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THE MEDIATING ROLE OF RESILIENCE IN THE RELATIONSHIP
BETWEEN RUMINATION-REFLECTION AND POSTTRAUMATIC
GROWTH IN CANCER PATIENTS

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Abstract

Today, cancer is considered a major public health problem that creates a lot of stress and can significantly affect a person's life quality in a negative way. Cancer patients who experience post-traumatic growth are more successful in responding to their illness, are reported to be healthier both physically and mentally, and have fewer symptoms of post-traumatic stress and anxiety. Thus, the present study tries to investigate the model of predicting post-traumatic growth based on rumination-reflection by the mediating role of resilience. The research was conducted by using the correlation method and path analysis. The sample consisted of 300 cancer patients who attended the hospitals in Tehran, and they were selected by purposive sampling. Participants completed the questionnaires of ruminant-reflection (Trapnell and Campbell, 1999), post-traumatic development (Tedeschi and Calhoun, 1996), and resilience (Connor & Davidson, 2003). The results showed that rumination-reflection affected the posttraumatic growth of cancer patients directly and indirectly (by the mediating resilience). Resilience also had a significant direct effect on post-traumatic growth. Thus, to promote

post-traumatic growth in cancer patients, resilience and rumination/reflection can be increased.

INTRODUCTION

Cancer is the second largest disease that causes death, and 9.6 million people died of cancer in 2018. About 70 percent of cancer deaths occur in low-income or medium-income countries. The global cancer statistics have shown that the cancer cases are increasing dramatically to the extent that in 2012, about 14.1 million people around the world are newly recognized to suffer from cancer. In 2030, the number of cancer patients will increase by 50 percent and reach 28 million people (World Health Organization, 2018). Based on the latest reports, the number of cancer cases in Iran is 112 thousand in 2014-2015. The cancer susceptibility of men and women are 157 and 137 respectively out of 100 thousand people. According to Iran's national program of cancer registries, in 2015, out of 108,798 people in Iran, 54 and 46 percent of the cancer patients were men and women respectively. The important point is that like other developing countries, the propagation of cancer in Iran is increasing (five to seven percent) (Health Ministry, Medical treatment and education, 2018).

The research findings have shown that the detection of cancer will disrupt the sense of security and the invulnerability of the individual (Cormio et al. 2017). After the threatening experiences of life like cancer, some people show positive psychological changes that are called posttraumatic growth. This expression was coined by Tedeschi & Calhoun (1996). It is about the positive psychological changes that people experience as the result of confronting big challenges and harmful life incidents. This expression describes the positive changes in the reactions of the people who were successful before the trauma and shows that these people have grown by confronting the trauma, and at the functional level, they have returned to the primary state and even further. (Tedeschi & Calhoun, 2004). Posttraumatic growth is divided into five subjects of A) Relationship with others that means the development of the relationship network and more intimacy with others; B) New probabilities that indicate the creation of a new path or new opportunities; C) Personal power that shows the internal power and ability of self-reliance in difficulties; D) Spiritual change that indicates the understanding and improvement of spiritual experiences; E) The gratitude for life that means to realize the value of life. (Jayawickreme et al. 2021).

After the individual's emotional shock and his/her confrontation with the disease, the remembrance activity aimed at the search for meaning begins and it underlies the rumination (Cormio et al. 2017). Rumination is a set of conscious thoughts that are focused on an important subject, and these thoughts appear even in the case of the absence of the environmental instant and necessary demands (Manavi Pour and Shah Hoseini, 2015). The rumination after the trauma in the people with different thoughts can be an effective factor in the expression and preservation of the negative attitude and consequently, the expression of positive or negative effects of the trauma (Newman & Nezlek, 2019). Researchers (Calhoun, Cann, Tedeschi, and

McMillan) believe that rumination in the first stage of the confrontation with the trauma plays an important role in the cognitive processing of the next stage and the post-traumatic growth. The mechanisms like rumination is a cognitive activity that is activated with the purpose of the continuation inhibition of the situation and will lead to the post-traumatic schemas (Tedeschi & Calhoun, 2004). In the first stages, the rumination is operated intrusively and it is continued until the individual gets along with the trauma, his/her distress and disappointment decrease, and gets rid of the unavailable purposes. In the next stages, the rumination is controlled and it is operated deliberately (Martin, 2012). The deliberate rumination or reflection that is defined as the human's tendency to introspection and getting more information about philosophy, nature, and purpose of life (Crane, Searle, Kagnas & Nwiran, 2019; Crane & Searle, 2016) is led to the reconstruction of the post-traumatic schemas and forms the new life events along with new purposes and cognitions in which the trauma will be considered as the opportunity for growth (Tedeschi & Calhoun, 2004).

Resilience is another variable that affects posttraumatic growth. Resilience is defined as the individual's trust in his/her ability to overcome stress, confrontation skills, self-esteem, emotional stability, and individual characteristics that increase others' social support. (Pinquart, 2009). In other words, resilience is the positive adaptation in response to horrible conditions (Waller, 2001). The studies have considered the feeling of being valuable, ability to solve problems, social competence, optimism, and sympathy as the characteristics of resilient people (Liu, Reed, and Girard, 2017).

Some studies have been conducted about the relationship of rumination-reflection and resilience with posttraumatic growth. The results of the study of Calhoun et al. (2000) have shown that the people who have had more rumination just after the trauma, have also experienced more posttraumatic growth. Also, Taku & Cann, Tedeschi & Calhoun (2009) founded that the intrusive rumination just after the trauma is in a positive relationship with the posttraumatic growth, but the later deliberate rumination predicts the current level of the posttraumatic growth with greater intensity. According to the studies of Ogińska-Bulik (2018), reflection and both kinds of rumination related to the experienced event (intrusive and deliberate) are in a positive relationship with the positive changes after the trauma. Intrusive ruminations related to the experienced event and reflection play the role of suppressors in the relationship between neuroticism and posttraumatic growth. Neuroticism decreases the ability to understand the positive effects but leads to intrusive rumination that along with reflection increases posttraumatic growth.

Also, Calhoun et al. (2000). have emphasized that the positive rumination –that is distinguished from the negative rumination by the constructiveness and activeness of the individual in the analysis of the situation- plays the most important role in the expression of the constructive dimension of the posttraumatic growth in such a way that the people who use the positive and constructive rumination just after confronting the trauma, more probably show posttraumatic growth six months to two years after the

crisis. Newman & Nezelek (2019) have shown that rumination-reflection is in a positive relationship with finding meaning in life and will lead to positive emotion and comfort and also the search for meaning in life.

The researchers have approved the relationship between resilience and posttraumatic growth (Maung et al. 2021; Nuccio & Stripling, 2020; Brooks, Amlôt, Rubin & Greenberg, 2020; Walsh et al. 2018; Ahmadi & Mehrabi, 2020; Kiani et al. 2019; Ahmadi, Mehrabi, and Neshat Doust, 2017). Maung et al. have analyzed the posttraumatic growth in refugee women and considered the resilience and events related to growth as the factors affecting posttraumatic growth. Also, Brooks et al. (2020) have considered training, the recognized (personal) experience and competence, social support, and effective confrontational solutions as the mechanisms of the effects of resilience on posttraumatic growth. Ahmadi and Mehrabi (2020) found that resilience has a direct significant effect on the posttraumatic growth of women with cancer or mourning experience and the styles of confrontation with stress mediate the relationship between resilience and posttraumatic growth. Kiani et al. (2019) analyzed the relationship between resilience and posttraumatic growth of the hemodialysis patients and showed that resilience plays an important role in the posttraumatic growth of the patients. By analyzing the predictors of posttraumatic growth in the women suffering from injury, Ahmadi, Mehrabi, and Neshat Doust (2017) showed that the variables of social support, resilience, spirituality, and self-efficacy are the positive predictors of the posttraumatic growth and collection of these variables prepares an important mechanism for confronting damaging incidents and helps people to experience the posttraumatic growth. It seems that resilience affects posttraumatic growth; therefore, improves mental health and the psychological well-being of individuals. Thus, Walsh et al. (2019) have shown that posttraumatic growth can play a mediating role in the relationship between resilience and the consequences of the mental health of cancer patients. Other researchers have also shown that by increasing resilience, the psychological well-being will also be improved (Smith & Yang, 2017; Hasan Zadeh Namin, Peymani, Ranjbari Pour, Abolmaali Alhoseini, 2019; Khanjani, Sohrabi, Azami, 2018).

Although many studies have been conducted concerning posttraumatic growth and also its relationship with different variables, it is still very important to answer the question that which psychological variables can affect posttraumatic growth directly and indirectly. Due to the great spread of cancer and the importance of the resources of cancer patients for dealing with the disease, the recognition of the factors affecting the psychological well-being of cancer patients according to different dimensions of posttraumatic growth helps the health specialists to implement targeted intervention programs in order to increase the correspondence and posttraumatic growth and the improvement of psychological well-being. The present study tries to answer the question: does resilience play a mediating role in the relationship between rumination/reflection and posttraumatic growth in cancer patients?

METHOD

This is a descriptive study that has used the correlation method (through path analysis). The studied statistical population included all the patients aged from 30 to 65 suffering from cancer. They attend the hospitals of Tehran, and those were the ones who have attended the hospitals in the winter and spring of 2020. Some researchers consider the minimum sample size of 100 and describe the sample size of 200 and more than 200 as favorable (Meyers et al. 2006). Therefore, by considering the possible decrement of the participants, 300 samples were chosen by the targeted sampling method. The entry criteria of the research include detection of cancer, ability to fulfill the tools, holding diploma or higher education degree, the duration of cancer diagnosis should be more than three months, 30-65 age range. The participants individually responded to the questionnaire in one session. The required descriptions about the research purpose, the privacy of the information, and the free participation in the study were presented and the participants' satisfaction was taken.

TOOLS

Rumination-Reflection Questionnaire (RRQ): This scale is prepared by Trapnell & Campbell (1999) to show the distinction between the compatible and incompatible components of rumination. The last edition of the rumination-reflection questionnaire includes 24 items, 12 items of which investigate the self-rumination focus and 12 items investigate the adaptive reflective thought. The response to each item is based on the 5-option Likert scale with a domain from 5 (Strongly agree) to 1 (Strongly disagree). Trapnell & Campbell analyzed the validity of the structure of this scale and reported that the subscale of the rumination shows a strong positive relationship with the symptoms of neuroticism, while the reflection scale shows the strongest relationship with openness to experience. Trapnell & Campbell used Cronbach's alpha and reported a good internal consistency concerning the reflection and rumination as 0.91 and 0.90 respectively. These two factors showed the minimum correlation with each other (0.22). Also, the study of Ghorbani, Watson & Hargis (2008) showed the proper characteristics of this tool so that the internal consistency of this scale is 0.84 and 0.80 in Iran and America respectively. In the present study, the reliability for self-rumination and reflective thought is 0.84 and 0.74 respectively, and 0.76 for the whole test.

Posttraumatic Growth Inventory: This questionnaire was designed by Tedeschi & Calhoun (1996) to measure posttraumatic growth. A self-assessment tool consists of 21 articles, and the individual must respond based on a 6-degrees Likert scale. The main form of this questionnaire consists of 5 subscales: 1) Relationship with others, 2) New possibilities, 3) Personal power, 4) Spiritual changes, and 5) Life value. In the study of Tedeschi & Calhoun (1996), the correlation coefficient of the subscales with the positive total point of the questionnaire was significant (0.88) and the coefficient of the Cronbach's alpha for the total questionnaire was 0.92.

The results of the study of Tedeschi & Calhoun (1996) showed that the people who have confronted a psychological shock have gained more points in comparison with the ordinary people. Heidar Zadeh et al.(2016) examined the psychometric characteristics of the Persian edition of the posttraumatic growth in the cancer patients and in the confirmatory factor analysis, they showed an acceptable fitness. Also, the 5-factor structure of the posttraumatic growth tool was approved. The coefficient of the Cronbach's alpha for the whole tool was 0.87 and the resulted coefficients for the components of the main 5-factor scale were 0.57 to -.77, and the correlation between the two tests -one of which was 30 days later than the other- in 18 samples was 0.75. In the present study, the reliability of this test was achieved to be 0.78, 0.70, 0.74, 0.77, and 0.70 for the relationship with others, new possibilities, personal power, spiritual changes, and life value respectively, and 0.70 for the whole test.

Connor-Davidson Resilience Scale: This questionnaire was prepared by Connor & Davidson (2003). The Connor-Davidson scale has 25 expressions that are scored based on a Likert scale from zero (Completely False) to five (Always True). Therefore, the test scores range from 0 to 100. The higher scores indicate the more testable resilience. The results of the factor analysis indicate that this test consists of factors: 1) Imagining the individual competence, 2) trusting one's instincts and handling negative emotions, 3) having a positive attitude to change and secure relationships, 4) control, 5) and spiritual effects. Connor & Davidson have reported the coefficient of the resilience scale of Cronbach's alpha as 0.89. Also, the reliability of the coefficient resulted from the test-retest method in a 4-weeks period was 0.87. The scores of the Connor-Davidson resilience scale were in a significant positive correlation with the scores of the Kobasa's hardiness scale and in a significant negative correlation with the scores of the perceived stress scale and the Sheehan stress vulnerability scale. These results indicate the simultaneous validity of this scale. The scores of the Connor-Davidson resilience scale have no significant correlation with the scores of the Arizona sexual experience scale at the beginning of the test and also at its end. This implies the discriminant validity of the test. The questionnaire that was distributed among the students by Samani, Jowkar, and Sahra Gard reported the reliability of 0.93, and the validity was achieved in various normal and risky groups by the designers of the test (through the method of factor analysis and convergent and divergent validity) (Samani et al. 2007). In the present study, the reliability of this test was achieved to be 0.87, 0.85, 0.81, 0.80, and 0.71 for imagining the individual competence, trusting one's instincts and handling negative emotions, having a positive attitude to change and secure relationship, control, and spiritual effects respectively, and 0.70 for the whole test.

The data was analyzed by SPSS and Amos 21.

FINDINGS

The present study was conducted as a sample of 300 men and women (72.7% female and 27.3 % male) who suffered from cancer and were aged from 18 to 55 years (mean: 42.89; standard deviation: 7.34). 65 percent (196 people) were

suffering from cancer for 1-5 years, 26 percent (77 people) for less than one year, and 9 percent (27 people) for more than 6 years. 37 percent (112 people) were at the first stage of the disease, 32 percent (97 people) at the second stage, 5 percent (16 people) at the third stage, and 25 percent (75 people) at the primary stages of the disease. Table 1 reports the mean, standard deviation, skewness, and kurtosis of the variables of the study. None of the variables of this study shows a serious deviation from the univariate normal distribution. Based on most of the sources of the skewness and kurtosis, the distribution of the scores in the range of (2 and -2) can be assumed normal (Gravetter & Wallnau) (Table 1). The correlation between variables is reported in Table 2. It indicates that there is a significant correlation between variables. Table 3 reports the direct and indirect path coefficients of the model.

Table 1 Mean, Standard Deviation, Skewness, and Kurtosis of the Variables

Variables	Mean	Standard Deviation	Skewness	kurtosis
Posttraumatic Growth	83/31	13/50	-0/91	1/04
Patients' Resilience	83/78	19/83	-1/72	1/58
Rumination	46/47	8/06	-0/67	0/37
Reflection	40/16	8.78	0/08	-0/44

Table 2 Pearson Correlation Matrix

Variable	1	2	3	4
1 Posttraumatic Growth	1			
2 Resilience	0/67**	1		
3 Rumination	0/56**	0/74**	1	
4 Reflection	0/58**	0/62**	0/48**	1

Table 3 Coefficients of Structural Model's Path

Path	Parameter b	βStandard Parameter	Critical Value	P Value
Rumination → Posttraumatic Growth	0/172	0/12	2/04	<0/05
Reflection → Posttraumatic Growth	0.307	0/27	5/22	<0/01
Resilience → Posttraumatic Growth	0/171	0/42	6/233	<0/01
Rumination → Resilience	1/97	0/58	14/59	<0/01
Reflection → Resilience	0/95	0/34	8/623	<0/01
Rumination → Resilience → Posttraumatic Growth	0/34	0/24	6/04	<0/01
Reflection → Resilience → Posttraumatic Growth	0/16	0/14	5/01	<0/01

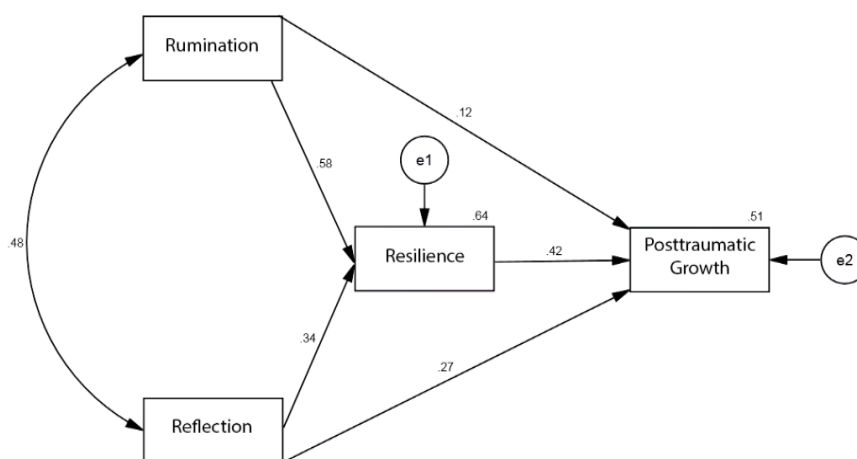


Figure 1 The Experimental Model of the Research in the State of Standardized Path Coefficients

Rumination/Reflection and resilience define 51% of posttraumatic growth. Rumination and reflection define 64% of the resilience variance.

DISCUSSION AND CONCLUSION

Due to the role and importance of posttraumatic growth in the psychological health and well-being of cancer patients, this study was conducted aiming at the analysis of the mediating role of resilience in the relationship between rumination-reflection and posttraumatic growth.

The results of the present study showed that rumination-reflection significantly and directly affects the posttraumatic growth of cancer patients. This result was in accordance with other studies concerning the relationship between rumination-reflection and posttraumatic growth (Ogińska-Bulik, 2018; Calhoun et al. 2000; Newman & Nezelek, 2019; Stockton, Hunt & Joseph, 2011; Taku et al. 2009). Some research findings (Ogińska-Bulik, 2018; Taku et al. 2009) have shown that reflection and both kinds of rumination concerning the experienced event (intrusive and deliberate) are in a positive relationship with the positive changes after the trauma; but other research findings (Morris & Shakespeare-Finch) have shown that the intrusive rumination is in a negative significant relationship with posttraumatic growth, and this is in contrast with the findings of the present research that indicates the positive relationship between rumination and posttraumatic growth. The relationship between rumination-reflection and posttraumatic growth of cancer patients can be defined based on the descriptive action model of Tedeschi & Calhoun (2004). Therefore, getting cancer as a traumatic experience leads to the collapse of fundamental beliefs. In order to deal with this situation, the patients use rumination and cognitive reappraisal to cope with the experience of the disease that is in accordance with other research findings concerning the relationship of rumination and cognitive reappraisal with posttraumatic growth (Shi et al. 2015; Soo & Sherman, 2015; Calhoun et al. 2000). The rumination is later continued deliberately and in a controlled way, then it will result in the finding of meaning. Finding of meaning will result in the increment of

purposefulness, positive emotion, hope, optimism, and satisfaction with life (Yilmaz et al. 2019; Mohammadi, Nikbakht, and Khosravi Bonjar, 2019). Changing the viewpoint and attitude toward the problem and considering it as an opportunity to grow and change will lead to posttraumatic growth. Therefore, it can be said that if rumination leads to the finding of meaning and resilience, it can positively affect posttraumatic growth. The rumination that leads to reflection and finding of meaning will positively affect the posttraumatic growth of cancer patients by increasing self-awareness, self-focus, conscious awareness of thoughts, excitement and motivation, increment of acceptance, decrement of negative emotions, increment of positive emotion, modifying emotional responses, finding of meaning, and changing the viewpoint and attitude of cancer patients. It seems that rumination-reflection helps cancer patients to understand the situation and determine the appropriate emotional reaction. Also, rumination must be considered a multi-dimensional variable that affects posttraumatic growth differently in terms of time. This can explain the contrast of the present study's results with the research findings of Morris & Shakespeare-Finch (2011). Just as other researches (Taku et al. 2009; Calhoun et al. 2000) have mentioned, the rumination that occurs in the first stage of the confrontation with the trauma can be effective in the cognitive processing of next stages and posttraumatic growth; but in the next stages of the confrontation with the trauma, deliberate rumination or reflection play more important roles in the prediction of posttraumatic growth. Being in accordance with the present study, other studies have shown that the promotion of resilience affects posttraumatic growth (Maung et al. 2021; Nuccio & Stripling, 2020; Brooks, Amlôt, Rubin & Greenberg, 2020; Walsh et al. 2018; Ahmadi & Mehrabi, 2020; Kiani et al. 2019; Ahmadi, Mehrabi, and Neshat Doust, 2017). Resilient people have certain characteristics that could lead to posttraumatic growth: positive and supporting resistance, feeling of being valuable, high recognition, ability to solve problems, social competence, optimism, sympathy, etc. (Liu, Reed, and Girard, 2017). Just as it was said, keeping the good relationship with family members, friends, and others will lead to the improvement of social support and the reception of supportive protection, and more social support will lead to posttraumatic growth in cancer patients (Nozari, Najafi, Momen Nasab, 2019). By increasing the adaptation to the stress resulted from patience and by improving flexibility, resilience can produce kind support, design and make a connection to improve hope, purposefulness, opportunity-making for significant participation, advancement on social bonds, explicit and adaptive demarcation, and learning life skills. It seems that resilience affects psychological well-being and posttraumatic growth by the mechanisms of creativity, flexibility in solving the problem, programming, receiving social support, self-esteem, etc. (Hasan Zadeh Namin et al. 2019). Therefore, it could be said that rumination-reflection and resilience will result in posttraumatic growth of cancer patients by increasing the psychological resources.

The findings of the present study showed that rumination-reflection with the mediating role of resilience can affect posttraumatic growth. Crane et al. (2019) have suggested that for the people who show more resilience when confronting stressful factors, the experience of primary psychological stress is

a motive to create an opportunity to promote resilience by systematic self-reflection. Researchers consider positive rumination or reflection as a metacognitive approach to learn self-awareness growth and assess the thoughts, feelings, and behaviors that make it possible to gain insight. It seems that positive rumination-reflection eases the assessment of purposive confrontations and problem-solving strategies. The individuals' primary response to the confrontation with a stressful event is the activation of rumination and the analysis of the effectiveness of confrontation and the strategies of emotion regulation. Researchers believe that rumination-reflection improves the resilience of people by mechanisms such as adaptation to confrontation strategies, redefining the stressful experiences as the growth opportunity, and increasing the main psychological resources such as self-efficacy and the activation of the resources that were not used before. (Crane & Searle, 2016; Jamieson et al. 2018). Therefore, it could be said that after confronting the stressful trauma or event, rumination-reflection affects the confrontational resources (social, cognitive, motivational, practical), and through this, it will lead to a practice of a set of emotional and confrontational regulators that construct the beliefs that are related to resilience; the output of this process is the resilience outcomes such as successful confrontation with stress (Crane et al. 2019). Experiencing the stress by rumination-reflection will improve the self-awareness of thoughts, emotions, and behaviors. Self-awareness will make people distinguish between the experimenter and the experiment (thoughts, feelings, and physical senses), and this will help people to observe their experiences freely. In a condition like this, people can recognize the stress activators better and get ready to confront them and solve the problem effectively. The individual's assessment eases the effective and purposive confrontation and the choice of the problem-solving strategies; by reassessment, it will change the individual's attitude toward stress and trauma in such a way that stressful experiences are considered as opportunities for growth. Also, the assessment process can make people aware of personal psychological resources such as self-efficacy and other resources that are not yet used. The use of these resources will lead to the improvement of the resilience of people. The assessment and focus on the future along with the analysis of the effectiveness of strategies help people to investigate the effective solutions and actions for the future correspondence of values and actions. Also, Padesky & Mooney (2012) believe that rumination-reflection improves resilience by the growth of the attitude toward the existing potentials for resilience and the search for alternative approaches.

Therefore, according to researchers, the five alternative steps of rumination-reflection are self-awareness, the recognition of activators, reassessment of stressors, analysis/assessment, and focus on the future will ultimately lead to the improvement of resilience. Crane et al. (2019) consider the five necessary steps of rumination-reflection to achieve resilience against stressful events respectively as self-awareness, recognition of activators, reassessment of stressors, analysis/assessment, and focus on the future. The first step is the self-awareness of emotional experience (emotional and physical awareness) and observational processes in response to psychological triggering events that are in accordance with Gross' model for emotion regulation (2015).

Awareness also means confirming the primary cognitive assessment of stressful events. Self-awareness is in harmony with the dimension of “self as context or as an observer” that is the main component of the treatment pattern of acceptance and commitment. The second reflective factor is the recognition of activators (that means the individual’s ability to recognize special triggering factors for primary response) that helps the successful adaptation to stressful events and makes people possible to recognize and grow their capacities for problem-solving. A combination of self-awareness and recognition of activators helps people to create a subjective model of the relationships between special events and various emotional and cognitive results. The third step is reassessment. The reflection process motivates the primary reassessment of the stressful event to make it possible to potentially reassess the events by a method that is more adaptive. The training of the methods of changing the individual’s assessment of events (modifying and changing the attitude) in such a way that changes the nature of sentimental/emotional output is the main part of the existing psychological interventions that can affect the mental health and psychological well-being of people. The reassessment of the stressful experience is considered as an opportunity to develop the individual’s ability to adapt to stressor factors. The fourth and fifth steps namely, analysis/assessment and focus on the future affect resilience directly. Assessment is the fair analysis of different aspects of an individual’s response to psychological stress in which certain intrusive and deliberate inputs (e.g. the strategies of regulating the confrontation and control of feelings) occur in response to the stressful event. These primary inputs are then analyzed in terms of the ability to achieve a value or purpose in that stressor factor. Finally, focus on the future asks people to recognize the effective solutions and actions for the correspondence of values and actions in the future. These strategies are revised and edited each time to improve the individual’s resilience in the future.

The findings of the present study showed that the posttraumatic growth of cancer patients is affected by the variables of rumination-reflection and resilience. Just after the confrontation with a harmful trauma, people react by sentimental shock, challenging emotions such as disappointment, sin, regret, horror, shame, and helplessness, and these reactions bring anxiety, social isolation, and rumination. Based on the action descriptive model, rumination will lead to the finding of meaning in the next stage, and search for meaning along with rumination-reflection can help posttraumatic growth and resilience of cancer patients. In cancer patients, posttraumatic growth and resilience will lead to the improvement of personal power, feeling of internal power, self-efficacy, optimism, ability to solve the problem, search for social support, acceptance of suffering, commitment to change, gratitude for life, change of attitude, using new opportunities, reassessment and prioritization of values, goal-setting, etc.

Due to some limitations, it seems necessary to interpret the results of the present study: This is a cross-sectional study. Therefore, the formulation of the results of the present study without considering the effect of time on variables and their relations is an important limitation of this study. The results of the

present research introduce the samples of cancer patients in the province of Tehran. Thus, generalization of the findings of this research to different study groups and societies such as cancer patients in other cities, the patients suffering from other diseases, etc. must be interpreted carefully. It is suggested that the model of this study should be implemented for those patients who have survived cancer so that the consistency and inconsistency of the relationships between resilience, posttraumatic growth, etc. can

be analyzed. The findings of this study indicated that rumination and resilience play an important role in the prediction of the posttraumatic growth of cancer patients; therefore, in order to improve the psychological adaptation of these people, it is required to pay attention to the variables of rumination, posttraumatic growth, and resilience and the interactive relations between these variables.

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