Resilience and Vulnerability in Coping with Stress and Terrorism

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The immediate response to the traumatic event in individuals who may develop ASD or PTSD involves intense fear, helplessness or horror. ASD is experienced during or immediately after the trauma, lasts for at least 2 days, and either resolves within 4 weeks or the diagnosis has to be adjusted. A diagnosis of PTSD may be appropriate provided the full criteria for PTSD are met [2]. Of individuals who respond to the trauma with intense fear or horror 15–35% will eventually develop a significant degree of dysfunction and distress [3], namely PTSD, for a considerable length of time. The PTSD symptoms can be grouped into three main clusters. The first is persistent re-experience of the traumatic event, such as recurrent dreams and flashbacks. The second is persistent avoidance of internal or external cues associated with the trauma, such as avoiding thoughts, avoiding activities, diminished interest, detachment, restricted affect, and sense of shortened future. The third is increased arousal, which is manifested as difficulty in concentrating, hypervigilance, and exaggerated startle response [2].

Recent studies have addressed the characteristics of resilience, defined by Bonanno [5] as “the ability…to maintain a relatively stable, healthy level of psychological and physical functioning in the face of highly disruptive events.” This concept is particularly important in view of the findings that following a range of traumatic events, a large percentage of people (40–78.2%) exposed to these events are either entirely or almost entirely symptom free [1,6,7].

Moscardino et al. [8] investigated the influence of socio-contextual variables on depressive symptoms in 158 adolescent survivors of the 2004 terrorist attack in Balsan, Russia. Over 1300 children and adults were taken hostage by a group of 32 terrorists at the traditional celebration for the opening school day. Hundreds of young children spent 57 hours sitting in an overcrowded gymnasium wired with explosives. They witnessed the beating and murder of family members, friends and teachers. On the third day the hostage crisis ended in extreme violence that caused the death of 329 persons and the injury of many hundreds. The survivors were assessed 18 months after the traumatic event for depressive symptoms,

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PTSD = post-traumatic stress disorder

ASD = acute stress disorder

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social support, sense of community and collectivism. The findings suggest that social support and community connectedness may serve as protective resources and were associated with lower rates of depressive symptoms.

Kaplan and co-authors [9] investigated stress-related responses after 3 years of exposure to terror (during 2003 and 2004) in three different types of population centers in Israel: a suburb of Tel Aviv, a settlement in the West Bank (Kiryat Arba) and the Gush Katif settlement cluster in the Gaza Strip. Symptoms of acute stress and chronic (post-traumatic) stress as well as symptoms of general psychopathology and distress were assessed. The inhabitants of Gush Katif, despite first-hand daily exposure to violent attacks, reported the fewest and least severe symptoms of stress-related complaints, the least sense of personal threat, and the highest level of functioning of all three samples. The most severely symptomatic and functionally compromised were the inhabitants of the Tel Aviv suburb, who were the least frequently and least directly affected by exposure to violent attacks. Due to the exclusive religiousness of the Gush Katif population, the data were reassessed according to religiousness. The religious inhabitants of Kiryat Arba had almost the same symptom profile as the Gush Katif population, whereas secular inhabitants of Kiryat Arba reported faring worse than any of the other populations. The authors conclude that religiousness combined with common ideological convictions and social cohesion is associated with substantially higher resilience as compared to the secular metropolitan urban populations.

Another recent Israeli study by Dekel and Nuttman-Swartz [10] yielded similar findings. Their study assessed a sample of 134 residents, 67 living in two kibbutzim and the other 67 living in the development town Sderot. Both groups have been the target of Qassam rocket attacks. The development town residents reported more post-traumatic symptoms. It is suggested that the kibbutz ideology and communal lifestyle provide a measure of protection against stress.

Similar findings were shown recently by Gelkopf and colleagues [11] who compared the responses to 7 years of continuous rocket fire of residents from the city Sderot, the rural community Otef Aza, and the non-exposed population of Ofakim. As expected, the residents of Otef Aza evidenced little symptomatology. In contrast, PTS, distress, functional impairment and health care utilization were substantially higher in the highly exposed city of Sderot than in the other three communities.

Taking all these findings together, sense of belonging appears to be an important characteristic of resilience. Sense of belonging refers to people's feeling of being part of a collective, whether the neighborhood, the immediate community, the nation, or any other group or place. It is characterized by mutual concern, connection, community loyalty, and trust that one's personal needs will be fulfilled by means of commitment to the group as a whole. In the Yom Kippur War in 1973, there were lower rates of combat stress in army units that had high levels of solidarity and cohesion than in those in which the soldiers' sense of belonging was lower [12].

Lack of resources was associated with increased vulnerability among city residents. Predictors of increased vulnerability to adverse psychological effects of terror found across studies included being female, older age, Arab ethnicity, immigrant status, having lower education level, direct exposure, prior experience of highly stressful events, suffering economic loss, proximity to the disaster, and lacking social support [11,13,14].

It is of note that two very recent Israeli studies addressed the possible prevention of PTSD by early treatment. Cognitive psychotherapy and prolonged exposure therapy, but not the antidepressive escitalopram, effectively prevented chronic PTSD in recent survivors [15]. A high dose of hydrocortisone (100–140 mg) immediately after trauma may also alter the trajectory of PTSD [16].

In summary, a preventive approach towards terror-exposed communities should focus on helping the vulnerable groups such as disadvantaged city populations who lack economic and social support. Resiliency can be enhanced by strengthening community solidarity and confidence in the army and in the national leadership of the country.

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References


**Capsule**

**The influence of genetic variation on innate immune activation in an environment with high infectious pressure**

Interleukin-10 (IL-10) production is under tight genetic control in populations living in affluent environments. However, little is known about the role of IL10 genetics on cytokine production in populations living in environments with high infectious pressure. Boef and co-scientists previously reported that, in a rural Ghanaian population, the most common IL10 haplotype associates with a pro-inflammatory response. Here, the authors aim to replicate these findings in an independent sample of the same population (n=2008) and an Israeli representative sample (n=647). The association between IL10 single nucleotide polymorphisms and Z-scores of IL-10 and TNFa levels was analyzed in each population subset. The most common IL10 haplotype was associated with a significantly lower IL-10 production and non-significantly increased TNFa levels. The correlation between repeated cytokine assays, based on 111 individuals with measurements in both 2006 and 2008, was r = 0.53 (P < 0.001) for IL-10 and r = 0.36 (P < 0.001) for TNFa. The replication of the previously found effect of variation in the IL10 gene on IL-10 production and the correlation between repeated cytokine stimulation assays provide evidence that IL10 genetics have an important role in regulating the host response under high infectious pressure.

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**Capsule**

**Role of major histocompatibility complex class II in the development of autoimmune type 1 diabetes and thyroiditis in rats**

Although the MHC class II ‘u’ haplotype is strongly associated with type 1 diabetes (T1D) in rats, the role of MHC class II in the development of tissue-specific autoimmune diseases including T1D and autoimmune thyroiditis remains unclear. To clarify this, Yokoi et al. produced a congenic strain carrying MHC class II ‘a’ and ‘u’ haplotypes on the Komeda diabetes-prone (KDP) genetic background. The a/u homozygous animals developed T1D similar to the original KDP rat; a/u heterozygous animals did develop T1D but with delayed onset and low frequency. In contrast, none of the a/a homozygous animals developed T1D; about half of the animals with a/u heterozygous or a/a homozygous genotypes showed autoimmune thyroiditis. To investigate the role of genetic background in the development of thyroiditis, the authors also produced a congenic strain carrying Cblb mutation of the KDP rat on the PVG.R23 genetic background (MHC class II ‘a’ haplotype). The congenic rats with homozygous Cblb mutation showed autoimmune thyroiditis without T1D and slight to severe alopecia, a clinical symptom of hypothyroidism such as Hashimoto’s thyroiditis. These data indicate that MHC class II is involved in the tissue-specific development of autoimmune diseases, including T1D and thyroiditis.

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“In everyone’s life, at some time, our inner fire goes out. It is then burst into flame by an encounter with another human being. We should all be thankful for those people who rekindle the inner spirit”

Albert Schweitzer (1875-1965), German theologian, organist, philosopher, physician, and medical missionary. He received the 1952 Nobel Peace Prize for his philosophy of “Reverence for Life,” expressed in the founding and sustaining of the Albert Schweitzer Hospital in Lambaréné, in Gabon. As a music scholar and organist, he studied the music of German composer Johann Sebastian Bach and influenced the Organ reform movement. Schweitzer’s passionate quest was to discover a universal ethical philosophy, anchored in a universal reality, and make it directly available to all of humanity.