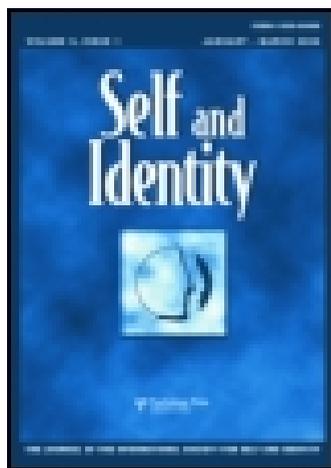


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## Self and Identity

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/psai20>

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Published online: 03 Oct 2014.

To cite this article: Avi Besser, Virgil Zeigler-Hill, Michael Weinberg, Aaron L. Pincus & Yuval Neria (2014): Intrapersonal Resilience Moderates the Association Between Exposure-Severity and PTSD Symptoms Among Civilians Exposed to the 2014 Israel-Gaza Conflict, *Self and Identity*

To link to this article: <http://dx.doi.org/10.1080/15298868.2014.966143>

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# Intrapersonal Resilience Moderates the Association Between Exposure-Severity and PTSD Symptoms Among Civilians Exposed to the 2014 Israel–Gaza Conflict

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Among civilians exposed to war trauma, the development of acute anxiety symptoms has been found to be positively associated with the severity of the traumatic exposure but negatively associated with intrapersonal resilience (optimism, hope, and self-esteem). No study to date has examined whether intrapersonal resilience plays a moderating role in the development of acute anxiety among individuals as they are exposed to trauma. This “natural laboratory” study examined the putative role of intrapersonal resilience in moderating the association between exposure-severity and the development of symptoms of posttraumatic stress disorder (PTSD) as assessed *in vivo* (i.e., under life-threatening conditions during exposure to war). A nonclinical community sample of 251 adults was assessed during real-time exposure to missile and rocket fire during an eruption of violence in the Middle East during July and August 2014. The results indicate that the severity of PTSD symptoms was positively associated with severity of exposure to trauma. However, this association was moderated by individual differences in intrapersonal resilience. More specifically, individuals with low levels of intrapersonal resilience reported more PTSD symptoms than those with high levels of intrapersonal resilience in the geographic regions in which individuals were exposed to low and high levels of rocket and missile fire. The findings of this study provide further evidence that intrapersonal resilience may significantly mitigate the development of PTSD symptoms among civilians exposed to potentially traumatic events.

**Keywords:** PTSD; Exposure-severity; War zone; Mass trauma; Resilience; Optimism; Hope; Self-esteem.

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Received 27 August 2014; accepted 11 September 2014; first published online 3 October 2014.

Grateful thanks are extended to all of the participants in this study. We wish to thank the anonymous reviewers for their very helpful comments on a draft of this article and the ideas involved.

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Exposure to war requires civilians to mobilize internal and external resources in order to effectively cope with potentially traumatic experiences that may place them at considerable risk for a range of mental-health consequences. The present study aimed to examine the diathesis–stress model, which addresses complex interactions between premorbid risk factors (diatheses) and situational stressors (McKeever & Huff, 2003) and suggests that exposure to potentially traumatic events interacts with individual differences to produce trauma-related outcomes (e.g., immediate responses to a proximate stressor). More specifically, we focused on the potential role that intrapersonal sources of resilience (i.e., optimism, hope, and self-esteem) may play in protecting individuals from developing symptoms of PTSD during exposure to uncontrollable, highly aversive, and life-threatening events that are potentially traumatic.

Individuals typically encounter a variety of difficulties during the course of their lives. These events range from daily hassles (e.g., traffic congestion) to major life events (e.g., being severely injured in an automobile accident) with most individuals experiencing at least one potentially traumatic event in their lives (e.g., Bonanno & Mancini, 2008). The fact that even the most severe events are considered to be “potentially” traumatic is important because it serves as a reminder that there are differences in how individuals respond to events in their lives. Some individuals have tremendous difficulty managing their reactions to mundane daily hassles, whereas others are able to deal effectively with even the most severe and challenging life events. The study of intrapersonal resilience attempts to improve our understanding of how and why individuals differ in their responses to the adversities they confront during the course of their lives. There is considerable debate about the exact definition and operationalization of intrapersonal resilience, but it is often said to reflect positive adaptation following adversity (e.g., Davis, Luecken, & Lemery-Chalfant, 2009; Fletcher & Sarkar, 2013; Jackson, Firtko, & Edenborough, 2007; Luthar & Cicchetti, 2000).

Previous research has clearly shown that personality traits can shape how individuals perceive and respond to potentially traumatic events which suggests that personality features may play a significant role in determining the likelihood of individuals developing acute anxiety symptoms and the extent/severity of those symptoms (e.g., Besser & Neria, 2009, 2010, 2012; Besser, Neria, & Haynes, 2009; Besser & Priel, 2010; Besser, Weinberg, Zeigler-Hill, & Neria, *in press*; Besser, Zeigler-Hill, Pincus, & Neria, 2013; Cox, MacPherson, Enns, & McWilliams, 2004; Neria, Besser, Kipper, & Westphal, 2010). One reason that personality features may play a role in responses to potentially traumatic events is that these personality features may reflect individual differences in intrapersonal resilience (e.g., Cann & Etzel, 2008; Vacek, Coyle, & Vera, 2010). Recent studies have found that the personality features of optimism, hope, and self-esteem—which are believed to reflect different aspects of intrapersonal resilience—are associated with the way individuals perceive and respond to stressors ranging from relatively mundane events such as beginning college (e.g., Besser & Zeigler-Hill, 2014) to extreme events such as exposure to life-threatening missile attacks during the 2012 Israel–Gaza war (e.g., Besser et al., *in press*). These intrapersonal sources of resilience are believed to provide individuals with an array of coping mechanisms (e.g., attentional, cognitive, and behavioral) that they can use to deal effectively with negative life events (Fredrickson, 2001; Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000). Thus, based on previous research that has demonstrated the important connection between intrapersonal resilience and anxiety symptoms among civilians under threat of rocket and missile fire (Weinberg, Besser, Campeas, Shvil, & Neria, 2012), the present study examined whether intrapersonal resilience would moderate the association between the severity of exposure to potentially traumatic events and PTSD symptoms.

*Optimism* is defined as the expectation that positive things will happen (Scheier & Carver, 1985). Higher levels of dispositional optimism are related to a variety of outcomes including well-being in times of stress (Besser & Zeigler-Hill, 2014) or adversity (Carver, Scheier, & Segerstrom, 2010). Optimism also predicts more adaptive responses to potentially traumatic events (Prati & Pietrantonio, 2009), including illness (e.g., Kivimäki et al., 2005), natural disasters (Samoon et al., 2010), terrorism (Ai, Evans-Campbell, Santagello, & Cascio, 2006; Besser et al., *in press*; Weinberg, Besser, Zeigler-Hill, & Neria, *in press*), and war (Thomas, Britt, Odle-Dusseau, & Bliese, 2011).

*Hope* involves the belief that an individual will be able to find a way to reach his or her goals (e.g., Snyder, Rand, & Sigmon, 2002). Hope is generally thought to be a positive motivational state that is based on goal-directed agency and planning to meet goals (Snyder et al., 1991). The tendency to experience hope is associated with positive responses to stressful situations (e.g., Affleck & Tennen, 1996; Folkman, 2010). It has been consistently demonstrated that hope can promote better psychological adjustment (Kwon, 2002) and general well-being (Magaletta & Oliver, 1999), and also serves as an important source of resilience for individuals experiencing potentially traumatic events (e.g., Ho, Ho, Bonanno, Chu, & Chan, 2010).

*Self-esteem* refers to the evaluative aspect of self-knowledge that reflects the extent to which people like themselves and believe that they are competent (e.g., Brown, 1998; Tafarodi & Swann, 1995). High levels of self-esteem buffer individuals from negative experiences (e.g., Brown, 2010). Among survivors of potentially traumatic events, high levels of self-esteem are associated with lower levels of emotional distress and fewer PTSD symptoms (e.g., Boscarino, Adams, & Figley, 2004; Kashdan, Uswatte, Steger, & Julian, 2006), as well as fewer anxiety symptoms and dissociative experiences (Besser et al., *in press*; Weinberg et al., *in press*).

Although numerous studies have pointed to an elevated risk of PTSD symptoms in the aftermath of exposure to potentially traumatic events (see Neria, Nandi, & Galea, 2008; Norris et al., 2002; Weinberg et al., 2012, for reviews), only a few studies have assessed these symptoms *during* actual exposure to these events (e.g., Neria et al., 2010). Over the past 14 years, large civilian populations in southwestern Israel and the Gaza Strip have been exposed to recurrent bouts of missile fire across the Gaza–Israel border. A number of previous studies have examined the mental-health consequences of ongoing exposure on the Israeli side of the conflict with the results of these studies suggesting that this exposure has had a broad impact on the mental health of exposed civilians (e.g., Besser et al., 2009, 2013, *in press*; Besser & Neria, 2009, 2010, 2012; Besser & Priel, 2010; Neria et al., 2010). Recently, Israeli and Palestinian civilians on both sides of the Gaza–Israel border experienced yet another round of escalation in the ongoing conflict. In this most recent conflict, Hamas and Islamic Jihad forces from the Gaza Strip launched long-distance missiles that were—for the first time—capable of reaching Israeli cities as far as 120 km from the border. During the period for which the data for this study were collected (8 July 2014 through 5 August 2014), approximately 3474 rockets were fired toward Israel with more than 2518 crossing the border into Israel.

## Overview and Predictions

The goal of the present study was to extend what is currently known about the possibility that intrapersonal resilience may moderate the association between the severity of exposure to potentially traumatic events and PTSD symptoms. Previous research has demonstrated that personality features reflecting intrapersonal resilience offer some

protection against poor psychological adjustment following stressful life events (e.g., Besser & Zeigler-Hill, 2014). However, relatively little is known about the capacity of these resources to substantially buffer individuals from potentially traumatic experiences during real-time exposure to war. To address this issue, we evaluated the levels of intrapersonal resilience and PTSD symptoms among participants in regions of Israel that were exposed to different levels of rocket and missile fire. We expected that severity of exposure would be positively associated with the development of PTSD symptoms which is consistent with the results of previous research (e.g., Besser et al., 2013). Moreover, we expected that intrapersonal resilience would moderate the association between exposure-severity and PTSD symptoms such that individuals with higher levels of intrapersonal resilience would exhibit less-severe PTSD symptoms than those with lower levels of intrapersonal resilience when confronted with the highest level of rocket and missile fire.

## Method

### *Participants and Procedure*

We recruited civilians who were confronted with different levels of potential threat from rocket and missile fire from the Gaza Strip during Operation Protective Edge, an Israel Defense Forces operation that began on 8 July 2014. This was the first time that long-distance missiles were used to reach locations as far as 120 km from the Israel–Gaza border (e.g., Tel Aviv, Jerusalem, Dimona, Haifa). The time available for residents to take shelter between the air-raid sirens warning of incoming fire and the impact of the missiles varied depending on their distance from the Gaza Strip. The amount of warning time ranged from approximately 15 s in the border areas (up to 7 km from Gaza) to 90 s in areas that were 75–120 km from the border (alarm zones were defined by the Israeli Home Front Command).

The sample included 251 Jewish Israeli adults (49 men, 202 women) with a mean age of 31.40 years ( $SD = 10.63$ ) and 14.57 years ( $SD = 2.96$ ) of formal education. The demographic features of the participants are presented in Table 1. The sample was composed of participants who were under fire as they completed the questionnaires (i.e., the participants were in areas that were actually being targeted). More specifically, 36.7% of the participants ( $n = 92$ ) lived in southeastern Israel, 7–40 km from the border, and were under severe threat of missile strikes at the time they completed the survey; 28.7% ( $n = 72$ ) lived in central Israel, 65–75 km from the border, and were under a moderate level of threat from missile strikes; and 34.7% ( $n = 87$ ) lived in southeastern or central Israel, 50–60 km from the border, but were under low levels of threat from missile strikes. It is important to note that simple geographic distance from the border was not equivalent to exposure-severity because some areas farther away from the border (e.g., Tel Aviv, Jerusalem, Dimona) were targeted far more often than other areas closer to the border.

Since our goal was to investigate participant reports *in vivo* under life-threatening conditions, data were collected via the Internet which allowed us to include individuals from across Israel who were experiencing different levels of exposure to missile strikes. A snowball sampling technique was used which utilized Internet-based social media outlets inviting individuals in those areas of Israel to participate in the study and asking them to invite their friends and family members to take part in the study as well. We believe that the low participation rate of men in our study—only 19.5% of our participants were men—may have been due, at least in part, to the fact that men were more likely to have been called into active military service during this conflict. Invitations to

**TABLE 1** Descriptive Statistics for Demographic Features Across the Three Exposure-Severity Regions

	Exposure-Severity Groups					
	Low ( <i>n</i> = 87) <i>n</i> (%)		Moderate ( <i>n</i> = 72) <i>n</i> (%)		High ( <i>n</i> = 92) <i>n</i> (%)	
Born in Israel						
Yes	74 (85.06)		60 (83.33)		76 (82.61)	
No	13 (14.94)		12 (16.67)		16 (17.39)	
Working or in school						
Yes	84 (96.55)		68 (94.44)		89 (96.74)	
No	3 (3.45)		4 (5.56)		3 (3.26)	
Family status						
Single	39 (44.83)		46 (63.89)		58 (63.04)	
Married	44 (50.57)		24 (33.33)		30 (32.60)	
Divorced/Separated	4 (4.60)		2 (2.78)		4 (4.35)	
Religiosity						
Religious	20 (22.99)		22 (30.56)		28 (30.43)	
Secular	67 (77.01)		50 (69.44)		64 (69.57)	
Economic status						
Low/Average	24 (27.59)		40 (55.56)		51 (55.43)	
Good	49 (56.32)		29 (40.27)		40 (43.48)	
High	14 (16.09)		3 (4.17)		1 (1.09)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Age	35.66	13.41	28.36	6.06	29.75	9.18
Education	15.77	3.55	14.10	2.56	13.79	2.23

participate in the study were sent on 8 July 2014 and data collection ended after 29 days, at the time of the first ceasefire declaration on 5 August 2014.

### Measures

#### Exposure-severity

Exposure-severity was defined by the intensity of the missile and rocket fire in the location in which each participant completed the study. Three levels of exposure-severity were defined: (a) *high exposure-severity* (i.e., southeastern Israel, in areas 7–40 km from the border that were under massive attack with approximately 1448 mortars and 1135 rockets being fired toward this area), (b) *moderate exposure-severity* (i.e., central Israel, in areas 65–75 km from the border that were under moderate missile fire with approximately 676 missiles being fired toward this area), and (c) *low exposure-severity* (i.e., southeastern Israel, in areas 50–60 km from the border that experienced infrequent missile fire with approximately 212 missiles being fired toward this area). Overall, 3474 rockets were fired toward Israel during the period of this study with 75% (more than 2518 rockets) crossing the border into Israel.

#### Intrapersonal resilience

Intrapersonal resilience was defined by measures capturing optimism, hope and self-esteem. The Life Orientation Test-Revised (LOT-R; Scheier, Carver, & Bridges, 1994)

was used to assess optimism. The LOT-R consists of 10 items: six relevant items (e.g., “In uncertain times, I usually expect the best”) and four irrelevant items (e.g., “It’s easy for me to relax”). Participants provided a response for each item using scales ranging from 0 (*I disagree a lot*) to 4 (*I agree a lot*). The questionnaire uses the average score of the six relevant items to capture optimism. The LOT-R has been shown to have adequate psychometric properties (e.g., Scheier et al., 1994). In the present study, the internal consistency coefficient for the LOT-R was 0.76.

The Trait Hope Scale (Snyder et al., 1991) was used to measure hope. This questionnaire consists of 12 items: eight relevant items (e.g., “There are lots of ways around any problem”) and four irrelevant items (e.g., “I feel tired most of the time”). Respondents provide a response for each item using scales that range from 1 (*definitely false*) to 8 (*definitely true*). This instrument uses the average score of the eight relevant items to capture dispositional hope. The Trait Hope Scale has been found to possess adequate psychometric properties (Snyder et al., 1991). In the present study, the internal consistency coefficient for this instrument was 0.70.

The Rosenberg Self-Esteem Scale (Rosenberg, 1965) was used to assess global self-esteem. This scale consists of 10 items (e.g., “On the whole, I am satisfied with myself”) that respondents were instructed to complete according to how they typically feel about themselves. Responses were made according to scales ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). This instrument is regarded as a well-validated and reliable measure of global self-regard (e.g., Blascovich & Tomaka, 1991). In the present study, the internal consistency coefficient for this instrument was 0.80.

### ***PTSD symptoms***

In the absence of PTSD questionnaires in Hebrew that follow the *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition (*DSM-5*; American Psychiatric Association, 2013) diagnostic framework, PTSD symptoms were evaluated using the PTSD Checklist-Civilian Version (PCL-C; Weathers & Ford, 1996). This 17-item self-administered questionnaire is based on the diagnostic criteria for PTSD from the *DSM-IV* (American Psychiatric Association, 1994). These criteria relate to three separate PTSD symptom clusters: re-experiencing (e.g., “Suddenly acting or feeling as if a stressful experience is happening again [as if you were reliving it]”), numbing/avoidance (e.g., “Avoiding activities or situations because they remind you of your stressful experience”), and hyperarousal (e.g., “Having difficulty concentrating”). Respondents were asked to rate the symptoms of PTSD they experienced during the past two weeks as related to the fighting between Israel and forces in Gaza (i.e., rocket and missile fire) using scales that ranged from 1 (*not at all*) to 5 (*extremely*). The total score on the PCL-C was our index of PTSD symptoms with higher scores representing higher levels of PTSD symptoms. In the present study, the internal consistency coefficient for the PCL-C was 0.93.

### ***Data Analysis***

Descriptive statistics were calculated separately for each of the three exposure-severity regions. We first examined whether there were significant differences between the three regions in terms of demographics, intrapersonal resilience (i.e., optimism, hope, and self-esteem), and PTSD symptoms. Then, we conducted bivariate analyses of the associations between the intrapersonal resilience variables and PTSD symptoms for individuals living in each region.

The primary purpose of our study was to determine whether the association between exposure-severity and PTSD symptoms varied as a function of intrapersonal resilience.

In other words, we wanted to know whether intrapersonal resilience moderated the association between exposure-severity and PTSD symptoms. We examined this moderational hypothesis by conducting a hierarchical multiple regression analysis in which PTSD symptoms were regressed onto exposure-severity region, intrapersonal resilience (i.e., a standardized composite of optimism, hope, and self-esteem), and their interaction. More specifically, two dummy variables were created to distinguish between the exposure-severity regions (i.e., Dummy 1 = *low*, Dummy 2 = *high*) with the moderate exposure-severity region serving as the reference category. This regression analysis was followed by the simple slopes tests recommended by Aiken and West (1991) to describe interactions involving continuous variables. These simple slopes tests were conducted using values that were one standard deviation above and below the mean of intrapersonal resilience to represent those with high and low levels of intrapersonal resilience.

## Results

Significant differences were found between the exposure-severity regions in terms of age ( $F_{[2,248]} = 11.99, p < .001$ ) and education ( $F_{[2,248]} = 12.21, p < .001$ ). Specifically, participants in the moderate exposure-severity region of Israel (i.e., central Israel) were older and had more years of formal education than those in the other exposure-severity regions. No significant associations were found between the exposure-severity regions and place of birth ( $\chi^2 = .20, p = .90$ ), being currently employed/in school ( $\chi^2 = .66, p = .72$ ), marital status ( $\chi^2 = 10.16, p = .12$ ), or religiosity ( $\chi^2 = 5.00, p = .54$ ). In light of these results, we controlled for the demographic features of age and educational status in our subsequent analyses.

There were no differences in the levels of intrapersonal resilience reported by participants in the three exposure-severity regions ( $F_{[2,248]} = 0.44, p = .65$ ). The overall mean level of PTSD symptoms was 35.79 (SD = 14.48; range 17–73) across the exposure-severity regions. It is important to note that a score of 50 or greater for the PCL-C suggests the presence of severe PTSD symptoms that should be further evaluated with a formal clinical assessment. In the present study, 49 participants (19.52%) met this criterion (11 participants in the low exposure-severity region, 15 in the moderate exposure-severity region, and 23 in the high exposure-severity region). As expected, significant differences emerged between the levels of PTSD symptoms across the exposure-severity regions ( $F_{[2,248]} = 8.09, p < .001$ ). Post hoc tests found that participants in the high exposure-severity region reported significantly higher levels of PTSD symptoms ( $M = 39.39$  [SD = 15.05]; range 17–72) than those in the low exposure-severity region ( $M = 31.08$  [SD = 11.95]; range 17–61;  $t_{[177]} = 4.07, p < .001$ ). Further, participants in the moderate exposure-severity region reported significantly higher levels of PTSD symptoms ( $M = 36.89$  [SD = 15.16]; range 17–73) than those in the low exposure-severity region ( $t_{[157]} = 2.70, p = .008$ ). The difference between participants in the moderate and high exposure-severity regions did not approach conventional levels of significance ( $t_{[162]} = 1.05, p = .29$ ).

Correlations for the entire sample revealed that intrapersonal resilience was negatively associated with PTSD symptoms ( $r_{[251]} = -.25, p < .001$ ) such that individuals with lower levels of intrapersonal resilience often reported relatively high levels of PTSD symptoms. The pattern of correlations within each exposure-severity region revealed that intrapersonal resilience was negatively associated with the severity of PTSD symptoms in the low ( $r_{[87]} = -.39, p < .001$ ) and high exposure-severity regions ( $r_{[92]} = -.29, p = .005$ ). However, the association between intrapersonal resilience and PTSD symptoms did not approach conventional levels of significance in the moderate exposure-severity region ( $r_{[72]} = -.05, p = .68$ ).

### Hierarchical Multiple Regression Analysis

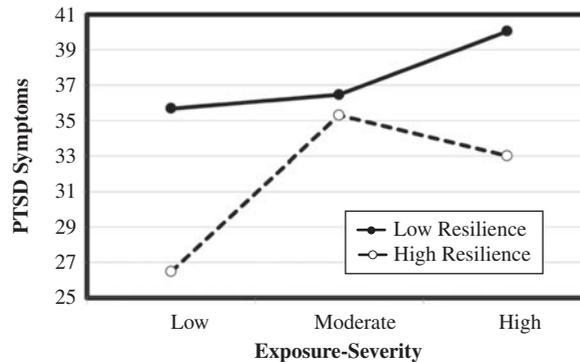
Levels of PTSD symptoms were regressed onto exposure-severity region and intrapersonal resilience. The main effect terms for exposure-severity (i.e., two dummy-coded variables), intrapersonal resilience, age, and education level were entered on Step 1. The two-way interactions between the dummy-coded exposure-severity variables and intrapersonal resilience were entered on Step 2. These regression analyses were followed by the simple slope tests that are used to describe interactions involving continuous variables (Aiken & West, 1991).

The results of this analysis are presented in Table 2. These results revealed main effects for education ( $\beta = -.15$ ,  $t = -2.06$ ,  $p = .04$ ) and intrapersonal resilience ( $\beta = -.22$ ,  $t = -3.51$ ,  $p = .001$ ) such that more PTSD symptoms were reported by individuals with lower levels of education and lower levels of intrapersonal resilience. In addition, the interaction of Dummy 1  $\times$  intrapersonal resilience emerged from this analysis ( $\beta = -.17$ ,  $t = -1.97$ ,  $p = .05$ ). The predicted values for this interaction are presented in Figure 1. Simple slope tests for the Dummy 1  $\times$  intrapersonal resilience interaction revealed that the slope of the line representing the association between exposure-severity and PTSD

**TABLE 2** Regressions of PTSD Symptoms on Age, Educational Level, Exposure-Severity, and Intrapersonal Resilience

	PTSD Symptoms		
	$R^2$	$\Delta R^2$	$\beta$
<i>Step 1</i>	.13***	.13***	
Age			.01
Education			-.15*
Exposure Dummy 1 (Low)			-.14
Exposure Dummy 2 (High)			.07
Intrapersonal Resilience			-.22***
<i>Step 2</i>	.17***	.04**	
Exposure Dummy 1 $\times$ Resilience			-.17*
Exposure Dummy 2 $\times$ Resilience			.05

Notes: \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .



**FIGURE 1** Predicted values for PTSD symptoms that illustrate the interaction between exposure-severity and intrapersonal resilience (at values that were one standard deviation above and below the mean).

symptoms was significant for participants with high levels of intrapersonal resilience ( $\beta = -.29, t = -2.77, p = .006$ ) but not for participants with low levels of intrapersonal resilience ( $\beta = .00, t = -0.02, p = .99$ ). Further probing of this interaction revealed that the association between intrapersonal resilience and PTSD symptoms was significant for participants in the low exposure-severity region ( $\beta = -.39, t = -3.38, p < .001$ ) but not for participants in the moderate exposure-severity region ( $\beta = -.04, t = -0.36, p = .72$ ). Taken together, these results reveal that intrapersonal resilience is associated with fewer PTSD symptoms in regions with relatively low levels of exposure-severity. However, this buffer appears to dissipate in regions with moderate exposure-severity.

## Discussion

We assessed the mental health of Israeli civilians exposed to the violence between Israel and Hamas and Islamic Jihad forces from the Gaza Strip between July and August 2014. The participants were adults located in regions of Israel with varying levels of exposure (i.e., low, moderate, and high) to incoming missile and rocket fire. Consistent with previous results concerning the earlier 2012 Israel–Gaza war (Besser et al., 2013), our results revealed a positive association between exposure-severity and self-reported PTSD symptoms. The present findings also include a negative association between intrapersonal sources of resilience and symptoms of PTSD which is consistent with previous research linking intrapersonal resilience with well-being and psychological distress in stressful situations, including among Israeli civilians exposed to missile attacks (Besser et al., [in press](#)).

Importantly, the association between exposure-severity and PTSD symptoms was shown to be moderated by individual differences in intrapersonal resilience. More specifically, intrapersonal resilience was associated with fewer PTSD symptoms for those individuals who were living in the low exposure-severity and high exposure-severity regions of Israel. The pattern that emerged suggests that participants with high levels of intrapersonal resilience reported a plateau effect with regard to their PTSD symptoms. That is, their symptoms increased until exposure-severity reached moderate levels, but there was no corresponding increase in PTSD symptoms as exposure-severity continued to increase. This pattern is consistent with previous results suggesting that positive personality features may protect individuals from experiencing fear and associated forms of psychopathology in potentially life-threatening situations (Kasler, Dahan, & Elias, 2008). In contrast, participants with low levels of intrapersonal resilience reported relatively high levels of PTSD symptoms in the low exposure-severity region which were similar to those reported by their counterparts in the moderate exposure-severity region. Individuals with low levels of intrapersonal resilience reported significantly more PTSD symptoms in the high exposure-severity region as compared to the other regions.

Taken together, these results show that while intrapersonal resilience moderates the effect of exposure-severity on PTSD symptoms, this pattern exists only for people living in low or high exposure-severity regions, but not among those living in a region of moderate exposure-severity. We believe the pattern that emerged from our analyses may be explained, at least in part, by the history of exposure-severity in these regions. If we consider the specific cities in which the individuals who participated in the study live (regardless of the distance from the Gaza border), then it becomes clear that those in the high exposure-severity region have frequently been confronted with threats of this sort over the past 14 years. In contrast, those individuals who live in the low and moderate exposure-severity regions have not experienced this threat as often. In fact, most of the individuals residing in the moderate exposure-severity region in the present study live in

cities that would have been considered to be in low exposure-severity regions during previous conflicts in which less-powerful rockets and missiles were used. As a result, the exposure-severity regions differed not only in their actual level of exposure to bombardment during the current conflict but also with regard to their history of similar attacks. This may provide at least a partial explanation for the fact that individuals with low and high levels of intrapersonal resilience reported similar levels of PTSD symptoms in the moderate exposure-severity region. The increase in exposure-severity experienced by many individuals living in this region may have disrupted their coping resources—at least temporarily. That is, individuals living in regions of low and high exposure-severity may have been able to draw upon their usual coping resources because they had confronted these sorts of threats in the past (i.e., their resources are intact). In contrast, many of the individuals who live in the moderate exposure-severity region were confronted with greater risk than they had dealt with in the past, which may have made it harder for them to draw upon their intrapersonal sources of resilience as they worked to assimilate this new situation.

It is also important to note that individuals living in the moderate exposure-severity region were older and had more years of formal education than those in the other exposure-severity regions. Although we controlled for these demographic features in our analyses, it is possible that there were other related demographic features—beyond those that we assessed—that may have contributed to the different pattern that emerged for those individuals in the moderate exposure-severity region.

### *Study Limitations*

The findings of the present study highlight the role that personality features linked with resilience may play in the development of psychological symptoms following exposure to uncontrollable and potentially traumatic events. Despite the strengths of the present study (e.g., a large sample of participants under actual threat), this study also has a number of limitations. First, the real-time data collection strategy utilized here may be limited by the manner in which PTSD symptoms develop over time. This is important because recovery and adjustment following exposure to a potentially traumatic event may take time. However, our study was only able to address the immediate response to these sorts of potentially traumatic events.

The second potential limitation is that the present study did not examine whether other types of trauma exposure may have influenced these results (e.g., participants may have experienced other potentially traumatic events in the past). It is quite likely that many of the individuals who participated in the present study may have experienced other similar events (e.g., during the Israel–Gaza conflict in 2012) that may have affected their PTSD symptoms in the present study. Future studies could attempt to account for this possibility by asking participants to report their previous exposure to potentially traumatic events and any psychological symptoms they were experiencing before the current conflict began.

The third potential limitation is that the present study was limited to a relatively small sample that included a high percentage of women. Although our sample was large enough to adequately test the present hypotheses, it would be helpful for future studies to involve much larger and more diverse samples. This sort of diversity is important because individuals may respond quite differently to these sorts of events (e.g., men and women have been found to respond differently to potentially traumatic events; Neria et al., 2008). In addition, we used a snowball sampling technique that increased the likelihood that individuals with more social connections—such as a larger number of friends and greater

contact with family members—would receive some communication about the study. This may have led to an underrepresentation of those individuals who have fewer social connections. In the service of recruiting individuals under threat as quickly as possible, we believe the limitations associated with this sampling procedure were an acceptable trade-off, but future studies of this sort may benefit from using other strategies for recruiting participants (e.g., random sampling in the different exposure-severity regions).

The fourth potential limitation of the present study concerns the measures that we included. The only indicator of psychopathology that we collected was a measure of PTSD symptoms. It may be helpful for future researchers to include other measures that capture a broader set of reactions to potentially traumatic events (e.g., depressive symptoms). Also, we only assessed a limited number of positive personality features that we thought were likely to serve as sources of intrapersonal resilience based on past research. As a result, we were unable to determine whether the observed results were unique to optimism, hope, and self-esteem. Future researchers may want to assess a broader array of personality features, in order to address whether other positive personality features (e.g., subjective well-being) may also buffer individuals from this sort of potentially traumatic experience.

The fifth limitation is that our underlying process model was that intrapersonal resilience would serve as a buffer that would provide at least some protection for individuals confronted with potentially traumatic experiences. Although our results are consistent with this proposal, the actual causal sequencing of these events remains unclear due to the correlational nature of our data. For example, it is possible that the level of intrapersonal resilience reported by our participants may have been influenced by their level of exposure to the potential trauma. However, this possibility is unlikely given that there were no differences in the levels of intrapersonal resilience reported by individuals in the three exposure-severity regions. It may be useful for future studies to utilize longitudinal designs that follow individuals over extended periods of time, to allow for a clearer understanding of the causal connection between intrapersonal resilience and responses to potentially traumatic events. Moreover, such a design would also be helpful in determining how changes in exposure-severity impact responses to potentially traumatic events.

### *Conclusions and Clinical Implications*

Despite the limitations of the present study, we were able to investigate an important phenomenon and make significant contributions to our understanding of the connections between positive personality features related to intrapersonal resilience and the development of psychological symptoms in response to potentially traumatic experiences. This study focused on participants who reported their experiences as they occurred (i.e., under *in vivo* life-threatening conditions) rather than relying on retrospective accounts of the events or utilizing laboratory simulations that lack the salience of real-world experiences. To the best of our knowledge, the present study represents the first attempt to study the interaction between sources of intrapersonal resilience and exposure-severity in predicting PTSD symptoms among war-zone civilians experiencing uncontrollable, life-threatening attacks.

These results underscore the importance of clinical evaluations concerning these sources of intrapersonal resilience in the delivery of mental health care and prevention programs focused on populations exposed to potentially traumatic events. This is important because these sources of resilience may play important roles in mitigating acute symptoms following exposure to potentially traumatic events. Although it is

conceivable that optimism and hope may be nontargeted change mechanisms in manualized cognitive-behavioral treatments of PTSD symptoms and associated outcomes (such as depression), this remains an open empirical question since patients suffering from traumatic stress often report a profound sense of hopelessness when they enter treatment (e.g., Glass, Flory, Hankin, Kloos, & Turecki, 2009) and studies that have examined hope in the context of psychotherapy have found that levels of hope are positively associated with treatment gains (Cheavens, Feldman, Woodward, & Snyder, 2006). Moreover, the results of the present study provide additional support for the idea that clinicians should view sources of resilience as valuable and powerful resources for individuals who have experienced trauma. Trauma care and prevention programs that attempt to improve intrapersonal sources of resilience (e.g., training individuals to be more optimistic, hopeful, and self-confident) may be especially beneficial in improving psychological adjustment in the wake of potentially traumatic events. Thus, prevention and intervention programs should be aimed at facilitating intrapersonal sources of resilience, in an effort to limit the negative impact of exposure to potentially life-threatening events. Notably, the findings of the present study suggest the possibility that such positive personality features may offer some level of protection from PTSD symptoms for those individuals confronted with immediate and severe threats.

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