

*Chapter*

## **REACTIONS OF CIVILIANS EXPOSED TO TERRORISM AND WAR TRAUMA IN ISRAEL: THE ROLE OF INTRA- AND INTERPERSONAL FACTORS**

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### **ABSTRACT**

Exposure to terrorism may place civilians at risk for short- and long-term mental health problems and is likely to mobilize a range of internal and external coping resources. Research has shown that the negative effects of terrorism are not restricted to individuals who have been directly affected by terror attacks, and posttraumatic stress disorder (PTSD) symptoms have also been documented among people who were indirectly exposed to the attacks. While previous research on the mental-health effects of mass trauma has mainly focused on singular traumatic events (e.g., the 9/11 attacks), the impact of continuous exposure to terrorism has rarely been examined. For the past 10 years, large communities in southwestern Israel have been exposed to ongoing rocket and mortar attacks from Hamas and Islamic Jihad forces located in the Gaza Strip. Due to these circumstances, researchers have identified Israel as a natural laboratory for studying stress and its effects in the context of terrorism and war. The goal of the current chapter is to present and discuss findings from ongoing research in Israel that aims: (a) to examine the effects of direct and prolonged exposure to mass trauma on a range of mental health outcomes in southern Israel; (b) to describe the ways in which such exposure threatens core safety and security schemas and increases vulnerability to trauma-related mental health problems; and (c) to assess the mediating and moderating roles of various intra- and interpersonal factors, including personality predispositions, perceived stress, perceived social support, and maladaptive cognitive-emotional

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regulation response styles in the development of a number of mental health outcomes [i.e., PTSD, depression, distress symptoms, generalized anxiety disorder (GAD), satisfaction with life, and prejudicial attitudes toward the adversary]. Both clinical and theoretical implications will be discussed.

**Keywords:** terrorism, prolonged exposure to trauma, personality vulnerability, PTSD symptoms, perceived stress, depressive symptoms, generalized anxiety disorder, satisfaction with life, perceived social support, war zone, evacuees.

## CONTEMPORARY TERRORISM: A FORM OF PSYCHOLOGICAL WARFARE

From biblical times to the present day, terrorism's main aim has been to spread fear and maximize chaos in society as a whole. It aims to transform both the emotions and the behaviors of large populations through widespread dissemination of fear and psychological distress. Terrorists carry out their goals by creating instability and distress, thereby violating the underpinnings of daily life (Fullerton, Ursano, & Norwood, 2003) and changing the routines and habits of the general population (Holloway & Fullerton, 1994). Although terrorism does not usually pose existential danger to nations, it is extremely effective in creating economical turmoil, damaging the public's morale, and reducing trust in democratic processes (Neria, Gross, Marshall, & Susser, 2006). Such an exposure may also mobilizes internal and external resources for coping with stress. In some cases, emotional balance is restored shortly after a traumatic event ends, but, in other cases, there may be profound and prolonged mental health squeale. These may include post traumatic stress disorder (PTSD), defined as the persistent reexperiencing of the traumatic event, avoidance of stimuli associated with the trauma, and numbing of general responsiveness, as well as symptoms of increased arousal (for detailed criteria, see the *DSM-IV-TR*; American Psychiatric Association, 2000).

Whereas among the general population, the prevalence of PTSD is 6.7% (Kessler, Chiu, Demler, & Walters, 2005), research conducted worldwide has noted higher rates of PTSD among populations directly exposed to terror attacks. For example, among 2,883 terror victims in Nairobi, 35% demonstrated PTSD symptoms (Njenga, Nicholls, Nyamai, Kigamwa, & Davidson, 2004). Among 254 individuals who were victims of terrorism in France between the years 1982 and 1987, 18% demonstrated PTSD symptoms (Aberhaim, Dab & Salmi, 1992). Among 1,008 residents of Manhattan, 20% demonstrated PTSD symptoms following the 9/11 attacks (Galea *et al.*, 2002) and among 113 victims 7 years after the terrorist attacks in Oklahoma City, 26% demonstrated PTSD symptoms (North, Pfefferbaum, Kawasaki, Lee, & Spitznagel, 2011).

The goal of the current chapter is to present recent findings on the effects of exposure to terrorism among civilian populations in the state of Israel. Specifically, we aim to a) provide a brief background description of the problem, b) describe the effects of direct and prolonged exposure to terror in southern Israel and the ways such exposure threatens core safety and security schemas and increases human vulnerability to trauma-related mental health problems; and c) to demonstrate the roles of both intra- and interpersonal factors, such as personality predispositions, perceived stress, perceived social support, and maladaptive

cognitive emotional regulation response styles, in a number of mental health outcomes [i.e., PTSD, depression, distress symptoms, generalized anxiety disorder (GAD), satisfaction with life, and prejudicial attitudes towards the adversary], in the context of ongoing exposure to terrorism and war.

## BACKGROUND

From Israel's conception to the present day, terrorism has always been present and has played an important part in shaping Israeli society. Premeditated assaults against civilians have been recorded throughout the state's 63 years of existence, and before. Terror attacks before the establishment of the state include the murder of 67 Jews on the 23rd and 24th of August, 1929 in what is referred to as the Hebron massacre. Then, 5 days later, on August 29th, 18 Jews were killed and eighty were wounded in what later became known as the Safed pogrom.

As a way of portraying both Israel's geopolitical circumstances and the psychological matrix of Israel's responses to terror, Shalev and Errera (2009) offered the term "stability within instability." The psychological response to terrorism in Israel at times reflects profound anxiety, while also expressing confidence and defiance; these two extremes are frequently intertwined.

Since Israel's declaration of independence, it has been involved in six military confrontations, the most recent of which took place during the summer of 2006. Each confrontation has shaken the country and resulted in death and destruction. The most recent and demoralizing prospect of terrorism is that of nuclear threat with the intention of annihilating the State of Israel. It is important to take these worries into account in any attempt to understand Israelis' reactions to terror.

In the Middle East, the lines between terror attacks, national struggle, and religious rage are often blurred (Shalev & Errera, 2009). Despite the constant presence of terrorism, its tactics keep changing. For instance, a cycle of significant hostage situations began with the deadly attack on the Israeli delegation to the Munich Olympics (1972), hijacking of Air France Airbus to Entebbe in 1976. These types of atrocities were replaced during the mid seventies with ongoing shooting of rockets and mortar fire by terrorist groups in southern Lebanon towards northern Israel which led to the first Lebanon war. These types of attacks were replaced again by the suicide bombing attacks that began in 1993 and became the deadliest and most horrifying form of terror from 2000 onward. Recent years have also seen the increased use of rockets and missiles against civilians (Shalev & Errera, 2009).

Starting in late September 2000, these assaults rapidly escalated into a fully fledged, semiorganized operation known as the *Second Intifada* or *Al Aqsa Intifada*. Terror attacks were carried out throughout the country. There were attacks in all major cities and in many small towns as well. Suicide bombers attacked schools, recreation areas, and malls. Violent acts were carried out by individuals (e.g., stabbings, shootings) in workplaces, gas stations, and crowded intersections. The casualty toll grew monthly, reaching a peak of 77 in March of 2002 (Shalev & Errera, 2009). Previously assumed boundaries of violence were violated, as exemplified by the January 17, 2002, attack on a Bat Mitzvah celebration in the small town of Hadera and incidents such as the March 17, 2002 suicide bombing of the public Passover

Seder at the Park Hotel in Netanya (which left 22 dead and 144 injured) and the July 31, 2002, bombing of the Frank Sinatra cafeteria at Hebrew University in Jerusalem (Shalev & Errera, 2009). Importantly, during this era, Israelis experienced terror not just as a sequence of discrete events, but as the constant interruption of routine activities, services, and resources. These major interruptions of daily activities, such as inconsistent work hours, the need to accompany children to school, searches in supermarkets, and delays on highways added a significant amount of stress (Shalev, Tuval, Frenkiel-Fishman, Hadar, & Eth, 2006). As a result of their frequency and reach, these acts of terror created, on the one hand, a feeling of unpredictable and pervasive threat and, on the other hand, a sense of a common fate and of a vital struggle.

From the outbreak of the Second Intifada in September of 2000 through December, 2009, 1,178 people were killed and 8,022 more were injured as a result of Palestinian terror attacks. Of the 1,178, killed, 790 were Israeli civilians (67%), 328 were members of Israel's security forces (29%), and 60 were foreigners (5%). More than 87% of these casualties were sustained between 2000 and 2004, with a peak of 452 casualties in 2002. A similar trend characterized the number of injuries. Of the 8,022 people who were injured in terror attacks during this period, more than 70% were injured between 2000 and 2004 (2,284 in 2002) (The Israel Democracy Institute).

In contrast to what has been found in the aftermath to the 9/11 attacks in the United States, studies that have investigated the Israeli response to these events have failed to find any direct correlation between physically witnessing or being geographically close to the site of a traumatic event and psychological well-being (Bleich, Gelkopf, & Solomon, 2003; Shalev *et al.*, 2006; Somer, Ruvio, Sever, & Soref, 2007; Somer, Ruvio, Soref, & Sever, 2005). As opposed to other cycles of violence (e.g., the shelling of northern Israel before the 1982 Lebanon war, or the 1969–1970 war of attrition, during which the majority of the population continued to maintain normal life, the Second Intifada has affected large populations. Furthermore, when taking into account the size of the Israeli population (approximately 6.5 million) and the many levels of acquaintances (i.e., relationships and group identities), there was little psychological distance available (Shalev & Errera, 2009). Practically everyone knew someone who was directly impacted by a terrorist attack and each major attack created personal distress for a very large number of people. Studies of the aftermath of the Second Intifada found somewhat high rates of exposure to terrorist acts and psychological response [e.g., 16% of a representative sample of the Israeli population in a study by Bleich *et al.* (2003), 15.4% in Gidron, Kaplan, Velt, & Shalem (2004), and 11% in Bleich, Gelkopf, Melamed, & Solomon (2006)]. Twice as many of the sampled individuals were indirectly exposed to terror attacks via personal friends and relatives (28%, 36.5%, and 20.2% in the above studies, respectively). As for prevalence of PTSD, a prevalence rate of 9% was reported for the general population and a prevalence rate of approximately 26.9% was reported among residents of the highly exposed West Bank settlements (Solomon & Lavi, 2005).

Shalev and Errera (2009) point to the fact that when researchers control for the *DSM-IV* PTSD F criterion (clinically significant stress or impairment), the prevalence of PTSD in the Israeli general population declines significantly. For example, there was a decrease from 9.4% to 2.4% in the Bleich *et al.* (2003) study and Shalev *et al.* (2006) reported a decrease from 26.9% to 9.6% among residents of highly exposed areas. Thus, despite the extensive exposure to terrorist acts, only 1 in 40 Israeli adults (2.4%) and approximately 1 in 10 of

those living in highly exposed communities ever reported “clinically relevant” PTSD (Shalev & Errera, 2009). However, the long-term effects on individuals, as well the society as a whole has yet to be determined.

## GENERAL INTRODUCTION

Although a number of previous studies have investigated PTSD in Israeli populations (e.g., Bleich *et al.*, 2003; Shalev *et al.*, 2006), the mental health impact of continuous exposure to terrorism has rarely been examined (e.g., Bleich *et al.*, 2003; Hobfoll *et al.*, 2008, 2009; Shalev & Freedman, 2005; Shalev *et al.*, 2006). Continuous threat to one’s security may affect an individual’s personal identity, leading to feelings of self-devaluation, failure, shame, and self-blame (e.g., Carlson & Dallenberg, 2000). When a traumatic experience is continuous, the community’s natural support systems may be severely disrupted. Friends or family members may have abandoned the area and long-lasting difficulties in social and family functioning are to be expected.

For over 10 years (2000 to 2011), the small town of Sderot (S’de-rote) and other nearby Gaza-bordering communities, located approximately 7 km (4.3 miles) from the Israel–Gaza border in southern Israel, have been exposed to rocket and mortar fire from Hamas and Islamic Jihad forces operating from the Gaza Strip. Over 6,000 rockets and over 2,500 mortar shells have been launched into this area during this period, threatening personal and family safety in the small and interconnected communities of the area and resulting in the loss of lives and many injuries, as well as considerable destruction of property. These events challenge any assumptions about safety, comprehensibility, and controllability.

Research has shown that the negative effects of national trauma are not limited to those directly affected by the trauma, and PTSD symptoms have been documented among people who were exposed to attacks only through the media (e.g., Bleich *et al.*, 2003; Neria & Sullivan, 2011). With today’s constant, up-to-the-minute television and internet news reports, individuals distant from actual events have been found to be susceptible to developing substantial symptoms of distress. For instance, studies conducted after the terror attack on the World Trade Center identified a high level of distress among people living outside of New York City and the surrounding area (e.g., Marshall *et al.*, 2007). These findings indicate that the subjective experience of the event, as manifested in feelings of threat, is the most significant predictor of posttraumatic stress symptoms (e.g., Gavrilovic, Lecic-Tosevski, Knezevic, & Priebe, 2002).

While studies have found that specific personality traits may shape individuals’ perceptions of and reactions to traumatic events, as well as their coping styles following exposure to trauma (e.g., Cox, MacPherson, Enns, & McWilliams, 2004; Miller, 2004), little is known about the effects of personality vulnerabilities in cases of ongoing exposure to terror and war. This chapter will present findings from six studies that have systematically examined these issues, namely the mental health impact of ongoing exposure to life-threatening terror in populations in southern Israel. We will also focus on the psychological impact of a more recent event, in which the ongoing low-level conflict escalated into a full-scale 22-day military conflict, as Israeli forces invaded the Gaza Strip, while Hamas and

Islamic Jihad forces in Gaza launched long-distance missiles at numerous locations deep inside Israel.

## **1. STUDY 1: ONGOING TERROR ATTACKS IN SOUTHERN ISRAEL: THE ROLE OF INTRA- AND INTERPERSONAL FACTORS IN THE REACTIONS OF TARGETED CIVILIANS**

### **1.1. Personality Vulnerability and PTSD**

In the context of managing stressful situations, Blatt (1991, 2008) has proposed a model of personality vulnerability traits, which offers a theoretical conceptualization of various forms of psychopathology as disruptions of normal developmental processes. This model can be relevant to the study of the individuals' perceptions and reactions to traumatic events and characterizes personality development as the integration of a person's capabilities for self-definition (self-criticism) and interpersonal relatedness (dependency). The self-definition process relates to the development of a positive and integrated sense of identity. The interpersonal-relatedness process relates to the ability to establish and maintain reciprocal, mature, and satisfying interpersonal relationships. Individual differences, with an emphasis on processes of relatedness and self-definition, delineate two fundamental personality styles, each with favored modes of cognition and coping strategies (Besser, Guez, & Priel, 2008; Besser & Priel, 2003a; Blatt, 1991, 2008; Blatt, Quinlan, Chevron, McDonald, & Zuroff, 1982). Adequate coordination between interpersonal relatedness and self-definition is the hallmark of optimal development and is assumed to reduce stress and lead to physical and psychological well-being (Blatt & Zuroff, 1992). Following Blatt's theoretical model of personality vulnerabilities, Besser and Priel (2010) examined the relationship between the personality-vulnerability dimensions of the trait Dependency and the trait Self-Criticism and the severity of traumatic stress-related mental health symptoms in two consecutive cross-sectional independent samples of a population of Israeli adults who had been directly exposed to ongoing rocket fire on their homes in Sderot and other Gaza-bordering communities. A sample of individuals who had been indirectly exposed to these attacks served as a comparison group. In their second study, Besser and Priel (2010) examined the possible mechanisms involved in these processes.

Besser and Priel (2010) assumed that individuals with high Dependency scores are at risk for developing negative affectivity when they perceive disruptions in their relationships with others, interpersonal loss, or social rejection. Individuals with high Self-Criticism scores are hypothesized to be at risk for developing negative affectivity when they perceive that they are not meeting their own high standards (e.g., Besser, 2004; Besser & Priel, 2003b, 2005a, b). It is important to note here that previous research has shown that the Self-Criticism dimension is the main vulnerability factor in populations experiencing stressful life events, such as the transition to parenthood and postpartum depression (e.g., Besser & Priel, 2003a, 2011; Besser, Vliegen, Luyten, & Blatt, 2008; Besser, Luyten, & Blatt, 2011; Campos, Besser, & Blatt, 2010, 2011; Campos, Besser, & Blatt, 2012; Priel & Besser, 1999, 2000). This same pattern was observed in the few existing studies that have been conducted within the context of PTSD, specifically focusing on Vietnam veterans (Southwick, Yehuda, & Giller, 1991), Holocaust survivors (Yehuda, Kahana, Southwick, & Giller, 1994), and victims of domestic violence (Sharhabani-Arzy, Amir, & Swisa, 2005). In their study, Besser and Priel (2010)

assessed whether self-criticism would be related to PTSD in both cases of direct exposure and cases of indirect exposure. Dependency was assumed to constitute a vulnerability factor in cases of direct and prolonged exposure to trauma.

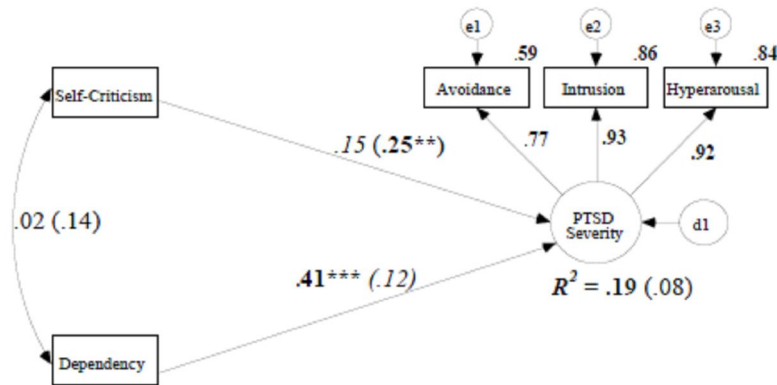


Figure 1. The Associations Between Self-Criticism and Dependency and PTSD Severity in the Direct-Exposure Sample and the Indirect-Exposure Sample (values in parentheses). The associations between Self-Criticism and Dependency and PTSD Severity among individuals directly exposed to trauma. Rectangles indicate measured variables and large circles represent latent constructs. Small circles reflect residuals (e) or disturbances (d); bold numbers above or near endogenous variables represent the amount of variance explained ( $R^2$ ). Unidirectional arrows depict hypothesized directional or causal links. Standardized maximum-likelihood parameters are used. The numbers in parentheses represent the values in the sample indirectly exposed to trauma. Bold estimates are statistically significant.  $**p < .01$ .  $***p < .001$ .

Besser and Priel (2010) conducted two consecutive studies. The results of Besser and Priel's (2010) first study showed that there were higher levels of stress and PTSD severity in the directly exposed group (the Gaza-bordering communities sample). In this group, stress levels were significantly related to high levels of PTSD severity. Regarding vulnerability traits, Dependency, but not Self-Criticism, was associated with higher levels of PTSD severity among individuals directly exposed to life-threatening events (see Figure 1). In contrast, Self-Criticism, but not Dependency, was related to levels of PTSD severity under conditions of indirect exposure to these events. Thus, while issues of interpersonal relatedness are of primary concern in situations involving direct exposure to threat, it seems that among the population indirectly exposed to trauma, issues of self-definition and identity are particularly important. Self-critical individuals, who may be less socially active or involved, present lower levels of PTSD. In other words, in contrast to the findings of previous studies of individual posttrauma reactions, these findings indicate that under conditions of communal prolonged life-threatening stress, Dependency, but not Self-Criticism, is associated with higher levels of PTSD severity; whereas Self-Criticism, but not Dependency, is related to high levels of PTSD severity under conditions of indirect exposure to these events. Moreover, these findings suggest that the deterioration of personal resources associated with direct and prolonged exposure to life-threatening stress may increase individuals' Dependency levels, as well as their maladaptive emotional reactions.

In order to further investigate the mechanisms underlying the vulnerability of dependent and self-critical individuals who have been directly or indirectly exposed to prolonged terrorist attacks, a second study was conducted by Besser and Priel (2010) using an independent sample examining the association between social support, cognitive regulation, PTSD, and distress.

## **1.2. Social Support, Maladaptive Cognitive Emotional Regulation, and PTSD and Distress**

There is extensive literature suggesting that perceived social support mediates the link between stressful life events and psychological consequences, such as anxiety, depression, and behavioral distress (Russell & Cutrona, 1991). It has also been suggested that a person's perception of the availability of others as a resource, rather than actual support received, plays an important role in the prediction of coping effectiveness, well-being, and psychological and physical health (Dolbier & Steinhardt, 2000). It is the primary interpersonal resource that is critical for coping with stress (Haber, Cohen, Lucas, & Baltes, 2007) and has been associated with psychological well-being in times of stress (Norris & Kaniasty, 1996). Perceived social support is generally considered to be a protective factor for individuals who have experienced a disaster (Norris *et al.*, 2002) or terror attack (e.g., Hobfoll, Canetti-Nisim, & Johnson, 2006). Individuals who maintain supportive social relationships are more resilient in the face of life-threatening conditions (Galea *et al.*, 2002; Norris & Kaniasty, 1996; Shalev, Tuval-Mashiach, & Hadar, 2004). Higher levels of perceived social support serve a protective role during times of stress, by enhancing adaptive coping behaviors (Cutrona & Russell, 1987). High levels of perceived social support have also been linked to resilience and recovery with respect to PTSD (e.g., King, King, Foy, Keane, & Fairbank, 1999). Indeed, as suggested by both Brewin, Andrews, and Valentine (2000) and Ozer, Best, Lipsey, and Weiss (2003) in their meta-analyses, impaired social support is one of the most powerful risk factors for PTSD (cf. Palmieri, Galea, Canetti-Nissim, Johnson, & Hobfoll, 2008).

Following years of exposure to attacks, interpersonal resources may be in short supply among many of the residents of Sderot and other Gaza-bordering communities, who are likely to have overtaxed their own resources and have few left to share. Furthermore, friends and family may not want to burden loved ones living nearby, as they know the burden those loved ones are already under. This situation of isolation may aggravate one's negative mood, since others are in a similar situation of shared fears and worries and thus are not available for support.

As might be expected, prior research has found that high levels of dependency under high-stress conditions may result in extreme demands for care and that extreme neediness leads to interpersonal conflict, which, in turn, leads to increased vulnerability in dependent individuals (Besser, Priel, Flett, & Wiznitzer, 2007). Increased demands for care seem to impair the ability of dependent individuals to effectively utilize the social support that is available, resulting in maladaptation (Cohen, 1993). Indeed, previous studies have demonstrated the role of perceived support as a mediator in the dependency–psychopathology association (see Priel & Besser, 2000). Among self-critical individuals, however, the loss of social support resources may have only limited effects. Self-critical individuals have been found to be reserved, cold in their interpersonal relationships, and uncomfortable socially.



These individuals tend to avoid intimate relationships, to be distrustful, to perceive others as critical and unsupportive, and to avoid turning to others for help (see Blatt, 2008).

In their second study, Besser and Priel (2010) explored whether levels of PTSD severity and distress symptoms among highly dependent individuals who were directly experiencing prolonged communal exposure to trauma were mediated by the perceived availability of social support. This mediational model integrated theoretical assumptions and empirical evidence into the association between personality and social support, and also assessed the role of social support and well-being under conditions of prolonged stress. Moreover, previous research (e.g., Sarason *et al.*, 1991) had confirmed that perceived social support is associated with personality characteristics, rather than with the actual helpfulness of others in moments of need. These studies emphasize the role played by personal beliefs regarding the risks and advantages of seeking help and the effects of these beliefs on the development and use of support resources (Vaux, 1992). As noted, prior to Besser and Priel's previous study, dependency has not been associated with PTSD, possibly because dependency is generally positively associated with the ability to recruit and maintain social support (Mongrain, 1998; Priel & Besser, 2000; Priel & Shahar, 2000).

In addition to social support, Besser and Priel (2010) assumed that cognitive emotion regulation strategies may also play an important role in the well-being of the residents of Sderot and other Gaza-bordering communities. Cognitive emotional regulation strategies are the conscious mental strategies individuals use to handle the intake of emotionally arousing information (e.g., Bryant, Moulds, & Guthrie, 2001). These strategies have been shown to play a pivotal role in the development of emotional and behavioral problems following exposure to stressful events (e.g., Garnefski, Boon, & Kraaij, 2003; Kraaij & Garnefski, 2006). In addition, psychopathological responses to stressors have been found to be strongly mediated by perceptions of a traumatic event and its aftermath (e.g., Ehlers & Clark, 2000).

General population studies focusing on the influence of cognitive emotion regulation strategies in the reporting of symptoms of depression and anxiety have shown that the strategies of blame, rumination, and catastrophizing are related to more severe symptomatology (e.g., Garnefski *et al.*, 2003). Catastrophic appraisals (e.g., Engelhard, van den Hout, Arntz, & McNally, 2002), attributing responsibility to another person (other-blame) (e.g., Delahanty *et al.*, 1997), and rumination (e.g., Michael, Halligan, Clark, & Ehlers, 2007) have all been associated with PTSD severity (Amone-P'Olak, Garnefski, & Kraaij, 2007).

In their second study, Besser and Priel (2010) aimed to explore intrapersonal and interpersonal mechanisms mediating the association between Dependency and Self-Criticism levels and symptomatic behavior, which were observed in their first study. They hypothesized that maladaptive emotional regulation (intrapersonal) and low levels of perceived social support (interpersonal) each mediate the associations between the Dependency personality vulnerability factor and symptomatic behavior among individuals exposed to direct threat. They also assumed that maladaptive emotional regulation strategies mediate the association between Self-Critical vulnerabilities and symptomatic behavior among individuals exposed to indirect threat. Finally, they extended the assessment of symptomatic behavior to include different aspects of individuals' distress reactions. In addition to PTSD severity, they also assessed levels of stress and arousal, negative mood state (dysphoria, anxiety, and hostility), anger, and somatic symptoms.

Consistent with their previous findings, Besser and Priel (2010) found that, in Gaza-bordering communities that were experiencing high levels of stress and PTSD symptoms,

levels of stress and arousal were significantly associated with high levels of PTSD severity. Their results also indicate that Dependency, but not Self-Criticism, is associated with higher levels of PTSD severity; whereas Self-Criticism, but not Dependency, is associated with levels of PTSD severity under conditions of indirect exposure (see Figure 2).

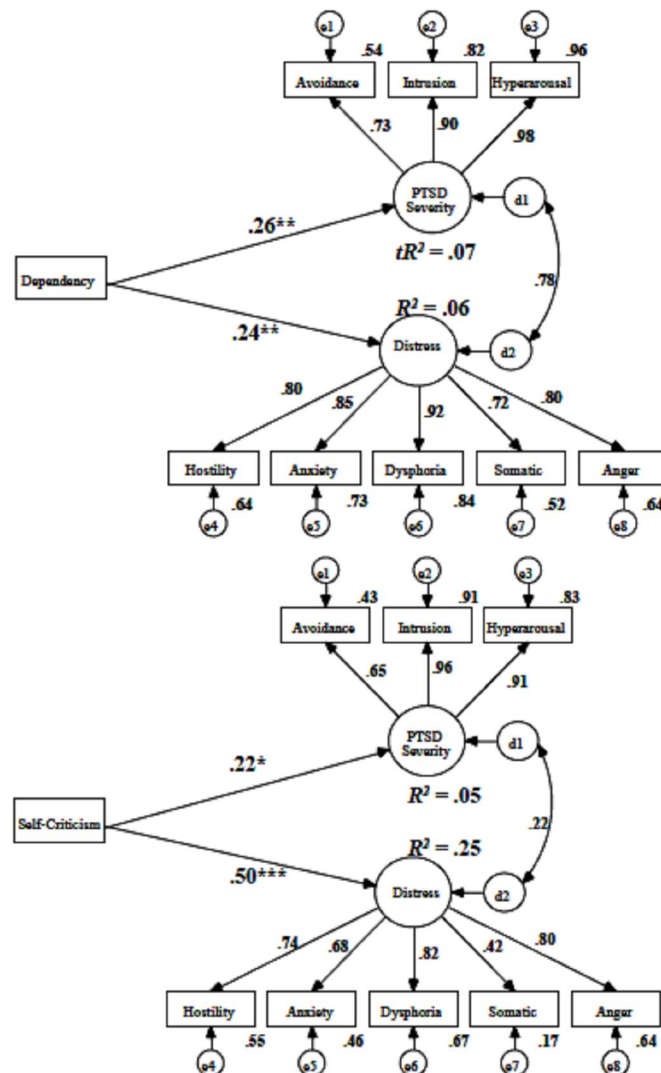


Figure 2. The Direct Associations Between Dependency and PTSD Severity and Distress in the Direct-Exposure Sample and the Direct Associations Between Self-Criticism and PTSD Severity and Distress in the Indirect-Exposure Sample. The direct association between Dependency and PTSD Severity and Distress in the direct exposure sample, and the direct association between Self-Criticism and PTSD Severity and Distress in the indirect exposure sample. Rectangles indicate measured variables and large circles represent latent constructs. Small circles reflect residuals (e) or disturbances (d); bold numbers above or near endogenous variables represent the amount of variance explained ( $R^2$ ). Unidirectional arrows depict hypothesized directional or causal links. Standardized maximum likelihood parameters are used. Bold estimates are statistically significant.  $*p < .05$ .  $**p < .01$ .  $***p < .001$ .

The results presented above extend these associations to include levels of distress, social support, and maladaptive emotional regulation. Civilians directly exposed to terrorist attacks experience high levels of dysphoria, anxiety, hostility, anger, and somatization, as well as low levels of perceived support and high levels of rumination, catastrophizing, and other-blame, as compared to those who have been only indirectly exposed to these events. In the directly exposed sample, the associations between Dependency, PTSD Severity, and Distress were mediated by perceived support and maladaptive emotional regulation (see Figure 3). In the sample indirectly exposed to trauma, both the direct and indirect associations between Self-Criticism and Distress were significant. The association of Self-Criticism with PTSD Severity was mediated by maladaptive emotional regulation processes. Although Self-Criticism was significantly associated with low levels of perceived support, perceived support did not mediate the associations between Self-Criticism and PTSD severity or between Self-Criticism and Distress in the sample that had been indirectly exposed to trauma (see Figure 3).

The findings of Besser and Priel's (2010) studies underscore the importance of individual differences in responses to prolonged life-threatening trauma. Highly self-critical individuals who are far away from the actual traumatic event seem to develop substantial symptoms of *secondary trauma*, which is known to be manifested as symptoms similar to those of PTSD, including fear, difficulty sleeping, recurring images of the traumatic experience, and cognitive as well as behavioral avoidance of reminders of the trauma (Boscarino, Figley, & Adams, 2004). However, self-critical individuals directly exposed to continuous life-threatening traumatic events do not seem to be particularly vulnerable to PTSD or high levels of distress. These findings indicate that while ruminative and distracting regulation responses mediate the relation between the Self-Criticism and PTSD Severity variables, they only partially mediate the relation between Self-Criticism and Distress. Highly dependent individuals directly exposed to prolonged life-threatening events seem to be the most vulnerable, suggesting that this situation may emphasize preoccupations with issues of community and interpersonal relationships. On the other hand, individuals indirectly exposed to these events appear to be preoccupied with issues of self-definition and identity, as has been previously observed in stressful contexts, in general (see e.g., Blatt, 2008) and, specifically, in the context of PTSD (Sharhabani-Arzy *et al.*, 2005; Southwick *et al.*, 1991; Yehuda *et al.*, 1994).

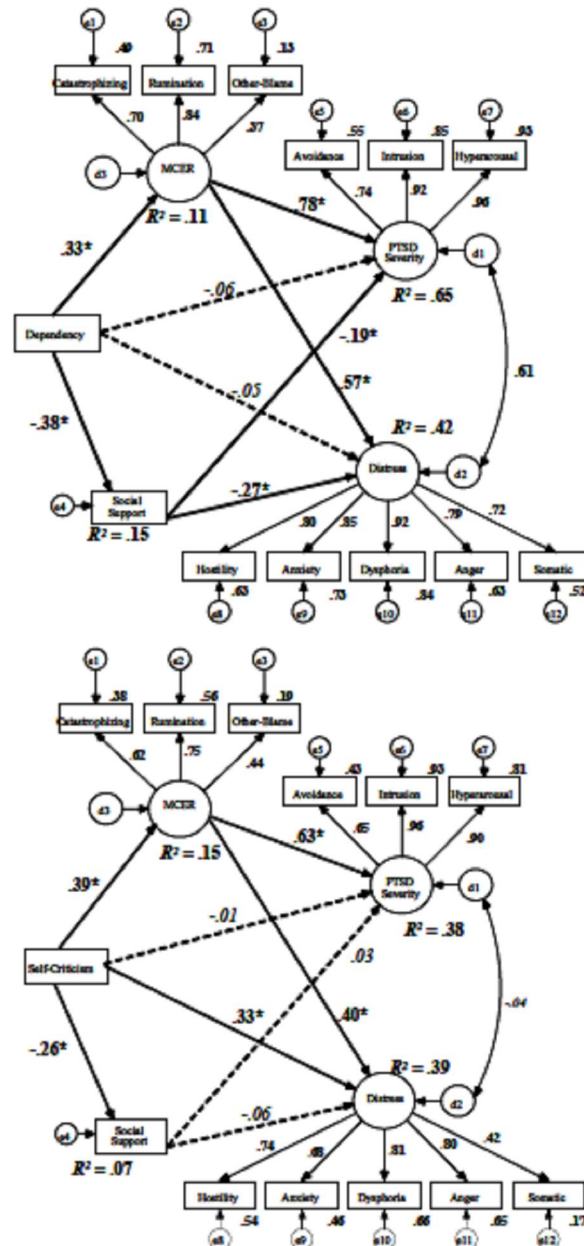


Figure 3. The Direct and Indirect Associations Between Dependency and PTSD Severity and Distress in the Direct-Exposure Sample and the Direct and Indirect Associations between Self-Criticism and PTSD Severity and Distress in the Indirect-Exposure Sample. The direct and indirect associations between Dependency and PTSD Severity and Distress in the direct-exposure sample and the direct and indirect associations between Self-Criticism and PTSD Severity and Distress in the indirect-exposure sample. Rectangles indicate measured variables and large circles represent latent constructs. Small circles reflect residuals (e) or disturbances (d); bold numbers above or near endogenous variables represent the amount of variance explained ( $R^2$ ). Unidirectional arrows depict hypothesized directional or causal links. Standardized maximum likelihood parameters are used. Bold estimates are statistically significant. \* $p < .01$ .

Dependent individuals directly exposed to prolonged threat present the highest levels of rumination, catastrophizing, and other-blame, as well as a deficit of perceived interpersonal support. When stress is continuous, prolonged, and shared by the entire community, highly dependent individuals may lack the inner representations of security necessary for adequate distress regulation under these extreme conditions. This deficit may prevent the resolution of the trauma and enhance the likelihood of the development of PTSD symptoms and distress. Since Dependency is a personality dimension primarily related to interpersonal relationships, it seems to be the most strongly affected by the perceptions of the loss of support that have been shown to accompany extreme stress. Paradoxically, exchanges of social support in the context of shared fears and worries under chronic stressful conditions may exacerbate symptoms of distress, as suggested by the “pressure-cooker effect” (Hobfoll & London, 1986).

These findings have some clinical/practical implications. They demonstrate the importance of personality evaluations in the planning of mental health treatment and prevention programs among stressed populations in war-like situations. Moreover, these findings point to basic differences in the factors affecting populations that are directly or indirectly affected by life-threatening traumatic events. Whereas issues of self-esteem may be fundamental among the latter, social support seems to be the most valuable resource among the former. Mental health practitioners should consider developing social support programs, as well as improving perceptions of social support, in general, and among highly dependent individuals, in particular. In accordance with this line of thought, recent recommendations for crisis intervention programs (e.g., Litz, Gray, Bryant, & Adler, 2002) have taken into account the fact that the posttrauma environment has an important influence on recovery and urge that social support be facilitated, including attempts to increase community cohesion when entire communities are affected (Meichenbaum, 1994). Thus, at the individual as well as the community level, prevention and intervention programs should be aimed at facilitating social support to limit the negative effects of exposure to life-threatening attacks.

Besser and Priel's (2010) findings also indicate the need to take both intra- and interpersonal processes into account in the investigation of responses to direct and indirect exposure to events that threaten whole communities. These findings also underscore the importance of the individuals' perception of the availability of interpersonal resources as a main source of resilience. Finally, evidence that maladaptive emotional regulation styles mediate the association between personality vulnerabilities and PTSD severity points to the possibility that both Self-Criticism and Dependency include an important active intrapsychic component that regulates person–environment interactions. Thus, there is further need to consider personality traits within their situational context.

Within the frame work of the examined intra- and interpersonal factors, Besser, Neria, and Haynes (2009) conducted additional research examining the impact of further predisposing factors that might affect how people cope in the face of ongoing terror. This work will be described in detail in the next section.

### **1.3. Study 2: Ongoing Terror Attacks in Southern Israel: Adult Attachment, Perceived Stress, and PTSD**

Besser, Neria, and Haynes (2009) focused on the relationships between exposure to terrorism, individual differences in adult attachment dimensions, perceived stress, and PTSD among a representative sample of 254 adults who had experienced more than 7 years of ongoing exposure to rocket and mortar fire in southern Israel and among 308 individuals who had not been exposed to terrorism.

#### ***1.3.1. Attachment Theory***

Attachment theory focuses on the relationship between children and their caregivers, with the assumption that early relationships are internalized in the form of mental representations of both the self and others. These representations lead to the creation of internal working models, which, in turn, may guide cognition, affect, and expectations in subsequent relationships (Bowlby, 1980). Attachment orientations are relatively stable across a person's life and are thought to guide his or her relationships with others in adulthood (Grossmann, Grossmann, & Waters, 2005; Main, Kaplan, & Cassidy, 1985).

A growing body of empirical research has extended the study of attachment beyond childhood (e.g., Hazan & Shaver, 1987), suggesting that the quality of early attachments may have long-term repercussions for various aspects of adult life. Recent research has furthered the conceptualization of internal working models of attachment. These researchers have proposed two main dimensions along which individual differences in attachment can be assessed: attachment anxiety and attachment avoidance (Brennan, Clark, & Shaver, 1998; Cassidy & Kobak, 1988; Mikulincer & Shaver, 2003, 2007).

A person's position along each of these orthogonal dimensions indicates his or her sensitivity to potential threats of rejection or lack of responsiveness and the extent to which he or she seeks or avoids proximity in the process of coping with such threats. Low scores on both dimensions characterize the secure attachment style; whereas insecure attachment styles are characterized by high scores on one or both dimensions (fearful: high anxiety and high avoidance; dismissive: low anxiety, high avoidance; and preoccupied: high anxiety, low avoidance). In their study, Besser, Neria, and Haynes (2009) focused on the relationship between these two dimensions or orientations and both the perception of stress and PTSD. High attachment-anxiety scores and high attachment-avoidance scores indicate the use of different strategies for coping with insecurity: the hyperactivation of the attachment system by increasing proximity (attachment anxiety), on the one hand, or the deactivation of the attachment system through the avoidance of contact (attachment avoidance), on the other hand.

Past research on adult attachment has focused on the roles of the attachment-related anxiety and avoidance orientations (Brennan *et al.*, 1998; Mikulincer & Shaver, 2003, 2007) in emotional self-regulation (e.g., Mikulincer & Shaver, 2003) and in individuals' responses to stress (e.g., Besser & Priel, 2003b, 2005a, 2006, 2009; Besser, Priel, & Wiznitzer, 2002; Mikulincer, Birnbaum, Woddis, & Nachmias, 2000; for a review, see Mikulincer & Shaver, 2007).

Individuals with high attachment-anxiety scores tend to intensify negative emotional states (hyperactivation strategies); whereas those with high attachment-avoidance scores tend

to distance themselves from emotional situations (using deactivation strategies; e.g., Mikulincer, Shaver, & Pereg, 2003). Individuals with high attachment-anxiety scores tend to be hypervigilant to sources of distress and hypersensitive to negative and stressful experiences (see Mikulincer & Shaver, 2007, for a review). In contrast, individuals with high attachment-avoidance scores are likely to downplay threats, dismiss their importance, and erect barriers against their own stressful thoughts and affect. These individuals appear to be less sensitive to stress than individuals with high attachment-anxiety scores. Insecurely attached individuals are believed to be especially likely to develop symptoms of distress and PTSD following negative experiences and stressful life events (e.g., Hammen *et al.*, 1995).

### ***1.3.2. Attachment Orientation, Social Support, and PTSD***

As described in detail above, perceived social support may act as a critical primary interpersonal resource for coping with stress and trauma (Haber *et al.*, 2007; Ozer *et al.*, 2003). What remains unknown, however, is how internal working models of attachment and perceived social support interrelate in responses to traumatic experiences. In the context of adult attachment theory, empirical studies have found that securely attached individuals deal with distress by acting constructively and turning to others for emotional and instrumental support (e.g., Mikulincer & Shaver, 2003). These studies have found that secure attachment is associated with the perceived availability of support; whereas insecurely attached adults report less available support (see Mikulincer & Shaver, 2007, for a review). Accordingly, individuals who score high on the attachment-anxiety orientation tend to overreact to their negative feelings in order to elicit support from others (Mikulincer & Florian, 1995). In contrast, individuals who score high on the attachment-avoidance dimension tend to distance themselves from others when faced with stressful events (e.g., Mikulincer & Florian, 1995; Mikulincer, Florian, & Weller, 1993).

Despite their different theoretical backgrounds and diverse areas of specific interest, empirical findings of studies conducted from both social-support and attachment-theory perspectives have produced consistent evidence that a person's perception of the availability of support is associated with self-regulation of distress. Existing research suggests that both attachment and social-support constructs share the assumption that basic personal characteristics influence expectations, interpretations, and actual patterns of interpersonal behavior (e.g., Sarason *et al.*, 1991).

However, whereas studies of social support focus more on contextual dimensions than on the history of relationships, the opposite is the case in studies of attachment theory (Sarason, Sarason, & Shearin, 1986; Sarason, Shearin, Pierce, & Sarason, 1987). Theoretically, it is possible that perceived social support may play two distinct, simultaneous roles in the relationship between attachment dimensions and PTSD, acting as both a mediator and a moderator. There is a growing body of research (e.g., Holahan, Moos, Holahan, & Cronkite, 1999; Lepore, Evans, & Schneider, 1991; Norris & Kaniasty, 1996; Quittner, Gluekauf, & Jackson, 1990; Thompson *et al.*, 2000) to indicate that perceived support is a potent mediator of the stress–distress relation. These studies have found that perceived support is eroded by pervasive, chronic stressors and that those individuals who perceive lower levels of available support present higher levels of distress. Furthermore, these findings have been consistent across a variety of populations, such as community-resident adults (Holahan *et al.*, 1999), college students living under crowded conditions (Lepore *et al.*, 1991), natural disaster

victims (Norris & Kaniasty, 1996), and civilians directly exposed to a prolonged period of ongoing terror attacks (Besser & Priel, 2010).

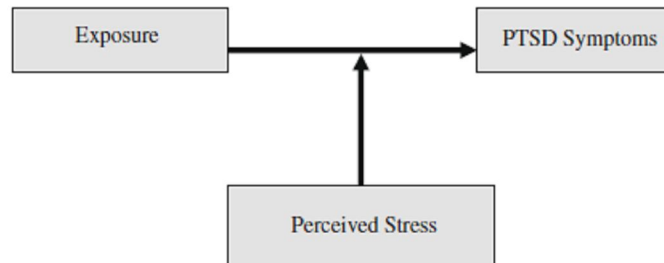
Based on this theoretical framework, Besser, Neria, and Haynes (2009) conducted the first study of the consequences of long-term, direct exposure to trauma in civilian populations exposed to terrorism. Furthermore, they examined whether the degree of perceived stress moderates the relationship between exposure and PTSD or mediates the relationship between insecure attachment and PTSD (see Figure 3). The primary goal of their study was to extend the current knowledge by examining the associations among extreme and ongoing exposure to terrorism, insecure attachment styles, perceived stress, and PTSD by studying a population that had been continuously exposed to direct trauma over a long period of time.

Besser et al. (2009) tested three hypotheses:

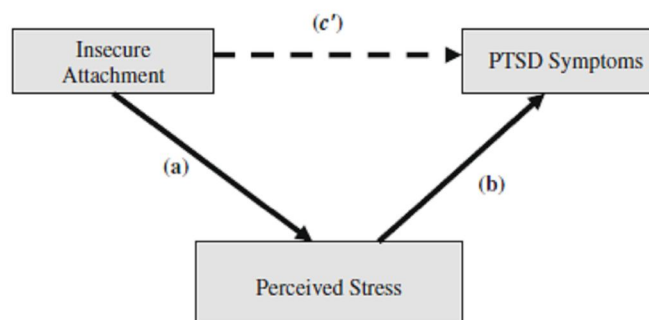
- 1) Ongoing-exposure residents will manifest elevated levels of PTSD symptoms and stress as compared to their no-exposure counterparts.
- 2) Ongoing-exposure residents who report high levels of stress will exhibit elevated levels of PTSD. No exposure is expected to moderate the associations between perceived stress levels and PTSD symptoms; whereas low levels of perceived stress are expected to moderate the associations between ongoing exposure and PTSD symptoms (Figure 4; moderation model).
- 3) Based on the model proposed by Pielage, Gerlsma, and Schaap (2000) that suggests that stress mediates the association between insecure attachment and psychopathology, ongoing-exposure residents who are insecurely attached will experience high levels of perceived stress, which, in turn, will be associated with the exhibition of higher levels of PTSD symptoms. Perceived stress is expected to mediate the relationships between insecure attachment dimensions and PTSD symptoms (Figure 4; mediation model).



1) *Moderational Models*: Perceived Stress affects the strength of the relationship between Exposure to trauma (OGE vs. NE) and PTSD Symptoms.



2) *Mediational Models*: Under direct and ongoing exposure (OGE), Perceived Stress accounts for the relationship between Insecure Attachment and PTSD Symptoms.



The dotted path (c') indicates a significant decrease in Path c when Perceived Stress is included in the model (a and b).

Figure 4. Hypothesized Theoretical Models for This Study.

The findings of the study conducted by Besser et al. (2009) are consistent with previous research (e.g., see Neria, Nandi *et al.*, 2008 for a review), suggesting that direct exposure to trauma has a greater debilitating effect than indirect exposure with regard to the level of PTSD symptoms (see Figure 5). Moreover, having a low-level of education and being female are also associated with increased risk of PTSD (Bleich *et al.*, 2003; Hobfoll, Tracy, & Galea, 2006; Neria *et al.*, 2006). These findings extended previous research by indicating that trauma-exposed individuals also had higher levels of insecure attachment than their counterparts who were not exposed to rocket fire.

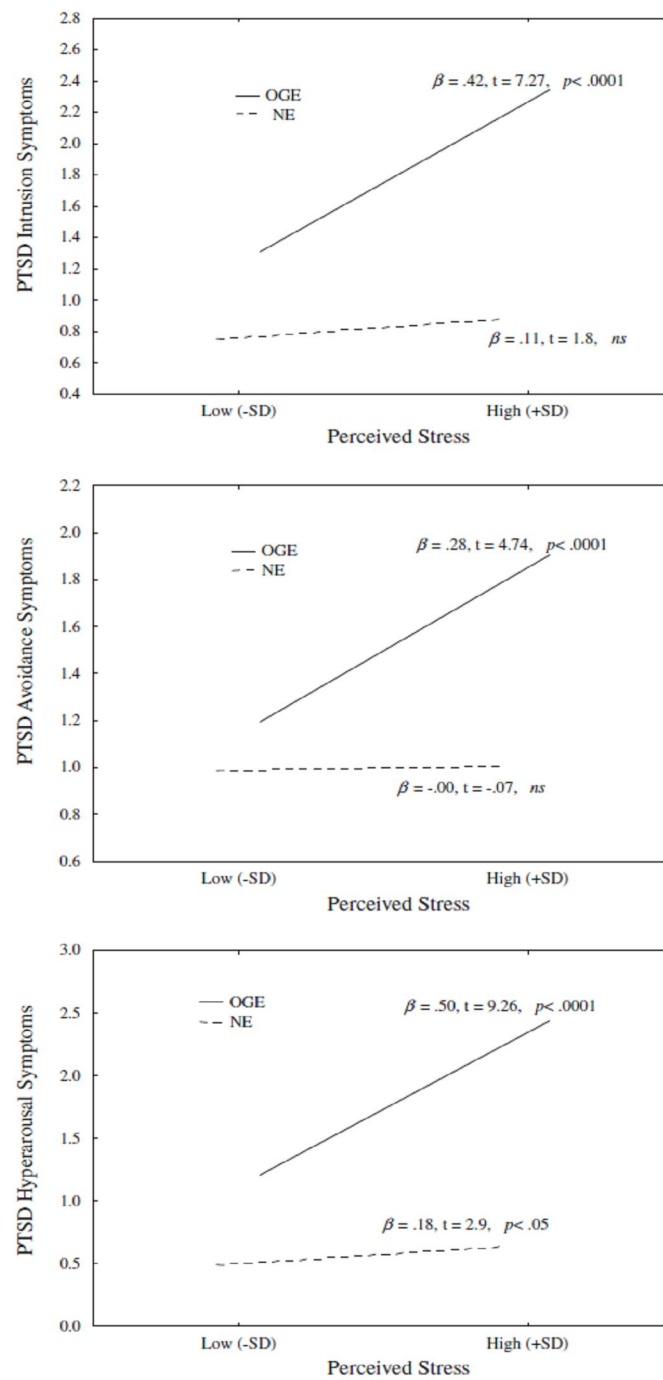


Figure 5. The Role of Perceived Stress in the Associations of Exposure to Trauma and PTSD.

These results suggest that ongoing exposure to trauma may affect internal working models of attachment and that these insecure attachment models may affect the perception of

additional traumatic events. One possible explanation for this is that ongoing exposure to traumatic experiences mobilizes internal and external resources for coping with stress, such as inner representations of security, which can interfere with the regulation process and intensify stress and distress. The state of mind of a person who is undergoing trauma may be characterized by overwhelming shock and intense feelings of panic, vulnerability, helplessness, and exhaustion (Horowitz, 1982). These conditions may automatically activate the attachment system at a high level (see Mikulincer *et al.*, 2003). Yet, it is important to note that, in the examined sample, the distribution of attachment dimension scores was not skewed, but rather followed a normal curve. This indicates that the ongoing-exposure sample is not an extreme group.

In the context of attachment-activation effects, since this study (Besser *et al.*, 2009) was cross-sectional, it is possible that increased insecure attachment may be a consequence of individuals' extreme and chronic exposure to trauma. Chronic exposure may lead to chronic activation of secondary attachment strategies, which may result in lasting scar effects (e.g., Rhode, Lewinsohn, & Seeley, 1990). This means that even when the exposure disappears, the individuals who were continuously exposed to terror may continue to show higher levels of attachment avoidance and attachment anxiety.

Besser *et al.* (2009) also found that the severity of traumatic exposure (ongoing exposure group) was associated with higher levels of stress and that those who had experienced higher levels of stress exhibited elevated levels of PTSD symptoms (Figure 5). Thus, the interaction between severity of traumatic exposure and individual differences in stress perception is important for determining the risk of mental health problems, a finding which emphasizes the role of subjective appraisal in determining the effect of traumatic events. An ongoing-exposure situation may aggravate the stressful experience by creating a pressure-cooker effect (Hobfoll & London, 1986), especially because others are in a similar situation of shared fears and worries. In fact, the individuals in the ongoing-exposure group reported low levels of social support and diminished satisfaction with life, demonstrating the depletion of psychological resources among this group (Besser & Priel, 2010). The results of this study are consistent with previous findings of positive associations among insecure attachment styles, stressful events, general psychological symptoms, and mental health problems (for a review, see Mikulincer & Shaver, 2007). As for the mechanism underlying the link between attachment style and psychopathology, these results (see Figure 6) seem to corroborate a model that suggests that insecurely attached individuals may appraise particular events as being more stressful, as compared to securely attached individuals, leading to the development of psychopathology (see Mikulincer *et al.*, 2000). Thus, the subjective appraisal of events plays a crucial role in the link between the severity of traumatic exposure, as well as individual differences in adults' insecure models of attachment, and the development of PTSD symptoms. While attachment anxiety was found to be a vulnerability factor for PTSD symptoms, attachment avoidance was not. These findings are in line with results that suggest that the Anxiety dimension of attachment is more of an issue in psychological distress and the occurrence of PTSD than the Avoidance dimension (Declercq & Willemsen, 2006). Furthermore, the results support findings regarding the association of an Avoidant Attachment regulation strategy with lower levels of sensitivity to stress (e.g., see Mikulincer & Shaver, 2007).

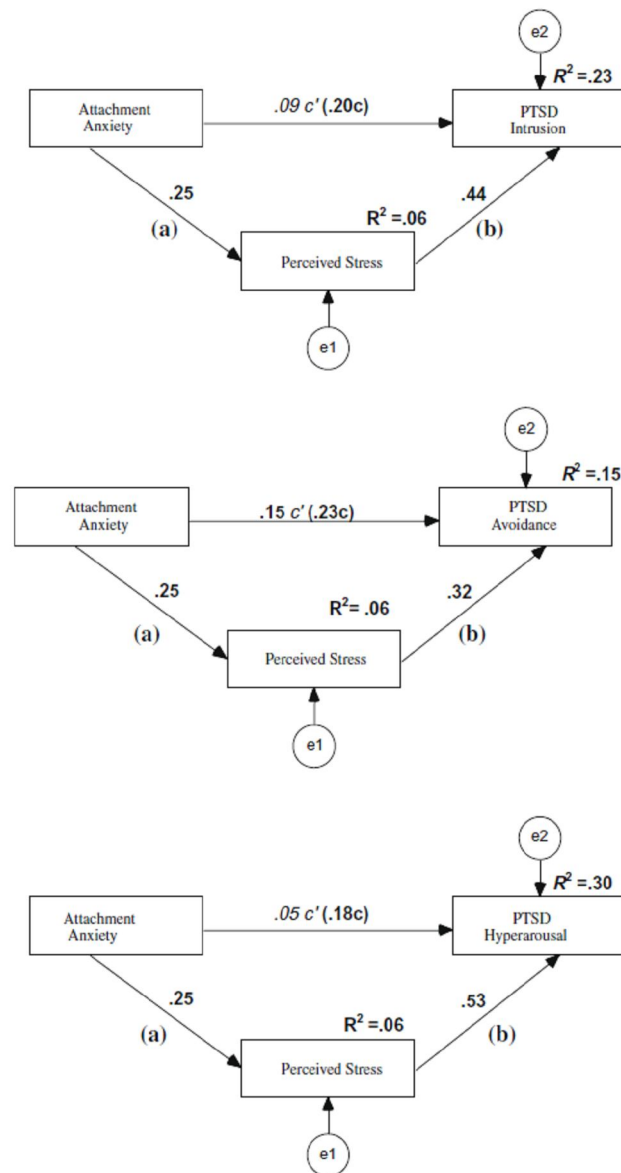


Figure 6. The Mediating Role of Perceived Stress in the Attachment-PTSD Associations in the Ongoing-Exposure Group. Path c' indicates a significant drop in Path c when the Perceived Stress scale was included in the model (a and b). Bolded estimates are significant regression coefficient  $\beta$  values. Numbers in parentheses represent the  $b$  values before the perceived stress scale (assumed mediator) was entered into the model. Small circles represent residual variances and unidirectional arrows depict hypothesized associations.

The findings of this study have a number of clinical implications. Trauma-focused interventions with an attachment-based paradigm may be suitable for populations that are exposed to trauma on an ongoing basis, especially when exposure to extreme traumatic stressors has caused attachment injuries. Moreover, the findings suggest that ongoing exposure to terrorism may elicit excessive distress. To address this issue, counseling

interventions for individuals with attachment anxiety might be oriented toward modification of their inflexible tendency for emotional hyperactivation.

These results also point to the potential coexistence of attachment effects on reactions to ongoing exposure to trauma, as well as the possible effects of adults' exposure to ongoing threats on their internal working models of attachment. Moreover, while the proposed model is based on the theory that perceived stress mediates the association between insecure attachment and PTSD, it is possible that attachment anxiety increases vulnerability to PTSD, which in turn may elevate stress reactions, making PTSD a possible mediating factor. These possibilities, known as equivalent models, limit the possibility of determining which model better fits the empirical data. In order to explore the direction of the observed associations among stress and PTSD symptoms, as well as the direction of their associations with insecure attachment in terms of cause and consequences, further longitudinal studies involving cross-lagged models are needed.

One such study that has already been conducted (Besser & Neria, 2010) will be addressed in detail in the following section. However, it should be noted that the phenomenon investigated in that study is unique and was characterized by an unpredictable starting point that did not allow for the collection of baseline measures. Moreover, further studies should consider better operationalization of stress, including assessment of general psychological health (e.g., distress or chronic stress) and objective biomarkers, in order to better capture long-lasting stress among exposed populations.

To the best of our knowledge, despite its limitations, this study represented the first attempt to investigate associations between attachment dimensions, stress, and PTSD during a period of direct and repeated life-threatening terrorist attacks. These findings underscore the need to assess both contextual and intrapersonal processes in trauma-exposed populations, as well as the need to consider the role of interpersonal protective factors, especially social support (see Besser & Priel, 2010; Henrich & Shahar, 2008).

#### **1.4. Study 3: Ongoing Terror Attacks in Southern Israel: Satisfaction with Life, Prejudicial Attitudes toward the Adversary, and PTSD**

While most of the studies that have examined the consequences of ongoing terrorism have mainly referred to PTSD, continuous exposure to terrorism has also been found to be associated with various other psychological outcomes. Exposure to terror attacks has been found to negatively affect other mental health domains, such as depression, bereavement, physical health, and disability (e.g., Galea *et al.*, 2002; Neria *et al.*, 2007; Neria, Nandi *et al.*, 2003; Silver, Holman, McIntosh, Poulin, & Gil-Rivas, 2002; Stout, 2002). Although a number of studies have focused on Israeli civilian populations exposed to terrorism (e.g., Bleich *et al.*, 2003; Hobfoll *et al.*, 2008; Shalev & Freedman, 2005; Shalev *et al.*, 2006), few have attempted to address the association between this exposure and the range of emotional domains beyond PTSD. Furthermore, the mental health burden of exposure to terrorism is substantial (e.g., Galea, Nandi, & Vlahov, 2005; Neria, Nandim & Galea, 2008; Rubin *et al.*, 2007) and not limited to those who have been directly exposed to trauma (Galea *et al.*, 2002; Silver *et al.*, 2002). While significant levels of PTSD have been reported among those directly exposed to terrorism (e.g., Bleich *et al.*, 2003; Galea *et al.*, 2002; Hobfoll *et al.*, 2008; Shalev & Freedman, 2005), symptoms of PTSD have also been reported by individuals who

were only indirectly exposed to terrorism (e.g., via the media: Ahern, Galea, Resnick, & Vlahov, 2004; Marshall *et al.*, 2007; Neria *et al.*, 2007).

In light of these reports and the growing need for scientific knowledge in this field, Besser and Neria (2009) examined additional aspects of predisposing factors for negative mental health effects and the psychological consequences of continuous exposure to terror. Specifically, they examined the relationship between exposure to ongoing missile attacks and PTSD, satisfaction with life, and prejudicial attitudes toward the adversary in civilian populations. They used a stratified probability sampling of 160 adults exposed to repeated missile attacks in southern Israel and compared them to 181 adults from areas outside the range of these attacks (Besser & Neria, 2009).

Although the association of PTSD with reduced quality of life has been examined in a number of civilian populations (e.g., Holbrook *et al.*, 2005; Paunovic & Ost, 2004) and populations of war veterans (e.g., Zatzick *et al.*, 1997), it has been suggested that more research is needed to better understand the relationship between PTSD and quality of and satisfaction with life (e.g., Howgego *et al.*, 2005; Rapaport, Clary, Fayyad, & Endicott, 2005). Over the last three decades, satisfaction with life has emerged as a central domain in the construct of subjective well-being and quality of life (Diener, Suh, Lucas, & Smith, 1999; Staudinger, Fleeson, & Baltes, 1999). Researchers have hypothesized that satisfaction with life is distinct from affective appraisals (e.g., mood and affect symptoms), in that it is more cognitively driven than emotionally driven (see e.g., Diener, Oishi, & Lucas, 2003; Pavot & Diener, 2004). Although exposure to trauma may negatively impact satisfaction with life, to the best of our knowledge, no study to date has directly addressed the effects of exposure to terrorism and PTSD on satisfaction with life.

Repeated exposure to terrorism may have a detrimental effect on attitudes toward the adversary among individuals in the affected communities. It has previously been suggested that in-group ties and hostility toward outgroups may be strengthened among populations exposed to terrorist attacks (Bar-Tal & Labin, 2001; Coryn, Beale, & Myers, 2004; Hobfoll, Canetti-Nisim *et al.*, 2006). According to this line of thought, hostile attitudes derive mainly from the challenges posed by outgroups toward the values, identity, culture, and socioeconomic resources of members of the in-group (e.g., Lubbers & Scheepers, 2001; Mudde, 1995; Quillian, 1995; Watts, 1996). Besser and Neria (2009) extended this line of research by investigating whether prejudicial attitudes toward the adversary are associated with this type of trauma exposure and PTSD.

They tested the following three hypotheses: (a) Participants exposed to ongoing missile attacks will manifest elevated levels of PTSD symptoms, reduced levels of satisfaction with life, and elevated levels of prejudicial attitudes toward the adversary, as compared to unexposed participants; (b) PTSD symptoms will be negatively related to satisfaction with life and positively related to prejudicial attitudes; and (c) the association between PTSD symptoms and satisfaction with life (Figure 7) and the association between PTSD symptoms and prejudicial attitudes (Figure 8) will be stronger among participants directly and continuously exposed to attacks than among participants with no such exposure.

The results of their study show that residents of communities directly and continuously exposed to these attacks had elevated levels of PTSD, as compared to residents of an area that had not been exposed to these attacks (27% vs. 3%). Although the reported levels of PTSD symptoms among the exposed individuals seem to exceed previous estimates for Israeli populations (e.g., Bleich *et al.*, 2003; Shalev *et al.*, 2006), they are in line with estimates

previously reported among populations recently exposed to terror or large-scale disasters (e.g., Neria Nandi, & Galea, 2008).

The negative association observed between PTSD and satisfaction with life is in accordance with the findings of previous quality of life studies (Holbrook *et al.*, 2005; Jordan *et al.*, 1992; Magruder *et al.*, 2004; Michaels *et al.*, 2000; Rapaport *et al.*, 2005; Schnurr, Hayes, Lunney, McFall, & Uddo, 2006; Zatzick *et al.*, 1997). However, in focusing on satisfaction with life, Besser and Neria's (2009) study extended this knowledge by showing that continuous exposure to a life-threatening situation intensifies these associations.

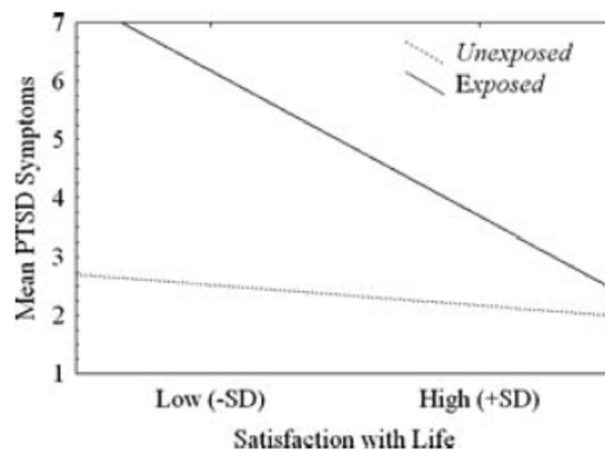


Figure 7. The Association of Satisfaction With Life With Levels of PTSD Symptoms as a Function of Exposure to Terror. Prejudicial attitude scores were significantly associated with PTSD Symptom scores among the exposed individuals ( $\beta = -.28, p < .001$ ), but not among the unexposed individuals ( $\beta = -.06, ns$ ).

Previous studies have described prejudicial attitudes toward racial, ethnic, and other social groups as being comprised of cognitive and affective components, such as negative thoughts, beliefs, and feelings toward the target individual or group(s) (see e.g., Dovidio *et al.*, 2004). Prejudicial attitudes can be influenced by both realistic and symbolic threats, as well as social desirability (Schweitzer, Perkoudis, Krome, Ludlow, & Ryan, 2005). Although social desirability might explain the nonsignificant differences between the levels of prejudicial attitudes toward the adversary observed in the exposed and unexposed groups, realistic threat assessment might explain the significant associations observed between PTSD and prejudicial attitudes among those directly and continuously exposed to trauma. These results further indicate that prejudicial attitudes towards the adversary are not merely a function of discrimination or the existence of PTSD symptoms, but that a specific social context (e.g., severe exposure to trauma) plays a role in the PTSD–prejudice relationship.

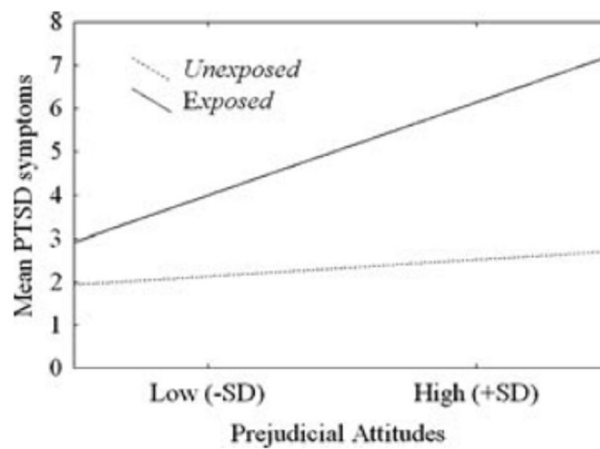


Figure 8. The Association of Prejudicial Attitude With Levels of PTSD Symptoms as a Function of Exposure to Terror. Levels of satisfaction with life were significantly associated with PTSD symptom scores among the exposed individuals ( $\beta = .50, p < .001$ ), but not among the unexposed individuals ( $\beta = .09, ns$ ).

The role of the exposure context could be interpreted in accordance with the conservation of resources (COR) theory (see Hobfoll, 2001, for a review). The COR theory suggests that the psychological impact of stress is primarily dependent on the threat of loss and/or the actual loss of resources suffered (e.g., Hobfoll, 1988, 1998). Accordingly, the COR theory may explain the significantly reduced satisfaction with life observed among the exposed group as the result of the significant losses they experienced. In the face of this loss, those who lack personal and social resources may be more likely to employ unproductive and even harmful coping behaviors (Holahan, 2000; Holahan *et al.*, 1999), such as hostile, negative, and prejudicial attitudes toward the adversary, which may be counterproductive coping mechanisms (Hobfoll, Tracy, & Galea, 2006). In line with this explanation are findings from a recent study conducted in Israel suggesting that exclusionism was more prevalent among individuals who believed that terrorism had caused them substantial damage (Hobfoll, Canetti-Nisim, & Johnson, 2006).

Besser and Neria's (2009) study may provide new information for both researchers and clinicians. As shown in their study, exposure to ongoing and repeated violence may not only elicit excessive distress in the form of PTSD, but also diminished satisfaction with life and increased prejudicial attitudes toward the enemy. The combination of stress-related symptoms and altered perceptions of both the self and others may call for the use of a comprehensive preventative approach that includes not only trauma-focused interventions, but also strategies to address changes in cognition and interpersonal relations.




## **2. ESCALATION OF TERROR ATTACKS TO A MASSIVE MILITARY CONFLICT**

As noted earlier, over the past 10 years, a large population in southwestern Israel has been exposed to ongoing rocket and mortar fire from Hamas and Islamic Jihad forces located in the Gaza Strip. Recently, the ongoing low-level conflict escalated into a massive military operation in the Gaza Strip (Operation *Oferet Itzuka*), which included the launching of long-distance missiles from Gaza to locations deep inside Israel. The operation lasted 22 days, from December 27, 2008, through January 17, 2009. During this period, Israeli students were forced to evacuate a college campus located close to the Israel–Gaza border in response to increased missile fire in the area. However, the long-distance missiles launched by Hamas from the Gaza Strip were capable of reaching the students in their new locations, even in areas up to 40 km (25 miles) from the border. However, individuals located farther from the border had more time to seek shelter between the moment the air-raid sirens sounded and the moment that the incoming missile(s) hit (see Figure 9).

Besser and Neria conducted three studies designed to investigate the psychological effect of the escalated conflict on evacuees who, despite their evacuation from a campus close to the Israel–Gaza border, still remained within the range of missile attacks. These studies focused on a) the effects of attachment orientation and perceived social support on symptoms of PTSD and major depressive disorder (MDD), b) whether social support mediates or moderates these effects, and c) whether PTSD symptoms, depression, and general anxiety disorder (GAD) are associated with intensity of exposure to trauma.



Figure 9. Map Showing the Range of Hamas Missile Fire Into Israel.  Location of the college campus from which the students were evacuated (7 km or 4.5 miles from the Gaza Strip). This map shows the different alarm zones (i.e., the amount of time one had to take cover between the moment the air-raid siren sounded and the moment the incoming rocket or missile hit) as defined by the Israeli Home Front Command. At locations within 10 km (6 miles) of the border, there was a period of only 15 s between the sounding of air-raid sirens and missile impact. In areas 20 km (12.4 miles) from the Gaza Strip, there were 30 s between the air-raid siren and missile impact. In areas 30 km (19 miles) from the Gaza Strip, there were 45 s between the air-raid siren and missile impact and in areas 40 km (25 miles) from the Gaza Strip, there were 60 s between the air-raid siren and missile impact.

## 2.1. Study 4: Evacuees Exposed to Missile and Rocket Attacks: Insecure Attachment, Perceived Social Support, and PTSD

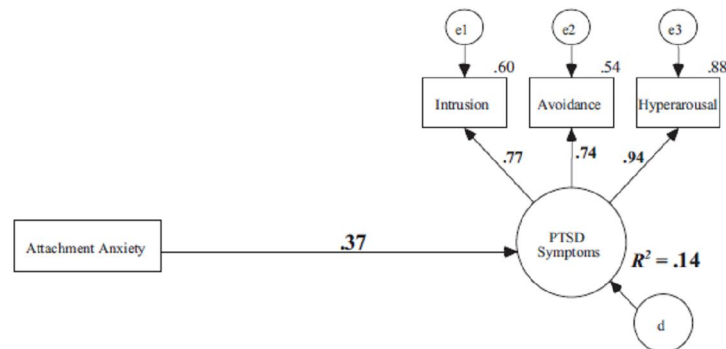
As previously discussed, exposure to war trauma may place civilians at risk for short- and long-term mental health and adjustment problems (see Horowitz, 1982, for a review). Such exposure is also likely to mobilize internal and external resources for coping with stress. In some cases, emotional balance is restored shortly after a traumatic event ends, but, in other cases, there may be profound and prolonged mental health sequelae. Research has found that the loss of resources may play a mediating role in the relationships between trauma exposure and differential reactions, such as general distress and physical symptoms (see Smith &

Freedy, 2000; Hobfoll, 1991). This implies that interpersonal resources are essential in the development of stress responses. Among these resources, as demonstrated earlier in this chapter, social support has received significant attention in trauma and stress and coping research as a factor that mediates the relationship between attachment orientation and PTSD symptoms (Besser *et al.*, 2009).

Previous studies have consistently indicated that attachment anxiety, rather than attachment avoidance, is associated with increased vulnerability to stress reactions (for a review, see Mikulincer & Shaver, 2007). Besser and Neria (2012) aimed to confirm the direction of these findings. However, since their study was the first attempt at examining attachment orientation and PTSD in evacuees from a war zone, they explored the possible associations of both attachment anxiety and attachment avoidance with PTSD. In addition, following increased attention on attempts to identify the intervening process variables that mediate the links between insecure attachment styles and emotional distress (for a review, see Mikulincer & Shaver, 2007), Besser and Neria (2012) also examined the mediating role of perceived social support in the association between adult attachment orientation and traumatic stress symptoms. Their findings suggest that perceived social support mediates the association between individual differences in the tendency to experience stress (attachment orientations; anxiety and avoidance dimensions) and PTSD symptoms. However, due to a plausible competing hypothesis that high levels of perceived social support moderate the relationship between insecure attachment orientations and PTSD symptoms (Cohen & Wills, 1985; Maunder & Hunter, 2001; Sarason, Pierce, & Sarason, 1990; Vogel & Wei, 2005), they also tested the hypothesis that perceived social support moderates the relationship between insecure attachment orientations and PTSD symptoms. In this way, they sought to investigate the interaction between attachment orientations and perceived social support and their associations with PTSD symptoms.

Besser and Neria (2012) hypothesized that insecurely attached evacuees, especially those with high attachment-anxiety scores, would report low levels of perceived social support, which, in turn, would associate with higher levels of PTSD symptoms. Low levels of perceived social support were expected to mediate the relationship between evacuees' insecure attachment, especially among those scoring high on the attachment-anxiety orientation, and evacuees' reported levels of PTSD symptoms. They also tested a competing hypothesis—that perceived social support moderates the relationship between insecure attachment orientations and PTSD symptoms, especially among individuals with high attachment-anxiety scores.

A) Direct association model



B) Mediation association model

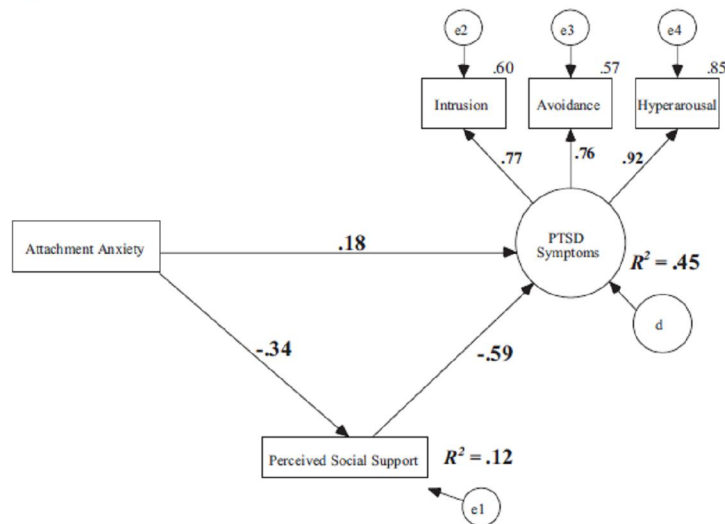


Figure 10. The Direct-Association Model and the Mediation-Association Model. (A) Direct-association model. (B) Mediation-association model. Rectangles indicate measured variables and large circles represent latent constructs. Small circles reflect residuals (e) or disturbances (d); bold numbers above or near endogenous variables represent the amount of variance explained ( $R^2$ ). Unidirectional arrows depict hypothesized directional or causal links. Standardized maximum likelihood parameters are used. Bold estimates are statistically significant.

Consistent with previous mass trauma studies (Galea *et al.*, 2002; Neria *et al.*, 2008; Norris *et al.*, 2002), Besser and Neria (2012) found a high prevalence of 20% for PTSD Symptoms. These findings are similar to Gil's (2005) study which was conducted among undergraduate students who were exposed to a bus bombing and found 18% prevalence for PTSD Symptoms. However a study conducted by Palmieri and colleagues (2008), which examined the psychological effect of the Israel–Hezbollah war found a prevalence of only 7.2% for PTSD Symptoms. Nevertheless these differences can be accounted for due to sample and measurement differences. Whereas Palmieri and colleagues (2008) used a nationally representative sample, Besser and Neria's study was conducted among evacuees

who were exposed to ongoing direct threat. In addition, the two studies used different PTSD measures, which prohibit direct comparison of the findings.

With regard to intensity of exposure to traumatic events, Besser and Neria's (2012) study revealed no association between intensity of traumatic exposure and PTSD Symptoms. Although these findings contradict several studies conducted outside of Israel which demonstrated higher prevalence of PTSD Symptoms among those closer to the terror attack (Jordan *et al.*, 2004; Neria *et al.*, 2006; Schlenger *et al.*, 2002), numerous studies conducted within the Israeli population (e.g., Bleich *et al.*, 2003; Shalev *et al.*, 2006; Somer, Ruvio, Soref, & Sever, 2005), like Besser and Neria's study, did not find such an association. It is possible that the uniqueness of Israel's population constantly being exposed to continuous horrific trauma led to a diminished sense of safety. In the context of Besser and Neria's study, even though the evacuees had more time to run and take cover, they were still within range of the missiles and thus kept feeling threatened. Therefore, in these circumstances the intensity of exposure is not necessarily a strong predictor of PTSD Symptoms.

Besser and Neria's (2012) results demonstrate that anxious attachment and low levels of perceived social support among individuals exposed to ongoing traumatic events are significantly associated with high levels of PTSD Symptoms. An explanation for these associations could be that since anxiously attached individuals are less resilient to life threatening situations, they are more inclined to suffer from PTSD Symptoms. In addition, under situations of ongoing stress and trauma, individuals who perceive their social support as low or deficient, will demonstrate more psychological distress, which increases their PTSD Symptoms (see Figure 10).

In the context of stressful situations, it is possible that anxiously attached individuals overreact to their negative feelings and try to expand their support from others (Mikulincer & Florian, 1995). This causes a chain reaction which puts immense pressure on the individual's social environment causing a deterioration in social support and increasing the "pressure – cooker effect" (Hobfoll & London, 1986; Kaniasty & Norris, 1995).

Keeping in mind that the evacuees were all in missile range, it is fair to assume that their friends and significant others were in missile range as well. This cumulative life threatening situation might have affected the capability of the significant other to provide social support since they were going through a personal horrific ordeal as well (Cutrona and Russell, 1990). However, it still remains unclear how negative attachment orientations might interrelate with this natural affiliative process.

While examining the mediating and/or moderating role of perceived social support and adult attachment in the context of PTSD Symptoms among evacuees, their findings support the mediational model. Accordingly, low levels of perceived social support have been found to mediate the association of attachment anxiety and PTSD Symptoms. This relationship is consistent with previous research demonstrating a positive link between attachment anxiety and the need for reassurance from others and the positive link between the need for reassurance from others and psychopathology (Davila, 2001; Declercq & Willemssen, 2006; Lopez, 2001; Joiner & Metalsky, 2001; Mallinckrodt & Wei, 2005; Wei, Heppner, & Mallinckrodt, 2003; Wei, Russell, Mallinckrodt, & Zakalik, 2004). Thus, when those with high levels of attachment anxiety seek social support and reassurance from others and fail to receive such support, this lack of support may influence their psychological state and increase their PTSD Symptoms.

However, although individuals scoring high on attachment anxiety were associated with high levels of PTSD Symptoms, these associations were not found among those who scored high in attachment avoidance. It is possible that while individuals scoring high in attachment anxiety express distress and hypersensitivity, individuals scoring high in attachment avoidance divert these negative emotions from awareness (Kobak & Sceery, 1988; Mikulincer, Florian, & Tolmatz, 1990).

Therefore, since the evacuees were all in missile range and were confronted daily with life-threatening situations, diverting negative emotions away from awareness might have been a useful defense mechanism. Nevertheless, it is possible that those individuals scoring high on attachment avoidance simply deny PTSD Symptoms as opposed to not experiencing them.

Furthermore, the results of Besser and Neria's (2012) study are in line with the notion that traumatic stress often challenges social relationships, highlighting the role of early and ongoing attachment orientations in predicting differential outcomes (e.g., Solomon, Dekel, & Mikulincer, 2008). Moreover, it provides support for theoretical frameworks that have addressed adaptation to trauma, such as social cognition theories (see Benight, 2012).

The findings of Besser and Neria's study have a number of clinical implications. They suggest the importance of personality evaluations in the provision of mental health treatment and prevention programs among exposed populations in war-like situations. Moreover, their findings identify perceived availability of social support as a most valuable resource among anxiously attached individuals, suggesting that mental health personnel should consider developing programs that will enhance social support in general and among anxiously attached individuals in particular. In this respect, the development of interventions for highly anxiously attached individuals may include strategies to modify their frequent tendency for emotional hyperactivation. Promoting a sense of attachment security may contribute to the reconstruction of comforting, health-sustaining beliefs that might have been shattered by trauma and, consequently, might enhance the opportunities for recruiting support.

However, there are several limitations to their study such as small sample size, lack of a control group and mainly, the cross-sectional nature that limits any assignment of causality. In other words, it can be argued that the direction of the model may differ in a manner such that the traumatic experience may affect the attachment orientation and not necessarily be affected by attachment orientations. However, this possibility can be discounted for several reasons. First, there were no differences in the levels of attachment orientations, the levels of PTSD Symptoms, or the levels of perceived support reported in individuals located in the different alarm zones. In addition, findings of another study (Mikulincer, Shaver, & Horesh, 2006), which examined the relationship between attachment orientations and war-related intrusions among the Israeli population during the second Gulf War, which exposed the Israeli population to the threat of non conventional missile launch for 21 days, found that attachment orientation has unique effects on trauma-related responses and thus shapes the trauma reaction.

Future studies on attachment that use a longitudinal design from childhood into adulthood will be able to supply the strongest test of early childhood attachment and subsequent responses during and following a major trauma.

In order to address this cross-sectional limitation and to expand the effect of attachment orientations on major depressive disorder in addition to PTSD, Besser and Neria (2010) conducted a second research study among student evacuees, which examined in a cross

lagged panel design the effect of attachment orientation and perceived social support on PTSD and MDD among evacuees.

## **2.2. Study 5: Evacuees under Missile and Rocket Attacks: Insecure Attachment, Perceived Social Support, PTSD, And Depressive Symptoms– A Follow Up Cross Lagged Study**

In their second study, Besser and Neria (2010) used a follow-up Cross-Lagged-design to test the effects of attachment orientations and perceived social support on PTSD and major depressive disorder symptoms (MDD) in a sample of 135 Israeli students who were evacuated from a university campus located near the Israel–Gaza border in response to increased missile–fire in the area. An internet–based data collection procedure enabled the simultaneous survey of evacuees located up to 40 km (25 miles) from the border, both during the fighting and four months after the ceasefire.

As previously demonstrated, attachment orientations and social support are strongly associated with psychological well beings following exposure to ongoing terror. What remains to be seen, however, is whether levels of negative responses to traumatic events are affected by levels of perceived support, or whether negative responses to traumatic events effect perceptions of social support. In the context of adult attachment theory, what remains unknown is whether internal working models of attachment effect perceptions of social support, or whether the levels of security of attachment are effected by levels of perceived availability of social support.

The goal of Besser and Neria's (2010) second study was to extend the current knowledge by conducting a follow-up study aiming to examine the sequence of effects among attachment orientations, perceived social support, and symptoms of PTSD and MDD, by using Cross-Lagged Panel Correlation (CLPC) path analyses.

As shown in their first study, Besser and Neria's (2010) data suggested that proximity to the border was not associated with symptoms or any other study variables. Thus, regardless of the objective threat (i.e., the amount of time one had to take cover between the moment the air raid siren sounded and the moment the incoming rocket or missile hit, which was a function of one's distance from the Israel–Gaza border), their findings suggest that the evacuation did not yield improved psychological symptoms among evacuees who continued to be exposed to missile attacks. PTSD prevalence and MDD have been found to be significantly higher in Time 1 than in Time 2 and Time 3. The elevated prevalence of PTSD and MDD at Time 1 can be explained by the powerful threat to life that participants experienced during the war. It is noteworthy that many participants in this sample may have continued to be exposed to long–distance missiles (up to 40 km or 25 miles from the Gaza–Israel border) even after evacuation. Nevertheless, the findings indicate a significant and sharp decrease in mean levels of PTSD and MDD symptoms at four months after ceasefire, as well as a significant increase in the perceived availability of social support and a decrease in reported levels of Attachment–Anxiety.

Consistent with previous analysis of civilians exposed to terrorism (e.g., Galea *et al.*, 2003), these findings suggest an overall resilience and an impressive ability to bounce back over time. The present, and previous study demonstrate the vulnerability of individuals scoring high for the attachment anxiety orientation, as compared to those scoring high for the avoidance orientation. It is also consistent with previous studies that have repeatedly documented the link between attachment anxiety orientation and psychological distress

(Davila, 2001; Declercq & Willemssen, 2006; Lopez, 2001; Joiner & Metalsky, 2001; Mallinckrodt & Wei, 2005; Mallinckrodt & Wei, 2005; Neria *et al.*, 2001; Wei, Heppner, & Mallinckrodt, 2003; Wei, Russell, Mallinckrodt, & Zakalik, 2004; Zakin, Solomon, & Neria, 2003), as well as the association between attachment avoidance regulation strategy and decreased sensitivity to stress (Lopez & Brennan, 2000). Individuals with different attachment orientations seem to differ in the strategies they use to deal with stress, as well as in their associated symptomatology. Those scoring high for the attachment anxiety orientation may be hypervigilant to sources of distress and hypersensitive to the problems they experience; whereas individuals scoring high for the avoidance attachment orientation seem to divert negative emotions from awareness (Kobak & Sceery, 1988; Mikulincer, Florian, & Tolmatz, 1990).

In line with previous studies, these results show that anxiously attached individuals with low levels of perceived social support are more likely to exhibit increased levels of symptomatology when exposed to traumatic events. Indeed, findings of previous correlational studies, as well as this study's findings for Time 1, point to the potential coexistence of attachment effects on reactions to ongoing exposure to trauma, as well as to the possible effects of adults' exposure to ongoing threats on their internal working models of attachment (Besser *et al.*, 2009). However, importantly, the current study's follow-up findings indicate Cross-Lagged effects in which Attachment–Anxiety had a significant effect over time on both levels of symptoms and perceptions of social support, such that higher levels of Attachment–Anxiety at the time of exposure (at war) were related to increased levels of symptoms and decreased levels of perceived social support four months later (see Figure 11).



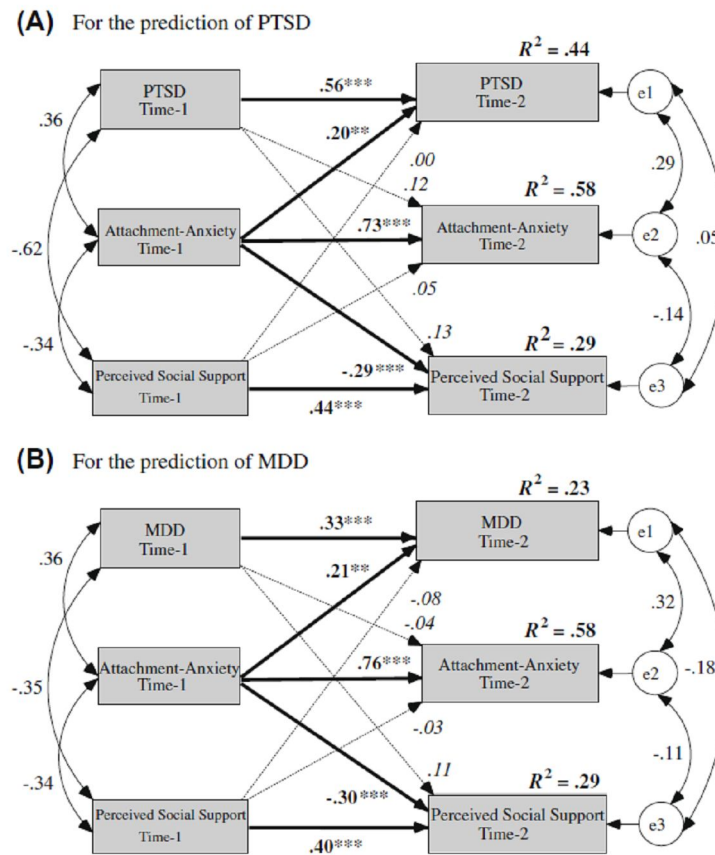


Figure 11. Cross-Lagged Models for the Prediction of PTSD and MDD. (A) For the prediction of PTSD. (B) For the prediction of MDD. Rectangles indicate measured variables. Small circles reflect residuals (e); bold numbers above or near endogenous variables represent the amount of variance explained ( $R^2$ ). Unidirectional arrows depict hypothesized directional or causal links/associations. Standardized maximum-likelihood parameters are used. Bold estimates are statistically significant at  $**p < 0.01$  and  $***p < 0.001$ . The dotted paths indicate nonsignificant causal links/associations.

No reciprocal effects were observed in this study (Besser & Neria, 2011). In other words, although higher levels of attachment anxiety predicted increased levels of PTSD and MDD symptoms and decreased levels of perceived social support 4 months after ceasefire, PTSD, MDD, and perceived social support did not have any effects on attachment anxiety over time. These findings provide further evidence for the idea that attachment anxiety is a vulnerability factor, given that it was associated with more severe PTSD and MDD symptoms and reduced levels of perceived support 4 months after ceasefire. This study (Besser & Neria, 2010) indicates overall resilience with an increase in perceived social support and a decrease in symptoms over time. However, individuals with high levels of attachment anxiety remained vulnerable and, therefore, exhibited high levels of PTSD and MDD symptoms. Furthermore, these individuals perceived their social networks as being less supportive under situations of continuous stress and maintained those views over time. As noted earlier, it is possible that anxiously attached individuals tend to overreact to their negative feelings in order to elicit support from others (Mikulincer & Florian, 1995). Future research should investigate whether

highly anxiously attached individuals facing extreme traumatic stress may become overly needy and overtax significant others. The results of the analysis conducted using the cross-lagged models further support the relative stability of individual differences in personality vulnerability factors and their moderately strong predictive effects on both positive and negative outcomes in trauma-exposed individuals.

Despite some limitations (i.e., small sample size and lack of a control group), this study (Besser & Neria, 2010) was able to address a unique phenomenon, focusing on real-time major stressful events that may well have significant ecological validity. The study focused on participants who reported on their experiences as they were occurring, under “in vivo” life-threatening conditions, and then again, 4 months later. Moreover, to the best of our knowledge, the present study represents the first attempt to further understand the relationships between civilians’ insecure attachment orientations, perceived social support, PTSD, and MDD, over time. Taken as a whole, the results of this study points to the central role of individual differences in personality vulnerability factors in mental health problems and interpersonal relations in response to war trauma exposure. An important next step will be the use of longitudinal studies to explore the underlying mechanisms of trauma-related emotional problems. For example, one possible study would examine the longitudinal role of various affect-regulation strategies as potential mediators and/or moderators of the observed cross-lagged effects.

As demonstrated above, PTSD and depression have been thought of as common consequences of continuous exposure to terrorism and war. Elevated levels of anxiety and uncontrollable worrying due to exposure to terrorism and/or war may also significantly influence one’s psychological state. In a three-wave, longitudinal study, Neria, Besser, Kiper, and Westphal (2010) examined these associations among evacuated students. That study is described in detail in the next section.

### **2.3. Study 6: Evacuees under Missile and Rocket Attack: PTSD, Depression, and General Anxiety Disorders– A Longitudinal Study**

Neria et al. (2010) conducted a three-wave, longitudinal study to examine the mental health consequences of the 2008–2009 Israel–Gaza war. Their study aimed to evaluate PTSD, MDD, generalized anxiety disorder (GAD), and their predictors among young Israeli civilians in southern Israel during the war and 2 and 4 months after the ceasefire.

Ample research has been conducted on the mental health consequences of exposure to war among Israeli populations, although most of these studies have been cross-sectional and the few prospective studies that have been performed were limited to two time points. Estimates of PTSD and depression among these populations vary. The prevalence of PTSD among the Israeli population varies and has previously been reported to be 7% (Palmieri *et al.*, 2008), 21% (Shalev *et al.*, 2006), 26% (Hall *et al.*, 2008), and 27% (Besser & Neria, 2009). Estimates of depression vary from 17% (Hall *et al.*, 2008) to 59% (Bleich *et al.*, 2003). In a 2-year follow-up study of the effects of the Al Aqsa Intifada, Bleich and colleagues (2006) reported a stable level of PTSD symptoms across two time points (9%), but a sharp decline in the incidence of depression, from 59% (Bleich *et al.*, 2003) to 29% (Bleich *et al.*, 2006). However, comparisons between these studies are complicated by differences in type of exposure, time of assessment, and measures of psychopathology.

Few studies have addressed the possibility that exposure to terrorism and war may be associated with elevated levels of exaggerated and uncontrollable worrying, above and beyond worrying associated with PTSD and depression. Neria et al. (2010) examined this possibility by expanding their research to include symptoms of GAD, in addition to PTSD and MDD. GAD is relatively common and is characterized by excessive and uncontrollable worrying, anxiety, hypervigilance, and numerous somatic symptoms of anxiety. GAD can also be chronic and disabling (e.g., Kessler *et al.*, 2005). Although GAD has never been studied in trauma-exposed Israeli populations, there is a growing body of literature describing elevated levels of GAD among other populations exposed to disaster (e.g., Palinkas, Downs, Petterson, & Russell, 1993) and terrorism (Ghafoori *et al.*, 2009).

Using a longitudinal, three-wave design and focusing on three mental health outcomes, Neria et al. (2010) aimed to examine the longitudinal associations of severity of trauma exposure, perceived availability of social support during the war, and immediate emotional response during the war with subsequent PTSD, MDD, and GAD. Although the contribution of exposure severity to PTSD is well documented (see Galea *et al.*, 2005; Neria, Nandi *et al.*, 2008; Norris *et al.*, 2002 for reviews), a number of studies of Israeli populations have not found significant relations between severity of exposure and PTSD (e.g., Besser & Neria, 2010; Bleich *et al.*, 2003; Shalev *et al.*, 2006).

The longitudinal design used by Neria and his colleagues (2010) and their inclusion of multiple mental health outcomes enabled them to explore these relations, thus extending the knowledge of the mental health consequences of exposure to military conflict in a young civilian population. The relationship between immediate emotional response to trauma and subsequent psychopathology has received limited scientific attention and has mostly been examined cross-sectionally (e.g., Roemer, Orsillo, Borkovec, & Litz, 1998). Thus far, only Brewin, Andrews, and Rose (2000) have used a longitudinal design to examine the association between immediate emotional response and PTSD. In their study, the level of immediate emotional response was found to be strongly related to the subsequent development of PTSD (Brewin, Andrews, & Rose, 2000).

A considerable body of literature concerning studies conducted in Israeli populations, previously described (Besser & Priel, 2010; Besser & Neria, 2012), suggests that perceived social support is a powerful buffer against stress-induced emotional distress. However, to the best of our knowledge, the study by Neria et al. (2010) is the only one to have investigated the interaction between social support and immediate emotional response to war-related trauma.

Neria and his colleagues sought (a) to examine levels of symptoms of PTSD, MDD, and GAD over time; and (b) to investigate the effects of exposure characteristics, immediate emotional response, perceived social support during the war, and the interaction between immediate emotional response and perceived social support on levels of symptoms of PTSD, MDD, and GAD over time. The results of their study (see Tables 1, 2, and 3) point to a rapid and sharp decline in symptoms of PTSD, MDD, and GAD. Symptoms of all of these disorders were more common among women than men and severity of trauma exposure before and during the war had no effect on immediate response or psychopathology. Perceived social support during the war moderated the effects of immediate emotional response for all psychopathology variables at each time point, as well as the changes in each of these variables over time.

**Table 1. Hierarchical Multiple Regressions for PTSD Symptoms**

Predictors	$R^2$	$\Delta R^2$	$B$	$SE\ B$	$\beta$	$F$ -change	Overall $F$	$df$
Time 1 <sup>a</sup>								
Step 1	0.08					11.71***	11.71***	1.134
Gender <sup>d</sup>			-8.27	2.42	-.28***			
Step 2	0.17	9%				14.95***	13.95***	2.133
Immediate emotional response <sup>e</sup>			8.96	2.32	.34***			
Step 3	0.48	31%				77.27***	40.43***	3.132
Social support			-0.37	0.04	-.56***			
Step 4	0.59	11%				35.27***	47.07***	4.131
Immediate Emotional Response x Social Support			0.12	0.02	.38***			
Time 2 <sup>b</sup>								
Step 1	0.06					8.82**	8.82**	1.133
Gender <sup>d</sup>			-6.03	2.03	-.25**			
Step 2	0.12	6%				7.86**	8.57**	2.132
Immediate emotional response <sup>e</sup>			5.46	1.95	.26**			
Step 3	0.16	4%				5.88***	7.89***	3.131
Social support			-0.11	0.04	-.20*			
Step 4	0.27	12%				20.45***	11.92***	4.130
Immediate Emotional Response x Social Support			0.1	0.02	.38***			

Time 3 <sup>c</sup>								
Step 1	0.04					6.01*	6.01*	1.132
Gender <sup>d</sup>			-5.23	2.13	-.21*			
Step 2	0.08	4%				4.67**	5.42**	2.131
Immediate emotional response <sup>c</sup>			4.47	2.07	.21*			
Step 3	0.22	14%				22.46***	11.71***	3.130
Social support			-0.21	0.04	-.38***			
Step 4	0.34	12%				23.41***	16.17***	4.129
Immediate Emotional Response x Social Support			0.11	0.02	.40***			

*Note.* PTSD = Posttraumatic stress disorder. <sup>a</sup>Time 1: during the war (January 7, 2009),  $n = 135$ . <sup>b</sup>Time 2: 2 months after the ceasefire (March 10, 2009),  $n = 134$ . <sup>c</sup>Time 3: 4 months after the ceasefire (May 10, 2009),  $n = 133$ . <sup>d</sup>Gender is a binary-coded variable (0 = female, 1 = male). Immediate emotional response of helplessness and fearfulness (0 = no, 1 = yes). \*  $p < .05$ , two-tailed. \*\*  $p < .01$ , two-tailed. \*\*\*  $p < .001$ , two-tailed.

**Table 2. Hierarchical Multiple Regressions for MDD Symptoms**

<b>Predictors</b>	<b><math>R^2</math></b>	<b><math>\Delta R^2</math></b>	<b><math>B</math></b>	<b><math>SE\ B</math></b>	<b><math>\beta</math></b>	<b><math>F</math>-change</b>	<b>Overall <math>F</math></b>	<b><math>df</math></b>
Time 1 <sup>a</sup>								
Step 1	0.11					15.6***	15.65***	1.134
Gender <sup>d</sup>			-4.90	1.24	-.32***			
Step 2	0.13	2%				3.10***	9.49***	2.133
Immediate emotional response <sup>c</sup>			2.18	1.24	.18*			
Step 3	0.22	9%				15.49***	12.18***	3.132
Social support			-0.11	0.03	-.31***			
Step 4	0.28	6%				9.92***	12.24***	4.131
Immediate Emotional Response x Social Support			0.04	0.01	.27***			
Time 2 <sup>b</sup>								
Step 1	0.03					4.22*	4.22*	1.133
Gender <sup>d</sup>			-2.74	1.33	-.18*			
Step 2	0.05	2%				3.15*	3.71*	2.132
Immediate emotional response <sup>c</sup>			2.3	1.3	.18*			
Step 3	0.07	2%				0.61*	2.67*	3.131
Social support			-0.02	0.03	-.07 <i>ns</i>			
Step 4	0.19	12%				20.62***	7.06**	4.130
Immediate Emotional Response x Social Support			0.07	0.02	.41***			

Time 3 <sup>c</sup>								
Step 1	0.04					4.94*	4.94*	1.132
Gender <sup>d</sup>			-2.36	1.06	-.19*			
Step 2	0.06	2%				3.06*	3.06*	2.131
Immediate emotional response <sup>c</sup>			1.12	1.04	.19*			
Step 3	0.10	4%				4.68**	4.68**	3.130
Social support			-0.07	0.02	-.24**			
Step 4	0.22	12%				8.72***	8.72***	4.129
Immediate Emotional Response x Social Support			0.05	0.01	.39***			

Note. MDD = Major depressive disorder. <sup>a</sup>Time 1: during the war (January 7, 2009),  $n = 135$ . <sup>b</sup>Time 2: 2 months after the ceasefire (March 10, 2009),  $n = 134$ .

<sup>c</sup>Time 3: 4 months after the ceasefire (May 10, 2009),  $n = 133$ . <sup>d</sup>Gender is a binary-coded variable (0 = female, 1 = male). Immediate emotional response of helplessness and fearfulness (0 = no, 1 = yes). \*  $p < .05$ , two-tailed. \*\*  $p < .01$ , two-tailed. \*\*\*  $p < .001$ , two-tailed.

**Table 3. Hierarchical Multiple Regressions for GAD Symptoms**

Predictors	$R^2$	$\Delta R^2$	$B$	$SE\ B$	$\beta$	$F$ -change	Overall $F$	$df$
Time 1 <sup>a</sup>								
Step 1	0.2					33.82***	33.82***	1.134
Gender <sup>d</sup>			-6.97	1.2	-.45***			
Step 2	0.23	3%				5.35***	20.138***	2.133
Immediate emotional response <sup>c</sup>			2.75	1.19	.20*			
Step 3	0.33	10%				17.90***	21.11***	3.132
Social support			-0.11	0.03	-.31***			
Step 4	0.41	9%				19.49***	22.94***	4.131
Immediate Emotional Response x Social Support			0.06	0.01	.34***			
Time 2 <sup>b</sup>								
Step 1	0.05					7.43***	7.43***	1.133
Gender <sup>d</sup>			-3	1.1	-.23***			
Step 2	0.07	2%				3.03**	4.70**	2.132
Immediate emotional response <sup>c</sup>			1.5	1.08	.19*			
Step 3	0.1	3%				4.52**	4.72**	3.131
Social support			-0.05	0.02	-.18*			
Step 4	0.2	10%				16.12***	7.99***	4.130
Immediate Emotional Response x Social Support			0.05	0.01	.36***			



Time 3 <sup>c</sup>								
Step 1	0.03					3.77*	3.77*	1.132
Gender <sup>d</sup>			-2.03	1.04	-.17 <i>ns</i>			
Step 2	0.03	0%				.73 <i>ns</i>	2.45 <i>ns</i>	2.131
Immediate emotional response <sup>c</sup>			0.88	1.03	-.08 <i>ns</i>			
Step 3	0.1	7%				9.71**	4.84**	3.13
Social support			-0.07	0.02	-.27**			
Step 4	0.18	8%				12.65***	7.12***	4.129
Immediate Emotional Response x Social Support			0.04	0.01	.32***			

*Note.* GAD = Generalized anxiety disorder. <sup>a</sup>Time 1: during the war (January 7, 2009), *n* = 135. <sup>b</sup>Time 2: 2 months after the ceasefire (March 10, 2009), *n* = 134. <sup>c</sup>Time 3: 4 months after the ceasefire (May 10, 2009), *n* = 133. <sup>d</sup>Gender is a binary-coded variable (0 = female, 1 = male). Immediate emotional response of helplessness and fearfulness (0 = no, 1 = yes). \* *p* < .05, two-tailed. \*\* *p* < .01, two-tailed. \*\*\* *p* < .001, two-tailed.

The elevated prevalence of PTSD, MDD, and GAD at Time 1 (see Table 4) may be due to the powerful threat to life that participants experienced during the war, as previously explained. It is noteworthy that many participants in this sample may have continued to be exposed to long-distance missile fire [reaching up to 40 km (25 miles) from the Gaza–Israel border] even after evacuation. Yet, the sharp decline (see Table 4) in symptom levels across the three disorders between Time 1 and Time 2 suggests an impressive capacity to quickly recover from initially high symptom levels in response to external change (i.e., ceasefire).

**Table 4. Means and Standard Deviations of PTSD, MDD, and GAD Symptoms at Three Time Points Among Civilians Exposed to the 2008–2009 Israel–Gaza War**

Variables	I Time 1 <sup>a</sup>		II Time 2 <sup>b</sup>		III Time 3 <sup>c</sup>		<i>F</i>	Statistics		Time Contrasts ( <i>F</i> )		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		Effect size $\eta^2_p$	Observed Power	1 vs. 2	2 vs. 3	1 vs. 3
PTSD	2.07	0.63	1.69	0.51	16.63	0.53	67.04***	0.34	1.0	8.47***	1.83	10.10***
MSS	9.33	5.57	6.36	5.58	6.15	4.44	31.51***	0.19	1.0	6.55***	<1	6.72***
GAD	11.14	5.65	5.95	4.66	4.47	4.34	117.10***	0.47	1.0	10.91***	3.83***	13.39***

*Note.* PTSD: posttraumatic stress disorder; MDD: major depressive disorder; GAD: generalized anxiety disorder. *N* = 133 for all three time points. <sup>a</sup>Time 1: during the war (January 7, 2009), *n* = 135. <sup>b</sup>Time 2: 2 months after the ceasefire (March 10, 2009), *n* = 134. <sup>c</sup>Time 3: 4 months after the ceasefire (May 10, 2009), *n* = 133. \*\*\**p* < .001, two-tailed.

These results are consistent with previous findings concerning civilians following the 9/11 terrorist attacks (Bonanno, Galea, Bucciarelli, & Vlahov, 2006; Galea *et al.*, 2003) and Israeli populations (Lomranz, Hobfoll, Johnson, Eyal, & Tzemach, 1994). Interestingly, trauma severity measures did not predict psychopathology at any time point. Although extensive research involving war veterans (e.g., Neria, Solomon, & Dekel, 2000) and individuals exposed to disasters (e.g., Galea *et al.*, 2003; Neria *et al.*, 2006) has yielded divergent results, the findings of Neria and his colleagues (2010) are in accordance with a number of other studies conducted in Israeli populations (e.g., Bleich *et al.*, 2003; Shalev *et al.*, 2006). Small spatial distances and the ongoing threat of terrorism in Israel may blur the distinction between direct and indirect exposure, creating a sense of national threat.

Moreover, it is possible that ongoing trauma exposure, especially exposure to high-impact threats to one's life, may operate in two directions. For some people, exposure may strengthen resistance against mental health problems (e.g., Basoglu, Paker, Özmen, & Sahin, 1994) via "immunization" to trauma-induced fear and increase self-efficacy or controllability in the face of direct challenge. Alternatively, as mentioned earlier (Besser & Neria, 2010), chronic exposure to trauma may produce a strong sense of vulnerability, accompanied by PTSD, MDD, and GAD, that may be independent of the exact location of the individual or the number of traumatic events experienced. Further longitudinal research is needed to explore these two possibilities.

Women were more likely to report immediate negative emotional responses to attacks as well as higher levels of symptoms of PTSD, MDD, and GAD over time, suggesting that gender differences in trauma-related psychological responses are robust across different time points following trauma exposure, starting with early responses to trauma and including long-term distress months after the initial exposure. Consistent with previous knowledge, the results of this study (Neria *et al.*, 2010) suggest that immediate emotional response to trauma predicts not only PTSD symptoms (Brewin, Andrews, & Rose, 2000; Neria *et al.*, 2000), but also MDD and GAD symptoms over time. These findings suggest that the response to high-impact trauma may often be a process that begins immediately after exposure and that experiences of helplessness and fearfulness may lead to the development of long-lasting psychopathology, which is not limited to PTSD.

In addition, the findings of Neria *et al.* (2010) concerning the predictive role of perceived social support in psychopathology over time are consistent with a growing body of research indicating that perception of available support is a potent moderator/buffer of the stress-distress relation, as has been demonstrated among disaster victims (e.g., Norris & Kaniasty, 1996) and described previously among Israeli civilians (Besser & Priel, 2010; Besser & Neria, 2012). Importantly, Neria and his colleagues' (2010) findings indicate that high levels of social support not only predict lower levels of psychopathology over time, but also moderate the longitudinal effect of immediate emotional response on symptoms of PTSD, MDD, and GAD. These findings suggest that greater perceived social support may reduce levels of vulnerability among individuals who may be particularly vulnerable to long-lasting psychopathology due to their intense initial responses following exposure to potentially traumatic events.

However, as previously mentioned, the study conducted by Neria *et al.* (2010) has some limitations. Their homogenous sample was composed of only college students, which is not representative of the general population, and their sample size was relatively small. Despite these limitations, the present study extends previous knowledge regarding the broad impact of

war trauma beyond symptoms of PTSD, as well as the potential role of social support in moderating the negative effect of immediate emotional response on a broad range of psychiatric symptomatology over time. Early psychosocial interventions designed to help highly symptomatic individuals build or maintain support networks may be useful for alleviating the long-term psychological repercussions of exposure to war-related trauma.

## CONCLUDING REMARKS

The work presented in this chapter is based on ongoing efforts to better understand the determinants and potential moderators and mediators of human responses to war, trauma, and terrorism. Our research was guided by an active search for answers to the following questions: (a) whether and to what extent exposure to extreme stress is debilitating, (b) whether it can result in a range of mental health outcomes beyond PTSD, and, finally, (3) whether those effects are associated with exposure severity and/or determined by predisposing trait personality vulnerabilities that are mediated by inter- and intrapersonal resources.

Overall, the series of studies presented here suggest that civilians exposed to severe and ongoing war trauma and terrorism are at increased risk for a host of negative postexposure outcomes. In contrast, brief and indirect exposure usually entails only limited risk, if any, of long-term mental health problems among the general population. Moreover, our studies demonstrate that exposure to trauma commonly interacts with numerous inter- and intrapersonal factors that may explain the differential risk for posttrauma psychopathology that is commonly observed after a population has been exposed to trauma.

Since our studies were conducted in natural settings and not in the lab, we opted not to seek biomarkers for psychopathology; future studies may opt to do so. In ongoing laboratory studies, we are now attempting to clarify the underlying mechanisms of trauma-related disorders such as PTSD, using neuroimaging and psycho-physiological assessments (Neria *et al.*, 2011) together with psychosocial factors that may help us to better understand the heterogeneous effects of trauma. It is our belief that, ultimately, the quality of posttrauma interventions will benefit from this work. To facilitate these efforts, we propose an interaction–transaction model of inter- and intrapersonal factors that may lead to highly needed theoretical insights (see Figure 12) and subsequently inform the professional community as to better ways to personalize treatments for such impairments. This model may aide the development of more effective theory-driven and empirically based prevention programs aimed at the inter- and intrapersonal factors that underlie PTSD and other mental-health consequences of mass trauma and other life-threatening events.

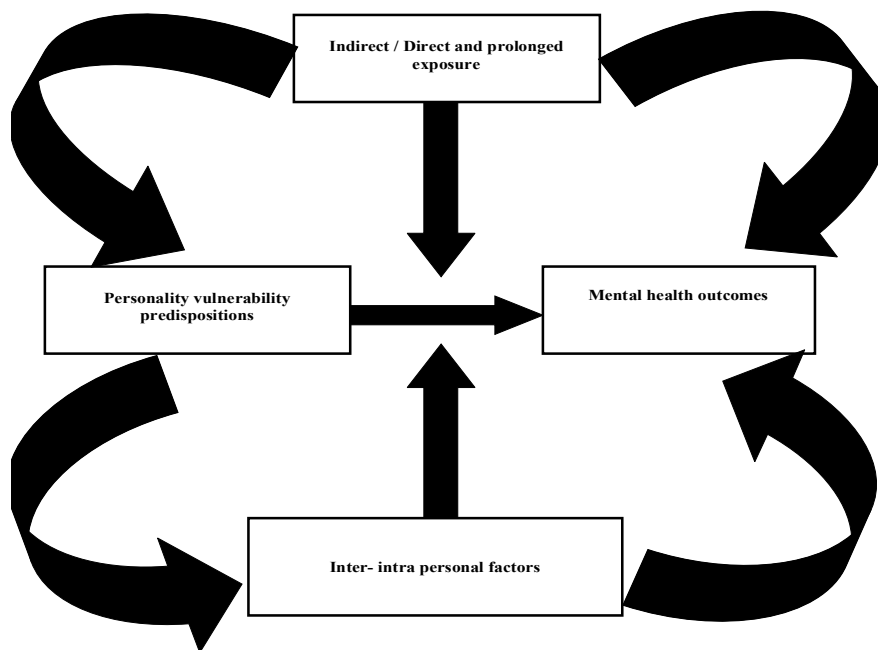


Figure 12. An Integrative Model for the Roles of Intra- and Interpersonal Factors in Mediating and Moderating Vulnerability to Mental Health Outcomes Following Exposure to Terror Attacks.

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