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The role of personality traits in trajectories of long-term posttraumatic stress and general distress six years after the tsunami in Southeast Asia

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ABSTRACT

The aims were to examine whether trajectories of posttraumatic stress (PTS) and general distress are related to personality traits and to investigate personality's contributing factor to PTS and general distress. The sample was 2549 Swedish tourists who survived the 2004 Indian Ocean tsunami and responded to postal surveys at 1, 3 and 6 years after the tsunami, including assessment of personality traits, PTS and general distress. The sample was categorized into a direct exposure group and an indirect exposure comparison group.

For both PTS and general distress, individuals with a resilient trajectory were lower in the trait neuroticism than those in the symptomatic trajectories whereas there were no differences in personality traits between the resilient trajectory and the low exposure comparison group. Neuroticism was strongly related to trajectories of both PTS and general distress even when adjusting for important risk factors such as traumatic bereavement and exposure severity. Other personality traits demonstrated weak associations with the trajectories. The present findings correspond with the notion of neuroticism as a vulnerability factor for symptomatic long-term trajectories of posttraumatic and general distress whereas resiliency was not predicated by particularly low levels of neuroticism.

1. Introduction

There is only a minority (<10%) of traumatized individuals who develops posttraumatic stress disorder (PTSD) (Bonanno et al., 2006; Norris et al., 2009). Individual differences in personality traits are one factor that appears to influence the development of PTSD. The five-factor model of personality, or the Big Five model, is one of the most commonly used personality models and it has strong empirical support (McCrae & Costa, 2003). The model states that personality traits fall along five different dimensions: neuroticism, openness to experience, conscientiousness, extraversion, and agreeableness. The personality trait neuroticism, which is characterized by a vulnerability to stress, has consistently been found to be a risk factor for developing PTSD, while extraversion, which is characterized by being outgoing and high on positive affect, has shown to be at some extent a resilience factor for developing PTSD (Jaksic et al., 2012). Conscientiousness, which is characterized by having self-discipline, orderly and careful, has also been associated with resilience, although the findings are more inconsistent (Jaksic et al., 2012), as are findings regarding openness and agreeableness. The trait openness to experience is characterized by being imaginative, esthetic sensitive and attentiveness to inner feeling, and agreeableness is a social trait characterized by being cooperative and displaying warmth and kindness, and openness.

A vast limitation in the literature on personality as a predictor of trauma-related distress is the reliance on associations with average levels of distress. Recently, studies have found diverse patterns in how posttraumatic stress develops over time in trauma survivors: the most commonly observed trajectories of posttraumatic stress within the first two years after single potentially traumatic events are resistance or resilience (i.e. minimal to no symptoms at any time after the event), recovery (i.e. initially moderate or high symptom levels followed by a distinct decline), delayed dysfunction (i.e. initially moderate or subthreshold symptom levels followed by worsening symptoms over time), and chronic dysfunction (i.e. persistently elevated symptoms) (Norris et al., 2009; Bonanno & Diminich, 2013; Bonanno, 2004; Pietrzak et al., 2014). There may be differences in trajectories, however, that are dependent on the timing of the follow-up. Nevertheless, one would expect that the chronic trajectory will show no or very small improvements as PTS symptoms that has not resolved within the first years tend to remain. Yet, more studies are needed especially larger studies in the field of disaster, and on general distress. A recent study by the authors (Johannesson et al., 2015) found slightly different trajectories than commonly found, in a six-year follow-up of Swedish survivors from the Southeast Asia tsunami in 2004: resilient, recovery,

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chronic and moderate chronic, and thus not a delayed trajectory. As most other studies have a shorter follow-up time of 1–2 years post-trauma, there is still more to learn about long-term trajectories.

Little is known about personality in relation to the trajectories of posttraumatic stress (Sveen et al., 2011). One putative reason for the inconsistencies in the findings on the personality–posttraumatic stress association that remains to be explored is whether different personality traits are differentially related to the various trajectories. For example, while high levels of neuroticism increase risk of a chronic course of PTS it is unclear whether recovery or resilience trajectories are associated with particularly low levels of neuroticism.

Furthermore, although neuroticism has been associated with general health problems after a disaster (Chung et al., 2006) and identified as a vulnerability factor for psychopathology (Kotov et al., 2010; Ormel et al., 2013; Perrin et al., 2014) it is not known whether the influence of personality is unique to PTS or also related to other mental health problems. Comparing PTS to general distress could indicate specific differences and commonalities in how processes that govern these constructs operate over time.

The aim of this study was to examine whether trajectories of PTS and general distress in Swedish tsunami survivors are related to different personality traits. We hypothesized that the personality trait neuroticism is associated with trajectories characterized by high levels of PTS and general distress whereas no directional hypotheses were warranted for the other traits.

2. Methods

The 2004 earthquake in the Indian Ocean and the ensuing tsunamis devastated coastal regions in Southeast Asia and more than 227,000 people perished (Telford & Cosgrave, 2007). About 7000 Swedish citizens traveling in Southeast Asia at the time were estimated to have been in the areas hardest hit by the tsunami.

2.1. Procedure and participants

The present study is part of a national cohort study of Swedish survivors from the Southeast Asia tsunami in 2004 (Johannesson et al., 2011). Swedish authorities registered Swedish citizens at national airports, when returning from destinations in Southeast Asia, during three weeks after the disaster. Individuals from 16 years of age (n = 10,501; 77% of those registered) were invited to participate in a postal survey 14 months post-disaster (T1). The respondents at T1, 4932 (49%), were invited to participate in a second survey three years (T2) and six years (T3) after the disaster. At T2, 3457 (70%) responded, and at T3, 2643 (53%). The study was approved by the Regional Ethical Board in Uppsala, Sweden.

The sample in this study included 2549 individuals, divided according to level of exposure to the tsunami. Those indirectly exposed formed a comparison group (n = 552), whereas the highly (n = 1178) and moderately (n = 819) exposed participants comprised the direct exposure group (n = 1997).

2.2. Measures

2.2.1. Survey instrument

The surveys included questions about the participants' demographics, disaster exposure and traumatic bereavement, about adverse life events in childhood, adulthood and post-tsunami (Table 1). Gender, family situation (*married/partner* or *no partner*) and educational attainment (≤12 or >12 years) were coded as binary variables.

Disaster exposure severity was coded as direct or indirect exposure according to a set of 30 items in the T1-survey. The direct exposure group included participants who reported having been caught or close to being caught by the tsunami or who reported one or more of the following: loss of relatives, felt a threat to life, physical injury to themselves or others, anxiety regarding the fate of relatives, had helped other victims, or witnessed corpses, others' suffering, or forlorn children. The indirect exposure group included those who could have been indirectly exposed, for example, by being repatriated in the same aircrafts or by talking to affected persons. Traumatic bereavement included participants who reported loss of relatives (i.e., partner, children, parents, siblings, grandparents, or parents-in-law) in the tsunami (*yes/no*).

Table 1
Background variables, and mean scores on personality, posttraumatic stress and general distress for the exposure groups.

	Direct exposure group (N = 1997)	Comparison group (N = 552)	p	χ^2
	N (%)	N (%)		
Gender			.04	4.2
Male	804 (40%)	249 (45%)		
Female	1193 (60%)	303 (55%)		
Age at time of study (years)			<.001	17.9
16–24	262 (13%)	77 (14%)		
25–40	561(28%)	125 (23%)		
41–60	996 (50%)	271(49%)		
61+	174 (9%)	78 (14%)		
Family situation			ns	
- Married/partner	1458 (73%)	394 (71%)		
No partner	539 (27%)	158 (29%)		
Level of education			ns	
≤12 years	1059 (53%)	317 (57%)		
>12 years	928 (47%)	233 (43%)		
Traumatic bereavement				
Yes	102 (6%)	–	–	
No	1600 (94%)	524		
Previous psychiatric illness			ns	
Yes	407 (24%)	115 (22%)		
No	1319 (76%)	417 (78%)		
	Mean (SD)	Mean (SD)	p	t-Value
BFI at T3				
Openness	3.35 (0.73)	3.27 (0.72)	.02	t = 2.41
Conscientiousness	3.96 (0.60)	3.95 (0.56)	ns	
Extraversion	3.68 (0.74)	3.56 (0.75)	.001	t = 3.18
Agreeableness	3.89 (0.58)	3.86 (0.58)	ns	
Neuroticism	2.43 (0.78)	2.27 (0.72)	<.001	t = 4.35
IES-R total				
T1	22.2 (17.8)	8.6 (10.5)	<.001	t = 22.33
T2	15.4 (15.2)	4.9 (7.7)	<.001	t = 21.23
T3	14.3 (14.4)	5.2 (8.0)	<.001	t = 19.41
GHQ total				
T1	2.14 (3.50)	0.74 (2.1)	<.001	t = 11.6
T2	1.72 (2.92)	0.97 (2.15)	<.001	t = 6.23
T3	1.57 (2.77)	0.94 (2.29)	<.001	t = 5.47

Note. SD = standard deviation; BFI = Big Five Inventory; IES-R = Impact of Event Scale-Revised; GHQ = General Health Questionnaire.

Adverse events were assessed with a checklist of 13 items (Bergsten Brucefors et al., 2001). The respondents were asked to indicate if they had experienced pre-disaster events in childhood (0–16 years of age) and/or as adults (>16 years of age), and/or experienced post-disaster events. The events included accidents, disasters, war/terror, violence/abuse, severe illness/injury to self or relatives, severe family conflicts/divorce, parents' divorce, and death of a significant other. The responses were coded into three categories (0, 1–2, and ≥3 events).

A proxy measure for pre-disaster psychiatric problems included two items: (a) *Have you ever in life, before the tsunami disaster, felt depressed or in a low mood, or had feelings of hopelessness, for more than two weeks?* (b) *Have you ever in life, before the tsunami disaster, had problems with panic reactions or persistent anxiety or anguish for more than four weeks?* The participants were asked to report whether (a) or (b) impacted their work or social functioning, or if (a) or (b) had led to their receiving psychological or pharmacological treatment. It was seen as indicative of pre-disaster psychopathology if the participant