Community Assessment of Psychic Experiences (CAPE) and Trauma and Loss Spectrum (TALS) 12 months after an earthquake in Italy

Community Assessment of Psychic Experiences (CAPE) e Trauma and Loss Spectrum (TALS) 12 mesi dopo un terremoto in Italia

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Summary

Objectives

Research following disasters allows for exploration of the effects of severe stress on mental health, as trauma is likely to increase the risk of psychosis. The aim of this study was to investigate the relationship between post-earthquake symptom distress and subclinical psychological symptoms on 512 young students, one year after the earthquake on 6 April 2009 in L'Aquila, Italy.

Methods

Assessments included the Trauma and Loss Spectrum Self-Report and Community Assessment of Psychic Experiences (CAPE). Significant associations were seen between trauma-related measures and subclinical symptoms of psychosis and depression scores.

Results

Trauma related measures are associated with a weak increase in the subclinical positive and negative dimensions of psychosis, and a modest increase in the subclinical depressive dimension.

Conclusions

Different post-trauma risk trajectories, were the main predictors of the three CAPE scores. Post-traumatic stress syndrome predicted CAPE positive, negative and depressive subclinical experiences in different ways.

Key words

Subclinical psychological symptoms • Psychosis • Vulnerability • CAPE • Trauma

Introduction

Vulnerability-stress models emphasize the role of stress and trauma in the emergence of psychosis [1-6]. Extensive research has been conducted on mental disorders following natural disasters, and several studies have assessed individuals who have experienced earthquakes [7-10].

A variety of reactions are observed after a major trauma. In the majority of cases, these resolve without any long-term consequences. In a significant proportion of individuals, however, recovery may be impaired, leading to long-term mental disorders. The most common of these is post-traumatic stress disorder (PTSD) [11], but other disorders may arise when vulnerability factors interact with traumatic events [12 13].

On 6 April 2009, the town of L'Aquila (Abruzzo) in central Italy was struck by an earthquake measuring 6.3 on the Richter scale, which was preceded and followed by a large number of minor quakes. In the town of L'Aquila, many buildings collapsed and large parts of the town were destroyed [14]. Overall, 309 people were killed and 1,600 were injured, of whom 200 were severely injured and hospitalized. More than 65,000 people were forced to leave their homes. We have explored the presence of PTSD in a sample of high school students evaluated by the Trauma and Loss Spectrum-Self-Report (TALS-SR). More than one-third of the sample (37.5%) reported a diagnosis of PTSD [15], thus we hypothesized an increase of other psychopathological symptoms with increasing psychotropic prescriptions [16].

We decided to explore correlations between the TALS-SR [17 18] and Community Assessment of Psychic Experiences (CAPE) symptoms in the same cohort of young adult survivors. The self-report instrument CAPE has been developed to assess psychotic experiences in the general population [19-21]. The TALS-SR was designed to explore post-traumatic spectrum symptomatology that may occur after a broad range of traumatic events, including low magnitude events and a series of major and minor losses. There are several different possible relationships between trauma and psychosis [4-6]. Furthermore, stressful or traumatic experience also predicts greater risk of prevalent and incident experience of subclinical psychosis [22].

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Experiencing psychosis can precipitate the development of post-traumatic stress symptoms, but the experience of trauma can also, for some individuals, lead to the development of psychosis. We consider the hypothesis that traumatic stress could be associated with increased vulnerability to psychosis even at subclinical level. These two instruments were selected since they can measure subclinical symptoms in their respective domains.

Method

The target population was living in L'Aquila when the earthquake on 6 April 2009 struck, and attended the last year of high school in L'Aquila one year after the earthquake. The population consisted of those living in the town of L'Aquila (i.e. about 72 000 inhabitants) who received assistance in the emergency conditions that followed the earthquake. All residents were directly 'exposed' to the disaster, though this clearly introduces a broad range of possible individual exposures [8 11]. All experienced loss of property and damage to their homes. All were displaced in locations within a 150 km area from the town or in tents located in the urban area. Twelve months after the earthquake, only 25% of inhabitants were able to return to their homes.

An overall cohort of 512 adolescents, 232 females and 280 males, was recruited. The questionnaires were initially administered to a larger sample, but data were available for only 88.2% of the initial sample owing to partial non-response. The subjects had a mean age of 17.65 ± 0.74 years (mean ± SD). Exposure to the earthquake was evaluated with a modified version of the Screening Instrument for Traumatic Stress in Earthquake Survivors (SITSES) [23]. All the exposed adolescents reported earthquake consequences (i.e. serious loss of properties, personal injuries, close familial relatives injured, trapped under rubble, etc.). Because only a small number of people experienced severe personal injury, these were excluded from the analysis. Considering the wide range of variability in trauma exposure, we decided to explore correlations between trauma related measures and CAPE scores since it was difficult to categorize such exposure.

The High School Council approved the study and gave consent for assessment procedures. Eligible subjects received a complete description of the study, and had the opportunity to ask questions. The study was completed 10 to 12 months after the earthquake.

The self-report instrument CAPE (http://cape42.homestead.com/index.html) was developed to assess attenuated psychotic experiences. Previous research with the CAPE has shown a three-dimensional structure of positive, negative and depressive factors in a large and representative sample of young men [20]. Students were also asked to complete the symptomatological domains of the TALS-SR [17], referring to the L'Aquila earthquake exposure. The TALS-SR explores a range of post-traumatic spectrum symptoms comprising emotional, physical and cognitive responses to the trauma, including re-experiencing, avoidance and numbing, and arousal symptoms. No other screening or clinical interviews were performed.

Spearman rho correlations were calculated. A stepwise multiple regression analysis was used to predict different CAPE ratings from TALS-SR scores as independent variables. Log-transformed values were used.

Results

Descriptive scores of the pychometric evaluations are reported in Table I. Even though all correlations between CAPE scores and TALS-SR reached statistical significance because of the large sample, only CAPE depressive scores

TABLE I.
TALS-SR and CAPE scores (mean ± SD) in the total sample (n = 512). *Punteggi di TALS-SR e CAPE (media ± DS) del campione totale (n = 512).*

TALS-SR	Domain IV "Reaction to losses or upsetting events"	7.53 ± 3.24
	Domain V "Re-experiencing"	3.67 ± 2.24
	Domain VI "Avoidance and numbing"	4.02 ± 2.67
	Domain VII "Maladaptive coping"	1.06 ± 1.50
	Domain VIII "Arousal"	2.31 ± 1.58
CAPE scores	CAPE overall positive*	1.54 ± 0.33
	CAPE overall negative*	1.75 ± 0.44
	CAPE overall depressive*	2.04 ± 0.50
	CAPE total**	1.73 ± 0.35

* Overall: frequency + distress scores; ** Total: sum of positive, negative and depressive scores.

(i.e. weighted frequency and distress and total scores) showed moderate correlations (rho from 0.29 to 0.46) with the TALS-SR domains. CAPE positive and negative weighted scores showed weak positive correlations with the TALS-SR (rho < 0.29).

Three stepwise multiple regression analyses were carried out to determine which TALS-SR domains predicted CAPE scores. No model explained more than 30% of variance. TALS-VII (i.e. Maladaptive coping) is more related to CAPE positive symptoms, TALS-VI (i.e. Avoidance and numbing) is more related to CAPE negative symptoms and TALS-VIII (i.e. Arousal) is more related to CAPE depressive symptoms. Regression with more variables did not substantially increase R^2 (Tab. II).

Detection tolerance indicated no multicollinearity.

Discussion

The present study was motivated by the literature suggesting potential links between trauma and psychosis [4 6 13 22]. We report that trauma-related measures are associated with a weak increase in the subclinical positive and negative dimensions of psychosis, and a modest increase in the subclinical depressive dimension in a student population.

There is growing research that has identified associations between trauma and diagnoses of psychosis or the occurrence of psychotic-like experiences [24].

To our knowledge, this is the first report exploring the relationship between a measure of traumatic stress as reflected by the Trauma and Loss Spectrum (TALS) [17 18] and attenuated psychotic experiences measured by CAPE. In a companion paper, we report a diagnosis of PTSD in

TABLE II.
Multiple Regression Analysis Stepwise Method, with CAPE factors as dependent variables (n = 512*). *Metodo di analisi stepwise di regressione multipla, con fattori di CAPE come variabili dipendenti (n = 512*).*

	CAPE Positive (n = 487*)				
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Predictor Variables	B	B	B	B	B
TALS-SR VII Domain - Maladaptive Coping	0.12	0.09			
TALS-SR VI Domain - Avoidance and Numbing		0.07			
R^2	0.13	0.18			
F for change in R^2	77.63**	54.97**			
	CAPE Negative (n = 485*)				
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Predictor Variables	B	B	B	B	B
TALS-SR VI Domain - Avoidance and Numbing	0.15	0.12	0.09		
TALS-SR VII Domain - Maladaptive Coping		0.07	0.07		
TALS-SR VIII Domain - Arousal			0.07		
R^2	0.14	0.17	0.18		
F for change in R^2	78.25**	48.32**	36.01**		
	CAPE Depression (n = 488*)				
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Predictor Variables	B	B	B	B	B
TALS-SR VIII Domain - Arousal	0.20	0.13	0.11	0.10	0.09
TALS-SR VI Domain - Avoidance and Numbing		0.10	0.07	0.07	0.06
TALS-SR IV Domain - Reactions to losses or upsetting events			0.10	0.10	0.08
TALS-SR VII Domain - Maladaptive Coping				0.04	0.04
TALS-SR V Domain - Re-experiencing					0.05
R^2	0.21	0.25	0.27	0.28	0.29
F for change in R^2	129.09**	82.01**	60.56**	46.98**	38.74**

* Number variation reflects missing values; ** $p < 0.0005$.

37.5% of this population [15], so we were confident that this finding may have been influenced by other psychopathological domains, such as those assessed by CAPE. It has been suggested that the environmental risks of psychosis act additively, and that the level of environmental risk combines synergistically with non-clinical developmental expression of psychosis to cause abnormal persistence and, eventually, the need for care [13]. Thus, psychological trauma may increase the risk of psychotic symptoms in individuals vulnerable to psychosis [25].

It is however conceivable that under the 'umbrella' of traumatic events there are different types of events perceived in a variety of ways so that the experience of trauma cannot be equated with symptoms of PTSDs. Furthermore, different types of stressors could have different specificities to trigger and/or worsen symptoms in those with a pre-existing vulnerability [26]. As many trauma researchers report positive psychological or personal changes in the aftermath of traumatic events, conceptualized as post-traumatic growth (PTG) [27], one possible explanation is that not all clinical and subclinical symptoms can be captured within a single theoretical construct that is sensitive to post-traumatic stress such as the TALS. It may be that emerging issues such as PTG weaken correlations between measurements, so that within one-year perspective stress-related measurements do not have a strong impact on positive and negative subclinical symptoms. Conversely, another explanation is that CAPE is not able to 'translate' this type of trauma into a marked increase in subclinical positive or negative symptoms of psychosis, while the subclinical depressive score is more sensitive to the effect of trauma. Interestingly, three different TALS domains, i.e. different post-trauma risk trajectories, were the main predictors of the three CAPE scores. In fact, frequency of cannabis use has been reported to be associated with the intensity of both positive and negative psychotic experiences, while no significant association was found between cannabis use and the depressive dimension [28].

The lack of past psychiatric history, pre-traumatic state, specific personality traits and characteristics of trauma exposure are limitations of this study, which is quasi-experimental in nature. In addition, self-report results have been criticized when they are the sole instruments of risk evaluation [29].

Despite these limitations, this exploratory study highlights that earthquake-related stress is a modest but significant risk factor for an increase in psychotic experiences, affecting the mental health of adolescents.

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