Psychopathology, Risk, and Resilience Under Exposure to Continuous Traumatic Stress: A Systematic Review of Studies Among Adults Living in Southern Israel
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CITATION
Psychopathology, Risk, and Resilience Under Exposure to Continuous Traumatic Stress: A Systematic Review of Studies Among Adults Living in Southern Israel

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Countless people around the world live with exposure to continuous traumatic stress (CTS) as a result of violent political conflict. Over the past 15 years, residents of southern Israel have been exposed to rocket fire from Gaza with varying intensity, and their mental health has been the subject of many studies. The purpose of this article was to systematically review the empirical literature on psychopathology in the southern Israel adult population exposed to CTS, focusing on their symptomatic picture, prevalence rates, and risk and protective factors. Twenty-eight quantitative articles were identified for review. The reviewed studies reported high levels of probable posttraumatic stress disorder, depression, and other psychopathological reactions among the CTS population during low-intensity periods, which appear to rise sharply during escalations. This review identified high-risk groups based on community of residence, level of exposure, socioeconomic factors, and perceived social support. This review proposes that future studies use intensive, longitudinal methods to elucidate the effect of changing exposure intensity, and that interventions target the identified vulnerable groups, with a focus on intrapersonal, social, and community protective factors highlighted in the review.

Keywords: ongoing exposure to trauma, PTSD, depression, war, conflict

Exposure to continuous traumatic stress (CTS; Straker, 1987), also known as ongoing exposure to trauma (Braun-Lewensohn, Celestin-Westreich, Celestin, Verté, & Ponjaert-Kristoffersen, 2009) or Type III trauma exposure (Kira et al., 2013), refers to situations in which individuals repeatedly face traumatic events in their everyday lives for prolonged periods. These situations may result from ongoing violent political conflict and, unfortunately, are currently the experience of numerous populations around the world. It has been argued that the psychological impact of current CTS is likely to differ from that of isolated traumatic events (Type I exposure), or of repeated interpersonal traumas (Type II exposure), as CTS involves a current ongoing threat, whereas Type I and Type II traumas refer to events that have occurred in the past and have since ceased (Diamond, Lipsitz, Fajerman, & Rozenblat, 2010; Lahad & Leykin, 2010; Nuttman-Shwartz & Shoval-Zuckerman, 2015). Yet, despite these differences, distress reactions to all three types of traumatic exposure have largely been categorized in relation to symptoms of posttraumatic stress disorder (PTSD).

Recently, it has been argued by a number of researchers that the PTSD paradigm may not be the most appropriate way of characterizing CTS responses (Diamond et al., 2010; Lahad & Leykin, 2010; Nuttman-Shwartz & Shoval-Zuckerman, 2015; Stein, Wilmot, & Solomon, 2016). For example, Diamond et al. (2010) noted that in CTS contexts, symptoms may abate when individuals leave the area of potential exposure, suggesting that this is a transient state. Second, although trauma exposure is ongoing, PTSD may not “fit” as avoidance of the situation is impossible, while arousal symptoms may be adaptive in this context (Diamond, Lipsitz, & Hoffman, 2013). It may be that other outcomes, such as depression, anxiety symptoms, or sleep difficulties, are better markers of distress in CTS contexts, or at least can give a more comprehensive picture of the psychopathological impact of this kind of exposure.
The current study aims to review the empirical literature on a particular group with CTS exposure—Israeli civilians with ongoing exposure to rocket fire. Since 2001, more than 15,000 rockets and mortars have been indiscriminately fired into Israel (Israel Ministry of Foreign Affairs, 2014). These attacks have caused deaths, injuries, damage, and disruption to everyday life. The range of these rockets has gradually increased from 10 km (2001–2004) to 160 km (since 2014), threatening close to 70% of the Israeli population (Israel Ministry of Foreign Affairs, 2014), although only residents who live in the first 40 km have had continuous exposure.

An excellent review on the psychological aspects of the Israeli–Palestinian conflict highlighted the toll that the conflict has had on citizens on both sides of the border (Ayer et al., 2015). Studies indicate that PTSD and depression are extremely prevalent among Palestinian civilians who have a high degree of exposure to political violence, compounded by poverty and a sense of uncertainty over the future (Canetti et al., 2010). Israeli civilians have been found to have lower rates of distress compared with Palestinians (Lavi, Canetti, Sharvit, Bar-Tal, & Hobfoll, 2014), perhaps buffered by a relatively stable social context, low levels of extreme poverty, a high degree of access to resources and therapy, and in more recent years, the construction of bomb shelters and missile defense systems that provide protection from rockets. The review by Ayer et al. (2015) emphasized the importance of investigating the impact of exposure to the conflict beyond PTSD, as well as reporting on associations between level of exposure and psychological distress. However, the review did not differentiate between these populations, who are obviously suffering from different types of exposure. Specifically focusing on one of these groups suffering from CTS exposure could clarify some of the variability between studies.

A case study of CTS exposure among Israeli civilians provides an opportunity for a valuable and meaningful literature review. First, as this situation has been well-studied over 15 years, it provides an opportunity to investigate what happens to such populations over time. In general, only longitudinal studies can reveal this kind of information; however, an examination of multiple cross-sectional studies conducted among the same population at different time points may also provide similar information. This review also provides a unique opportunity to understand psychopathology in the context of ongoing trauma; in many CTS contexts, the situation is too unsafe for trauma researchers to enter, or the situation is so difficult that conducting research is not feasible.

The current review examines existing empirical evidence on clinical reactions to CTS on people living in southern Israel to clarify the potential mental health implications, investigate risk and protective factors, and examine limitations of existing studies. Specifically, the aim of this review is to answer two main questions: (a) What is the psychopathological picture of CTS responses? and (b) What are the risk and protective factors for psychopathology in this population?

**Method**

We conducted a systematic search for studies published in English (searches were conducted on February 1, 2016) in PsycNET and Google Scholar. We used the following search term categories: Israel AND Missile, Israel AND Rocket, Israel AND Continuous Exposure, and Israel AND Ongoing Exposure. We excluded studies that examined the Palestinian population, as this exposure is different in terms of type, duration, and severity of exposure. Papers were selected for initial review based on the following criteria: (a) published in English, (b) peer reviewed, (c) quantitative research, and (d) published between the years 2000 and 2016. We then checked the reference lists in the bibliographies of studies returned in the search, as well as forward citation tracking of all the selected papers.

This search yielded 184 articles, from which we removed 28 duplicate articles following an initial screening check, leaving 156 unique articles (see Figure 1). We then added additional inclusion criteria: (e) assessed Israelis with primary ongoing exposure to rocket fire from Gaza, (f) assessed a solely adult sample, and (g) measured psychopathological reactions. Of the 156 articles selected for review, 96 articles were excluded because they assessed populations exposed to other conflicts or terror situations, or assessed populations who were only exposed to rocket fire during escalations, and therefore did not have ongoing exposure. Twenty-four articles were excluded because their samples included children or adolescents. The other articles not meeting the criteria for inclusion were one study of adults with intellectual disability, one study investigating secondary traumatization among social workers, and six articles that assessed nonpsychopathological emotional reactions. This left 28 articles for review (see Table 1).

**Results**

The earliest point of data collection was in 2005, and the last point of data collection was August 2014 (during Operation Protective Edge). The 28 identified articles reported on 33 studies, of which 32 met inclusion criteria. Twenty-five studies used a cross-sectional design, whereas only seven used a longitudinal design. Of the 32 studies reviewed only 14 included a non-CTS comparison group. Sampling methods varied, with 14 studies using different randomized methods, 11 studies using convenience sampling, and six studies using snowball sampling.
### Table 1


<table>
<thead>
<tr>
<th>Publication</th>
<th>Study design</th>
<th>Participants</th>
<th>Exposure measures</th>
<th>Psychopathology measures</th>
<th>Psychopathology rates</th>
<th>Key risk and protective factors</th>
<th>Strengths</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ben-Ezra, Palgi, Hamama-Raz, and Shtrira (2015)</td>
<td>Study 1: Longitudinal, Random digit dialing</td>
<td>December 2008-January 2009 (during Operation Cast Lead)</td>
<td>Sderot and surrounding communities (participants living continuously in the area since 2001)</td>
<td>General health questionnaire, Acute Stress Disorder scale (ASD), Short Center for Epidemiological Studies Depression scale (Short CES-D), PTSD checklist</td>
<td>At T1: ASD, 12% Depressive symptoms, 35.2% Psychological distress, 58.9%</td>
<td>Risk: ASD at T1 increased the risk for PTSD at T2 by more than seven times Perceived self-responsibility (for personal reaction) at T1 was positively associated with PTSD at T2</td>
<td>Longitudinal study design</td>
<td>PTSD was not assessed at T1</td>
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<tr>
<td></td>
<td>Study 2: Longitudinal, Convenience sampling</td>
<td>April 2011 (immediately after an escalation)</td>
<td>Sderot and surrounding communities</td>
<td>General health questionnaire, ASD, Short CES-D PTSD checklist</td>
<td>At T1: ASD, 10.57% At T2: PTSD, 7.3%</td>
<td>Risk: ASD symptoms at T1 significantly predicted PTSD at T2</td>
<td>—</td>
<td>Small sample size and convenience sampling</td>
</tr>
<tr>
<td>2. Ben-Ezra, Palgi, Shtrira, and Hamama-Raz (2013)</td>
<td>Study 1: Study group (n = 46), Control group (n = 43)</td>
<td>January 2009 (during Operation Cast Lead)</td>
<td>Study group: Nurses working within rocket range (Ashkelon) Control group: Nurses working outside of rocket range (Tel Aviv)</td>
<td>Impact of Event Scale–Revised (IES-R for PTSD), CES-D Psychosomatic Problems Scale</td>
<td>Not assessed</td>
<td>Risk: The exposed group had higher PTSD, depressive, and psychosomatic symptoms Both exposed groups had higher PTSD compared with the inexperienced group Nurses in the exposed group in Study 1 had higher depressive and psychosomatic symptoms than the nurses in the previously exposed group in Study 2</td>
<td>Comparison group</td>
<td>Cross-sectional Small sample size</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Publication</th>
<th>Study and sample design</th>
<th>Data collection date</th>
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<th>Psychopathology rates</th>
<th>Key risk and protective factors</th>
<th>Strengths</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study 2: Study group (n = 45)</td>
<td>Cross-sectional Randomized sampling</td>
<td>July 2009 (6 months after ceasefire)</td>
<td>Study group: Nurses working within rocket range (Ashkelon)</td>
<td>All those working within rocket range were considered previously exposed</td>
<td>IES-R CES-D Psychosomatic Problems Scale</td>
<td>Not assessed</td>
<td>Protective: The previously exposed group had lower psychosomatic symptoms than the unexposed group</td>
<td>Comparison group</td>
<td>Cross-sectional design</td>
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<tr>
<td>Control group (n = 31)</td>
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<td>Control group: Nurses working outside of rocket range (Tel Aviv)</td>
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<td></td>
<td>Small sample size</td>
<td></td>
</tr>
<tr>
<td>Study 3: Besser and Neria (2009) Study group (n = 160)</td>
<td>Cross-sectional Stratified randomized sampling</td>
<td>October 2007–April 2008</td>
<td>Study group: Sderot and surrounding communities within rocket range</td>
<td>All those living in and around Sderot were considered exposed All those living in and around Elat were considered unexposed</td>
<td>IES-R (PTSD)</td>
<td>Study group: Elevated levels of PTSD symptoms—27% Control group: Elevated level of PTSD symptoms—3%</td>
<td>Risk: Gender (female) was associated with PTSD In the exposed group, PTSD symptoms were positively associated with more prejudiced attitudes Protective: In the exposed group, life satisfaction was negatively associated with PTSD severity</td>
<td>Comparison group</td>
<td>Cross-sectional design</td>
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<td>Control group (n = 181)</td>
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<td>Control group: Elat and surrounding communities</td>
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<tr>
<td>Study 4: Besser and Neria (2010) T1 (n = 135) T2 (n = 133)</td>
<td>Longitudinal Convenience sampling</td>
<td>January 2009 (during Operation Cast Lead) May 2009 (4 months after ceasefire)</td>
<td>Students at Sapir College (Sderot)</td>
<td>Proximity to border, with three groups identified (all within rocket range) (1) 0–20 km from the border (2) 20–30 km from the border (3) 30–40 km from the border</td>
<td>PTSD Inventory (PTSD-I) Patient Health Questionnaire-9 (PHQ-9 for depression symptoms)</td>
<td>Not assessed</td>
<td>Risk: Higher attachment anxiety was positively associated with more PTSD and depression symptoms at the same time point and longitudinally Higher attachment anxiety at T1 was associated with greater PTSD and depression symptoms at T2 Protective: Social support was negatively correlated with both PTSD and depression symptoms at the same time point and longitudinally</td>
<td>Longitudinal design Convenience sampling</td>
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<table>
<thead>
<tr>
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<th>Study and sample design</th>
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<th>Strengths</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Besser and Neria (2012) ( (n = 135) )</td>
<td>Cross-sectional Convenience sampling</td>
<td>January 2009 (during Operation Cast Lead)</td>
<td>Students at a college in Sderot, who were evacuated to their families (still within rocket range)</td>
<td>Proximity to border, with three groups identified (all within rocket range): (1) 11–20 km from the border, (2) 21–30 km from the border, (3) 31–40 km from the border</td>
<td>PTSD-I</td>
<td>Probable PTSD—20%</td>
<td>Risk: Low levels of social support mediated the association of attachment and PTSD. Intensity of exposure (proximity to the border) was not related to PTSD symptoms</td>
<td>—</td>
<td>Cross-sectional design Convenience sampling</td>
</tr>
<tr>
<td>6. Besser, Neria, and Haynes (2009)</td>
<td>Study group ( (n = 254) ) Control group ( (n = 308) )</td>
<td>October 2007–April 2008</td>
<td>Study group: Sderot and surrounding communities within rocket range Control group: Eilat and surrounding communities</td>
<td>All those living in and around Sderot were considered exposed All those living in and around Eilat were considered unexposed</td>
<td>Stress Arousal Checklist (SACL; psychological experience) IES-R (PTSD)</td>
<td>Not assessed</td>
<td>Risk: Exposure was associated with higher levels of PTSD, and perceived stress Gender (female) and low education levels were associated with greater levels of PTSD Link between perceived stress and PTSD symptoms was significantly stronger in the exposed group Higher levels of perceived stress in the exposed group mediated the association between attachment anxiety and PTSD</td>
<td>Comparison group</td>
<td>Cross-sectional design Large and matched sample</td>
</tr>
<tr>
<td>7. Besser and Priel (2010) Study 1: Study group ( (n = 129) ) Control group ( (n = 155) )</td>
<td>Cross-sectional Stratified randomized sampling</td>
<td>October 2007–April 2008</td>
<td>Study group: Sderot and surrounding communities within rocket range Control group: Eilat and surrounding communities</td>
<td>All those living in and around Sderot were considered exposed All those living in and around Eilat were considered unexposed</td>
<td>IES-R (PTSD) SACL The Depressive Experience Questionnaire (DEQ)</td>
<td>Not assessed</td>
<td>Risk: Exposure was positively associated with dependency, PTSD severity, and perceived stress Among the exposed group, level of stress was associated with PTSD severity, as well as higher levels of dependency For the unexposed group only self-criticism was related to levels of PTSD.</td>
<td>Comparison group</td>
<td>Cross-sectional design</td>
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</tbody>
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<th>Limitations</th>
</tr>
</thead>
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<tr>
<td>Study 2: Study group ($n = 119$) Control group ($n = 127$)</td>
<td>Cross-sectional Stratified randomized sampling</td>
<td>October 2007 – April 2008</td>
<td>Study group: Sderot and surrounding communities within rocket range Control group: Eilat and surrounding communities</td>
<td>All those living in and around Sderot were considered exposed All those living in and around Eilat were considered unexposed</td>
<td>IES-R SAACL DEQ Visual Analog Scale (negative affect scales for negative state mood) State Anger Scale Somatic, Cognitive and Behavioral Anxiety Inventory-Somatic subscale</td>
<td>Not assessed</td>
<td>Risk: Exposure was associated with higher levels of dysphoria, anxiety, hostility, anger, and somatization, compared with the nonexposed group. Levels of stress and arousal, as well as dependency were associated with higher levels of PTSD. Among the exposed group, the associations between dependency and PTSD severity and overall distress were mediated by low levels of perceived social support and maladaptive emotional regulation. Among the unexposed group, the associations between self-criticism and PTSD severity were mediated by maladaptive emotional regulation.</td>
<td>Comparison group</td>
<td>Cross-sectional design</td>
</tr>
<tr>
<td>8. Besser, Weinberg, Zeigler-Hill, and Neria (2014) ($n = 140$)</td>
<td>Cross-sectional Snowball</td>
<td>November 2012 (during Operation Pillar of Defense)</td>
<td>Women in rocket fire range</td>
<td>All those included in the study were considered exposed (all participants lived 7–40 km from the border with Gaza)</td>
<td>PTSD Checklist civilians (PCL-C) The Dissociative Experience Scale</td>
<td>Not assessed</td>
<td>Protective: Both intrapersonal (hope, optimism, and self-esteem) and interpersonal (perceived social support) sources of resilience were negatively associated with PTSD and dissociative symptoms.</td>
<td>—</td>
<td>Cross-sectional design</td>
</tr>
<tr>
<td>9. Besser, Zeigler-Hill, Pincus, and Neria (2013) ($n = 342$)</td>
<td>Cross-sectional Snowball</td>
<td>November 2012 (during Operation Pillar of Defense)</td>
<td>Women in rocket fire range</td>
<td>Three levels of exposure severity were identified according to exposure during the operation: (1) High exposure, 7–40 km from the border (CTS group) (2) Moderate exposure severity, 65–75 km (3) Low exposure, 50–60 km</td>
<td>The Pathological Narcissism Inventory PCL-C Generalized Anxiety Disorder Scale (GAD-7)</td>
<td>Not assessed</td>
<td>Risk: High exposure severity (CTS) had significantly higher PTSD and GAD (there was no difference between the moderate and low exposure groups). PTSD and GAD symptoms were related to pathological narcissism for those who were highly and moderately exposed during the operation (the CTS and not CTS—moderately exposed group)</td>
<td>Large sample size</td>
<td>Cross-sectional Comparison group</td>
</tr>
<tr>
<td>Publication</td>
<td>Study and sample design</td>
<td>Data collection date</td>
<td>Participants</td>
<td>Exposure measures</td>
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<td>10. Besser, Zeigler-Hill, Weinberg, Pincus, and Neria (2015) (n = 251)</td>
<td>Cross-sectional Snowball</td>
<td>July–August 2014 (during Operation Protective Edge)</td>
<td>Jewish Israeli adults living in communities exposed to rocket fire</td>
<td>Sample was divided into three groups according to exposure during the operation (1) High exposure, 7–40 km from border (CTS group) (2) Moderate exposure, 65–75 km (3) Low exposure, 50–60 km</td>
<td>PCL-C</td>
<td>Not assessed</td>
<td>Risk: Moderate and high exposure (CTS) groups had higher PTSD symptom levels than the low exposure group; there were no significant differences between them</td>
<td>—</td>
<td>Cross-sectional</td>
</tr>
<tr>
<td>11. Braun-Lewensohn and Rubin (2014) (n = 843)</td>
<td>Cross-sectional Not stated</td>
<td>March–April 2012 (1 week to 1 month after an escalation)</td>
<td>Adults living within rocket fire range</td>
<td>Sample was divided into three groups based on distance from border with Gaza (1) Up to 7 km from border (CTS group) (2) 7–40 km from border (CTS group) (3) More than 40 km from border</td>
<td>Psychological distress (SPD)</td>
<td>Not assessed</td>
<td>Risk: The medium proximity group reported the highest distress. Women had higher levels of distress (above and beyond group) Protective: Middle-aged population had the least distress (above and beyond group). High family income was negatively associated with distress (above and beyond group). Sense of coherence was negatively associated with distress, especially in the CTS group closest to the border</td>
<td>Large sample size</td>
<td>Cross-sectional</td>
</tr>
<tr>
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<td>12. Chipman, Palmieri, Canetti, Johnson, and Hobfoll (2011) Study group (n = 500) Control group (n = 501)</td>
<td>Cross-sectional Random telephone sampling, stratified for gender and exposure</td>
<td>July-August 2008</td>
<td>Study group: Residents of exposed regions (Sderot, Netivot, or Ashkelon) Control group: Residents of low or nonexposed regions (Ofakim, Ashdod, or Akiva)</td>
<td>Exposure group was based on place of residence. Direct exposure was also assessed by three items asking how many times participants had experienced the following due to rocket attacks: (1) Witnessed or were present when there were injuries or fatalities. (2) A family member or close friend died. (3) Personally injured or had a family member or friend who was injured.</td>
<td>PTSD Symptom Scale</td>
<td>Posttraumatic stress-related impairment—29% Probable PTSD—5.5%</td>
<td>Risk: High-exposure region had higher levels of posttraumatic stress-related impairment (exposure region was only a marginally significant predictor after accounting for other exposure variables). Injury to oneself, a close friend, or family member predicted impairment (above and beyond group) Gender (female), less education, and low income, as well as the loss of psychological resources, worse health, and sleep disturbance were significantly associated with greater impairment (above and beyond group)</td>
<td>Large sample size Comparison group</td>
<td>Cross-sectional The duration of exposure (CTS vs. short-term exposure) was not regarded as a factor in most of the analyses</td>
</tr>
<tr>
<td>13. Dekel and Nuttman-Shwartz (2009) Study group 1 (n = 67) Study group 2 (n = 67)</td>
<td>Cross-sectional Convenience, matched for gender and age</td>
<td>March-July 2005</td>
<td>Study group: Urban residents with lower education and higher exposure (Sderot) Control group: Kibbutz residents with higher education and lower exposure (Kibbutz)</td>
<td>Participants were asked to indicate their direct exposure to rockets on a 5-point scale ranging from 1 (no direct exposure) to 5 (a rocket fell on or very close to my home)</td>
<td>PTSD-1</td>
<td>Not assessed</td>
<td>Risk: Higher exposure was associated with greater PTSD level. Older age was associated with greater PTSD. PTSD and PTG were significantly associated. High levels of threat appraisal were associated with greater levels of PTSD. Protective: Sense of belonging was a significant protective factor for PTSD for the kibbutz residents</td>
<td>Comparison group</td>
<td>Cross-sectional Convenience sampling</td>
</tr>
</tbody>
</table>

(table continues)
<table>
<thead>
<tr>
<th>Publication</th>
<th>Study and sample design</th>
<th>Data collection date</th>
<th>Participants</th>
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</tr>
</thead>
</table>
| 14. Dickstein et al. (2012)  
(\(n = 450\)) | Cross-sectional  
Stratified | August 2009 | Residents of Sderot and Otef Aza (all in range of fire) | Exposure was measured using a 6-item questionnaire relating to personal injury, family member injury, close friend injury, family member killed, close friend killed, and loss of property | PCL  
Depression Anxiety Stress Scale 21 | Not assessed | Risk: Exposure was positively correlated with PTSD, depression, anxiety, and stress symptoms  
Under substance use coping, denial/disengagement, and social support seeking; terror-related exposure was associated with higher depression, anxiety, and stress  
Protective: Acceptance/positive reframing was associated with decreased levels of PTSD, depression, anxiety, and stress | Large sample size | Cross-sectional |
Study group  
(\(n = 50\))  
Control group  
(\(n = 49\)) | Cross-sectional  
Convenience sampling | February–September 2009 | Study group: Mental health professionals working in Sderot  
Control group: Mental health professionals working in rural communities bordering Gaza | All participants worked in exposure region  
Objective exposure was assessed by 10 items related to the frequency of direct exposure to rocket fire  
Subjective exposure was assessed by four items that reflected perceived threat (e.g., personal and family security)  
Professional exposure was assessed by six items related to the frequency of exposure through work | PTSD-1  
Modified version of the Compassion Fatigue Questionnaire (for vicarious trauma) | Not assessed | Risk: Study group (higher objective, subjective, and professional exposure to rockets compared with the controls) reported higher PTSD and vicarious traumatization symptoms  
Subjective exposure predicted both PTSD and vicarious traumatization  
PTSD was predicted by professional experience and perceived professional competence  
Vicarious traumatization was predicted by years of education  
Vicarious traumatization was predicted by professional experience, professional support, and perceived professional competence | Cross-sectional  
Convenience sampling |
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<th>Limitations</th>
</tr>
</thead>
<tbody>
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<td>16. Gelkopf, Berger, Bleich, and Silver (2012)</td>
<td>Cross-sectional Random-digit dialing</td>
<td>July 2007</td>
<td>Study groups: High-exposure urban (Sderot) and high-exposure rural (Otef/Aza)</td>
<td>Sderot and Otef/Aza residents were considered highly exposed. Ofakim and Hevel Lachish were considered “indirectly” exposed.</td>
<td>PCL 18-item Brief Symptom Inventory</td>
<td>Probable PTSD: High/urban group—26.4% High/rural—5.6% Low/urban—1.5% Low/rural—0%</td>
<td>Risk: High exposure/urban group reported higher PTSD and distress, and worse functioning than the other three groups. High exposure/rural residents reported more anxiety and distress than residents of low/rural.</td>
<td>Comparison group</td>
<td>Cross-sectional</td>
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<td>Control groups: Low-exposure urban (Ofakim) and low-exposure rural (Hevel Lachish)</td>
<td>Objective exposure to rocket fire was assessed using questions relating to personal exposure, near missile, and injury/foss of close other.</td>
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<td>17. Gil, Weinberg, Or-Oben, and Harel (2015)</td>
<td>Cross-sectional Snowball</td>
<td>July 2014 (during Operation Protective Edge)</td>
<td>Residents living within the range of rocket fire during the war</td>
<td>Three levels of objective threat were defined: 1) High exposure, 7–40 km from border (CTS group) 2) Moderate exposure, 40–80 km 3) Low exposure, over 80 km Subjective threat was examined by a single question on a 4-point Likert scale relating to the participant’s estimation of the threat that missiles will harm/other living space.</td>
<td>DSM-5 PTSD Symptom Levels Scale Peritraumatic Dissociative Experiences Questionnaire</td>
<td>Not assessed</td>
<td>Risk: High levels of objective and subjective threat were positively associated with distress. Higher peritraumatic dissociation was associated with higher PTSD symptoms (above and beyond CTS). Females were at higher risk for PTSD symptoms (above and beyond CTS).</td>
<td>Comparison groups</td>
<td>Cross-sectional CTS was not taken into consideration in part of the analyses.</td>
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<td>Study and sample design</td>
<td>Data collection date</td>
<td>Participants</td>
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<td>Psychopathology rates</td>
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<td>18. Gil et al. (2016) T1 (n = 212) T2 (n = 160)</td>
<td>Longitudinal Snowball</td>
<td>July 2014 (during Operation Protective Edge) August 2014 (during a ceasefire during Operation Protective Edge)</td>
<td>Residents living within the range of rocket fire during the war</td>
<td>Three levels of objective threat were defined: (1) High exposure, 7–40 km from border (CTS group) (2) Moderate exposure, 40–80 km (3) Low exposure, over 80 km</td>
<td>DSM-5 PTSD Symptom Levels Scale Peritraumatic Dissociative Experiences Questionnaire</td>
<td>Not assessed</td>
<td>Risk: Higher PTSD symptoms at T1 were associated with higher PTSD symptoms at T2 (above and beyond CTS) Higher dissociation symptoms at T1 were associated with higher dissociation symptoms at T2 (above and beyond CTS) Protective: Higher peritraumatic dissociation at T1 was associated with lower PTSD symptoms at T2 (above and beyond CTS)</td>
<td>Longitudinal Comparison group</td>
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<td>19. Lassri, Soffer-Dudek, Lerman, Rudich, and Shahar (2013) Study 1 T1 (n = 91) T2 (n = 67)</td>
<td>Longitudinal Convenience sampling</td>
<td>Approximately 1 year before Operation Cast Lead (precise dates not given, likely in 2008) January–February 2009 (1–2 months after Operation Cast Lead)</td>
<td>Undergraduates studying at a college exposed to rocket attacks</td>
<td>Questionnaire which assessed four types of exposure: (1) Perceived stress-related exposure (2) Physical exposure (how close and how loud the missiles were from their location?) (3) Relational exposure (were people they knew affected by the missiles?) (4) Media exposure (the amount of terror-related television they watched following the attacks and their emotional reactions to it)</td>
<td>53-Item Brief Symptom Inventory (BSI-53) DEQ</td>
<td>Not assessed</td>
<td>Risk: Only under high perceived stress-related exposure; Self-criticism positively predicted increased levels of postexposure psychopathology</td>
<td>Longitudinal Convenience sampling</td>
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<td>Participants</td>
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<td>Study 2</td>
<td>Longitudinal</td>
<td>Approximately 3 years before Operation Cast, Lead (precise dates not given, likely in 2006) 3 months later</td>
<td>Graduates of a college exposed to rocket attacks</td>
<td>Questionnaire which assessed four types of exposure: (1) Perceived stress-related exposure, (2) Physical exposure (how close and how loud the missiles were from their location?), (3) Relational exposure (were people they knew affected by the missiles?), (4) Media exposure (the amount of terror-related television they watched following the attacks and their emotional reactions to it)</td>
<td>BSI-53, DEQ-SC6 (Self-Criticism Scale)</td>
<td>Not assessed</td>
<td>Risk: Only under high perceived stress-related exposure: When initial levels of preexposure psychopathology were low, self-criticism predicted elevated levels of postexposure psychopathology, Only under low media exposure: When initial levels of preexposure psychopathology were high, self-criticism predicted decreased levels of postexposure psychopathology</td>
<td>Longitudinal Convenience sampling</td>
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<td>Study 2</td>
<td>Longitudinal</td>
<td>7 January 2009 (during Operation Cast Lead)</td>
<td>Students at a college in Sderot</td>
<td>Severity of exposure to rocket and missile attacks before and during the war was assessed by asking each participant about the number of times he or she was exposed to attacks before and during the war. Even after evacuation to their parents’ homes, most students remained in rocket fire range</td>
<td>PTSD-1, PHQ-9 for depression, GAD-7</td>
<td>PTSD prevalence: T1 = 20%, T2 = 3.0%, T3 = 2.2%</td>
<td>Depression prevalence: T1 = 45.2%, T2 = 22.2%, T3 = 22.2%</td>
<td>GAD prevalence: T1 = 57.8%, T2 = 21.5%, T3 = 12.6%</td>
<td>Longitudinal Convenience sampling</td>
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<table>
<thead>
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<th>Publication</th>
<th>Study and sample design</th>
<th>Data collection date</th>
<th>Participants</th>
<th>Exposure measures</th>
<th>Psychopathology measures</th>
<th>Psychopathology rates</th>
<th>Key risk and protective factors</th>
<th>Strengths</th>
<th>Limitations</th>
</tr>
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<tbody>
<tr>
<td>21. Nuttman-Shwartz (2014) (n = 451)</td>
<td>Cross-sectional Convenience sampling</td>
<td>Not stated</td>
<td>Students at a community college in rocket firing range</td>
<td>Students were asked whether they had been exposed to rockets, and if so, at what proximity on a 4-point scale</td>
<td>BSI-53 (general score) Functioning was measured using 12 statements that tap various aspects of daily functioning</td>
<td>Not assessed</td>
<td>Risk: High levels of exposure was associated with lower levels of functioning. Married participants had higher levels of general stress reactions. Women reported higher levels of general stress reactions. Fear reactions mediated between levels of exposure to rockets and both general stress reactions and impaired functioning. Fear reactions also mediated between distractive coping styles and both general stress reactions and impaired functioning.</td>
<td>Large sample size</td>
<td>Cross-sectional Convenience sampling</td>
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<td>22. Nuttman-Shwartz and Dikel (2009) Total (n = 500) Sderot residents (n = 69) Rural settlements (n = 73) Communities outside of confrontation zone (n = 358)</td>
<td>Cross-sectional Convenience but includes oversampling participants from higher exposed areas</td>
<td>Not stated</td>
<td>Students of Sapir College in Sderot (within rocket range)</td>
<td>Participants were divided into three groups based on place of residence Exposure was assessed by a single question in which participants were asked if they had ever been exposed to rockets</td>
<td>PTSD-1 Probable PTSD: Overall—9.5% Sderot group—26% Rural group—6% Other areas—6%</td>
<td>Risk: Living in Sderot and high level of exposure were both associated with higher levels of PTSD symptoms. Sderot residents had significantly higher alcohol use. Low economic status and being female were both associated with higher levels of PTSD (above and beyond groups). High levels of alcohol and medication use, and higher levels of support seeking were both associated with higher levels of PTSD (above and beyond groups). Protective: High sense of belonging to the community and use of acceptance as a way of coping were both associated with low levels of PTSD (above and beyond groups).</td>
<td>Comparison group</td>
<td>Cross-sectional Convenience sampling Risk and resilient factors were analyzed above and beyond CTS (although between group differences in PTSD were found).</td>
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<th>Study and sample design</th>
<th>Data collection date</th>
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<th>Strengths</th>
<th>Limitations</th>
</tr>
</thead>
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| 23. Nuttman-Shwartz, Dekel, and Regev (2015)                               | Cross sectional                                                                        | 2007–2009 (includes both escalations and periods of relative calm) | Two age-groups of exposed adults from urban and rural regions                     | Exposure was assessed using the exposure to attacks questionnaire (five items) main score | PTSD-1                  | Probable PTSD: Urban group: Younger (aged 20–30) = 29.5%  
Older (aged 60–75) = 40.5%  
Rural group: Younger = 4.5%  
Older = 7.1% | Risk: Exposure was positively correlated with PTSD symptoms  
Urban residents reported higher PTSD rates  
Low income predicted higher PTSD  
Protective: Higher sense of belonging to the community predicted lower PTSD symptoms | —                                    | Cross-sectional Convenience sampling |
| 24. Palgi (2015) (n = 339)                                                | Cross sectional                                                                        | January–February 2014 | Jewish, older than 50, living in communities surrounding Gaza                     | Exposure was assessed by the number of exposures reported from an eight-item list I heard or saw a rocket fall, a rocket fell close to me, my house was hit, I was physically injured, someone I know was physically injured, a family member or a close relative was physically injured, one of my acquaintances was killed, and a family member or a close relative was killed | PTSD checklist adapted for DSM-5   | Probable PTSD—24.8%  
Intrusions—52.5%  
Avoidance—43.7%  
Negative mood and cognitions—45.4%  
Arousal—48.4% | Risk: The following were associated with probable PTSD:  
Exposure to rockets  
Lower education  
Religiosity  
Low self-rated health  
Incidence of depression | —                                    | Cross-sectional Convenience sampling |
| 25. Palgi, Gelkopf, and Berger (2015) (n = 343)                           | Cross sectional                                                                        | July 2007            | Highly exposed city of Sderot as well as rural communities bordering Gaza          | Exposure was assessed by number of exposures reported from an eight-item list (see Palgi, Gelkopf, & Berger) | PCL                    | Not assessed                                                                                   | Risk: Older men who reported low exposure to traumatic life events (before the security situation) had significantly higher PTSD symptoms | Random sampling | Cross-sectional |

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<th>Publication</th>
<th>Study and sample design</th>
<th>Data collection date</th>
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<th>Limitations</th>
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<td>26. Palmieri, Chipman, Canetti, Johnson, and Hobfoll (2010)</td>
<td>Cross-sectional Random telephone sampling, stratified for gender and exposure</td>
<td>July–August 2008</td>
<td>Study group: Residents of exposed regions (Sderot, Netivot, or Ashkelon) Control group: Residents of low or nonexposed region (Ofakim, Ashdod, or Akiva)</td>
<td>The sample was split into a high exposure group and a low exposure group based on place of living Direct exposure was also assessed by three items asking how many times participants had experienced: death of a family member or close friend as a result of rocket or terror attacks; an injury to oneself, a family member, or close friend as a result of rocket or terror attacks; and witnessing rocket or terror attacks, or being present where there were injuries or fatalities</td>
<td>PTSD Symptom Scale PHQ-9</td>
<td>Probable PTSD: Study group—5.6% Control group—5.4% Probable depression: Study group—6% Control group—5.6% Sleep problems: (In both groups)—37.4%</td>
<td>Risk: Gender (female), older age, and economic loss were associated with more sleep problems (above and beyond group) Psychosocial resource loss was associated with sleep problems (above and beyond group) Probable PTSD was associated with sleep problems (above and beyond group)</td>
<td>Comparison group Random sampling Large sample size</td>
<td>Cross-sectional</td>
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<td>Stein et al. (2013)</td>
<td>Cross-sectional Random telephone sampling Stratified</td>
<td>August 2009</td>
<td>High exposure urban (Sderot) High exposure rural (Otef Aza)</td>
<td>Exposure was assessed by an 11-item (yes/no) measure that asked participants whether they, their family member, or close friend had been exposed to a terror attack. Participants were then asked to indicate whether they or their family member or close friend had been injured in an attack, whether they or their family member or close friend lost property in an attack, and whether a family member or close friend was killed in an attack.</td>
<td>PCL-C Depression Anxiety Stress Scale 21</td>
<td>Probable PTSD: Urban—35.2% Rural—6.6%</td>
<td>Risk: Sderot group: Level of terror-related exposure strongly predicted PTSD. Low level of education was a significant predictor for depression. Number of categories of life traumas strongly predicted PTSD and depression. Otef Gaza group: Age, income, and being single were significant predictors of depression.</td>
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<td>Cross-sectional</td>
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28. Weinberg, Besser, Zeigler-Hill, and Neria (2015) | Cross-sectional | November 2012 (during Operation Pillar of Defense) | Female civilians living in southwest Israel 7–40 km from the border with Gaza | All participants were in rocket range and were considered exposed | GAD-7 The Dissociative Experience Scale | Not assessed | Risk: Acute GAD symptoms and dissociative experiences were positively correlated. Protective: Self-esteem mediated the association between optimism and acute GAD symptoms. Self-esteem was negatively associated with acute GAD symptoms. Dispositional optimism was negatively associated with acute GAD symptoms and dissociative experiences. | — | Cross-sectional |

**Note.** PTSD = posttraumatic stress disorder; SPD = serious psychological distress; PTG = posttraumatic growth; DSM-5 = *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition.*

a It was noted that they were indirectly exposed through the media. b PTSD symptoms did not significantly differ between a CTS group and a non-CTS group that was exposed to shelling during an operation; however, both groups significantly differ from a non-CTS low exposure group. c These measures were created for the purpose of this study. d Proximity to the border was not significantly associated with PTSD symptoms at T2. e Severity of exposure was not associated with distress. f Exposure was not significantly associated with PTSD, depression, or sleep problems.
Psychopathology Prevalence

Probable PTSD prevalence. Of the reviewed articles, 11 articles (12 studies) reported probable PTSD prevalence rates in CTS populations. Nine cross-sectional studies assessed rates during “routine” times (i.e., between escalations, with less intense rocket fire), with probable PTSD rates ranging from 5.6% to 35.2% (Ben-Ezra, Palgi, Hamama-Raz, & Shira, 2015; Besser & Neria, 2009; Chipman, Palmieri, Canetti, Johnson, & Hobfoll, 2011; Gelkopf, Berger, Bleich, & Silver, 2012; Nuttman-Shwartz & Dekel, 2009; Nuttman-Shwartz, Dekel, & Regev, 2015; Palgi, Gelkopf, & Berger, 2015; Palmieri, Chipman, Canetti, Johnson, & Hobfoll, 2010; Stein et al., 2013). These differences seem to stem from various risk factors such as current exposure, overall exposure level, low socioeconomic status (SES), and community structure, as will be discussed later. One cross-sectional study assessed rates during an escalation, reporting a probable PTSD rate of 20% among students from a higher education college near Sderot, Israel (Besser & Neria, 2012). A longitudinal study conducted among students from the same college near Sderot reported rates of 20% during an escalation, with dramatic decreases to 3% and 2.2%, 2 and 4 months after ceasefire, respectively (Neria, Besser, Kiper, & Westphal, 2010).

Probable depression prevalence. Three studies assessed depression prevalence (Ben-Ezra et al., 2015; Neria et al., 2010; Palmieri et al., 2010). One cross-sectional study found a high rate of 35.2% depression prevalence during an escalation (Ben-Ezra et al., 2015). Palmieri et al. (2010) measured depression during “routine” and found a much lower rate of 6% among a CTS sample and 5.6% in a non-CTS comparison group, although the sample in this study included individuals from communities with moderate intensity of exposure, and only for 2 years before the study. A longitudinal study found depression rates of 45.2% during escalations, which dropped significantly to 22.2% at both 2 and 4 months after ceasefire, although this rate is still high (Neria et al., 2010).

Other probable psychopathology prevalence and distress. Rates of probable acute stress disorder during an escalation were 10.6% and 12% in two cross-sectional studies reported in the same article (Ben-Ezra, Palgi, Shira, & Hamama-Raz, 2013). A longitudinal study using the clinical cutoff for generalized anxiety disorder symptoms among college students found a high probable generalized anxiety disorder rate of 57.8% (Neria et al., 2010), which dropped to 21.5% and 12.6% (2 and 4 months after ceasefire, respectively). High levels of psychological distress were found in 58.9% of a highly exposed CTS group during an escalation; however, there were no reports concerning rates from this sample in routine times, or from any longitudinal or comparison group (Ben-Ezra et al., 2015). In a cross-sectional study, Chipman et al. (2011) found a high stress-related impairment rate of 29% among a CTS group.

These findings indicate that rates of probable psychopathology seem to be linked to current intensity of rocket fire; during escalations, the rates were generally higher than during routine times. Additionally, the findings that the clinical picture of samples with high CTS exposure includes various manifestations of distress suggest that it is important to conceptualize, investigate, and treat reactions to ongoing exposure to rocket fire through a broader lens than simply focusing on PTSD.

Risk and Protective Factors

The reviewed studies assessed the role of various well-established risk factors for psychopathology in the trauma literature including demographics, socioeconomic and exposure factors, as well as various interpersonal and intrapersonal factors.

Demographic factors. Demographic risk factors identified by the reviewed studies included being female (Besser & Neria, 2009; Besser, Neria, & Haynes, 2009; Nuttman-Shwartz, 2014), being married (Nuttman-Shwartz, 2014), and being older (Dekel & Nuttman-Shwartz, 2009). A high rate of 40.5% probable PTSD was found in Nuttman-Shwartz et al.’s (2015) study among elderly individuals living in Sderot. Finally, Palgi et al. (2015) found the highest PTSD rates in older males with a low level of negative life events.

Socioeconomic factors. The CTS groups that have had the greatest intensity and longest duration of exposure live either in the development town of Sderot, or in kibbutz or other small close-knit rural villages. There are differences between Sderot and the other communities characterized by level of communal living and by the SES of the residents. Accordingly, a number of studies compared Sderot residents with residents of the rural communities. Extremely high rates of probable PTSD were reported by residents of the Sderot development town: 26.4% (Gelkopf et al., 2012), 26% (Nuttman-Shwartz & Dekel, 2009), and 35.2% (Stein et al., 2013). In contrast, residents of nearby highly exposed rural communities reported lower rates of probable PTSD: 5.6% (Gelkopf et al., 2012), 6% (Nuttman-Shwartz & Dekel, 2009), and 6.6% (Stein et al., 2013). Stein et al. (2013) investigated the effect of socioeconomic factors on psychopathology in these groups, and found that education level was negatively related to depression only in Sderot, whereas in the rural community it was economic status that was negatively related to psychopathology. Other studies found a significant main effect of low SES, beyond community of residence (Nuttman-Shwartz & Dekel, 2009; Nuttman-Shwartz et al., 2015).

Exposure. Exposure was assessed in a number of ways across studies; although some defined exposure based on living within rocket range or within a set distance from the Gaza border, other studies included objective exposure (exposure to specific events), subjective exposure (appraisal of threat), or professional exposure (secondary trauma) questions.

Most of the reviewed studies found significant associations between proximity to the border and psychopathology (Besser et al., 2009; Besser & Neria, 2009; Besser & Priel, 2010; Besser, Zeigler-Hill, Pincus, & Neria, 2013; Besser, Zeigler-Hill, Weinberg, Pincus, & Neria, 2015; Gelkopf et al., 2012), whereas only some did not (Besser & Neria, 2012; Braun-Lewensohn & Rubin, 2014; Palmieri et al., 2010).

Three articles compared probable PTSD rates of Sderot residents with that of other urban non-CTS communities without rocket exposure. Three studies found remarkably similar probable PTSD rates among CTS groups from Sderot, ranging between 26 and 27%, whereas the comparison urban non-CTS groups reported between 1.5 and 6% probable PTSD (Besser & Neria, 2009; Gelkopf et al., 2012; Nuttman-Shwartz & Dekel, 2009).

Personal/objective exposure measured by different items concerning specific shelling-related events was positively related to
probable PTSD, depression, anxiety, stress symptoms, and lower levels of functioning in all relevant studies (Chipman et al., 2011; Dekel & Nuttman-Shwartz, 2009; Dickstein et al., 2012; Finkelstein, Stein, Greene, Bronstein, & Solomon, 2015; Gil, Weinberg, Or-Chen, & Harel, 2015; Nuttman-Shwartz, 2014; Nuttman-Shwartz & Dekel, 2009; Nuttman-Shwartz et al., 2015; Palgi et al., 2015; Stein et al., 2013) but one that found that number of exposure events (attacks) was not related to severity of distress (Neria et al., 2010). Braun-Lewensohn and Rubin (2014) compared two CTS groups with a non-CTS group and found that intensity of exposure (dose–response) rather than proximity was associated with higher levels of distress. Similarly, Chipman et al. (2011) found that the relationship between living in an exposed community and PTSD symptoms remained only marginally significant when accounting for other subjective exposure variables.

**Interpersonal factors.** As with Type I and Type II trauma exposure, interpersonal factors seem to play a key role in the emergence of psychopathological symptoms in the context of CTS. Social support was found to be negatively associated with PTSD and depression both at the same time point and longitudinally (Besser & Neria, 2010), and with dissociative symptoms at the same time point (Besser, Weinberg, Zeigler-Hill, & Neria, 2014). Similarly, social support seeking was associated with higher depression, anxiety, and stress (Dickstein et al., 2012; Nuttman-Shwartz, 2014). High sense of belonging to the community was found to play a protective factor for PTSD (Nuttman-Shwartz & Dekel, 2009), especially for rural community residents. It may be that interpersonal factors are particularly important aspects of resilience in the context of CTS exposure, when whole communities are exposed.

**Intrapersonal factors.** Among CTS populations, anxious attachment was found to be highly related to PTSD as well as depression (Besser & Neria, 2010, 2012). In a comparative study, Besser and Priel (2010) found higher levels of dependency in the CTS group as compared with a nonexposed group.

The link between perceived stress and PTSD was significantly stronger in the CTS group compared with the non-CTS group (Besser & Neria, 2009). Perceived stress also increased the effect of personality risk factors on PTSD—under high perceived stress-related exposure, self-criticism was associated with increased psychopathology longitudinally (Lassri, Soffer-Dudek, Lerman, Rudich, & Shahar, 2013). Other intrapersonal factors found to be related to psychopathology were prejudiced attitudes, which were found to be positively related to PTSD symptoms only among the CTS group compared with the non-CTS group (Besser & Neria, 2009), and perceived self-responsibility (for personal reactions), which was positively associated with PTSD longitudinally (Ben-Ezra et al., 2015). Substance use coping and denial/disengagement were related to higher depression, anxiety, and stress (Dickstein et al., 2012).

Among the intrapersonal factors that were measured and found to act as protective factors in the reviewed papers were a sense of coherence, which was negatively associated with distress in the CTS group with the proximity to the border (Braun-Lewensohn & Rubin, 2014), and hope, optimism, and self-esteem, which were all negatively related to PTSD levels (Besser et al., 2014). Acceptance and positive reframing were negatively related to levels of PTSD, depression, anxiety, and stress (Dickstein et al., 2012). Life satisfaction was also negatively related to PTSD severity in the CTS group (Besser & Neria, 2009).

**Discussion**

The goal of the current article was to systematically review the current knowledge concerning the clinical picture of Israeli civilians exposed to prolonged traumatic stress, to better understand the effects of this kind of exposure and consider risk and protective factors. The reviewed studies indicated that probable PTSD rates are higher in CTS groups compared with non-CTS groups. There was a large range of probable PTSD rates in the CTS population, and these differences seem to be related to community of residence and whether the study was conducted during an escalation or “routine” period. Exposure was found to be related to probable PTSD in most of the reviewed studies, along with a broad range of other distress outcomes such as depression, anxiety, somatization, and sleep difficulties.

The PTSD rates in the CTS groups reported by the reviewed studies are higher than those in the comparative non-CTS groups, and are also markedly higher than PTSD rates found in large epidemiological studies (e.g., past-year PTSD prevalence of 3.5% among adults in the U.S. National Comorbidity Survey Replication; Gradus, 2007). The high rates found specifically among Sderot residents (urban sample) were similar to those found in other highly trauma-exposed urban samples (Liebschutz et al., 2007; Westphal et al., 2011).

We were not able to sufficiently address the question of what happens to populations with ongoing exposure to rocket fire over time. Most of the papers reviewed used cross-sectional designs that did not capture the fluctuations in distress caused by current levels of exposure. However, the findings of these studies suggest that psychopathology and distress appeared to spike sharply during escalations, and then abate when intensity of exposure dropped in routine times; however, this was only assessed directly in the study by Neria et al. (2010). These studies indicate that CTS reactions may be more transient and context dependent than is typical for PTSD and depressive states.

Eagle and Kaminer (2013) question whether psychological re-actions to CTS are maladaptive, as they occur in context of a realistic and ongoing threat. Similarly, on the basis of their clinical experience treating the population in the Gaza CTS area, Diamond et al. (2010) argue that PTSD may not be the most accurate descriptor for the reactions of the Israeli inhabitants of the area and that what are described as PTSD symptoms in other situations may in fact be normative coping responses to the imminent threats of the situation. Thus, posttraumatic reexperiencing is replaced with a general feeling of fear; hypervigilance is linked to the anticipation of oncoming missiles; and avoidance symptoms are better conceived as functional reality-based coping that entails avoiding areas that are likely to be hit by missiles (Diamond et al., 2013). As such, they argue that the symptoms constellation within CTS may be better interpreted as adaptive coping to an aversive environment, or even the commonly used phrase of a normal reaction to an abnormal situation. The conceptual argument posed by Diamond et al. (2010) is not dissimilar to what previous CTS research in Israel has found. Israelis responded to the first Gulf War and the second Intifada with intense, yet short-lived, distress, but levels of
clinical disorders were minimal (Solomon, 1995; Tuval-Mashiach & Shalev, 2005).

Yet this framing of the situation leaves critical questions unanswered. The current review indicates that a significant proportion of the CTS population appear to meet criteria for psychopathology. Even if these “symptoms” are actually transient adaptive reactions to a traumatic stressor, and abate in various situations, the CTS resident lives under nearly constant threat, and usually with a high level of actual exposure. The reactions may be understandable, but this abnormal situation has become the reality of daily life for those experiencing CTS over many years. Therefore, a conceptualization focused on functional impairment and generalized distress, rather than standard symptom-based diagnostic criteria, may better be able to capture the suffering experienced by many of those living with CTS exposure.

The reviewed studies did not indicate a clear relationship between exposure and psychopathology. This may be owing to varied operationalization of “exposure” across the reviewed studies. Proximity to the border was sometimes used as a proxy for exposure; however, as the range of rocket fire has steadily increased, this was not necessarily informative. Furthermore, in many cases, proximity to the border was not equivalent to level of threat or actual exposure. Indeed, the relationship between proximity to the border and distress yielded different results across studies. Other exposure measures used by the reviewed studies were also problematic, as they generally inquired about specific events but did not assess the cumulative level of exposure over time. Furthermore, only a few of the reviewed studies included a non-CTS comparison group. Future studies comparing various CTS populations with different intensity and duration of exposure, together with comparison non-CTS samples, could help clarify our understanding.

An alternative explanation is that the typical dose–response relationship between exposure and psychopathology, as reported in many previous studies of trauma exposure, may be less relevant than current exposure for those living with CTS. It may also be that severity of exposure is not uniformly associated with all types of psychopathology (Helpman, Besser, & Neria, 2015). Further investigation is needed to understand whether exposure differentially affects various kinds of PTSD symptoms. Finally, all the longitudinal studies included in the review assessed overall rates of psychopathology. Moreover, the duration of exposure and long-term response trajectories should be investigated assessing whether, and in whom, habituation to the stressors occurs. Future research may want to broaden the psychiatric symptoms measured among this population to create a broader understanding of the emerging symptomatic response to this kind of stress. Finally, it is important to use the findings of this review to frame research focused on identifying risk and protective factors in this particular CTS context, but also in other populations living with CTS, including Palestinian groups, other populations living in conflict situations, and people exposed to a high degree of community violence.

In conclusion, this review presents the complex clinical picture of psychological reactions to CTS in the population of southern Israel, with high rates of probable psychopathology, even in periods of relative calm, and which seem to rise sharply during escalations. This review identified a number of high-risk groups based on community of residence, level of exposure, socioeconomic factors, and perceived social support. Although this review does not provide sufficient evidence on the question of whether these CTS reactions should be considered “true” psychopathology, the findings of these studies indicate widespread and persisting distress. Future research and interventions should focus on how best to buffer distress in these vulnerable groups targeting the intrapersonal, social, and communal factors highlighted in this review.

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