# THE RELATIONSHIP BETWEEN PERSONALITY CHARACTERISTICS AND POST TRAUMATIC STRESS DISORDER IN CHILDREN AND ADOLESCENTS WHO HAVE LOST THEIR PARENT

**Faramarz Sohrabi**

Allameh Tabatabai University, Tehran, Iran

## Abstract

**Pathological reactions to traumatic events have been reported in the literature for more than one hundred years. Parental loss as a traumatic event leads to a measurable degree of symptomatic disorder. The present study aims to determine the role of personality characteristics of children and adolescents who have lost their parents in the occurrence of PTSD symptoms in these subjects, and to specify which demographic variables, types of parental loss, type of personality and other relevant variables are predictor factors for PTSD. One hundred and forty four children and adolescents who had lost their parents were studied. From the total sample, 39 were survivors whose parent(s) died through the 1990 earthquake in Iran and were considered as a study group. One hundred and five children, who had lost their parents through natural death, divorce or, separation in Tehran, were considered as a comparison group. Three research instruments (CPTSD-RI, CAPS, and JEPQ) were used in this study. The results of the study showed that 48.7% of the study group and 20% of the comparison group met the criteria for PTSD symptoms. Subjects who had lost their parents through death were more at risk than children and adolescents whose parents were divorced or separated. In this particular study, girls reported a higher level of PTSD symptoms than boys. Multiple exposure to the traumatic events was found to be a factor of importance in predicting PTSD. Subjects with higher scores on Neuroticism and Psychoticism were more likely to show PTSD symptoms, whereas children and adolescents with higher scores on the Extroversion were less likely to meet the criteria for PTSD symptoms.**

## Introduction

Pathological reactions following traumatic stress have been described in the literature for many years prior to the formal inclusion of Post-Traumatic Stress Disorder (PTSD) in DSM-III (APA, 1980). PTSD was defined in the American Psychiatric





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Association publication Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R, A PA, 1987) as "the development of characteristic symptoms following a psychologically distressing event that is outside the range of usual human experience." The World Health Organisation's point of view is that PTSD arises as a delayed and/or protracted response to a stressful event or situation, either short- or long lasting, of an exceptionally threatening or catastrophic nature, which is likely to cause pervasive distress in almost anyone (ICD-10, 1992). According to the (DSM-IV, APA, 1994) the essential feature of PTSD is the development of characteristic symptoms following exposure to an extreme of traumatic stress, involving direct personal experience of an event that involves actual or threatened death or serious injury, or threat of death or injury experienced by a family member or other close associate (DSM-IV, APA, 1994).

Recently, a large number of studies have been carried out to investigate the psychological impact of stressful life events on children and adolescents. These studies have focused on traumatic stresses including violence (Terr, 1983), natural disaster (Galante & Foa, 1986; Green et al., 1991; Goenjian et al., 1995), sniper attack (Pynoos et al., 1987) sexual abuse (Kisser et al.1989) and war (Nader et al. 1993; Kuterovac, Dyregrov & Stuvland, 1994). A number of studies suggest that certain personality variables, prior to exposure to the traumatic stressor, may increase the vulnerability to developing PTSD (McFarlane, 1988; Spigel et al., 1988). It may be that the personality variables operate to increase vulnerability to PTSD through a sensitisation process. That is, because such individuals often grow up in rather chaotic environments and may be exposed to multiple stressors, they may become sensitised to trauma and have a lower threshold for the traumatic event that finally precipitates PTSD (Ebrely et al., 1991).

The present study seeks to address one of the key issues in the field of PTSD, as outlined by Green (1994) in her recent review: "What are the risk factors of developing PTSD?" Are the personality variables playing significant role in the development of PTSD symptoms? Therefore, the first objective of this study is to determine the relationship between personality characteristics and development of PTSD to find that whether children and adolescents with different personality characteristics (Extroversion-introversion, Neuroticism, or Psychoticism) demonstrate different rates and severity of PTSD symptoms in reaction to parental loss. This study also aims to determine the impact of the traumatic event of parental loss through earthquake, natural death, divorce or separation on children and adolescents. The other objective is to specify which demographic characteristics of subjects and other related variables such as type of parental loss, the severity of trauma experienced, multiple exposure to the traumatic event, experience of parental death are major predicting factors in the development of PTSD.

## Risk Factors for the Development of PTSD

It has been found that certain factors carry a high risk of an individual developing PTSD. Not everyone experiencing negative life events, even in the absence of a social support system, engages in post traumatic stress reaction. Something else is needed. In this regard, Breslau (1999) stated that previous exposure to trauma signals a greater risk of PTSD from subsequent trauma. In investigating the aetiology of psychiatric disorders generally, clinicians look at the contribution of several factors such as predisposing and precipitating, factors for the incidence of every disorder. Before considering those factors, it is necessary to give a brief definition of the important terms regarding the risk factors.

Predisposing factors are any genetic factors or sets of factors that increase the likelihood of their possessor displaying a particular trait or characteristic. These factors are long-standing behaviour patterns, childhood experiences, and durable personal and social characteristics that may alter the susceptibility of the individual to illness. Precipitating factors, in contrast, influence the timing of the onset of illness; the term refers for the most part to more or less transient changes in current conditions or





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characteristics, and it is such changes that constitute our present subject of inquiry. Some predisposing factors may make the individual less vulnerable to stress, such as prior experience with the stressor. In regard to risk factors concerning stress reactions, Barker (1988) believes that the reaction of children to stress varies greatly, depending on the nature, severity and duration of stress, their personality strengths, temperament and previous experiences, and the social support available to them during and following stressful experiences.

The present study attempts to ascertain whether personality characteristics and other variables such as age, sex, type and duration of parental loss, multiple exposure to the stressful life events and multiple experience of loss of family members protect children and adolescents from the adverse effects of stressors.

**Personality**

In this study, we attempt to review the research linking personality factors and stressful life events to the PTSD process as a risk factor. Personality is here defined as "enduring patterns of perceiving, relating to, and thinking about the environment and oneself." (DSM-IV, 1994). Exposure to stressful situations alone does not explain why some individuals experience disorder while others do not. So one of the issues that has attracted a great deal of interest is the extent to which personality characteristics influence the experience of stress. What dimensions or attributes of the person are associated with psychological difficulty in assimilating the trauma? Why do some individuals seem to return to normal functioning rather quickly after the trauma, whereas others experience it for many years?

There have been clear indications that personality may function as an intervening variable in the stress process (Lazarus, 1984). Personality also appears to be more influential in situations where there is little opportunity for control (Folkman, et al., 1986). McFarlane (1988) indicated that introversion, neuroticism and a past history and family history of psychiatric disorder, were pre-morbid factors significantly associated with the development of chronic PTSD.

In fact, personality features affect the way in which stressors are managed and subjectively experienced. People have low or high thresholds when coping with extra pressures and this is often determined by personality. Are some persons strengthened in self-actualising directions by extraordinarily stressful life events? Apparently, the answer to this and other questions will help us to understand the nature and mechanisms of post-trauma psychological functioning. It has been argued that what an individual "brings to" an encounter may influence his or her response to stress. Therefore, the presence of certain personality features may act as moderators when individuals are faced with stressful situations. Recently, Hagstrom (1995) indicated that the impact of traumatic events varies from one individual to another. A number of personality variables have been proposed as moderators (e.g., type-A personality/behaviour pattern, Friedman and Rosenman, 1974; hardiness, Kobasa, 1979; sense of coherence, Antonovsky, 1979; locus of control, Parkes, 1986; monitors and blunters, Miller, 1987).

The effects of most personal variables in mediating stressful conditions are fairly obvious. Generally, some cognitive styles produce stress, while other styles reduce or even eliminate it. Stress-prone personalities can be described in many ways. The difference between Type A and Type B behaviour (Friedman & Rosenman, 1974), for example, is a useful way of describing a particular stress-prone style. Joseph et al. (1993) state that attributional style research shows greater externality for positive outcomes to be associated with PTSD. Another general term in social psychology is locus of control that is generalised expectancies for internal-external control of reinforcement (Rotter, 1966). In Solomon, Mikulincer, and Avitzur's (1988) study, the relationship between locus of control, coping, social support, and PTSD in War veterans at two and three years following combat was examined. The results showed that the intensity





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of PTSD declined between the two points of time, reflecting a process of recovery.

**Personality dimensions**

Research into the main dimensions of personality has been pursued by many well-known figures. A review of the literature by Eysenck (1970) has disclosed the existence of two, very clearly marked and outstandingly important types of Extroversion-Introversion (E), and Neuroticism (N), emotionality or stability-instability. He called the third dimension of personality as "psychoticism". It was argued that just as neurosis is a pathological exaggeration of high degrees of some underlying trait of neuroticism, so psychosis is a pathological exaggeration of high degrees of some underlying trait of psychoticism. Rachman (1967) suggests that the dimensions of extroversion and neuroticism could be utilised with great advantage in studies of personality in children. In this section, the main features of personality dimension are briefly described.

Extroversion-Introversion (E): The typical extrovert is sociable, likes parties, has many friends, needs to have people to talk to, and does not like reading or studying by himself. He prefers to keep moving and doing things, tends to be aggressive and loses his temper quickly. The typical introvert is a quiet, retiring sort of person, introspective, fond of books rather than people; he is reserved and distant except to intimate friends. He keeps his feelings under close control, and does not lose his temper easily. In general, it would be correct to say that the extroverted person prefers the outer world of action, objects and people and is energised by being with others. On the contrary, the introvert person prefers the inner world of concepts and ideas and is energised by being alone. The introvert has a more subjective, the extrovert a more objective outlook; the introvert shows a higher degree of cerebral activity, the extrovert a higher degree of behavioural activity. The introvert shows a tendency to self-control (inhibition), the extrovert shows a tendency to lack of such control.

Neuroticism (N): Eysenck describes the individual who scores high on the Neuroticism scale as being an anxious, worrying individual, moody and frequently depressed. He is likely to suffer from various psychosomatic disorders. His strong emotional reactions interfere with his proper adjustment, making him react in irrational, sometimes rigid ways. When combined with extroversion, such an individual is likely to be touchy and restless, to become excitable and even aggressive. If the high N individual has to be described in one word, one might say that he was a "worrier"; his main characteristic is a constant preoccupation with things that might go wrong, and a strong emotional reaction of anxiety to these thoughts.

Psychoticism (P): A high scorer on the psychoticism scale may be described as being solitary, not caring for people; he is often troublesome, not fitting in anywhere. He may be cruel and inhuman, lacking in feeling and empathy, and altogether insensitive. He is hostile to others, and aggressive, even to loved ones. He has a liking for odd and unusual things, and a disregard for danger; he likes to make fools of other people, and to upset them.

**Personality and PTSD**

With regard to personality, stress and vulnerability, there is broad empirical support for the generalised susceptibility hypothesis which proposes that psychological factors such as stressful life events, and how one appraises and adapts to these events, increases the overall risk of illness (e.g. Lazarus & Folkman, 1984).

A number of studies suggest that certain personality variables, prior to exposure to the traumatic stressor, may increase the vulnerability to developing Post-Traumatic Stress Disorder (McFarlane, 1988, Spigel, et al, 1988). For example, among fire-fighters exposed to the Australian bushfire, McFarlane (1988) found that introversion and neuroticisim were predisposing factors for PTSD. According to the study conducted by Streimer et al. (1985) PTSD is also associated with a disturbed childhood environment, especially a poor parent-child relationship or a high rate of





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parental separation. Moreover, personality may often affect the probability of developing PTSD in indirect ways. For example, Helzer et al (1987) found that PTSD following a stressor was predicted by a history of behavioural problems before the age of 15. PTSD has also been found among children who were clinically diagnosed as having borderline personality disorder (BPD). In the study by Famularo et al. (1991) findings raise the possibility that a diagnosis of BPD in childhood can often represent PTSD.

**Parental loss and PTSD:** The loss of a parent in childhood, through death, divorce or separation, has long been considered a main risk factor for adult psychopathology. In other words, the loss of a loved one is of the most severely painful experiences that any human being can suffer. Bowlby (1980) states that early loss can sensitise individuals and make them more vulnerable to trauma experienced at a later date, especially to those events represented by loss or threat of loss. Bereavement as an important example of loss has been defined as both a state and a reaction to the death or loss of someone to whom the individual had been attached (Raphael et al., 1987).

Although the research on PTSD in bereaved children is scant and limited by methodological shortcomings, there is growing evidence that early parent death can affect the severity of other PTSD associated psychiatric illnesses in later life (e.g. Depression). In relation to the impact of parental death, it has been widely held that the death of parents during childhood presents a trauma predisposing the individual to later psychopathology (Krueger, 1983). Other psychologists address bereavement within the context of stress research or management (Dohrenwend & Dohrenwend, 1978). This approach has also been encouraged by the creation of a category of disorder, which has been specifically precipitated by trauma, the Post-Traumatic Stress Disorder (APA, 1980). In addition, PTSD covers loss-induced stress, whether caused by natural or man-made disasters, and in military or civilian contexts. Next to bereavement, divorce is probably the most traumatic event that can be experienced during childhood and adolescence.

In response to this principal research question of "Is parental loss a sufficient traumatic event that can lead to PTSD?" Pynoos (1990) stated that: "common aversive events, such as bereavement and parental divorce, rarely produce post-traumatic Stress disorder." Schut et al., (1991) also hypothesised that bereavement and PTSD would overlap, and examined the prevalence of PTSD in the conjugually-bereaved. They suggested that there is empirical evidence undermining the American Psychiatric Association's (1987) prior exclusion of simple bereavement from events having PTSD-triggering potential. Parkinson (1993) believes that bereavement is a traumatic experience resulting in the symptoms of grief and these are similar to those of Post-trauma Stress. The loss of a parent in childhood through death or separation has also long been considered a prominent risk factor for adult psychopathology (Kendler et al., 1996).

The present study attempts to investigate the possible relationship between parental death through earthquake, death by natural causes, divorce or separation and the development of PTSD. In fact, in this research, the question "Is the loss of parents different from those events that are generally outside the range of usual human experience and is it a sufficient stressor to lead to PTSD?" is posed.

As study group have lost their parents through earthquake, therefore, it is appropriate here to give a brief description of the 1990 earthquake in Iran as a catastrophic event for the children and adolescents. On June 21, 1990 (31 Khordad, 1369), an earthquake with a magnitude of 7.3 to 7.7 on the Richter scale, struck the Northwest of Iran. The epicentre of the earthquake was "Manjil" in Gilan Province that was located 230 Km Northwest of Tehran (the capital city of Iran). This earthquake was one of the most devastating natural disasters in Iran, causing heavy loss of life and property. This catastrophic earthquake caused the death of at least 39,512 and injured nearly 60,096 and 134,582 families were made homeless. The study group was





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survivors of this event.

## Method

Since this research was carried out after the incidence of the traumatic events (loss of parents by earthquake, natural death, divorce, and separation) it is an Ex Post Facto type study. An Ex Post Facto design is one in which the groups are matched after the independent variable has already been administered or after the occurrence of the event to be studied. In other words, a retrospective design was used in this study.

## Study Population

The population of this study was children and adolescents who had lost their parents either through the 1990 catastrophic disaster of earthquake or via natural causes including death, divorce and separation.

## Subjects

The study subjects consisted of the 144 children and adolescents. Thirty-nine who had lost their parents following the 1990 earthquake in Iran were the study group. The study group was survivors of this event. A comparison group or 105 children and adolescents who had lost their parents through natural death (for reasons other than the earthquake), divorce, and separation were also recruited from centres of Welfare Organisation of Iran for Orphans "Children's Home" in Tehran. The mean age of the subjects was 14.2 years with age range of 10-19 years.

## Sampling

Children and adolescents were randomly recruited from the main earthquake affected area in the Northwest region of Iran (N=39) and from eighteen "Children's Homes" in Tehran, the capital city of Iran (N=105). From the two main earthquake affected areas (Provinces of Gilan and Zanjan) the Roudbar city within the Gilan province was randomly selected for the study. A total of 202 bereaved children and adolescents with age range of 10-19 in Roudbar city were living with surviving family members or close relatives. From this age range population 39 children and adolescents were selected for this study. In Tehran city from 18 centres for Orphaned children and adolescents 4 centres including two centres for boys and two centres for girls were randomly recruited to the study (N=105).

## Assessment Instruments

In order to provide an accurate diagnosis of Post-Traumatic Stress Disorder two measurers were used. In addition, one personality questionnaire was used to determine the role of personality characteristics in the development of PTSD symptoms. These measures included two Interview schedules the Clinician-Administered PTSD Scale (Blake et al., 1990) and the Child Post-Traumatic Stress Reaction Index (Frederick, et al, 1992. The Junior Eysenck Personality Questionnaire was used to investigate possible relationships between the personality characteristics of the subjects as a predisposing factor for PTSD symptoms.

## The Clinician-Administered PTSD Scale (CAPS)

The CAPS is a structured interview of demonstrated reliability and validity, developed by the American National Center for PTSD (Blake et al, 1990). There are five criteria that must all be fulfilled to meet a DSM-III-R diagnosis of PTSD. The CAPS is a 30-item scale that assesses current, lifetime and associated symptoms of PTSD. Items are included that assess each of the 17 core symptoms that constitute the DSM-III-R construct of PTSD. It has a separate frequency and intensity rating scale for each symptom and these are measured on a five-point Likert scale (0-4). The CAPS can be used as a dichotomous measure for making a DSM-III-R diagnosis or as a continuous measure for evaluating PTSD symptom and syndrome severity. It conforms to the majority of the criteria identified by Watson (1990) as an ideal instrument for the assessment of PTSD. Inter- observer reliability was demonstrated with a Kappa statistic of 0.90.





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### Child Post-Traumatic Stress Reaction Index (CPTSD-RI)

The CPTSD-RI is a 20-item scale designed to assess the frequency and severity of post-traumatic stress reactions of school-age children and adolescents after exposure to a broad range of traumatic events. The revised version of this instrument was developed by Frederick, Pynoos, and Nader (1992) and has a five-point Likert rating scale ranging from 0 to 4 to rate frequency of occurrence of symptoms. Inter-rater reliability for this instrument, when administered by a clinician, has been reported to be excellent, with a Cohen kappa of 0.88 for inter-item agreement (Pynoos et al., 1987). Internal consistency of this scale has also been reported in the study by Yule et al. (1992) with a satisfactory Cronbach's alpha of 0.94.

### Junior Eysenck Personality Questionnaire (JEPQ)

The JEPQ introduced by Eysenck and Eysenck (1975) measures four trait dimensions of personality: Extroversion-introversion (E) Neuroticism (N) Psychoticism (P) and Social desirability (L). The construction and validation of this questionnaire was initially undertaken in the UK by Eysenck and Eysenck (1987). They reported that in the one-month test-retest data for children the reliability varied from an extremely low figure of 0.55 to 0.89. The reliabilities of the E, N, and L scales were all within the 0.7 to 0.9 range; those for P were a little below the 0.7 value.

Would the same factors of E, N, P, and L necessarily be replicated in other countries and cultures? This was a question answered by Barrett and Eysenck in 1984. They stated that it was possible to compare the personality of people in each country with other countries. In this study, the 80-item JEPQ was applied to the subjects. Rahiminezhad (1993) standardised the JEPQ with Iranian boys and girls (N=2190). The age range of the subjects was 11-20 years. The Reliability of the Farsi (Persian) version was proved by Rahiminezhad. He reported that the Farsi version of the 80-item JEPQ showed Construct Validity using Factor loading of the original 90-item EPQ.

PTSD measures (CAPS, and CPTS-RI) were translated from English into the Farsi) language, which was the subjects' mother language. Rahiminezhad had translated the JEPQ from the English language into the Farsi, in 1993. He has used and standardised this personality questionnaire with Iranian children and adolescents with Farsi language. All the study instruments were back translated independently to English to compare their resemblance. Versions translated back into English, and the Farsi versions of the instruments used in this study had a good concordance.

### Procedure

Data were collected from the study group who experienced loss of parent(s) following the 1990 earthquake in Iran and from the comparison group with experience of loss of parent(s) via natural causes in the Children's Home of Tehran city. Initially the subject's demographic information was recorded. Then subjects were interviewed with the CPTSD-RI and CAPS and finally they completed the JEPQ.

### Data Analysis

In this study all collected data in relation to demographic information and other research variables were analysed using descriptive statistical methods. In order to test hypotheses and to indicate the role of independent variables and their association with rate and severity of PTSD symptoms inferential statistical techniques were carried out. To examine group differences on the PTSD symptoms in subjects, Chi-square was used with categorical variables. To predict how much variance of PTSD symptoms is explained by one or a group of independent variables and which variable is the most important factor in appearance of PTSD symptoms the statistical models of Multiple and Logistic Regression was utilised. Responses were coded and computer analysis was carried out using the Statistical Package of Social Sciences (SPSS).





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## Results

Demographic characteristics may contribute to the individual's evaluation of stressful conditions and his/her response to them may function as predisposing factors in the occurrence of PTSD symptoms. A summary of demographic data of the subjects is as follows. The age range of the total 144 study samples was 10-19 years old with mean age of 14.2 years. In 45.8% of cases one of parents and in 20.8% of them both of parents had died. The parents of 25.7% of subjects had divorced. Two third (66.6%) of the subjects had lost their parents through death.

## Symptoms of PTSD in Subjects on CAPS and CPTSD-RI

The prevalence of PTSD symptoms in children and adolescents and also the severity of PTSD derived from the interviews of CAPS and CPTSD-RI are present in Table 1.

**Table 1.** Prevalence of PTSD symptoms and its severity in children and adolescents

| Type of Loss of parents | PTSD symptoms | | Severity of PTSD | | | | Total Row |
|---|---|---|---|---|---|---|---|
| | Met PTSD | Not Met | Doubtful | Mild | Moderate | Severe | N |
| | N | N | N | N | N | N | % |
| | % | % | % | % | % | % | |
| Loss via earthquake | 19 | 20 | 4 | 13 | 12 | 10 | 39 |
| (study group) | 48.7 | 51.3 | 10.3 | 33.3 | 30.8 | 25.6 | 27.1 |
| Natural loss | 21 | 84 | 34 | 40 | 18 | 13 | 105 |
| (Comparison group) | 20 | 80 | 32.4 | 38.1 | 17.1 | 12.4 | 72.9 |
| | 40 | 104 | 38 | 53 | 30 | 23 | 144 |
| Total | 27.8 | 72.2 | 26.4 | 36.8 | 20.8 | 16.0 | 100 |

As shown in Table 1, from all 144 children and adolescents studied 40 (27.8%) met all three symptom clusters and duration of the disturbance of at least one-month criteria for PTSD. As it can also be seen in the Table 1, 72.2% of subjects did not diagnose as a PTSD group (N=104). The severity of PTSD in subjects drawn from administration of CPTSD-RI is also presented in Table 1. As the table manifests, from all studied subjects, 15.3% reported severe and very severe degree of PTSD symptoms. 21.5% indicated moderate and 36.8% indicated mild degree of PTSD. The prevalence and severity of PTSD symptoms in the study and the comparison groups are separately seen in the table.

## Predictor Factors for PTSD

Experience of parental death and PTSD

This study investigated whether children and adolescents who have lost their parents through death (either by natural causes or via earthquake) may manifest more rate, and more intense, symptoms of PTSD than children whose parents are alive but live apart from them. Figure 1 presents the study results in this connection.

The results, shown in Figure 1, indicate that from the total of 40 children and adolescents who met the criteria for PTSD symptoms, 35 (87.5%) had experienced parental death, whereas, just five (12.5%) of disordered subjects had no parental death experience. In other words, of 96 subjects with experience of parental death 36.5% met the criteria for PTSD symptoms, but of 48 those with no parental death experience, only five children and adolescents (10.4%) met the criteria for PTSD symptoms. Thus, the group with parental death experience were more than three times more likely to manifest PTSD symptoms than those without experience of parental death.





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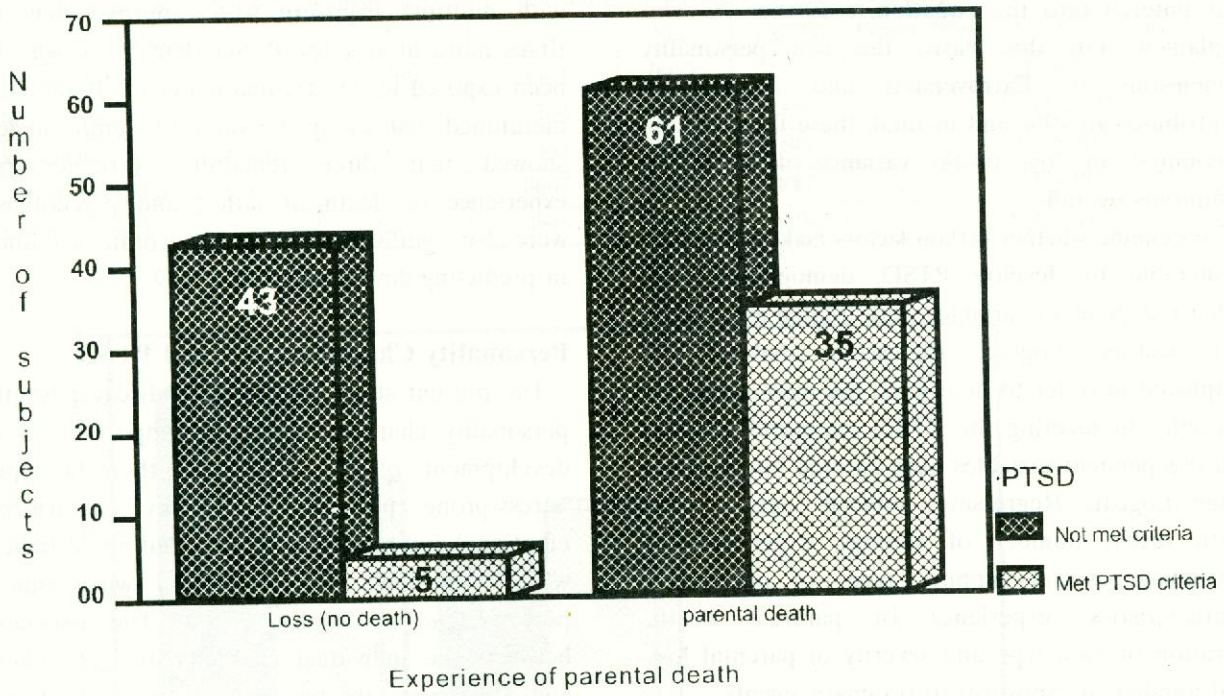


**Figure 1.** Association of experience of parents' death and the rate of PTSD in subjects

## Other Predictive Factors for PTSD (Analysis of Regression)

To determine the predictive factors for subjects' development of PTSD symptoms the related variables were entered into a stepwise multiple regression. These variables were age, sex, birth order, number of siblings, age at loss of father and mother, time since loss of father/mother, experience of earthquake, multiple exposure to traumatic events, social support, experience of parental death, severity and type of parental loss and personality dimensions of Extroversion-introversion, Neuroticism, and Psychoticism.

The analysis was ordered for factors according to their contribution to variance. Separate stepwise multiple regression analyses were conducted with the CAPS and CPTSD-RI. Table 2 presents a summary of the results of the stepwise multiple regression analysis of the total number of CAPS symptoms.

**Table 2.** Summary table of stepwise multiple regression analysis of CAPS total number of PTSD symptoms presenting optimal predictors

| Variable | B | SE | Beta | R2 | P |
|---|---|---|---|---|---|
| Extroversion-introversion | -.176644 | .060690 | -.246839 | .12 | .0043 |
| Neuroticism | .195634 | .051352 | .309110 | .19 | .0002 |
| Experience of earthquake | 2.075979 | .639656 | .276717 | .26 | .0015 |

Analysis of the multiple regression in Table 2 shows that Extroversion-introversion accounted for 12% of the variance in developing PTSD symptoms. A further 7% of the variance was explained by





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Neuroticism. When the experience of earthquake was entered into the equation, a further 7% was explained. On this basis, the two personality dimensions of Extroversion and Neuroticism contributed to 19% and in total, these three factors accounted for 26% of the variance of the PTSD symptoms overall.

To examine whether certain factors make individuals vulnerable to develop PTSD, demographic and other independent variables were treated as possible risk factors. Logistic regression analysis was employed in order to determine the main predictor variables in meeting the PTSD symptoms criteria. All independent variables were entered into a single stage Logistic Regression: subjects' age, gender, birth order, number of siblings, experience of earthquake, social support, types of personality characteristics, experience of parental death, duration of loss, type and severity of parental loss and number of exposures to traumatic events.

The variables entered to the equation to obtain the level of exponential "Exp (B)" value, the factor by which the odds of the event change when I-th independent variable increases by one unit. All significant variables entered into the equation together in a Multiple Logistic Regression while non-significant variables in single stage Logistic Regression were removed from the equation. Of those variables entered into the equation, five variables appeared to be more predictive of PTSD symptoms than the other variables as shown in Table 3.

As can be seen from Table 3 the lower and upper 95% confidence limits indicated that of the five important predictor variables the two main variables included multiple exposure to the traumatic events, and extroversion were the most significant factors in predicting PTSD symptoms in children and adolescents. Taking the values of Exp (B) (2.8078) for the variable of "experience of father death" indicated that children and adolescents who had experience of death of fathers were almost three times more likely to meet the PTSD symptoms criteria than subjects who had no such experience. It can also be seen that those subjects with multiple exposure were approximately two times more at risk for PTSD than those who had been exposed to less traumatic events. It should be mentioned that taking the value of significant level showed that three remaining variables (sex, experience of death of father and psychoticism) were also significant (only at 90% confidence limits) in predicting development of PTSD.

## Personality Characteristics and PTSD

The present study attempted to discover whether personality characteristics were important in the development of the PTSD. Is there a typical "stress-prone personality" or any characteristic emotional and behavioural traits that might indicate which individuals are at risk, or what kind of persons tend to develop PTSD? The association between the individual characteristics of children and adolescents, the results from the application of the JEPQ, and the rate and severity of PTSD were investigated. The findings of this part of the study are presented in Figure 2.

As can been seen in Figure 2, a higher rate of PTSD symptoms was found in children and adolescents with lower scores on the E scale (mean=13); whereas, overall, there was a slight decline in the rate of PTSD symptoms with an increasing mean of Extroversion scores (mean=16). In other words, introverted subjects were more likely to develop PTSD symptoms. On the other hand, Figure 2, shows that higher scores on the Neuroticism correlated with a high rate of PTSD symptoms. The mean of the Neuroticism scores, in the group with PTSD symptoms, was 13, while it was 11 in the group that did not meet PTSD criteria. As with Neuroticism, subjects with higher scores on Psychoticism demonstrated a higher rate of PTSD symptoms than the group with lower scores. As can be seen from Figure 2, the mean scores of Psychoticism in PTSD subjects was five, whereas it was three in the subjects who did not meet the criteria for PTSD symptoms.





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**Table 3.** Logistic regression analysis of DSM-III-R criteria for PTSD presenting main predictors of PTSD symptoms

| Variable | B | SE | Sig | Exp(B) | Lower-Upper 95% Confidence Limits |
|---|---|---|---|---|---|
| Gender (sex) | .8300 | .4981 | .0957 | 2.293 | .849-6.210 |
| Multiple exposure | .6212 | .2204 | .0048 | 1.861 | 1.198-2.892 |
| Experience of death of father | 1.0324 | .5363 | .0542 | 2.808 | .961-8.207 |
| Extroversion-introversion | -.1714 | .0667 | .0101 | .842 | .737-.963 |
| Psychoticism | .1772 | .0945 | .0607 | 1.194 | .988-1.442 |

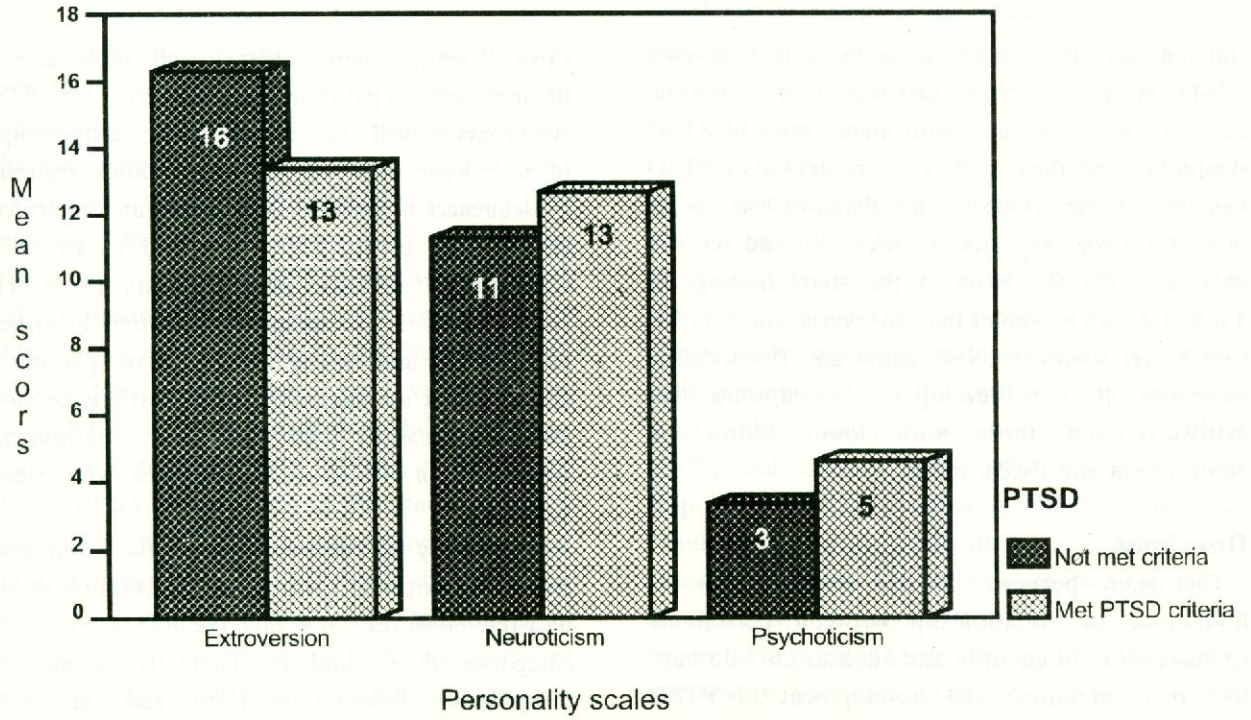


**Figure 2.** The association between mean scores of personality scales and PTSD symptoms

A Chi-square test was applied to examine the difference between the group with PTSD symptoms (disordered group) and the group, which did not meet the PTSD criteria (not-disordered group) onthe three dimensions of personality. The results indicated statistically significant differences between the PTSD group and the not-disordered group. This means that the PTSD group scored significantly higher on the Neuroticism scale ((2=6.26, df=2, p=.044) and Psychoticism scale ((2=7.68, df=2, p=.022) and lower on the Extroversion-introversion scale of the JEPQ than the non-disordered group ((2=15.03, df=2, p=.001).

To investigate the possible significance of the relationship between the scores of children and adolescents on the personality scales and the rate and severity of PTSD symptoms, Spearman correlation coefficients were used. Table 4 presents these correlations.

As Table 4 indicates, there were significant negative correlation between Extroversion and PTSD and its severity ($p<.05$). That is to say, the higher scores on the E scale resulted in the lower rate of PTSD and the lower degree of severity of PTSD. In other words, subjects with lower scores on the E scale tended to be more introverted, thus introvert





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**Table 4.** Spearman correlation coefficients between personality scales and PTSD symptoms

| Personality scales / PTSD measures | Extroversion r (p) | Neuroticism r (p) | Psychoticism r (p) |
|---|---|---|---|
| CAPS (PTSD symptoms) | -.302 (.000) | .279 (.001) | .301 (.000) |
| CPTSD-RI (Severity of PTSD) | -.286 (.001) | .224 (.008) | .270 (.001) |

children and adolescents were more likely to develop PTSD symptoms than extroverts. In addition, children and adolescents with higher rates of PTSD symptoms, and those with a severe degree of PTSD had higher Neuroticism and Psychoticism scores than those who reported a lower rate and severity of PTSD. On the basis of the study findings in Table 4, it can be stated that introverts, and subjects with higher scores on Neuroticism and Psychoticism, were more likely to develop PTSD symptoms than extroverts and those with lower scores on Neuroticism and Psychoticism.

## Discussion

The main purpose of this research was to investigate the relationship between personality characteristics of children and adolescents who have lost their parent(s) and development of PTSD symptoms. The first question this study sought to answer was whether the loss of parents through earthquake and loss of parents by natural causes (death, divorce, and separation) are sufficient events to produce PTSD symptoms in children and adolescents. The results revealed that although there were differences between types of loss in degree of traumatisation, loss of parents as a traumatic event can lead to the PTSD symptoms and other associated psychological problems in some individuals is supported by the results presented here.

According to the results, besides 48.7% of earthquake survivors (study group) met the full criteria for PTSD, 20% of the comparison group who had experienced parental death by natural causes (simple bereavement) and even due to divorce and separation met criteria for PTSD symptoms as well. This finding in the study group is in line with most of previous studies regarding consequences of disasters on children and adolescents (e.g. Pynoos et al., 1993, Yule and Udwin, 1991, Goenjian et al., 1995. Kisser et al., 1993). This result impels the acceptance of the study hypothesis of "sudden and unexpected loss of parents in children and adolescents due to earthquake cause more increased and intensive pathological symptoms of PTSD than subjects who simply bereaved."

In contrary to the study group the comparison group did not lose their parent(s) through sudden disaster. However, 20% met the PTSD criteria for categories B, C, and D. There is an apparent disagreement between the PTSD reactions in the comparison group and the DSM-III-R (APA, 1987) criteria, which exclude simple bereavement from the index of traumatic events leading to the PTSD. Clearly, the results of present study suggest empirical evidence (presence of 20% rate of PTSD symptoms in simply bereaved subjects) undermining the American Psychiatric Association's (1987) a former exclusion of simple bereavement from events having PTSD-triggering potential. It was also hypothesised that loss of parents through death will result in more rate and severe symptoms of PTSD than loss due to divorce and separation. The findings of present study also supported this idea.

In relation to the type or severity of loss the findings of the present study confirmed that death of both parents is more traumatic (catastrophic)





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than the death of just one parent (very severe), or loss through divorce (severe) and separation (moderate). This result agrees with DSM-III-R (1987) scale for psychosocial stressors. Fatherless children and adolescents also reported frequent and severe PTSD symptoms. One probable reason for this difference is due to the greater mortality fathers in the earthquake survivors (with more PTSD symptoms) subjects than other groups.

In this study the differential reactions of subjects with age related different level of cognitive and emotional development to the traumatic event of parental loss was rejected. There was no significant difference between age groups of children and adolescents in the frequency and severity of PTSD symptoms. This result was inconsistent with the findings of Green et al. (1991) who showed fewer PTSD symptoms in the youngest age group of children who were exposed to the Buffalo Greek dam collapse. Other demographic variables like birth order and number of siblings did not appear to play a significant role in the psychological outcome of traumatic events in this study.

The results of the present study showed that girls were at a higher risk of PTSD symptoms than boys. This finding supported the study hypothesis of "there is difference between boys and girls in developing PTSD symptoms". Support for the view that females report more symptoms than males comes also from studies of Vogel and Vernberg (1993), Green et al. (1991), Shannon et al. (1994), and Yule (1994). All those have shown clear differences emerged with girls more vulnerable to higher levels of distress following traumatic events than boys. Multiple exposure to the traumatic events and/or multiple experience of loss of family members, was also found to be a factor of importance in predicting PTSD in this research. Thus, the experience of multiple events of earthquake and parental loss and other stressful life events leads to more pathological reactions, including PTSD symptoms in subjects.

Regarding association of personality characteristics and PTSD symptoms the findings of the present study indicated that lower scores on Extroversion, and higher scores on Neuroticism, and Psychoticism were correlated with higher rate and severity of PTSD symptoms. Taking the value of correlation coefficients, we may, perhaps, conclude that personality characteristics are predisposing factors for developing PTSD symptoms. Therefore, the hypothesis of "the subjects with different personality characteristics will manifest different post-traumatic reactions" is accepted. It means that personality characteristics are pre-morbid or predisposing factors significantly associated with the development of PTSD symptoms.

These findings are in line with views of Williams et al. (1993), emphasising that exposure to the major trauma does not cause psychiatric disorder in all victims, due to "differences in susceptibility and reaction". It is also in accordance with Horowitz's (1993) study suggesting that personality factors can both predispose to greater resilience and to greater vulnerability. Again, it is consistent with Kobasa (1979) and Lazarus (1984) who believe that the response of certain personality features may act as "moderators" when individuals are faced with stressful situations. On the basis of the study results we agree with Strange (1970), McFarlane, (1988); Spiegel, Hunt, and Dondershine, (1988) that certain personality variables prior to exposure to the traumatic stressor may increase the vulnerability to developing Post-Traumatic Stress Disorder.

## Conclusion

It was the main aim of the present study to investigate whether post traumatic psychopathology can occur as a consequence of parental loss in children and adolescents, that is, does PTSD occur after parental loss? Are the personality characteristics and other variables predictor factor associated with the development of PTSD symptoms? A multi-assessment approach using three standard measures was employed and successfully highlighted the prevalence of PTSD in 144 children and adolescents who had experienced the loss of parents through earthquake, death by





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natural causes, divorce or separation.

The results of this particular study suggested that the prevalence of PTSD in this population was 27.8% overall. These data showed that 48.7% of earthquake survivors or the experimental group and 20% of the control group met the diagnostic criteria for PTSD symptoms. The results of the present study strongly support Parkinson's (1993) statement that bereavement result in symptoms similar to those of Post-trauma Stress. Given this, it can be concluded that PTSD symptoms may be caused by bereavement itself as a traumatic event in the lives of children and adolescents. This important conclusion derived from this particular study makes DSM-III-R (APA, 1987) criteria for traumatic events questionable. It may therefore encourage the APA to re-examine the criterion (A) and consider bereavement as a traumatic stressor resulting in PTSD symptoms in children and adolescents. The present research could be the first study to claim that simple bereavement and even loss of parents through divorce and separation can result in the development of PTSD symptoms and its associated symptoms in children and adolescents.

Regarding the association of PTSD and the type of loss of parent, this study showed that death of parent(s) is an extremely traumatic event in children and adolescents which may result in pathological reactions including PTSD, compared to other kinds of loss (divorce and separation). Subjects who had lost both parents owing to death, manifested more frequent and more severe symptoms of PTSD than those who had lost only one parent owing to death. These two groups manifested a grater rate and degree of severity than those who had lost their parents through divorce or separation.

On the basis of the findings of the present study, it can be concluded that the experience of multiple or cumulative traumatic events of earthquake and parental loss and other stressful life events leads to more pathological reactions, including PTSD symptoms in children and adolescents. From the results of this study with regard to the relationship between PTSD symptoms and demographic variables, it can be concluded that females are at high risk of developing a higher rate and greater degree of severity of PTSD symptoms than males. There was no relationship between PTSD symptoms and the age of subjects. Other demographic variables like birth order and number of siblings, did not appear to play a significant role in the psychological outcome of traumatic events in this study.

Personality characteristics were found to be significant predisposing factors associated with the development of PTSD symptoms in this study. According to the results of the present study, a higher rate of PTSD symptoms was found in children and adolescents who scored lower on the Extroversion Scale. The result indicated that higher scores on Neuroticism and Psychoticism correlated with a higher rate and more severe degree of PTSD symptoms in subjects. Given this, it can be concluded that personality characteristics of children and adolescents are very important factors associated with PTSD symptoms, which can predict the outcome of traumatic events in this study.

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