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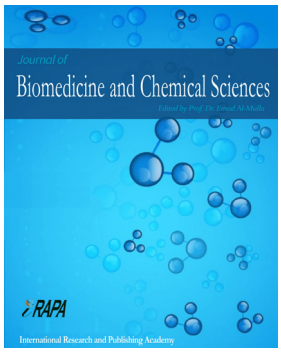

Ego-Resiliency and Post-Traumatic Stress Disorder: A Strengths Perspective

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ABSTRACT

This study was carried out to assess the relationship of ego-resiliency with Post-Traumatic Stress Disorder (PTSD) in mature survivors of the Bam earthquake. This research is an ex post facto (causal-comparative and correlational) study. 607 adult (304 males, 303 females) survivors of the Bam earthquake in Iran, selected through convenience sampling, participated in this research. All the participants completed the Mississippi Scale for PTSD, Connor-Davidson Resiliency Scale (CD-RIS), and Demographic Characteristic Questionnaires. Descriptive and inferential statistics were used to analyse data in the current study. This study aimed to assess the relationship of ego-resiliency with PTSD in mature survivors of the Bam earthquake by using multiple regression analysis. We found that ego-resiliency has the criteria to enter regression analysis as a predictive variable for determining the change in PTSD. This variable could significantly predict PTSD in our study. The present study has defined ego-resiliency as coping successfully with stressful factors and hardships. Ego-resiliency is a person's capability to create a bio-psycho-spiritual balance in the face of trauma, and it is a kind of self-repair accompanied by positive emotional and cognitive outcomes. Concerning the side effects of disasters, evidence shows that negative events can have negative outcomes, such as PTSD. At present, there are many studies on the various negative changes that a person undergoes after confronting psychologically negative events. Theoretically, several factors, such as evaluation method and adaptive reactions, factors related to the trauma, as well as personal and situational factors are involved in curbing the occurrence of PTSD.

INTRODUCTION

Post-traumatic stress disorder (PTSD) is an anxiety disorder comprising three clusters of symptoms. PTSD is caused in reaction to a stressful situation. The situation or event (trauma) must be necessarily in such a manner that it endangers the life of a person or his relatives (American Psychiatric Association, 2000). Flashback symptoms, avoiding stressful situations, avoiding thinking about or observing the situation, and in the meantime, repetitive thoughts, nightmares and sleep disorders, suicidal thoughts and depression are likely prevalent. Disorder symptoms should go on for six months. Studies indicate that genetics and some personal features have a role in being affected by such a disorder. Although many people affected by PTSD overcome the disorder by receiving the required treatment, few of them remain affected for years or even for life. This disorder was identified and codified for the first time among the soldiers who had survived the Vietnam War, and it was inserted in the 3rd version of DSM. Studies on such veteran survivors of the war indicated a common pattern of biological and psychological symptoms (Van der Kolk & McFarlane,

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1996). Such symptoms were also observed in women suffering from sexual harassments and severe physical damage (Walker, 1984). It seems that the damage may not individually have led to PTSD, but such people would be usually affected by it when they have witnessed severe violence and savagery and experienced huge fear, while not being able to do anything.

Justifying differences in people's responses to stress, all specialists agree that generally four factors known as "resistance sources" help people to deal with stress. These factors include health measures, natural abilities, personality attitudes and opportunity characteristics (Tartasky, 1993). Therefore, it was indicated that some people in accordance to their share of benefiting from these sources can become free from the negative results of stress and lead healthy lives. Toleration can be seen in those who face many challenges to maintain their lives and live in a society and those who enjoy the required recognition capabilities. In other words, those who must confront many challenges show higher toleration compared to others. Rutter (1987) believes that psychological toleration is the capacity of people to confront difficulties and tensions in such a way that the lowest amount of improper performance, negative morale and mental diseases can be seen. Studies indicate that those who have had supporting families and led regulated and well-structured lives in their childhood in a disciplined and programmed manner show higher levels of toleration later (Rutter, 1987). Moreover, emotional maturity also leads to an increase in toleration (Vaillant, 2003).

In fact, the concept of resiliency was created to study the growth of persons who are born and educated under dangerous conditions including: families in which the parents suffer from mental disorders or alcoholism, parents who abuse their children or families faced with poverty or war. Research findings indicate that a minimum of 50% and a maximum of 70% of people who are educated in such conditions can overcome their problems, and finally lead successful lives (Wright & Masten, 1997). Resiliency is not just a genetic phenomenon that is only possessed by some special humans, but it is in fact an innate capacity of each person that can result in reform and change (Masten, 2001). Resiliency is a dynamic process in which environmental and personality effects influence mutual exchange. Studies conducted in the field of resiliency insist on theoretical patterns of human growth, which were already formulated by Eric Ericsson, Biori Bronfen Broner, Jan Piageot, Lorense Kelberg, Karol Gilian, Radolf Stinz, Abraham Mozlo and Josef Chilton Piers (Wright & Masten, 1997).

Notwithstanding all these theoretical patterns, it is insisted that different aspects of human growth (mental, social, recognition, ethical and spiritual) form the main core of this approach that consists of the pre-assumption that there is an inherent "biological nature" in all humans for growth and perfection. Nature itself is a reformer of humanistic organism that naturally appeared under specified environmental conditions. According to Masten (2001), when a disaster is very severe and passed on, the initial needs of humans should be supplied and then it is possible for the emergence of resiliency. The main applied result of the researches conducted in the field of resiliency is that we can increase the ability of persons so that they would have feelings of identity, efficiency, as well as have the capacity to make decisions, set targets and believe in the future, and in such cases, they would be able to put their basic humanistic needs, including kindness, relation with other people, respect, challenge, power and meaningfulness, at the centre of attention for fulfilling preventive interventions, training and personal growth while faced with stressful and difficult conditions (Tugade & Fredrickson, 2004).

The aim of the current study was to investigate the relation between ego-resiliency and PTSD in mature survivors of Bam earthquake to design a beneficial plan for psychological intervention after possible natural disasters in the future. The hypotheses of this research are as follows:

- There is a reversed relationship between ego-resiliency and PTSD.
- PTSD can be predicted by individual ego-resiliencies of earthquake survivors in the city of Bam.

The research questions of this study are as follows:

- Does ego-resiliency differ between males and females?
- Does PTSD differ between males and females?
- How do the components of ego-resiliency differ between the group receiving therapy and the control group?
- How do the components of PTSD differ between the group receiving therapy and the control group?
- What are the components of ego-resiliency among different age groups?
- What are the components of PTSD among different age groups?
- What are the components of ego-resiliency according to marital status?

- What are the components of PTSD according to marital status?
- How do the components of ego-resiliency differ in relation to educational status?
- How do the components of PTSD differ in relation to educational status?

METHODS

The design of this study is ex post facto (casual-comparative and correlational). There are two types of variables in this research: predicting variable 'ego-resiliency' and criterion variable 'PTSD'. The statistical population of the present research comprises all youths and adults (both males and females) living in the earthquake regions of the city of Bam, and have experienced and were rescued from Bam earthquake on December 26, 2003. In this research, ages younger than 25 years and ages older than 60 years were regarded as the criterion for exclusion from the statistical population. The total number of research samples was 607. The study participants were Persian-speaking adults who were rescued during "Bam earthquake" in Iran. All the measures used in this study are reliable measures of the constructs of interest and have been validated for this population.

For selecting the study sample, we undertook volunteer accessible sampling in different places of Bam city. Following the cooperation of persons who oversaw governmental and non-governmental departments as well as the families of this city, the target groups were selected. As many as 608 packages of questionnaires were distributed among the target groups. Each package included the three questionnaires. To decrease the variance of error as well as to increase the test ability, each package had its own different mixture. For every person, the goals of the research were described in brief without directly referring to terms such as ego-resiliency and PTSD that may have influenced the research results. All the participants completed the questionnaires at their places within the time allocated to them. Finally, a total of 608 packages of questionnaires were collected, including an incomplete one. So, the total number of samples became 607 (304 males + 303 females).

The instruments for conducting this research were three standard questionnaires. We selected all of them and checked and controlled their validity, reliability and suitability. They were as follows:

Demographic Characteristics Questionnaire

This questionnaire was prepared to gain demographic information such as age, sex, marital status, educational level, and psychological consulting records (receiving psychological services). The survey assessed all of them.

The Mississippi Scale for PTSD Questionnaire

Measuring the Negative Legacy of Trauma

In the present study, after performing the Mississippi Scale for PTSD Questionnaire survey for an Iranian sample in Bam city, its validity and reliability were evaluated as follows:

Having Bad Memories

This factor included 10 items (4, 7, 13, 14, 18, 29, 33, 36, 37, and 39). By deleting four items (14, 29, 36, and 37), its validity and reliability reached an acceptable level. Cronbach's alpha, as a reliability index, was 0.83, and as per the confirmatory factor analysis, the goodness to fit indices such as RMSEA, GFI, and AGFI were 0.068, 0.98, and 0.96, respectively. Considering the mentioned indices, the validity and reliability of the tool were confirmed. Moreover, the factor loads for markers of having bad memories ranged from 0.62 (items 7 and 9) to 0.71 (item 13). Considering the observed amounts of t, all the factor loads obtained had a significance level of $p<0.05$.

Communicational Problems with Others

This factor included eight items (1, 5, 6, 22, 28, 30, 35, and 38). By deleting four items (6, 22, 30, and 38), its validity and reliability reached an acceptable level. Cronbach's alpha, as a reliability index, was 0.60, and as per the confirmatory factor analysis, the goodness to fit indices such as RMSEA, GFI, and AGFI were 0.045, 1, and 0.98, respectively. Considering the mentioned indices, the validity and reliability of the tool were confirmed. Moreover, the factor loads for markers of communicational problems with others ranged from 0.40 (item 1) to 0.84 (item 28). Considering the observed amounts of t, all the factor loads obtained had a significance level of $p<0.05$.

Emotional Disability (Inability to Control Emotions)

This factor included 10 items (3, 16, 20, 23, 24, 25, 26, 27, 31and 32). By deleting four items (3, 24, 27, and 32), its validity and reliability reached an acceptable level. Cronbach's alpha, as a reliability index, was 0.73, and as per the confirmatory factor analysis, the goodness to fit indices such as RMSEA, GFI, and AGFI were 0.063, 0.98, and 0.96, respectively. Considering the mentioned indices, the validity and reliability of the tool ranged from 0.54 (item 16) to 0.75 (items 25 and31). Considering the observed amounts of t, all the

factor loads obtained had a significance level of p<0.05.

Depression

This factor included eight items (2, 8, 9, 10, 12, 15, 17, and 21). By deleting three items (8, 10, and 17), its validity and reliability reached an acceptable level. Cronbach's alpha, as a reliability index, was 0.77, and as per the confirmatory factor analysis, the goodness to fit indices such as RMSEA, GFI, and AGFI were 0.057, 0.99, and 0.97, respectively. Considering the mentioned indices, the validity and reliability of the tool were confirmed. Moreover, the factor loads for markers of depression ranged from 0.27 (item 2) to 0.82 (item 15). Considering the observed amounts of t, all the factor loads obtained had a significance level of p<0.05.

Connor–Davidson Resiliency Scale Questionnaire

The present research used the Connor–Davidson Resiliency Scale (CD-RIS) (2003) as the tool for measuring resiliency. This questionnaire was prepared by Connor and Davidson (2003) following a review of research sources during the years 1979–1991 in the field of resiliency. The study of the psychometric characteristics of this scale was performed among six groups, including public population, persons referring to the initial ward, psychiatry outpatients, patients with the problem of all-inclusive anxiety disorder, and two groups of patients with post-event stress disorder. The producers of this scale believe that this questionnaire is suitable to separate resilient persons from non-resilient persons in clinical and non-clinical groups, and it can be used for research and clinical situations.

The CD-RIS Questionnaire contained 25 questions that were graded as per a Likert Scale from zero (completely incorrect) to five (always correct). To specify the reliability of this scale, first the correlation of any type with the total grade and score was calculated, and then it was used as per the method of analysing factor. Calculating the correlation of each grade with the total grade indicated that except type three, all the coefficients were in the range of 0.41 to 0.64. At the next stage, the types of scale were analysed by the main components' method. To analyse the reliability of the ego-resiliency scale, Connor and Davidson used the Alpha-Cronbach method, and their reliability coefficient was 0.89. The reliability and validity of the CD–RIS were confirmed after using Cronbach's alpha and confirmatory factor analysis. This factor included 25 items (1-25). By deleting seven items (1, 10, 12, 14, 17, 22, and 24), its validity and reliability reached an acceptable level. Cronbach's alpha, as a reliability index, was 0.89, and as per the confirmatory factor analysis, the goodness to fit indices such as RMSEA, GFI, and AGFI were 0.065, 0.92, and 0.90, respectively. Considering the mentioned indices, the validity and reliability of the tool were confirmed. Moreover, the factor loads for the remaining markers of resiliency ranged from 0.33 (item 3) to 0.65 (item 4). Considering the observed amounts of t, all the factor loads obtained had a significance level of p<0.05.

Data Analysis

The current study used descriptive and inferential statistics to analyse the data. Descriptive data were used to define the sample's descriptive characteristics. Then, suitable statistics were used to test the hypotheses. SPSS software and LISREL were used for data analysis. The descriptive method studies included frequency report, mean analyses presentation of standard deviation, and other relevant data in our sample. Inferential statistics were used to test our hypotheses and answer the search questions and find answers to our questions as well. The inferential statistical models for data analysis included structural formulas, Chi-square test, multivariate analysis of variance, and dependent t test. All the test samples voluntarily participated in the research, and in case of lack of preference, they could be referred to the total tests. Besides, to adhere to ethical points, the participants were authorized not to write their names and addresses, and in case of preference to have the results, they could announce their demands. Some of the ethical points that were observed in this research were as follows: confidentiality of the acquired information, intentional satisfaction for the research tests, lack of publishing information to the other test participants, and creating a trustful atmosphere.

RESULTS

The frequency distribution and valid percent of the studied sample based on demographic topics such as sex, marital status, educational level, age, receiving psychological services were as follows:

Table 1
Frequency distribution of the studied sample based on sex, marital status, educational level, age, and receiving psychological services

Variables	Category	Frequency	Percent
Gender	Male	304	50.4
	Female	303	49.6
Marital Status	Single	191	31.4
	Married	392	64.6
	Divorced	15	2.5
	Widowed	9	1.5
Educational Level	Lower than National Diploma	56	9.2
	National Diploma	304	50.2
	Higher than National Diploma	146	24
	Bachelor's Degree	95	15.6
	Master's Degree	5	0.8
	Doctorate	1	0.2
Age	25-35	336	55.2
	36-45	196	32.4
	46- 60	75	12.4
Receiving Psychological Services	Yes	247	40.7
	No	360	59.3

Of the 607 individuals who had stated their sex, 304 (50.4%) were males, who comprised the maximum number of participants, and 303 (49.6%) were females, who comprised the minimum number of participants. With respect to marital status, 191 (31.4%) were single, 393 (64.6%) were married, 15 (2.5%) were divorced, and nine (1.5%) were widowed due to the death of their husbands. Therefore, most of the participants 393 (64.6%) were married and a minimum number of 9 (1.5%) among them were widowed. The maximum number of 305 (50.2%) participants had a national diploma, 146 (24%) had a higher national diploma and 95 (15.6%) had a bachelor's degree, 56 (9.2%) had an educational qualification below national diploma, five (0.8%) had a master's degree, and one (0.2%) had a doctorate degree, which also made for the least number of participants. Among the studied population, 334 (55.2%) participants were between 25 to 35 years old, 196 (32.4%) were between 36 to 45 years old, and 75 (12.4%) were between 46 to 60 years old. Therefore, most of the participants (334) comprising 55.2% were between 25 to 35 years old, and the least number of participants (75) accounting for 12.4% were between 46 to 60 years old. The least number of 247 participants (40.7%) had received psychological services, while a maximum of 360 participants (59.3%) had not received any psychological service.

Table 2
Independency t test results for the comparison of ego-resiliency in the two gender groups

Variable	Male		Female		t	df	Sig.
	M	SD	M	SD			
Ego-Resiliency	49.91	9.27	46.98	10.63	3.58	597	0.0001

As shown in Table 2, the regression analysis showed that ego-resiliency as a predicting variable had the criteria to enter the model for significantly predicting PTSD (R^2=0.20). As shown in this table, 20% of the variance in PTSD could be defined by this variable ($F_{(5,577)}$=28.24, p<0.01).

Table 3
Mean and standard deviations of the four PTSD components in the two gender groups

PTSD	Male		Female	
	M	SD	M	SD
Having Bad Memories	14.71	3.65	13.92	5.25
Communicational Problems with Others	8.60	2.57	8.31	3.24
Inability To Control Emotions	14.24	3.65	13.62	4.89
Depression	18.83	4.13	17.53	6.42

As shown in Table 3, the mean scores of ego-resiliency differed significantly between the two genders ($t_{(597)}$=3.58, p<0.05). It can be inferred that ego-resiliency is higher in males.

Table 4
Multivariate analysis of variance results for assessing the differences between the two gender groups with respect to the four components of PTSD

PTSD	F	df		Sig.
		b	w	
Multivariate (Hoteling's Trace)	2.36	4	600	0.052
Having Bad Memories	4.68	1	603	0.031
Communicational Problems with Others	1.48	1	603	0.223
Inability To Control Emotions	3.37	1	603	0.067
Depression	9.16	1	603	0.003

As shown in Table 4, the lowest and the highest mean scores for both sex groups were related to communicational problems with others and depression, respectively. Moreover, the results indicated that in all the four components of PTSD; (having bad memories, communicational problems with others, inability to control emotions, and depression), males scored higher than females.

Table 5
Independency t test results for the comparison of ego-resiliency between those who received psychological services and those who did not receive such services

Variable	Used Services		Unused Services		t	df	Sig.
	M	SD	M	SD			
Ego-Resiliency	47.92	10.08	48.86	10.09	1.12	597	0.263

As shown in Table 5, regarding the results of the multivariate test, the linear combination of PTSD components (having bad memories, communicational problems with others, inability to control emotions, and depression) did not differ significantly between males and females ($F_{(4,600)}$=2.36, p>0.05), and it can be concluded that PTSD scores did not differ significantly between the two sex groups. Considering the results of the single variate test, the mean scores of having bad memories differed significantly between males and females ($F_{(1,603)}$=4.68, p<0.05), and it can be concluded that having bad memories was significantly higher in males than in females. Considering the results of the single variate test, the mean scores of communicational problems with others did not differ significantly between males and females ($F_{(1,603)}$=1.48, p>0.05), and it can be concluded that communicational problems with others was similar among both sex groups.

Considering the results of the single variate test, the mean scores of inabilities to control emotions did not differ significantly between males and females ($F_{(1,603)}$=3.37, p>0.05), and it can be concluded that the inability to control emotions was similar among both sex groups. Considering the results of the single variate test, the mean scores of depressions differed significantly between males and females ($F_{(1,603)}$=9.16, p<0.05), and it can be concluded that depression was significantly higher in males compared to females.

Table 6
Mean and standard deviations of the PTSD components among those who received psychological services and those who did not receive such services

PTSD	Used Services		Did Not Use Services	
	M	SD	M	SD
Having Bad Memories	15.17	3.24	13.72	5.16
Communicational Problems with Others	8.55	2.27	8.36	3.29
Inability To Control Emotions	14.42	3.13	13.59	4.96
Depression	20.07	3.98	16.87	5.91

As shown in Table 6, the mean scores of ego-resiliencies did not differ significantly between those who received and those who did not receive psychological services ($t_{(597)}$=1.12, p>0.05). It can be inferred that ego-resiliency was the same in both the above-mentioned groups.

Table 7
Multivariate analysis of variance results for assessing the difference between those who received psychological services and those who did not with respect to the four PTSD components

PTSD	F	df		Sig.
		b	w	
Hoteling's Trace) (Multivariate	19.75	4	600	0.0001
Having Bad Memories	15.57	1	603	0.0001
Communicational Problems with Others	0.56	1	603	0.451
Inability To Control Emotions	5.73	1	603	0.017
Depression	56.20	1	603	0.0001

As shown in Table 7, the lowest and highest mean scores of both groups were related to communicational problems with others and depression, respectively. Moreover, the results indicated that in all the four components of PTSD (having bad memories, communicational problems with others, inability to control emotions, and depression), the scores of those who had received psychological services were higher than those who had not received psychological services.

Table 8
Independency t test results for the comparison of ego-resiliency between the different age groups

Variable	25-35 years		36-45 years		46-60 years	
	M	SD	M	SD	M	SD
Ego-Resiliency	47.89	10.35	48.78	9.91	50.39	9.06

As shown in Table 8, regarding the results of the multivariate test, the linear combination of PTSD components (having bad memories, communicational problems with others, inability to control emotions, and depression) differed significantly between those who received psychological services and those who did not ($F_{(4,600)}$=19.75, p<0.05), and it can be concluded that PTSD scores did not differ significantly among the two above mentioned groups. Considering the results of the single variate test, the mean scores of having bad memories differed significantly between the two groups ($F_{(1,603)}$=15.57, p<0.05), and it could be concluded that having bad memories was significantly higher among those who had received psychological services.

Considering the results of the single variate test, the mean scores of communicational problems with others did not differ significantly between the two groups ($F_{(1,603)}$=0.56, p>0.05), and it could be concluded that communicational problems with others was similar in both the above-mentioned groups. Considering the results of the single variate test, the mean scores of inabilities to control emotions differed significantly between the two groups ($F_{(1,603)}$=5.73, p<0.05), and it could be concluded that inability to control emotions was higher among those who had received psychological services. Considering the results of the single variate test, the mean scores of depressions differed significantly between the two groups ($F_{(1,603)}$=56.20, p<0.05), and it could be concluded that depression was significantly higher among those who had received psychological services.

Table 9
Multivariate analysis of variance results for assessing the differences in ego-resiliency

Variable	F	df		Sig.
		b	w	
Ego-Resiliency	1.97	2	594	0.139

As shown in Table 9, the mean scores of ego-resiliency were higher in older people than in younger people.

Table 10
Mean and standard deviations of the PTSD components in different age groups

PTSD	25-35 years		36-45 years		46-60 years	
	M	SD	M	SD	M	SD
Having Bad Memories	14.61	4.78	14.32	3.81	13.00	4.96
Communicational Problems with Others	8.89	3.10	8.09	2.44	7.39	2.93
Inability To Control Emotions	14.20	4.50	13.91	3.84	12.68	4.61
Depression	18.72	5.69	18.10	4.76	15.92	5.46

As shown in Table 10, regarding the results of the multivariate test, the mean scores of ego-resiliency did not differ significantly between the three different age groups ($F_{(2,594)}$=1.97, p>0.05).

Table 11

Multivariate analysis of variance results for assessing the differences between the different age groups with respect to the four components of PTSD

PTSD	F	df		Sig.	Scheffe
		b	w		
Multivariate (Hoteling's Trace)	4.01	8	1196	0.0001	
Having Bad Memories	3.88	2	600	0.021	25-35>46-60
Communicational Problems with Others	10.60	2	600	0.0001	25-35>36-45 25-35>46-60
Inability To Control Emotions	3.82	2	600	0.022	25-35>46-60
Depression	8.36	2	600	0.0001	25-35>36-45 25-35>46-60

As shown in Table 11, the scores of all the four components of PTSD (having bad memories, communicational problems with others, inability to control emotions, and depression) were highest in the 25-35-year-old age group among the three age groups.

Table 12

Mean and standard deviations of ego-resiliency with respect to marital status

Variable	Single		Married		Divorced		Widowed	
	M	SD	M	SD	M	SD	M	SD
Ego-Resiliency	45.58	10.03	50.03	9.64	44.57	14.30	48.22	8.56

As shown in Table 12, regarding the results of the multivariate test, the linear combination of PTSD components (having bad memories, communicational problems with others, inability to control emotions, and depression) differed significantly between the three age groups ($F_{(8,1196)}$=4.01, p<0.05), and the three age groups also differed significantly with respect to PTSD. Considering the results of the single variate test, the mean scores of having bad memories differed significantly between at least two age groups ($F_{(2,600)}$=3.88, p<0.05), and according to Scheffe's post hoc test, it could be concluded that those who were in the 25-35-year-old age group had more experience of having bad memories than their counterparts in the 46-60-year-old age group. The other paired comparisons did not yield significant results.

Considering the results of the single variate test, the mean scores of communicational problems with others differed significantly between at least two age groups ($F_{(2,600)}$=10.60, p<0.05), and according to Scheffe's post hoc test, it could be concluded that those who were in 25-35-year-old age group had experienced more communicational problems with others than those who were in the 36-45-year-old and 46-60-year-old age groups. The other paired comparisons did not yield significant results. Considering the results of the single variate test, the mean scores of inabilities to control emotions differed significantly between at least two age groups ($F_{(2,600)}$=3.82, p<0.05), and according to Scheffe's post hoc test, it could be concluded that those in the 25-35-year-old age group had experienced more inability to control emotions than those in the 36-45-year-old age group. The other paired comparisons did not yield significant results. Considering the results of the single variate test, the mean scores of depressions differed significantly between at least two age groups ($F_{(2,600)}$=8.36, p<0.05), and according to Scheffe's post hoc test, it could be concluded that those in the 25-35-year-old age group had experienced more depression than those in the 36-45-year-old and 46-60-year-old age groups. The other paired comparisons did not yield significant results.

Table 13

Multivariate analysis of variance results for assessing the differences in ego-resiliency based on marital status

Variable	F	df		Sig.	Scheffe
		b	w		
Ego-Resiliency	9.30	3	596	0.0001	Married>Single

As shown in Table 13, the mean scores of ego-resiliency were higher among married individuals than in the other three groups (single, divorced, and widowed).

Table 14
Mean and standard deviations of the PTSD components with respect to marital status

PTSD	Single		Married		Divorced		Widowed	
	M	SD	M	SD	M	SD	M	SD
Having Bad Memories	16.48	4.26	13.29	4.86	13.33	4.86	14.33	4.56
Communicational Problems With Others	10.02	2.98	7.66	3.49	9.27	3.49	8.33	2.65
Inability To Control Emotions	15.92	4.11	12.98	4.77	13.20	4.77	14.00	4.00
Depression	20.28	5.15	17.17	8.08	17.13	8.08	18.44	6.78

As shown in Table 14, considering the results of the multivariate test, the mean scores of ego-resiliency differed significantly between the different groups ($F_{(3,596)}$=9.30, p<0.05). The results of the Scheffe post hoc test showed that married people had significantly higher ego-resiliency as compared to singles.

Table 15
Multivariate analysis of variance results for assessing the differences in the PTSD components based on marital status

PTSD	F	df		Sig.	Scheffe
		b	w		
Multivariate (Hoteling's Trace)	8.67	12	1803	0.0001	
Having Bad Memories	23.72	3	602	0.0001	Married<Single
Communicational Problems with Others	33.00	3	602	0.001	Married<Single
Inability To Control Emotions	22.44	3	602	0.0001	Married<Single
Depression	15.44	3	602	0.0001	Married<Single

As shown in Table 15, the mean scores of singles were higher for all the four components of PTSD (having bad memories, communicational problems with others, inability to control emotions, and depression).

Table 16
Mean and standard deviations of ego-resiliency with respect to educational groups

Variable	Male		Female				
	M	SD	M	SD	t	df	Sig.
Ego-Resiliency	48.26	10.66	48.64	9.67	0.46	598	0.646

As shown in Table 16, considering the results of the multivariate test, the linear combination of the PTSD components (having bad memories, communicational problems with others, inability to control emotions, and depression) differed significantly among the four different groups ($F_{(12,1803)}$=8.67, p<0.05). Considering the results of the single variate test, the mean scores of having bad memories differed significantly between at least two groups ($F_{(3,602)}$=23.72, p<0.05). According to the results of the Scheffe post hoc test, having bad memories scores were higher among singles as compared to married people. The other paired comparisons did not yield significant results. Considering the results of the single variate test, the mean scores of communicational problems with others differed significantly between at least two groups ($F_{(3,602)}$=33.00, p<0.05). Considering the results of the Scheffe post hoc test, singles scored higher with respect to communicational problems with others as compared to their married counterparts. The other paired comparisons did not yield significant results.

Considering the results of the single variate test, the mean scores of inabilities to control emotions differed significantly between at least two groups ($F_{(3,602)}$=22.44, p<0.05). Considering the results of the Scheffe post hoc test, singles had more problems with respect to inability to control emotions as compared to married individuals. The other paired comparisons did not yield significant results. Considering the results of the single variate test, the mean scores of depression differed significantly between at least two groups ($F_{(3,602)}$=15.44, p<0.05). Considering the results of the Scheffe post hoc test, singles scored higher with respect to depression as compared to individuals with different marital status. The other paired comparisons did not yield significant results.

Table 17
Mean and standard deviations of the PTSD components with respect to educational groups

PTSD	No University Degree		University Degree	
	M	SD	M	SD
Having Bad Memories	14.23	4.48	14.43	4.60
Communicational Problems with Others	8.57	3.05	8.28	2.73
Inability To Control Emotions	13.83	4.21	14.06	4.49
Depression	18.14	5.26	18.21	5.69

As shown in Table17, the mean scores of ego-resiliency did not differ significantly between the two educational groups ($t_{(598)}$=0.46, p>0.05). As shown in Table 22, in both educational groups, the highest mean scores were related to depression. The lowest mean scores were related to communicational problems with others. Moreover, the results showed that the mean scores of people with university degrees were higher with respect to having bad memories, inability to control emotions, and depression. And the mean scores of communicational problems with others were higher among those without university degrees. As shown in Table 23, considering the results of the multivariate test, the linear combination of the PTSD components (having bad memories, communicational problems with others, inability to control emotions, and depression) did not differ significantly between the two educational groups ($F_{(4,601)}$=1.39, p>0.05).

Considering the results of the single variate test, the mean scores of having bad memories did not differ significantly between the two educational groups ($F_{(1,604)}$=0.33, p>0.05). Considering the results of the single variate test, the mean scores of communicational problems with others did not differ significantly between the two educational groups ($F_{(1,604)}$=1.48, p>0.05). Considering the results of the single variate test, the mean scores of inability to control emotions did not differ significantly between the two educational groups ($F_{(1,604)}$=0.32, p>0.05). Considering the results of the single variate test, the mean scores of depressions did not differ significantly between the two educational groups ($F_{(1,604)}$=0.005, p>0.05).

Discussion

McCubbin and McCubbin (1996) define ego-resiliency as successfully coping with stressful factors and hardships, and believes that this characteristic facilitates coping with negative events such as the death of significant others or death due to natural disasters. However, ego-resiliency is not just resistance while facing traumas or threatening states. In fact, a resilient person is an active and constructive participant in his/her surrounding conditions. Ego-resiliency is a person's capability to create a bio-psycho-spiritual balance in face of traumas, and it is a kind of self-repair accompanied by positive emotional and cognitive outcomes (Masten, 2001). With respect to the role of ego-resiliency, the literature regarding psychological adaptations shows that ego-resiliency is a positive psychological variable that is positively correlated with personal coping as well as negative life events such as divorce, death of loved ones, and natural disasters (McCubbin & McCubbin,1996). Evidence also suggests that resilient people are flexible and calm, and are able to confront devastating challenges (Letzring et al., 2005). In another study on ego-resiliency and coping. People who are high on ego-resiliency react positively in face of negative emotions and can adapt better with negative conditions and events. In addition, Carr (2013) found that high levels of ego-resiliency help people to use positive feelings and emotions to cope with undesirable experiences and return to a desirable state.

Evidences show that negative events can create negative outcomes. As per these evidences, people attain PTSD after challenging negative events (Tedeschi & Calhoun, 2004). There are many extant studies on the various negative changes that a person undergoes after confronting psychologically negative events; however, little evidence exists regarding the factors that do not facilitate PTSD. Theoretically, several factors such as evaluation method and adaptive reactions, factors related to the trauma, as well as personal and situational factors cannot facilitate PTSD (Calhoun et al., 2000). According to the theoretical definition, ego-resiliency can be related to personal characteristics that do not facilitate PTSD. This means that people who are resilient according to their personality traits can cope well with negative life events and do not let PTSD appear during their lives.

Theoretically, Tedeschi and Calhoun (1996) believe that several main characteristics such as resilience, self-efficacy and optimism can facilitate coping with natural disasters such as earthquakes. In line with this, our results revealed that ego-resiliency could be used to evaluate PTSD in people who had experienced the Bam earthquake. Although our results are inconsistent with some other studies (Bossick, 2008), most previous

studies have emphasized on the importance of ego-resiliency in coping with negative life events (Harvey, 1996). In Iran, personal characteristics along with certain cultural factors such as religious teachings can predict as well as facilitate post-traumatic growth after negative events.

CONCLUSION

The aim of this study was to assess the relationship between PTSD and ego-resiliency by using a multiple regression analysis. We found that ego-resiliency had the criteria to enter regression analysis as a predictive variable for determining changes in PTSD. This variable could significantly predict PTSD in our study. The absence of ego-resiliency could lead to PTSD. Lack of sufficient flexibility reduces the Bam residents' ability to cope with stress and planning, and thereby puts them at risk of PTSD. Studies performed in Iran on the Bam earthquake show that several psychological disorders could predict PTSD in these groups of traumatized individuals. High prevalence of disorders such as anxiety, depression, paranoia, and obsessive-compulsive disorder in Bam residents could indicate PTSD. People who are psychologically hard are goal-oriented, committed and have a meaning in life. Studies have shown that psychological hardiness is related to physical and mental health, and it reduces the negative effect of different stressors (Kobasa et al., 1983).

Others have shown the positive effects of psychological hardiness in coping with stressful events. Researchers have found that psychological hardiness could predict physical health, depression, and life satisfaction (Clark & Hartman, 1996). Psychological hardiness influences life satisfaction, positive emotions, problem solving methods, and defensive mechanisms (Calhoun et al., 2000). To sum up, all the data obtained from our analysis indicate that human relationships are one of the most important factors that have a positive effect on individual mental health during natural disasters. It is necessary to elaborate that due to the Iranian culture and associated sub conscious most of the people find close and intimate connections as soothing and protecting factors in face of disasters and hardships. In such countries, using the national emotional bond for remedy and to alleviate the hurt feelings of individuals can be very beneficial for national comfort and soothing.

Competing Interest

The authors had no competing interests.

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