

Coping and Life Satisfaction: Mediating Role of Ego-Resiliency in Patients with Rheumatoid Arthritis

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Significance of the Study

- The aim was to determine whether resiliency mediates the relationship between coping strategies and life satisfaction.
- A high level of resiliency and the use of emotion-focused coping strategies are associated with a better quality of life in individuals with rheumatoid arthritis.
- Resiliency mediates between emotion-focused strategies and life satisfaction.

Keywords

Ego-resiliency · Life satisfaction · Rheumatoid arthritis

Abstract

Objective: Ego-resiliency is attributed the status of a “meta resource” that is responsible for a flexible selection of coping strategies depending on the requirements of a specific difficult situation. A considerably burdensome critical life event is the development of a chronic illness such as rheumatoid arthritis (RA). Apart from coping with the symptoms, a fundamental task confronting patients is maintaining their quality of life. This raises the question of whether ego-resiliency serves as a mediator between coping strategies and quality of life. **Materials and Methods:** 210 RA patients were invited to participate in this study. They were requested to complete a questionnaire that included the Satisfaction with Life scale, the stress coping inventory Mini-COPE, and the Ego-Resiliency scale. The collected data were analyzed by a simple mediation procedure and estimation of simple cor-

relation coefficients. **Results:** The analysis demonstrated that ego-resiliency ($r = 0.46$; $p < 0.001$) and emotion-focused coping ($r = 0.39$; $p < 0.001$) determined life satisfaction. Additionally, ego-resiliency mediated the relation between emotion-oriented coping strategies and life satisfaction. Partial mediation was observed ($a = 0.45^{**}$; $b = 0.36^{**}$; $c = 0.39^{**}$; $c' = 0.22^{**}$; $R^2 = 0.24$; $F = 35.65$; $p < 0.001$). **Conclusion:** Our observations partly support the assumption about a controlling role of ego-resiliency in the process of selecting coping strategies according to demands of situations.

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Introduction

Chronic diseases constitute one of the most common stressors, with every person suffering from approximately 2.2 chronic diseases on average [1]. Chronic diseases are considered complex, and can be cognitively, emotionally, socially, and existentially difficult, and re-

quire from the patient the ability to cope with these difficulties.

Chronic diseases often exceed an individual's ability to adjust, posing a threat to their biological, psychosocial, and spiritual well-being [2]. The functioning of individuals with a chronic disease may be analyzed with reference to a transactional model of stress [3, 4]. Therefore, a chronic disease is considered a critical life event that initiates a stress transaction [5].

Rheumatoid arthritis (RA) is a chronic disease that may dramatically disrupt human functioning. Patients often experience severe pain and a decline in their ability to perform the activities of daily living (ADLs) [6]. RA symptoms include a restricted range of motion in the joints and fatigue, both of which can lead to increasing feelings of helplessness [7]. Co-occurring multiorgan dysfunction may often intensify feelings of powerlessness and negative emotions, which can lead to depression and losing hope of recovery [5].

As Zautra et al. [7] observed, RA symptoms are related to various affective systems. They claimed that pain is connected to an increased level of a negative affect which is unrelated to positive affect. However, their subjects whose symptoms included disability and related limitations experienced a decline in the level of a positive affect with no simultaneous changes in the intensity of a negative affect. These results indicate that one of the possible consequences of RA is a decrease in quality of life.

The interactive model of stress and coping supports a thesis that the course of stress transaction is modified by a number of factors related to a particular person, his or her abilities, the resources they possess, and the environment they live in. In order to define this group of factors, the term "resources conducive to coping with stress" is used [3]. Such resources may modify the course of every stage of stress transaction, that is, primary appraisal, secondary appraisal, coping, and following consequences. According to Lazarus and Launier [8], the processes of secondary appraisal, to a large extent, refer to the assessment of possessed resources, whereas an answer to the question of whether the person is able to cope with a stressful situation is given based on the perception of the available resources. It is assumed that resources are qualities that beneficially influence the course of stress transaction.

Among the internal resources are complex resources, so-called meta resources, which play a key role in the process of adaptation to change because they control the use of other resources (e.g., a sense of coherence) [5] and the flexible application of various coping strategies (e.g., ego-resiliency) [9].

Ego-resiliency is considered one of the crucial meta resources believed to control the selection of the coping strategies. A view is held that it facilitates a flexible selection of coping strategies in a difficult situation depending on what the situation requires. Ego-resiliency is defined as an "adaptive flexibility" that manifests itself in the ability to adjust the level of stimulus control to the demands of the situation [10]. It involves the ability to modify the level of ego-control, depending on the demands of a situation. It is assumed that people characterized by a low level of ego-resiliency are unable to adapt their ego-control to the situation. Regardless of what they encounter, they reveal their emotion to the same degree and fail to control behavioral impulses. On the other hand, individuals characterized by strong ego-resiliency can change their level of ego-control, reducing or increasing it, depending on what the situation demands. A person with a high level of ego-resiliency is able to control his or her impulses when necessary and reduce their level of ego-control when the situation permits [5].

Ego-resiliency may be treated as a resource which, on the one hand, is conducive to experiencing positive emotions, and on the other hand supports a flexible selection of remedial measures depending on what a situation requires. This approach towards understanding the role of ego-resiliency has been adopted in the research on the functioning of RA and diabetic patients [11, 12]. The studies indicated that patients characterized by strong ego-resiliency are more satisfied with their lives.

The purpose of our research was to ascertain whether resiliency mediates the relation between coping strategies and life satisfaction. There are very few studies related to this problem in subjects with RA. We need to expand our knowledge on it because RA is associated with many demands that create a burden for patients (e.g., coping with pain, adapting to the progression of disability, the necessity of regularly taking medication, etc.). Additionally, patients can cope effectively if they are able to adjust their coping strategies to the demands that emerge. Based on theoretical models, one may assume that resiliency plays a key role in the process of a flexible selection of coping strategies [13].

We hypothesized that RA patients with a high level of resiliency would apply coping strategies that would be adjusted to the specific demands of their disease. This would, in turn, lead to a better quality of life. We predicted that ego-resiliency serves a mediating function between coping strategies and life satisfaction.

Table 1. Descriptive statistics, Cronbach's α reliability coefficient, and correlation coefficients between measured variables

	Mean	SD	α	2	3	3a	3b	3c	4	4a	4b	4c	4d	4e	5	5a	5b	5c	5d	5e	5f
1. Life satisfaction	21.79	5.79	0.81	0.46**	0.12	0.13	0.08	0.07	0.39**	0.32**	0.32**	0.30**	0.20**	0.21**	0.03	0.16*	0.05	0.02	-0.01	-0.12	0.02
2. Ego-resiliency	41.51	7.07	0.85	0.39**	0.34**	0.35**	0.35**	0.22**	0.45**	0.48*	0.33*	0.32*	0.15*	0.22*	0.12	0.27**	0.09	0.11	0.01	-0.12	0.04
3. Problem-oriented coping	11.66	3.12	0.74	0.78*	0.78*	0.78**	0.78**	0.72**	0.55*	0.50*	0.35**	0.07	0.26*	0.54**	0.10	0.22**	0.06	0.20	-0.07	-0.15**	0.06
3a. Active coping	4.17	1.25	0.67	0.57**	0.28*	0.37*	0.42*	0.28*	0.37*	0.42*	0.26**	0.03	0.15**	0.29*	0.01	0.15**	0.00	0.08*	-0.11*	-0.22*	0.03
3b. Planning	4.07	1.31	0.62	0.27**	0.27**	0.39**	0.42**	0.27**	0.39**	0.42**	0.33**	0.06	0.15**	0.27**	-0.04	0.09*	-0.05	0.03	-0.12**	-0.23**	0.03
3c. Seeking instrumental support	3.43	1.54	0.59	0.47**	0.47**	0.47**	0.47**	0.27**	0.47**	0.31**	0.21**	0.06	0.24**	0.64**	0.22**	0.24**	0.16*	0.30**	0.03	0.05	0.06
4. Emotion-oriented coping	15.25	4.79	0.70	0.71**	0.71**	0.71**	0.71**	0.63**	0.71**	0.63**	0.53**	0.33**	0.60**	0.64**	0.27**	0.35**	0.19**	0.30**	0.01	0.06	0.04
4a. Positive reframing	3.53	1.36	0.69	0.42**	0.42**	0.42**	0.42**	0.33**	0.42**	0.33**	0.24**	0.04	0.19**	0.38**	0.13**	0.27**	0.12**	0.17**	-0.02	-0.09*	-0.04
4b. Acceptance	3.96	1.30	0.56	0.24**	0.24**	0.24**	0.24**	0.24**	0.24**	0.24**	0.24**	0.04	0.19**	0.27**	0.04	0.19**	0.05	0.12**	-0.07	-0.08*	-0.06
4c. A sense of humor	1.90	1.44	0.65	0.13**	0.13**	0.13**	0.13**	0.13**	0.13**	0.13**	0.13**	0.08*	0.13**	0.08*	0.25**	0.20**	0.17**	0.19**	0.15**	0.16**	0.08*
4d. Turning to religion	2.29	1.94	0.87	0.23**	0.23**	0.23**	0.23**	0.23**	0.23**	0.23**	0.23**	0.23**	0.23**	0.23**	0.24**	0.23**	0.19**	0.20**	0.06	0.16**	0.14**
4e. Seeking emotional support	3.57	1.61	0.81	0.17**	0.17**	0.17**	0.17**	0.17**	0.17**	0.17**	0.17**	0.17**	0.17**	0.17**	0.17**	0.25**	0.12**	0.25**	-0.05	0.03	0.00
5. Dysfunctional coping	12.09	5.44	0.73	0.59**	0.59**	0.59**	0.59**	0.59**	0.59**	0.59**	0.59**	0.59**	0.59**	0.59**	0.59**	0.59**	0.68**	0.72**	0.47**	0.66**	0.63**
5a. Self-distraction	3.15	1.55	0.58	0.35**	0.35**	0.35**	0.35**	0.35**	0.35**	0.35**	0.35**	0.35**	0.35**	0.35**	0.35**	0.35**	0.35**	0.42**	0.04	0.20**	0.18**
5b. Denial	1.92	1.58	0.57	0.21**	0.21**	0.21**	0.21**	0.21**	0.21**	0.21**	0.21**	0.21**	0.21**	0.21**	0.21**	0.21**	0.21**	0.41**	0.20**	0.35**	0.27**
5c. Venting	2.52	1.58	0.48	0.21**	0.21**	0.21**	0.21**	0.21**	0.21**	0.21**	0.21**	0.21**	0.21**	0.21**	0.21**	0.21**	0.21**	0.21**	0.21**	0.38**	0.31**
5d. Psychoactive substance use	0.60	1.16	0.78	0.30**	0.30**	0.30**	0.30**	0.30**	0.30**	0.30**	0.30**	0.30**	0.30**	0.30**	0.30**	0.30**	0.30**	0.30**	0.30**	0.30**	0.30**
5e. Behavioral disengagement	1.57	1.36	0.59	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**
5f. Self-blame	2.33	1.53	0.45	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**	0.22**

* $p < 0.05$; ** $p < 0.001$.

Materials and Methods

Subjects

Participation in the research was voluntary and anonymous. Respondents were randomly selected from a sample of individuals who were admitted for standard check-ups in the rheumatology wards of hospitals in Poznan, Śrem, and Gorzów Wielkopolski, on the 20–25 April 2019. Subjects were included who had a diagnosis of RA and no mental disorders. We aimed to simultaneously examine a large sample of patients whose key problem was RA. 210 RA patients took part in the study. The number of women in this study was higher ($n = 161, 76.7\%$); the disproportion is reflected in the disease rate among women and men reported in the population. The mean age for all participants was 54.92 years (SD 14.85). Men and women were of a similar age (mean age of women [M_w] 54.85 and SD_w 15.31; mean age of men [M_m] 55.14 and SD_m 13.37; $t = -0.129$; $df = 208$; $p = 0.904$). Mean life-span with the disease was 12.39 years (SD 10.12), and there were no differences in this respect between men and women (M_w 12.16 and SD_w 10.02; M_m 13.16 and SD_m 10.49; $t = -0.583$; $df = 208$; $p = 0.561$). Respondents who were married (161; 76.7%), had a high-school education diploma (73; 35%), resided in rural areas (65, 31.15%), and received either a disability pension or retirement benefit prevailed in the sample (131; 63%).

Tools

Along with a sociodemographic questionnaire, study participants completed individual questionnaires measuring life satisfaction [14], coping strategies [15], and ego-resiliency [16].

The Satisfaction with Life scale (SWLS) [15, 17] was used to measure general life satisfaction. It consists of 5 statements with which respondents may agree or disagree on a 7-point scale (1 = strongly disagree and 7 = strongly agree). The total result is the sum of the answers given. The value of Cronbach's α was satisfactory and amounted to = 0.81.

The stress coping inventory Mini-COPE [16, 18, 19] enables the measurement of 14 strategies of coping with a difficult situation. They comprise active coping, planning, positive reframing, acceptance, a sense of humor, turning to religion, seeking emotional support, seeking instrumental support, self-distraction, denial, venting, psychoactive substance use, behavioral disengagement, and self-blame. Each of the coping strategies is measured by 2 test items. Answers are given on a 4-point scale (0 = never and 4 = always). The result is a sum of answers on a particular subscale. Due to a large number of coping strategies, in order to perform a general analysis, the researchers aimed at reducing numbers. Coping strategies were thus classified into 2 groups, i.e., problem-oriented (Cronbach's $\alpha = 0.74$), emotion-oriented (Cronbach's $\alpha = 0.70$), and dysfunctional (Cronbach's $\alpha = 0.73$) coping [18].

The Ego-Resiliency scale was developed to measure the intensity of resiliency [9, 16]. The scale consists of 14 test items. The respondents take a stance about particular statements, (e.g., I like getting to one place using different paths), estimating their agreement with each of them on a 4-point scale (1 = does not apply and 4 = strongly applicable). The value of Cronbach's α was satisfactory at 0.85.

Statistical Procedures

We first calculated Cronbach's α reliability coefficient of the research tools, the descriptive statistics of the measured variables, and simple Pearson correlation coefficient (r) of coping strategies, ego-resiliency, and life satisfaction (Table 1). For the sake of verify-

Table 2. Mediating role of ego-resiliency in the link between coping strategies and life satisfaction (bootstrap 10,000)

	Coefficient			Sobel's test			Model summary			95% CI	
	<i>a</i>	<i>b</i>	<i>c</i>	<i>c'</i>	<i>z</i>	<i>p</i> value	<i>R</i> ²	<i>F</i>	<i>p</i> value	lower	upper
Problem-oriented coping	0.39**	0.49**	0.12	-0.06	4.73	<0.001	0.21	29.00	<0.001	0.11	0.30
Active coping	0.34**	0.47**	0.13*	-0.03	4.27	<0.001	0.21	28.46	<0.001	0.09	0.26
Planning	0.34**	0.50**	0.08	-0.08	4.44	<0.001	0.21	29.54	<0.001	0.09	0.28
Seeking instrumental support	0.22**	0.47**	0.07	-0.31	3.05	0.002	0.21	28.51	<0.001	0.04	0.18
Emotion-oriented coping	0.45**	0.36**	0.39**	0.22**	4.34	<0.001	0.24	35.65	<0.001	0.09	0.25
Positive reframing	0.44**	0.41**	0.29**	0.11	4.69	<0.001	0.22	30.38	<0.001	0.11	0.26
Acceptance	0.31**	0.44**	0.21**	0.07	4.04	<0.001	0.21	29.18	<0.001	0.07	0.23
A sense of humor	0.29**	0.41**	0.27**	0.15**	3.88	<0.001	0.23	32.77	<0.001	0.07	0.19
Turning to religion	0.15*	0.44**	0.21**	0.15*	2.13	0.033	0.22	32.04	<0.001	0.01	0.14
Seeking emotional support	0.21**	0.44**	0.21**	0.11	2.95	0.003	0.22	30.46	<0.001	0.04	0.16
Dysfunctional coping	0.10	0.46**	0.03	-0.01	1.53	0.126	0.21	28.40	<0.001	-0.01	0.12
Self-distraction	0.28**	0.45**	0.17*	0.04	3.53	<0.001	0.21	28.59	<0.001	0.05	0.23
Denial	0.08	0.46**	0.05	0.08	1.22	0.221	0.21	28.36	<0.001	-0.02	0.10
Venting	0.11	0.46**	0.02	-0.04	1.61	0.107	0.21	28.56	<0.001	-0.01	0.13
Psychoactive substance use	0.01	0.46**	-0.01	-0.01	0.02	0.983	0.21	28.38	<0.001	-0.06	0.05
Behavioral disengagement	-0.11	0.46**	-0.11	-0.06	-1.70	0.089	0.21	29.06	<0.001	-0.13	0.01
Self-blame	0.04	0.46**	0.12	-0.01	0.56	0.573	0.21	28.35	<0.001	-0.05	0.08

* $p < 0.05$; ** $p < 0.001$.

ing the assumption about the mediating role of ego-resiliency in linking coping strategies and life satisfaction, a mediation procedure was carried out as recommended by Preacher and Hayes [20]. The analysis included a resampling procedure with 5,000 repetitions. Seventeen mediation models were tested, where each coping strategy was sequentially placed on the side of the independent variable. In each of the tested models, ego-resiliency was treated as the mediator and life satisfaction as the dependent variable.

Results

Mean results in the study group were the following: 21.79 for life satisfaction, 41.51 for ego-resiliency, 11.66 for problem-focused coping strategies, 15.25 for emotion-focused strategies, and 12.09 for dysfunctional coping strategies.

Relations between Ego-Resiliency, Coping Strategies, and Life Satisfaction

Ego-resiliency has a positive connection with life satisfaction ($r = 0.46$; $p < 0.01$) and with all coping strategies classified as problem- and emotions-oriented strategies. Correlation coefficients ran from $r = 0.15$; $p < 0.05$ for turning to religion to $r = 0.48$; $p < 0.01$ for positive reframing. Only one of the strategies self-distraction, classified as dysfunctional coping correlated with ego-resiliency ($r = 0.27$; $p < 0.01$).

The level of life satisfaction was primarily determined by emotion-oriented coping strategies. Correlation coefficients ran from $r = 0.20$; $p < 0.01$ for positive reframing to $r = 0.32$; $p < 0.01$ for turning to religion. Self-distraction also proved to be the only dysfunctional coping strategy interacting with coping ($r = 0.16$; $p < 0.05$).

Mediating Role of Ego-Resiliency in Relations between Coping Strategies and Life Satisfaction

As proposed, we observed that ego-resiliency mediated the relation between coping strategies and life satisfaction. Such mediation was mainly observed in the emotion-oriented coping strategies (Table 2). Complete mediation was observed for 3 emotion-oriented strategies: positive reframing, acceptance, and seeking emotional support. The results indicate that strong ego-resiliency bears a direct relation to coping strategies and life satisfaction. Patients who often use positive reframing, acceptance, and seeking emotional support are more satisfied with their lives as they are characterized by a high level of ego-resiliency (Table 2).

In the case of a sense of humor and turning to religion, partial mediation was observed. This means that the relation between coping strategies and the level of life satisfaction may be direct, or that other variables that were not taken into account in the model were involved. It may be

assumed that ego-resiliency is conducive to effectively using emotion-oriented coping strategies.

The interrelations ran in a different manner when the problem-oriented and dysfunctional coping strategies were placed next to independent variables. Ego-resiliency served the function of a mediator only twice; in a relation between active coping and life satisfaction (a problem-oriented strategy) and in self-distraction (a dysfunctional coping strategy). Both observed mediations were complete. Using these strategies proved conducive to greater life satisfaction. Patients adopting active coping strategies and self-distraction are more satisfied with their lives as they are characterized by a high level of ego-resiliency (Tables 1, 2).

Discussion

The observed interrelationships between variables indicated that strong ego-resiliency and using some of the coping strategies, mainly those oriented towards emotion regulation, is conducive to a high level of life satisfaction.

The results of this study contribute to understanding the mechanism of ego-resiliency to a greater degree. Ego-resiliency is defined as a disposition (linked to personality) which facilitates flexible adaptation to a difficult situation (such as having RA) and activates various coping strategies. Many coping strategies are associated with positive emotions whereas ego-resiliency is treated as a factor that actually provokes positive emotions [8]. We observed a mediating role of ego-resiliency for emotion-oriented coping strategies. Similar results were obtained in previous studies [10, 11]. It seems that ego-resiliency can influence the capacity to cope in a difficult situation, since experiencing positive emotions fosters the drawing away from negative experiences related to the disease. Ego-resiliency can thus facilitate the achievement of emotional balance in a difficult situation.

Ego-resiliency may be considered a resource which, on the one hand, is conducive to experiencing positive emotions, and on the other hand helps in flexible selection of remedial measures depending on the demands of the situation. This approach towards the understanding of the role of resiliency has been adopted in studies on the functioning of RA and diabetic patients [16, 17]. As expected, our results demonstrated that patients characterized by a strong ego-resiliency are more satisfied with their lives. According to Block and Kremen [21], many coping strategies are associated with positive emotions whereas resilience is thought to be a determinant of positive emotions. We have demonstrated that resilience played the role of a mediator

for emotion-focused coping strategies. Similar results were observed in earlier studies [22, 23]. Resilience may affect coping with difficult situations because experiencing positive emotions fosters distraction from negative experiences, making it easier to achieve emotional stability in difficult situations. However, it should be emphasized that the effect of ego-resiliency was limited to the mediation of relations between emotion-oriented strategies and life satisfaction. Only occasionally did it serve this role in the case of problem-oriented and dysfunctional coping strategies. The observed representation of interrelationships between variables accounted for in the model only partially supports the hypothesis that ego-resiliency controls the flexible selection of coping strategies. This conclusion is corroborated in the case of emotion-oriented strategies.

Resilience can be treated as a resource which not only fosters positive emotions but also supports the flexible selection of coping strategies adapted to the demands of the situation. This approach to the role of resilience has been adopted in studies on the functioning of patients with RA and diabetes [2, 24].

It should be noted, however, that the action of resilience was found to be limited to mediating relationships between emotion-focused strategies and life satisfaction. It only sporadically played such a role in problem-focused coping strategies and dysfunctional coping strategies.

Limitations

This study has its limitations. First, we used self-report methods to evaluate variables. This means of gathering data creates risks associated with data distortion due to the tendency of respondents to present themselves in a more positive light. Second, we used targeted selection while constructing the sample. Our respondents were patients reporting for a hospital check-up. Consequently, our results may not be fully representative of the population in general because the study included respondents with long disease duration. It would be worthwhile to conduct these analyses in a subgroup of people with similar disease duration. Transactional models of stress assume that the capacity to cope changes over time, so individuals who have just obtained their diagnoses may cope in different ways from patients who have already lived with their disease for longer.

Conclusions

The results of the study have important clinical implications. They indicate that an assessment of a patient's psychological status should be a part of the diagnostic

process; such an assessment may support the decision to provide counseling for the patients who need it. Psychological counseling for patients in combination with treatment is usual when adverse secondary psychological outcomes of the disease are observed.

Similar studies ought to be conducted on patients with other chronic diseases or who are experiencing difficult situations. Such research would help establish whether the observed interrelations are reflected in different populations and different situations.

It is worth conducting a study in which the dependent variable will be related to negative affective states (e.g., the level of depression or anxiety). Such research would help ascertain whether the mechanism of ego-resiliency is restricted to arousing positive emotions or also serves a role in the regulation of negative emotional states. The patient's psychological status should be assessed at the initial stage of the diagnostic process. Psychological inter-

ventions should focus on the patient's empowerment to foster effective coping.

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Statement of Ethics

Respondents were fully informed about the purpose of the study and gave their written informed consent to participate. The study proposal was approved by the Bioethical Committee of Poznań University of Medical Sciences according to a diagnosis of RA and the absence of mental disorders.

Disclosure Statement

The authors declare no conflicts of interest.

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