Bounce back capacity in persons with mental disorders: a comparative study following a catastrophic event

Capacità di "Bounce back" in persone con disturbi mentali: un confronto dopo un evento catastrofico

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Summary

Objective

"Bounce back" (i.e. ability to recover from stress and traumas) captures the essence of resilience. It may be particularly important for subjects who are already ill, and above all if suffering from mental disorders. This study assessed the capacity of "bounce back" of subjects with different mental disorders exposed to the L'Aquila (Italy) earthquake, in order to investigate its relationship with diagnosis and severity of mental disorders.

Method

One hundred people referred to mental health facilities, were evaluated using: i) Brief Resilience Scale; ii) a Visual Analogue Scale for subjective adjustment evaluation after the earthquake; iii) Clinical Global Impression scale. Thirty-seven non-exposed patients referring to mental health facilities in an area that was not involved in the earthquake have also been evaluated. All diagnoses were based on ICD-10.

Results

Subjects with a higher "bounce back" score showed better subjective adjustment. "Bounce back" ability is not function of different diagnoses, severity of mental disorder, sex, or age. Subjective adjustment only reflects "bounce back" capacity.

Conclusion

It is likely that multiple factors related to diagnosis and mental health features as well as factors related to social context intervened in enhancing personal resilience. The social meaning of care and rescue efforts offered to earthquake survivors could have had a role in enhancing personal resilience; thus, this could have conferred an advantage to stigmatized or isolated subjects.

Key words

Bounce back • Resilience • Natural disaster • Traumatic stress • Mental disorders

Introduction

Resilience is the process of negotiating, managing and adapting resources within one's individual life and environment, leading to adaptation in the face of adverse situations [1 2]. The ability to "bounce back" (i.e. to recover from stress and traumas, to adapt to stressful circumstances and to avoid illness despite significant adversities) captures the essence of resilience related to protection and reduction of harm, representing its conceptual core [2-4]. It may be particularly important for subjects who are already ill, above all if suffering from mental disorders or dealing with ongoing health-related stresses [5 6]. To the best of our knowledge, however, there have been no direct comparisons of "bounce back" abilities among people with different mental disorders exposed to the same stressful situation.

On April 6, 2009, at 3:32 a.m., an earthquake (Richter magnitude 6.3) struck L'Aquila, Italy: 309 people died, more than 1,000 people were injured and 66,000 were displaced.

In the aftermath of the catastrophe, individuals referring to the National Mental Health Care Service (NMHCS) facilities in L'Aquila were asked about subjective adjustment to the event [7]. Subjects with schizophrenia and mood disorders showed better subjective outcomes, while those presenting anxiety disorders felt worse. A substantial proportion of patients with schizophrenia and mood disorders even reported a feeling of improvement after the earthquake. It is likely that different capacities for adaptation and "bouncing back" following adversity may play a role in this observation. Unfortunately there was no data on assessment of resilience.

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Following these observations, we investigated the ability to "bounce back" in subjects with mental disorders exposed to the earthquake using an established measure of resilience, namely the Brief Resilience Scale (BRS) [6 8]. A secondary aim was to compare exposed to unexposed individuals with mental disorders.

Methods

Study participants

100 subjects, consecutively referred to the NMHCS in L'Aquila, were evaluated 13–14 months after the earthquake (61 females and 39 males, mean age 47.15 ± 12.15 years). None suffered personal physical injury due to the earthquake. The sample population consisted of people living in the town of L'Aquila and the surrounding areas who received assistance in emergency conditions. All residents were directly "exposed" to the disaster, though this clearly introduces a broad range of possible individual exposures [9 10]. After the event, all subjects had been displaced in locations within a 150 km area from the town or in tents located in the urban area. One year after the earthquake only 25% of inhabitants could return to their homes. All experienced loss of property and damage to their home; 5% were trapped under rubble with minor physical consequences; 15% lost someone they knew.

Thirty-seven non-exposed individuals consecutively referred to the NMHCS of Rieti, an area outside that involved in the earthquake, 50 km away, were also evaluated.

We used a quasi-experiment where the treatment variable is manipulated, but the groups are not equated prior to manipulation of the independent variable. This type of study can be utilised, especially in situations where "true" experiments are not possible as is the case for comparison of a population exposed to a natural disaster, and the experimenter wants to infer causes and effects typically afterwards.

Assessments

All diagnoses were based on the Tenth Revision of the International Classification of Diseases (ICD-10) after interview by a senior psychiatrist. After complete description of the study, all subjects gave informed consent to participate, as approved by the Human Studies Committee.

The Brief Resilience Scale (BRS) [6], an outcome measure that assesses the ability to "bounce back" or recover face to adversities, was used. The scale has six items: items 1, 3, and 5 are positively-formulated, and items 2, 4, and 6 are negatively-formulated. Subjects are instructed to indicate the extent to which he/she agrees with each of the statements and scored accordingly: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree. The BRS is scored by reverse coding items 2, 4, and 6, and calculating the mean of the six items.

Subjects from the L'Aquila district were also evaluated by a Visual Analogue Scale (VAS) [7] with three anchor points ("better", "equal", "worse") in response to the question "How did you mentally feel after the earthquake?". The response was considered as categorical variable splitting the sample into two subgroups reporting "worse" and "equal/better" subjective adjustment. The Clinical Global Impression (CGI) scale measuring severity of illness was also used.

Statistical Analyses

Chi-square, and two- and three-way analyses of variance were used to examine BRS scores by subjective adjustment, diagnosis and gender. Pearson's r correlation coefficient was also used.

Results

In the L'Aquila sample, 33 persons were diagnosed with schizophrenia, 35 with affective disorders and 32 with anxiety disorders. Similarly, in the Rieti sample 32.4% (n = 12/37) of subjects were diagnosed with schizophrenia, 40% (n = 15/37) with affective disorders and 27.2% (n = 10/37) with anxiety disorders (X_2 = .45, df 2, NS).

Within the L'Aquila sample, 36.4% of subjects with schizophrenia (n = 12/33), 37.1% of those with affective disorders (n = 13/35) and 40.6% of those with anxiety disorders (n = 13/32) reported subjective "worse" outcome. The remaining reported "equal/better" outcome (n = 21/33, 63.6%; n = 22/35, 62.9% and n = 19/32, 59.4%, respectively) (X_2 = .14; d.f. = 2; p = NS).

The L'Aquila and Rieti samples showed higher severity of illness (CGI) for schizophrenia (two-way ANOVA diagnosis effect F = 42.14, d.f. 2,137, $p < 0.005$), but no difference between exposed and unexposed subjects (L'Aquila *vs*. Rieti, d.f. 1,137, F = 1.27, NS; Interaction F = 14.33, d.f 2,137, $p < 0.0005$).

BRS mean item scores by diagnosis and subjective adjustment evaluation through VAS of the L'Aquila sample are shown in Table I. Two-way ANOVA results showed that only subjective adjustment effect reached a significant difference (i.e. subjects reporting "worse" *vs*. those with "equal/better"). Gender effect was also explored in a three-way analysis, but no significant effect or interaction was observed.

When the Rieti sample was added as an unexposed subjects category in the two-way ANOVA, no diagnosis effect was observed. The subjective adjustment factor reached significant difference, showing L'Aquila subjects with worse adjustment lower BRS scores than non-exposed subjects (Table I).

No significant correlations were seen in either sample (L'Aquila and Rieti) between BRS and age (r = -0.14 and r = 0.05, NS) or CGI severity (r = -0.07 and r = -0.13, NS).

Discussion

Approaches to resilience in mental disorders have been poorly employed due to the lack of a common theoretical construct and other methodological pitfalls [2]. Moreover, no direct comparisons among different diagnoses of mental disorders have been reported.

Capacity for resilience in subjects with psychiatric disabilities does not end when a diagnosis of major mental disorder is made, even when struggling to recover from psychiatric disorders [11-13].

Several studies have suggested that even individuals with psychotic disorders do not clinically deteriorate and may actually improve after exposure to disasters or emergency situations [14]. A similar result was reported in our previous investigations [7]; in the present study, more than 60% of subjects referred feeling "equal" or even "better" than before the earthquake. For these reasons, we further used a Visual Analogue Scale as a general measure of distress [7], which is able to discriminate subjective adaptations to traumatic events, with the aim of investigating the relationship with other related variables.

We observed that subjects with the highest score of bounce back also displayed better subjective adjustment: "bounce back" ability was not a function of, or related to different diagnoses, severity of disorders, sex, or age. Subjective adjustment only reflected higher or lower "bounce back" capacity. While we had no a priori hypothesis of the magnitude of the BRS variation of any diagnostic group, it should be only underlined that diagnosis of "psychotic" disturbance, the most severe, does not limit a resilient response.

Using a quasi-experimental design, with a comparison of individuals exposed to an earthquake with pre-existing diagnoses to a sample of individuals with similar diagnoses who were not exposed to an earthquake, we observed that "bounce back", as evaluated by the BRS, dampened after stress in a proportion (38%) of the L'Aquila sample. This dampening, associated with poorer subjective adjustment, can be due to a lack of protective resilience activation [15]. On the other hand, more than 60% of the earthquake-exposed sample showed no differences in BRS scores compared to those who were not exposed. These observations are irrespective of diagnosis, age and severity of illness.

It is likely to implicate a role of multiple interrelated factors in diagnosis to help explain the present results. In fact, the social meaning of care and rescue offered to survivors may have had a role in enhancing personal resilience; thus, subjects who were most stigmatised or isolated could have received an advantage. Resilience mechanisms should not be restricted to the individual sphere, but should also be considered as the result of a variety and interactions of factors at the group level (e.g. community and culture). Individuals mature and thrive in a social context, which has profound effects on how they cope with stressful events [2 16-18].

Stigma and discrimination adversely affect subjects experiencing mental health problems, creating negative self-beliefs and leading to unemployment and loss of social relations. All these experiences, as well as other factors promoting a individual's resilience, are related to recovery from mental disorders [12 19-21]. These complex processes involve rebuilding one's life, self-esteem and hope for

TABLE I.
BRS evaluation by diagnosis and subjective adjustment in persons exposed and unexposed to the L'Aquila earthquake. *Valutazione diagnostica tramite il BRS e regolazione soggettiva in persone esposte e non esposte al terremoto de L'Aquila.*

	BRS score		
	Schizophrenia	Affective Disorders	Anxiety Disorders
L'Aquila sample (n = 100) Subjective adjustment [*, **]			
"Worse" (n = 38)	(n = 12) 2.50 ± 0.56	(n = 13) 2.49 ± .059	(n = 13) 2.54 ± 0.93
"Equal/Better" (n = 62)	(n = 21) 3.12 ± 0.60	(n = 22) 2.51 ± .074	(n = 19) 2.86 ± 0.74
Rieti Sample (n = 37) [§]	(n = 12) 2.92 ± 0.56	(n = 15) 3.09 ± 1.05	(n = 10) 3.07 ± 1.38

Analysis within the L'Aquila sample: [*] two-way ANOVA: d.f. 1.100; Diagnosis effect (A): F = 1.53; NS. Subjective adjustment effect (B): F = 4.94; p < 0.05. AxB effect: F = 1.39; NS; [**] three-way ANOVA (adding sex effect to the previous two-way ANOVA model): d.f. 1,100; Diagnosis effect (A): F = 1.51; NS. Subjective adjustment effect (B): F = 4.94; p < 0.05. Sex effect (C): F = 0.03; NS. AxB effect: F = 1.69; NS. AxC effect: F = 0.25; NS. BxC effect: F = 0.03; NS. AxBxC effect: F = 1.93; NS. Analysis including the Rieti sample (i.e. unexposed sample); [§] two-way ANOVA: d.f. 1,137; Diagnosis effect (A): F = .43; NS. Subjective adjustment (i.e. worse, equal/better adjustment and not exposed samples) effect (B): F = 3.94; p < 0.05. AxB effect: F = 1.10; NS. Scheffé test for post-hoc comparison: L'Aquila subjects with worse subjective adjustment *vs*. Rieti BRS scores mean difference 0.52 SD .18, p < 0.05.

a better future, which likely represent the different sides of a multi-faceted phenomenon.

Even though a unified methodology and definition is lacking in the field of resilience, we used the BRS [5]. This instrument has not yet been used in clinical samples of subjects with mental disorders; its authors suggest that one's individual ability to recover is important in the case of illness, encouraging its use in this specific field. Moreover, the scale received the highest rating for quality criteria in evaluation of psychometric properties among 15 measures of resilience [8].

Although of exploratory heuristic value, the present study has some limitations. Firstly, exposure levels to the earthquake were not evaluated. Moreover, a major issue related to possible psychiatric outcomes in the aftermath of mass trauma exposure is the impact of the trauma itself: for instance, we have no information whether the patients at L'Aquila lost a relative or close friend during the earthquake. We believe, however, that this can constitute a systematic bias and that the impact of the trauma was about the same among the diagnostic groups.

The sample size is relatively small so that subgrouping for disorders as a consequence of earthquake exposure (e.g. post-traumatic stress disorder) has not been made and no consideration was given to possible comorbidities. The use of self-rating instruments could also constitute a limitation. These issues need to be addressed in further investigations.

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