63*	.71*	.55*	.68*	.49	–	.83*	1										
9 W2	.51*	.48*	.72*	.60*	.47	–	.61*	.65*	1									
10 W2	.62*	.69*	.66*	.79*	.56	–	.76*	.85*	.77*	1								
11 W2	.48*	.54*	.46*	.55*	.67	–	.58*	.63*	.64*	.72*	1							
12 W2	–	–	–	–	–	.76*	–	–	–	–	–	1						
13 W3	.69*	.63*	.61*	.58*	.47	–	.73*	.67*	.69*	.67*	.52	–	1					
14 W3	.55*	.64*	.56*	.58*	.46	–	.65*	.75*	.66*	.72*	.55	–	.89*	1				
15 W3	.43*	.47*	.65*	.52*	.48	–	.45*	.53*	.77*	.63*	.54	–	.70*	.69*	1			
16 W3	.54*	.63*	.61*	.65*	.53	–	.64*	.72*	.72*	.80*	.65	–	.80*	.86*	.78*	1		
17 W3	.34*	.40*	.46*	.42*	.58	–	.43*	.48*	.56*	.49*	.63	–	.58*	.64*	.62*	.72*	1	

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18 W3	–	–	–	–	–	.76*	–	–	–	–	–	.86*	–	–	–	–	–	1
19 Years	–.06	–.08	–	–.06	–	.00	–.06	–.05	–.15	–.02	–	.03	–.16	–.11	–	–.14	–	.09
Mean	78.9	31.7	25.1	16.7	8.9	26.1	82.8	33.5	25.8	17.6	9.1	24.3	86.2	35.9	26.5	18.8	9.2	21.0
SD	21.8	11.7	5.4	4.9	3.2	20.2	21.6	11.9	5.2	15.8	43.4	21.5	22.0	12.4	5.6	35.7	93.3	20.1

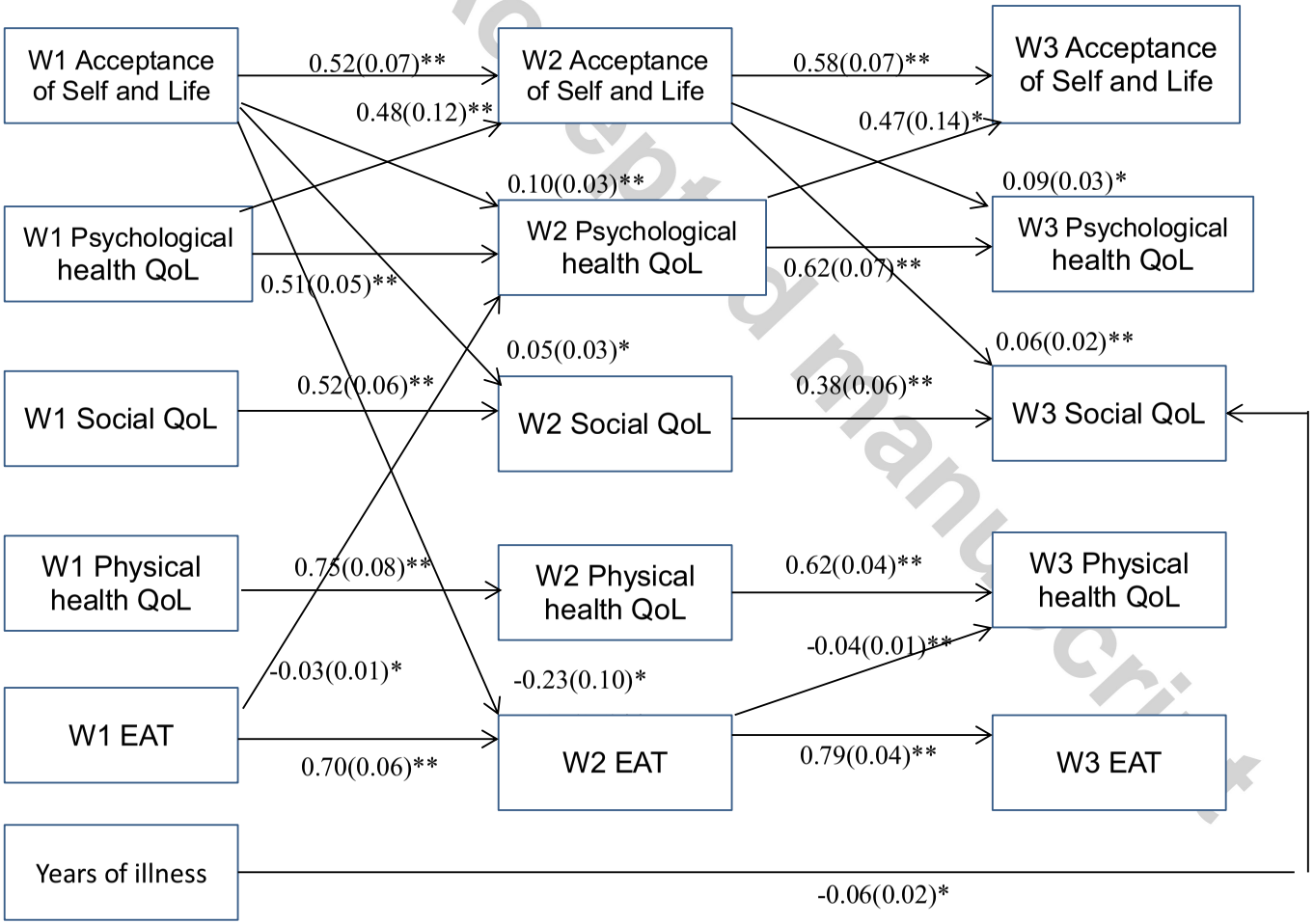
*$p < .05$. **$p < .001$.

Highlights

- Resilience factors predict an increase in several domains of quality of life
- Resilience predicts a reduction of eating disorders symptoms over time
- Psychological health increases acceptance of self and life
- Physical health increases personal competence.
- The relationships between resilience factors and quality of life are reciprocal

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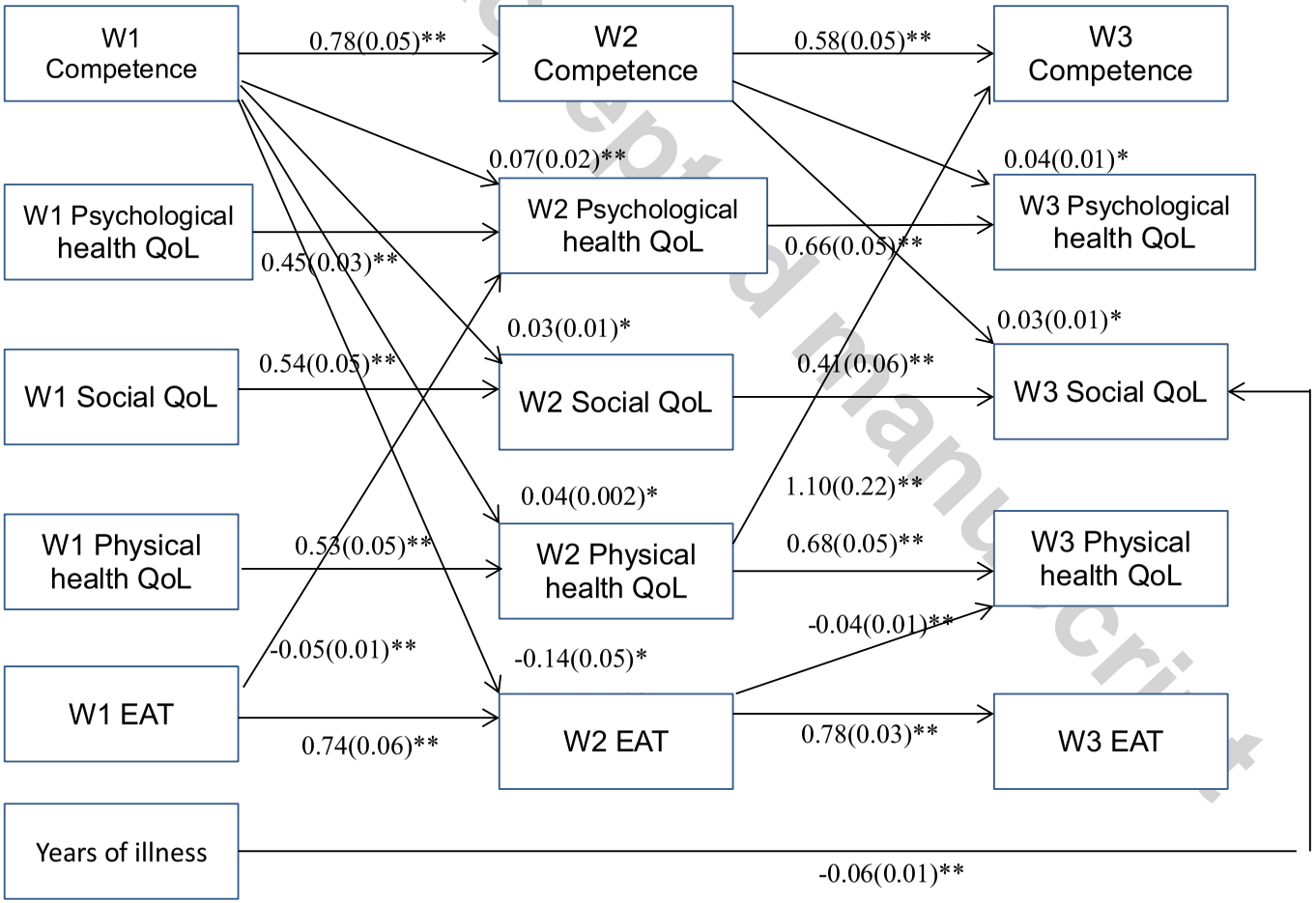
Figure 1. Longitudinal paths between acceptance of self and life, quality of life (QoL), and the Eating Attitudes Test (EAT). Values given represent unstandardized coefficients with standard errors. *$p < .05$. **$p < .001$.



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Figure 2. Longitudinal paths between competence, quality of life (QoL), and the Eating Attitudes Test (EAT). Values given represent unstandardized coefficients with standard errors. *$p < .05$. **$p < .001$.



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