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Children and adolescents facing a continuous security threat: Aggressive behavior and post-traumatic stress symptoms



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ABSTRACT

There is extensive research evidence indicating that children and youth are the most vulnerable population for developing psychological symptoms relating to war and terror. Although studies have documented a wide range of detrimental emotional and behavioral effects of such exposure, much less is known about the effects of exposure to a continuous security threat for children and adolescents. Against this background, the current article examined the implications of continuous exposure to missile attacks among 1096 children and adolescents enrolled in public schools near the Israeli border with Gaza. Participants filled out quantitative questionnaires, which relate to the pathological consequences of continuous exposure to security threats, and to the role of the school and the community as a protective environment against disruptive behavior resulting from such exposure. The findings revealed that PTSS responses were mainly related to the security threat, whereas interpersonal aggression resulted from other types of traumatic events. Significant differences were found between aggression and posttraumatic symptoms, by age and gender. PTSS was found to be lower for older participants and higher for girls, whereas aggression was higher for boys and higher for older participants. Furthermore, the sense of belonging to the place of residence was negatively associated with PTSS as well as with aggressive behavior: the higher the participants' sense of belonging, the lower their levels of PTSS and aggressive responses. In contrast, the sense of belonging to the school was negatively associated only with aggressive behavior: the higher the participants' sense of belonging to the school, the lower their aggressive responses. The findings are discussed in the light of trauma theories and in light of the results of previous research. The study contributed to knowledge about the differential consequences of exposure to a security threat, and highlighted the importance of differential interventions with children who show post-traumatic symptoms versus those who show aggressive behavior. Accordingly, the security situation should not overshadow social issues that need to be addressed, such as family violence and aggression among school children.

1. Introduction

There is a great deal of research indicating that children and adolescents are the most vulnerable population for developing a range of psychological symptoms relating to trauma and distress, the most prominent of which are Posttraumatic Stress Symptoms (PTSS) and Posttraumatic Stress Disorder (PTSD; North & Pfefferbaum, 2002). A growing body of evidence also suggests that other behavioral dysfunctions such as aggressive behavior in school (Al-Krenawi, Graham, & Sehwill, 2007) and substance use (Boscarino, Adams, & Galea, 2006) are frequent among adolescents who have been exposed to traumatic events. However, much less is known

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about the effects of exposure to a *continuous security threat* on posttraumatic stress symptoms (PTSS) among children and adolescents and on their behavior. In such situations, it is necessary not only to address the immediate physical and emotional damage resulting from one event, but also to examine the implications of the ever-present threat that is always looming: the fear of a potential future event (Kline & Mone, 2003; Kline and Mone, 2003), the need to go on with daily life in the danger zone for an unknown period of time, and the stress of living under conditions that have been coined an “emergency routine” (Baum, 2012).

Research findings indicate that such exposure has far-reaching implications for long-term emotional, behavioral, and cognitive adjustment beyond PTSD (Pat-Horenczyk, 2005; Sagy & Braun-Lewensohn, 2009; Terr, 1991). Notably, experiencing such exposure has been associated with developmental conflicts (Elbedour, Onwnegbuzie, Ghannman, Whitcome, & Abu Hein, 2007), depression (e.g. Shahar et al., 2009), risk for suicide (Pelkonen, Marttunen, & Aro, 2003), and fear and anxiety, which play an important role especially in continuous traumatic situations (Henrich & Shahar, 2013). Other researchers have found behavioral and cognitive effects such as violent and aggressive behavior (Brookmeyer, Henrich, Cohen, & Shahar, 2011; Busby, Lambert, & Ialongo, 2013), delinquent behavior (Merrilees et al., 2013), and even disruptions in the adolescents' social network (Barile, Grogan, Henrich, Brookmeyer, & Shahar, 2012).

However, in addition to the above-mentioned findings, many studies conducted in conflict areas have indicated that children and adolescents who have been exposed to political violence do *not* necessarily experience serious psychological consequences (Braun-Lewensohn, Celestin-Westreich, Celestin, Verté, & Ponjaert-Kristoffersen, 2010; Zeidner, 2005). Moreover, a large body of research has found that only a small fraction of people who have been exposed to political violence will develop long-term stress reactions, whereas most of them will become accustomed to living in the shadow of political violence and danger (Ronen, Rahav, & Appel, 2003), and will even succeed in being resilient (e.g., Braun-Lewensohn, Sagy, & Roth, 2011).

In light of this range of findings, and considering that there are children and adolescents who are still exposed to ongoing political violence, it is important to continue investigating the emotional and behavioral consequences of such exposure. Other aspects of this situation that have not been addressed sufficiently are involvement in violence at school, which has become a common concern, especially among children and adolescents (Chemtob, Nomura, Josephson, Adams, & Sederer, 2009), and the role of the school as a protective environment against disruptive behavior resulting from continuous exposure to security threats and political violence.

1.1. Trauma and aggression

Whereas the literature provides extensive support for the correlations between exposure to trauma and community violence and aggressive behavior (Purugganan, Stein, Silver, & Benenson, 2003), less is known about the correlation between exposure to ongoing war and terror (or political violence) and adolescents' aggressive behavior and posttraumatic symptoms. Solomon, Even-Chen, and Itzhaky (2007) found that greater exposure to political, domestic, and community violence contributed significantly to self-reports of aggressive behavior at school. Similarly, a survey of 2328 Palestinian high school students in the West Bank found that exposure to political violence was strongly associated with involvement in school violence (Al-Krenawi et al., 2007).

The theoretical literature is backed by empirical evidence indicating that exposure to political, community, or family violence predicts future violent behavior (Brookmeyer, Henrich, & Schwab-Stone, 2005; Widom & Czaja, 2012). For example, Schiff et al. (2012) found that war effects include a broad range of psychological stress symptoms and risk behaviors such as involvement in school violence, which persist long after the war ends – especially among youth who have experienced childhood trauma and high exposure to war-related stressors. In the same vein, Henrich and Shahar (2013) conducted a longitudinal study which revealed that exposure to terrorism may have chronic, long-term effects on violence among youth, and highlighted the importance of continuing to investigate this issue. However, to the best of our knowledge, these studies did not look at age differences, type of aggression (being a victim versus being an aggressor), or the contribution of contextual factors such as the school or place of residence. In addition, many children and adolescents do not experience stress symptoms even in the face of sustained terror attacks, and for many of those who do the experience of distress might be short-lived (Henrich & Shahar, 2013). Nonetheless, in situations of continuous exposure to threat, fear of the next adverse event was found to be a prominent factor (Diamond, Lipsitz, Fajerman, & Rozenblat, 2010; Nuttman-Shwartz, 2014). Those reactions, which include posttraumatic stress symptoms (PTSS), violence, and victimization, were found to be gender-based (e.g., Barile et al., 2012). In light of previous findings regarding gender differences in the effects of exposure to terrorism, we examined whether the direct and indirect effects of gender, age, and exposure to violence on PTSS and/or aggressive behavior through several mediators (fear, being a victim, and sense of belonging to the place and to the school) contribute to explaining the additional variance in PTSS or aggressive behavior in the face of continuous exposure to a security threat.

1.2. Trauma and community resources

Our research was based on the tenets of social ecological theory (Harvey, 1996; Ungar, 2008, 2013) and Conservation of Resources (COR) theory (e.g., Hobfoll, Dunahoo, & Monnier, 1995), which are integrative stress theories that consider both environmental and internal processes. According to these theories, family, friends, schools, and neighborhoods can serve as a powerful protective factor in the context of exposure to political violence (Cummings & Davies, 1996; Dubow et al., 2009). Based on this theoretical framework, our study aimed to explore whether the ability to cope and to continue with a routine at times of stress is related not only to personal resources but also to contextual and community resources such as subjective perceptions of one's place of residence and one's sense of belonging to the community (Dekel & Nuttman-Shwartz, 2009; Ungar, 2013). In addition, we explored the interaction between personal and contextual resources (Harvey, 1996). Specifically, we examined whether the school, which is a natural environment for children and adolescents, might serve as a protective environment or as an environment that is conducive to

PTSS and/or to violent behaviors at times of continuous exposure to a security threat.

Notably, place of residence, community services, and schools are actual resources, and the ability to navigate between these resources and feelings about one's place of residence are related to the ability of the community and the individual to cope with traumatic events (Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008; Ungar, 2008). These resources reflect the objective structure of the community, and individuals' feelings about their place of residence reflect subjective perceptions of their relationships with the community, country, place of residence, and educational institutions (Norris et al., 2008; Nuttman-Shwartz, 2011).

These perceptions, which have been referred to as “sense of community” or “sense of belonging,” highlight the importance of the availability of social connections as a buffer against the impact of disasters (Kawachi & Berkman, 2001). Research on the effects of traumatic events has revealed that an individual's sense of belonging can provide protection and buffer the negative consequences of adversity (e.g. Fisher, Sonn, & Bishop, 2002). Previous studies in Israel have revealed that in situations of continuous stress, people with a high sense of belonging to their place of residence – their country, their neighborhood, or an educational institution such as a school or college – are better able to cope with traumatic events than those with a low sense of belonging to their communities (Dekel & Tuval-Mashiach, 2010; Henrich & Shahar, 2008).

In line with the second aim of the current study, we examined the effects of sense of belonging to different types of communities (school versus place of residence) on PTSS responses and aggressive behavior among children and adolescents who are continuously exposed to traumatic events, by age and gender.

1.3. Research context

The intensification of the Israeli-Palestinian conflict since 2001 has caused considerable pain and suffering to civilian populations living on both sides of the border. The following study was conducted a decade after continuous exposure to missile attacks among a sample of children and adolescents residing in the southwestern region of Israel.

This recurrence of chronic stress essentially describes the situation faced by the residents of the city of Sderot and the Israeli rural localities (kibbutzim) surrounding Gaza. For years, the difference between these two types of localities derived not only from the size of the locality and the sociodemographic characteristics of the residents, but could also be attributed to political and ideological aspects. Whereas most of the residents of Sderot were descendants of immigrants who arrived in Israel from North Africa in the 1950s, the residents of kibbutzim in the area were perceived as part of the elite founders of the nation, and they advocated a communal economy. Over the years, and particularly during the past two decades, the entire region has experienced a social change. The kibbutzim have been privatized, and they have absorbed new residents. In this process, the communities have grown and changed demographically, and they are no longer identified with the party in power. The city of Sderot, which has been identified as a small development town for many years, experienced a major economic and demographic and economic crisis, and there were residents who left the city. Five years after that crisis, the leaders of the community succeeded in reversing the trend. The population increased, unemployment rates declined, and above all the level of education and the academic achievements of students improved substantially.

Since 2001, the southern region of Israel has been the target of missile attacks, and by the end of 2010, residents of the area had been exposed to more than 10,000 Qassam missile and mortar shell attacks. Qassam rockets are fired at all hours, and have introduced considerable uncertainty and anxiety into the lives of the residents of this area (Dekel & Nuttman-Shwartz, 2009). From 2001 to the end of 2010, 32 Israelis, including 4 children, had been killed in direct Qassam attacks (B'tselem, 1 January 2011), and approximately 26%-27% of the Sderot residents had reported experiencing PTSD, compared with 6% of the residents of rural communities in the area (Besser & Neria, 2009; Nuttman-Shwartz & Dekel, 2009).

Thus, the aims of the current study were twofold (1) to examine posttraumatic stress symptoms (PTSS) and aggressive behavior resulting from exposure to the continuous threat of missile attacks among children and adolescents living in the shadow of these attacks; (2) to examine the contribution of emotional and social distress (sense of fear and being a victim at school) and of the contextual resources (sense of belonging to the school and to the place of residence) to the variance in PTSS and aggressive behavior in the wake of a continuous threat.

A set of hypotheses was developed on basis of the above theoretical background. In these hypotheses we compared two types of responses to the security situation as experienced by children and adolescents living near the border. For some of the participants, this unique situation was expressed in developing fears and traumatic stress, whereas for others it was expressed in aggressive behavior; and there were those who combined both types of responses. Two types of factors affected these responses: personal background, which included physical exposure to threat; and levels of emotional and social distress.

We hypothesized that:

- Factors that affect the development of stress symptoms would have a similar effect on the development of personal aggression.
- The higher the level of exposure to threat, the higher the reported posttraumatic stress symptoms (PTSS) and personal aggression would be.
- High levels of emotional and social distress (sense of fear and being a victim) would increase the levels of PTSS and aggressive behavior.
- High levels of contextual resources (sense of belonging to school and sense of belonging to place of residence) would reduce levels of PTSS and aggressive behavior.

2. Method

2.1. Sample and data collection

The sample consisted of students from eight public schools in the area, totaling at 1096 Jewish children and adolescents in grades 5–12 who lived near the Israeli border with Gaza. Of these children and adolescents, 97.12% ($N = 1065$) completed all questionnaires. The sample was divided into three sub-groups according to grade level: elementary school – 208 (19.5%); junior high school – 587 (55.1%); and high school – 270 (25.4%); 52% of the participants were girls, and 92% were Israeli-born, of whom 80% had married parents; 17.2% lived in rural communities, and the other 82.8% lived in the city of Sderot.

In addition, 23.9% of the participants in the sample reported some previous exposure to traumatic events unrelated to the security situation, and 49.5% of the elementary school students reported being victims of violence, compared with 35.1% of the junior high school students and 27% of the high school students. With respect to the security situation, 25.4% had been exposed to 10 or more missile explosions; 57.1% had been exposed to fewer than 10 missile explosions, and 17.5% reported being exposed only once; 44.1% reported being exposed to a missile explosion in their immediate proximity; 48.4 reported being exposed at a small distance; 5.7% reported being exposed at a great distance; and 1.8% reported that they had been exposed to missile explosions only at a very great distance. The overall mean for aggressive behaviors was low ($M = 0.13$, $SD = 0.25$) on a scale ranging from 0 to 2: 52.6% of the sample reported no aggressive behavior at all, whereas 41.6% reported that they had engaged in some aggressive behavior. Only 1% of the sample reported aggressive behavior at a level higher than 1. Similarly, the overall mean scores for sense of fear was low ($M = 1.5$, $SD = 0.35$) on a scale from 0 to 4. Over 70% reported a sense of fear at a level below 2. The overall mean for sense of belonging to the school was $M = 2.07$, $SD = 0.55$ and for sense of belonging to the place of residence was $M = 1.99$, $SD = 0.71$. At least 13.2% of the students met the full criteria for PTSD (based on the DSM-4 criteria). The rates of PTSD were much lower among the elementary school students (10.1%) and among the junior high school students (11.1%). Among the high school students, the rate was 20.4%.

2.2. Procedure

Data were collected in 2010, at a time when residents of the area were the target of continuous missile attacks. The study was based on self-administered questionnaires, which were distributed in the classroom during the school day by trained research assistants in the presence of the teacher. The study was approved by the Chief Scientist of the Ministry of Education in Israel (no. 10.31.62), and adhered to all of the ethical regulations and procedures required by the Ministry. Parents and participants were given the option of contacting the school psychological services in the area if they needed assistance. Responses were anonymous.

2.3. Instruments

2.3.1. Socio-demographic questionnaire

Participants were asked to provide information on background variables such as gender, place of residence, and exposure to any traumatic events that were not related to the military situation. Grade level (elementary school, junior high school, and high school) was used as an ordinal proxy for age.

2.3.2. Objective and subjective exposure questionnaire

This variable was measured using two scales: (1) the number of missile attacks the participants had been exposed to; and (2) their proximity to the missiles that had fallen. The number of events was scored on a 3-point Likert scale: 1 (*1 missile explosion*); 2 (*fewer than 10 explosions*); and 3 (*10 or more explosions*). In addition, participants were asked about their physical proximity to the explosions. Responses were based on a 4-point scale. 1 (*a great distance away*); 2 (*in my place of residence – Sderot versus my kibbutz, while I was there*); 3 (*in my neighborhood, while I was there*); 4 (*in my building or a few meters away from me, while I was there*).

2.3.3. Subjective fear

Using a 5-point Likert scale ranging from 0 (*hardly any danger*) to 4 (*extreme danger*), participants were asked to indicate the extent of danger they felt (sense of fear) in each of five events. The Cronbach's alpha for this instrument was 0.92.

2.3.4. Sense of belonging to the place of residence and to the school

This variable was measured on the basis of the Sense of Belonging Scale developed by Itzhaky (1995). The scale consists of two subscales for each dimension (community and school), with 12 items relating to the community and 10 items relating to the school. Participants were asked to indicate the extent to which they agreed with each statement, on a scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). One overall score for sense of belonging was derived by calculating the mean of the responses to the items for each participant. The Cronbach's alpha reliability for the questionnaire used in the current study was 0.87 for sense of belonging to the school and 0.78 for sense of belonging to the place of residence.

2.3.5. PTSD – children's posttraumatic stress reaction index CPTS-RI

This self-report questionnaire developed by Rodriguez, Steinberg and Pynoos (1999) was used to assess PTSD among youth aged 10–17 years. The questionnaire consists of 22 items, including the DSM-IV PTSD symptoms (intrusion, avoidance and arousal), which

provide a basis for examining both the intensity and number of PTSD symptoms. Responses were based on a 5-point Likert scale, with scores ranging from 0 (*not at all*) to 4 (*all the time*). The Global Symptom Score consists of the sum of the scores on the questionnaire, with possible scores ranging from 0.00 to 80.00. Scores are divided into five rates of intensity: 0–11 (*doubtful*), 12–24 (*mild*), 25–39 (*moderate*), 40–59 (*severe*), and 60–80 (*very severe*). The CPTS-RI has been widely used in epidemiological trauma studies conducted among children and adolescents who were not necessarily in need of treatment and failed to qualify for a formal diagnosis of PTSD. Such a wide application was executed in order to reflect the spectrum of PTSS responses that characterized normal populations exposed to ongoing terror (Klodnick et al., 2014). High levels of reliability, and validity have been reported for the scale. The Cronbach’s alpha for the 17 items in the PTSD inventory used in the current study was 0.91.

2.3.6. School violence questionnaire

The school violence questionnaire developed by Schiff (2006) was used to measure school violence. The questions pertained to two dimensions of violence: 1–Being a victim; four items examined whether the students had been victims of violent incidents (e.g., ‘Another student hit me at school’); and 2–Being an aggressor; nine items examined whether the students had perpetrated violent acts (e.g., “During school hours I threatened another student”. or “I threw a chair at a teacher”). Participants were asked to indicate the number of violent events that they had personally experienced during the previous month at school on a scale ranging from 0 to 2, as follows. These numbers indicated: 0 (*never exposed to violent behavior*), 1 (*experienced one to three incidents of violent behavior*), and 2 (*experienced three or more incidents of violent behavior*). In the current study, the Cronbach’s alpha values were 0.77 for being a victim, and 0.81 for enacting aggressive behavior.

2.4. Data analysis

To test the effects of personal background and emotional and social distress on PTSS and school violence simultaneously, and in light of the research hypotheses we constructed a path analysis model in which the dependent (endogenous) variables were PTSS and school violence (Fig. 1). Path analysis is a special form of structural equation modeling (SEM), which is based on externally calculated indices rather than on integration of the full measurement model. The path model is a set of regression equations for which the coefficients are estimated simultaneously. A path is a single effect from one independent variable to the dependent variable (a one-headed arrow in Fig. 1). Thus, one variable may be dependent on one or more variables and independent of other variables at the same time. Each hypothesis was tested within the integrative framework of all other research components. A preliminary analysis of Pearson’s correlations between research variables was conducted in order to determine empirical paths that have to potential to explain the effects of emotional and social distress on PTSS (see Table 1). To complement the modeling strategy, a comparison of the path coefficients (each pair of estimates, e.g., the effect of age on PTSS versus the effect of age on school aggression) was conducted in an attempt to define similar versus dissimilar effects on PTSS and school aggression using the Wald test (Mplus V.7.3,

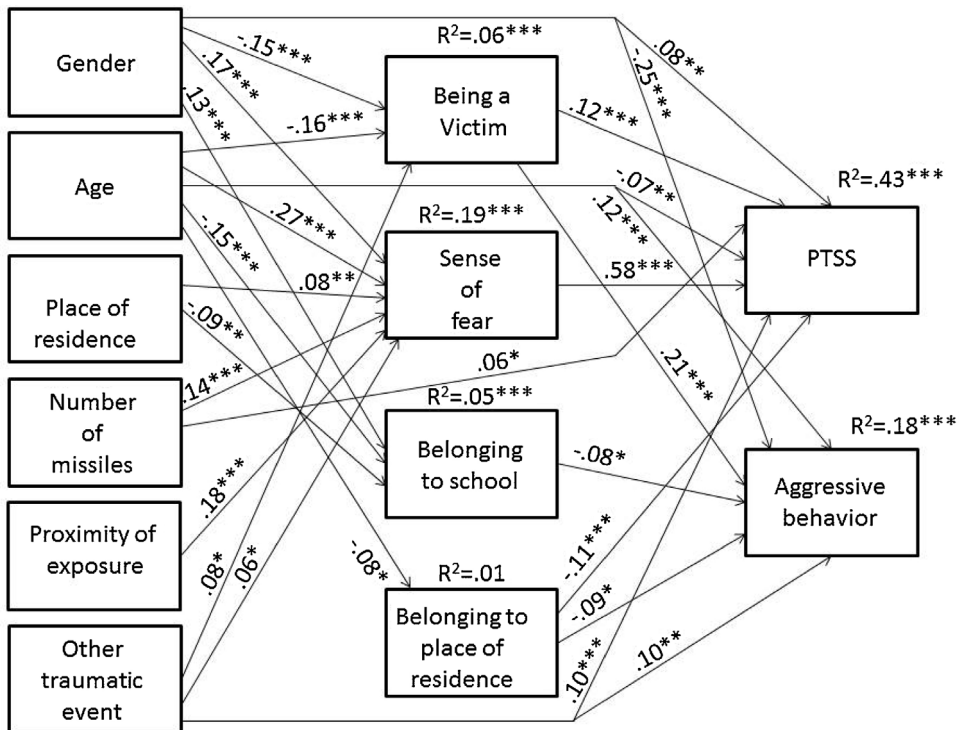


Fig. 1. Path Estimates for Direct Effects in a Path Analysis Model. Note: correlations are reported in a separate table.

Table 1
Correlations within mediators and dependent variables.

Variable	Sense of fear	Belonging To the school	Belonging to the place of residence	Aggressive Behavior
Being a victim	0.07* (0.03)	-0.13*** (0.03)	-0.12*** (0.03)	-
Sense of fear		0.01 (0.03)	-0.03 (0.03)	-
Belonging to the school			0.42*** (0.03)	-
PTSS				0.07 (0.04)

* $p \leq 0.05$. ** $p \leq 0.005$. *** $p \leq 0.001$.

Muthén & Muthén, 2012). The path model also enables measurement of indirect effects. For example, a background variable may affect the dependent variable indirectly, mainly through the participants' level of emotional and social distress. We used the bootstrapping procedure ($n_{\text{repeats}} = 1000$) to ensure correct estimations of the indirect parameters without making assumptions about the sampling distribution (Hayes, 2013).

3. Results

The preliminary correlation analysis showed that sense of fear correlated positively with age, exposure to missiles, life events, and mainly with PTSS ($r = 0.30$, $p < 0.001$; $r = 0.23$, $p < 0.001$; $r = 0.23$, $p < 0.001$; $r = 0.61$, $p < 0.001$, respectively). PTSS correlated positively with age ($r = 0.11$, $p < 0.01$), number of missiles ($r = 0.21$, $p < 0.001$), and life events ($r = 0.18$, $p < 0.001$). Aggression, like PTSD, also correlated positively with level of exposure, albeit to a lesser extent ($r = 0.06$, $p < 0.05$), but girls were found to report lower aggression than boys ($r = -0.30$, $p < 0.001$). Sense of belonging correlated negatively with aggressive behavior, both in regard to belonging to the school ($r = -0.19$, $p < 0.001$) and in regard to belonging to the place of residence ($r = -0.16$, $p < 0.001$). Being a victim correlated negatively with sense of belonging to the school ($r = -0.12$, $p < 0.001$) and sense of belonging to the place of residence ($r = -0.11$, $p < 0.001$). Belonging to the school and belonging to the place of residence also correlated with each other ($r = 0.42$, $p < 0.001$). These preliminary results provided the justification for the full hypothesis testing model.

3.1. The association of personal background variables and PTSD with aggressive behavior in a path analysis model

First, the correlations estimated by the model replicated some of the preliminary correlations. Being a victim was positively associated with sense of fear ($r = 0.07$, $p < 0.05$), and negatively associated with sense of belonging to the school ($r = -0.13$, $p < 0.001$) and place of residence ($r = -0.12$, $p < 0.001$; see Table 1).

Table 2 shows the final results of the path analysis model, where the columns represent the dependent variables and the rows represent the independent explanatory variables.

Overall, the fit of the model met the required level ($CFI = 0.957$, $TLI = 0.948$, $RMSEA = 0.037$, $Chi-Square = 310.00$, $df = 249$, $p = 0.005$) which makes the empirical analysis valid. The percentage of explained variance (R^2) was significant for all equations, except for belonging to the place.

We found that PTSS levels were positively associated with the number of missiles the student was exposed to ($\beta = 0.06$, $p < 0.06$), but the association with being a victim and sense of fear was even stronger ($\beta = 0.12$, $p < 0.001$; $\beta = 0.58$, $p < 0.001$, respectively). This result lends support to Hypotheses 2 and 3. In addition, being a victim had a positive effect on aggressive behavior ($\beta = 0.21$, $p < 0.001$), but sense of fear did not. PTSS was found to be lower for older students ($\beta = -0.07$, $p < 0.001$), and higher for girls ($\beta = 0.08$, $p < 0.01$). Comparison of the effects of the independent variables on PTSS with the effects of the independent variables on aggressive behavior showed that effects of gender, age, and sense of fear on PTSS and aggressive behavior were different, whereas the effect of place of residence, exposure to missile attacks, prior traumatic events, being a victim, and sense of belonging to the place of residence was similar (partially supporting Hypothesis 1). In contrast to the preliminary analysis, age was negatively associated with the level of PTSS ($\beta = -0.07$, $p < 0.05$). This counterintuitive association may be explained by a further indirect effect.

A closer look at the potential indirect effects reveals that several paths were mediated by other effects. Table 3 presents the indirect effects, which were found to be significant and complement the hypothesis testing analysis. Two types of indirect mediation effects may be defined: full mediation, where the independent variable only affects the dependent variable indirectly; and partial mediation, where both direct and indirect effects are observed. For example, girls reported a lower sense of being a victim; and a lower sense of being a victim was associated with lower levels of aggression (indirect = -0.03 , $p < 0.05$). This indirect effect indicates that girls showed less aggression as a result of having a lower sense of being a victim. However, because this effect was also observed directly, the indirect effect is partial. Note that the indirect estimate is simply the multiplication of the two following paths: independent variable to mediator; and mediator to dependent variable. To correct this bias, we used the bootstrapping technique, which tests the probability of the indirect effect through multiple sample repeats (Hayes, 2013).

Table 2
Path estimates for direct effects, including Wald's test results.

Variable	Being a victim	Sense of fear	Belonging to the school	Belonging to the place of residence	PTSS	Aggressive behavior	Wald's Test
Gender	-0.15*** (0.03)	0.17*** (0.03)	0.13*** (0.03)	-	0.08** (0.02)	-0.25*** (0.02)	82.90***
Age	-0.16*** (0.03)	0.27*** (0.03)	-0.15*** (0.03)	-0.08* (.03)	-0.07** (0.03)	0.12*** (0.03)	18.89***
Place of residence	-0.02 (0.03)	0.08** (0.03)	-0.09** (0.03)	0.03 (0.03)	0.03 (0.02)	0.01 (0.02)	0.14
Number of missiles	-	0.14*** (0.03)	-	-	0.06* (0.03)	0.06 (0.03)	0.003
Proximity of exposure	-	0.18*** (.03)	0.04 (0.03)	-	0.04 (0.03)	-0.02 (0.04)	2.03
Other traumatic event	0.08* (0.03)	0.06* (0.03)	-	-0.05 (0.03)	0.10*** (0.03)	0.10** (0.03)	0.03
Being a victim					0.12*** (0.03)	0.21*** (0.04)	4.18*
Sense of fear					0.58*** (0.03)	-0.01 (0.03)	178.93***
Belonging to school					-0.004 (0.03)	-0.08* (0.03)	2.97
Belonging to place of residence					-0.11*** (0.03)	-0.09** (0.03)	0.4

(N = 1065); * p ≤ 0.05; **p ≤ 0.005; ***p ≤ 0.001.
Goodness of fit: CFI=0.957, TLI=0.948, RMSEA=0.037, Chi-Square = 310.00, df = 249.

Table 3
Indirect effects of independent variables on dependent variables using the bootstrapping technique for bias correction.

Independent	Mediator	Dependent variable	Independent → mediator	Mediator → dependent	Independent → dependent	Indirect	Total
Gender	Being a victim	Aggressive behavior	-0.15*** (0.03)	0.21*** (0.04)	-0.25*** (0.02)	-0.03** (0.01)	-0.30*** (0.02)
Gender	Belonging to the school	Aggressive behavior	0.13*** (0.03)	-0.08* (0.03)	-0.25*** (0.02)	-0.01* (0.01)	
Gender	Being a victim	PTSS	-0.15*** (0.03)	0.12*** (0.03)	0.08** (0.02)	-0.02*** (0.01)	0.16*** (0.03)
Gender	Sense of fear	PTSS	0.17*** (0.03)	0.58*** (0.03)	0.08** (0.02)	0.10*** (0.02)	
Age	Being a victim	Aggressive behavior	-0.16*** (0.03)	0.21*** (0.04)	0.12*** (0.03)	-0.03*** (0.01)	0.10*** (0.03)
Age	Belonging to the school	Aggressive behavior	-0.15*** (0.03)	-0.08* (0.03)	0.12*** (0.03)	0.01* (0.01)	
Age	Being a victim	PTSS	-0.16*** (0.03)	0.12*** (0.03)	-0.07** (0.03)	-0.02** (0.01)	0.08* (0.03)
Age	Sense of fear	PTSS	0.27*** (0.03)	0.58*** (0.03)	-0.07** (0.03)	0.15*** (.02)	
Other traumatic event	Being a victim	Aggressive behavior	0.08* (0.03)	0.21*** (0.04)	0.10** (0.03)	0.02* (0.01)	0.12*** (0.03)
Other traumatic event	Being a victim	PTSS	0.08* (0.03)	0.12*** (0.03)	0.10*** (0.03)	0.01* (0.004)	0.15*** (0.03)
Other traumatic event	Sense of fear	PTSS	0.06* (0.03)	0.58*** (0.03)	0.10*** (0.03)	0.04* (0.02)	
Proximity of exposure	Sense of fear	PTSS	0.18*** (0.03)	0.58*** (0.03)	0.04 (0.03)	0.10*** (0.02)	0.14*** (0.03)
Number of missiles	Sense of fear	PTSS	0.14*** (0.03)	0.58*** (0.03)	0.06* (0.03)	0.08*** (0.02)	0.14*** (0.03)
Place of residence	Sense of fear	PTSS	0.08** (0.03)	0.58*** (0.03)	0.03 (0.02)	-0.04** (0.02)	-0.02 (0.03)

* p < 0.05; **p < 0.01; ***p < 0.001; Bootstrap (bias correction), n repeats = 1000.

Table 3 is arranged by independent variables (e.g., gender, age, traumatic events, proximity of missiles, number of missiles, and place of residence).

Compared with males, females showed lower levels of aggression through a sense of belonging to the school (indirect = -0.01, p < 0.05), as well as through being a victim (indirect = -0.03, p < 0.05). However, this indirect effect was partial. Similarly,

being a victim partially mediated the effect of gender on PTSS (indirect = -0.02 , $p < 0.001$), and the sense of fear partially mediated the effect of gender on PTSS (indirect = 0.10 , $p < 0.001$). An additional column, “total effect,” shows that overall, the total effect of age on PTSS was positive (total effect = 0.08 , $p < 0.05$). This finding resolves the question of the negative direct effect that was discussed earlier and provides the explanation for the total effect; that is, older age was positively associated with higher PTSS, taking into account both direct and indirect effects.

Two full indirect effects were also found. First, proximity to missiles did not directly affect the level of PTSS, but did have an indirect effect (indirect = 0.10 , $p < 0.001$); and urban residents (Sderot) versus rural residents (kibbutzim) showed no difference in the effect on PTSS levels, but the indirect effect on PTSS through sense of fear was significant (indirect = -0.04 , $p < 0.01$). In other words, although no difference in PTSS levels was observed, the effect of place of residence on PTSS became significant through sense of fear.

The effect of age on aggression was partially mediated by being a victim (indirect = -0.3 , $p < 0.01$) and by the sense of belonging to the school (indirect = 0.01 , $p < 0.05$). This partial indirect effect was estimated between age and PTSS through being a victim (indirect = -0.02 , $p < 0.01$), and through a sense of fear (indirect = 0.15 , $p < 0.001$). Moreover, being a victim partially mediated the effect of other traumatic events on aggression (indirect = 0.02 , $p < 0.05$) and on PTSS (indirect = 0.01 , $p < 0.05$). Finally, sense of fear mediated the effect of other post-traumatic events on PTSS (indirect = 0.04 , $p < 0.05$).

4. Discussion

The current study aimed to examine the effects of exposure to an ongoing threat on children and adolescents in terms of two dimensions: the psychological dimension, as reflected in post-traumatic stress responses; and the behavioral dimension, as reflected in school violence. In addition, the study examined contribution of sociodemographic variables, particularly age, to the variance in these dimensions. Moreover, in light of the *continuous and ongoing* aspect of this violence, we attempted to examine the contribution of sense of fear and exposure to aggression (being a victim), over and above the contribution of the violence inherent in the security situation per se (e.g., Nuttman-Shwartz, 2014). Both of these dimensions have been found to affect stress reactions: one due to the security situation, and the other as a behavioral characteristic of children and adolescents at schools (Ronen et al., 2003). However, based on ecological trauma theories and previous research findings, we examined the contribution of contextual variables (sense of belonging to the school and sense of belonging to the community) to mediating PTSS symptoms.

The findings of the current study revealed that the variance in participants' post-traumatic stress symptoms and levels of aggression was significant. The results showed that the predictors of PTSS and aggressive behavior were different, and that they were not related to each other. In this regard, it is important to consider the differences in the explanatory factors relating to the two types of responses. Whereas PTSS responses were mainly associated with actual exposure to missiles and to the intensity of missile attacks, no significant relationship was found between interpersonal aggression and exposure to missile attacks.

This finding is surprising, and contradicts the results of previous studies on the responses of children and adolescents to war and terror (Schiff et al., 2012). One explanation for this unexpected result is that in these geographic areas, continuous exposure to missiles has become routine and habitual, so that missile attacks do not seem to intensify responses such as interpersonal aggression, which are prevalent among children and adolescents at schools. In a situation of continuous exposure to threat there is a need to gather personal strength, and students have to help each other in order to cope successfully with the situation.

In addition, significant differences in PTSS and aggressive responses were found by age and gender. The rate of high school students who met PTSD criteria was significantly higher than the rate of younger children. Moreover, the high school students were characterized by higher levels of aggression than their younger counterparts. This finding highlights the increased vulnerability of adolescents. Whereas boys reported higher levels of aggression, girls reported higher levels of posttraumatic stress responses. These findings are also consistent with the literature on age and on gender sensitivity (girls have been shown to be particularly sensitive) in terms of reporting and developing posttraumatic stress symptoms (Schiff et al., 2012; Solomon et al., 2005). In addition, it can be argued that girls tend to experience more sexual abuse, which might lead to higher levels of PTSS, whereas boys are more likely to experience childhood physical abuse, which might contribute to aggression (Auslander et al., 2016).

This important result, which attests to the lack of a direct relationship between PTSS and aggression (Table 1), is also manifested in the current findings with regard to the contribution of the sense of belonging to the school and to the place of residence. Nonetheless, although these findings revealed that the sense of belonging to the school substantially mediated aggression among students (in contrast to the results of previous studies, e.g. Duggins, Kuperminc, Henrich, Smalls-Glover, & Perilla, 2016), it was not found to contribute to PTSS responses.

It can thus be argued that the prevailing atmosphere and the feelings of children and youth about the school they attend will affect aggressive behavior irrespective of the security situation. Conversely, irrespective of the students' sense of belonging to the school, the security situation was positively associated with posttraumatic stress responses (PTSS). It is also noteworthy that the lack of a direct relationship between sense of belonging to the school and PTSS may have derived from the low average levels of this feeling among the participants. This finding highlights the need for schools in these areas to invest in enhancing students' sense of belonging, and to increase their role in helping students cope with interpersonal aggression. Efforts to enhance the students' sense of belonging can contribute to buffering their emotional distress, which may already be high at this age, and is likely to be especially high in a situation of continuous violence such as the one examined in the present study.

In contrast, the sense of belonging to the community was found to play a substantial role in explaining the variance in both of the outcome variables. Although the participants' place of residence was not directly related to stress reactions, the sense of belonging to the community in which they lived was negatively associated with PTSS as well as with aggression. Thus, it appears that a high sense

of belonging can predict lower rates of PTSS, a relationship which indicates that policymakers might use macro interventions to help residents cope more successfully with the ongoing crisis.

Fear, which is considered to be a risk factor for continuous traumatic stress (Nuttman-Shwartz, 2014), was another variable which highlights the finding that the security situation did not necessarily explain PTSS and aggressive behavior together, and that they were in fact two separate phenomena. In this context, it is important to note that there was no direct correlation between place of residence and PTSS. However, the relationship was mediated by level of fear. Children and adolescents living in Sderot reported higher levels of fear than did their counterparts living on kibbutzim in the Gaza region. It can be assumed that this was not only because the children in Sderot were exposed to a larger number of missiles and sirens, but it was also due to the sociodemographic variables such as low SES and a family and community history of exclusion.

This result is supported by previous research which indicated that fear predicted post-traumatic responses, and that it was especially salient in a situation of exposure to continuous violence (Diamond et al., 2010; Nuttman-Shwartz, 2014). It should be noted that fear was related to all of the independent research variables (gender, age, level of exposure, place of residence, and other traumatic events). Not surprisingly, older girls with a history of exposure to aggression, who had been more exposed and were in closer proximity to missile attacks, reported higher levels of fear.

In contrast, fear responses did not explain aggressive behavior but were related to the experience of being a victim, which was positively associated with both PTSS and aggression responses. However, in this case younger boys who had experienced other types of violence unrelated to the security situation reported higher levels of being a victim. Hence, there is a need to recognize that school violence can be – and often is – related to traumatic events that have nothing to do with the security situation, and these situations should be dealt with accordingly. The results highlight the importance of identifying situations of violence and traumatic events that take place outside of the school setting, as well as situations that are related to parental functioning and to lack of sufficient emotional regulation (Besser & Priel, 2010) in order to identify children and youth who may be at risk for developing PTSS symptoms, for being victims, and/or for aggression at school. In that regard, it would also be worthwhile to expand research on the family's responses and the impact of those responses on children's stress reactions, as has become common in a variety of aspects of trauma research and social work intervention (Dekel & Monson, 2010). Finally, it is noteworthy that the children who reported the highest level of being a victim in terms of the frequency of violent incidents were elementary school students. In light of this finding, there is a need to continue examining whether contextual variables – particularly the sense of belonging to the school – have a moderating effect on violence outside of the school as well as on the experience of being a victim at school. Having said this, it is important to stress that the city of Sderot has been exposed to more missile attacks than the localities in the surrounding area. As such, the significant difference in levels of fear among residents of Sderot versus residents of the surrounding localities might be a result of objective exposure, beyond the differences in the background variables of the children and adolescents and beyond factors relating to the socio-political hierarchy of Israeli society.

Before concluding, several limitations of the study need to be mentioned. First, the results can only be generalized to a limited extent because the research was based on a cross-sectional design and on self-report questionnaires. It is known that these questionnaires have several disadvantages, including differential interpretations of the questions asked. It is also possible that the distribution of questionnaires in the classroom without ensuring privacy affected the participants' responses to the questions. It should be noted, however, that this is a widely used method of distributing questionnaires and tests at schools, and that in an attempt to overcome these limitations, the staff members and research assistants stayed in the classrooms when the participants filled out the questionnaires in order to prevent them from exchanging opinions. Moreover, the research assistants clarified that there are no right or wrong answers. Participants were asked to describe their personal thoughts and feelings, and we assured them that the information would remain anonymous and would not be shown to the authorities at school or to anyone else.

In addition, questionnaires were filled out only by students who attended school on that particular day. Hence it is possible that those who were not in school on that day had different levels of PTSS and/or different behaviors. Although the absentees comprised a small group, efforts should be made to reach these children in order to gain a fuller perspective of the consequences of ongoing exposure to threat. It should also be borne in mind that the data were collected during a period in which the intensity of missile attacks varied, and this may also have affected the children's responses to the questionnaire.

Although the research measured the effects of being exposed to an ongoing security threat, these children may also have been exposed to other traumatic events such as domestic violence and other childhood traumas that are likely to have affected their reactions. Hence these issues should also be addressed in future studies. This kind of measurement and the relatively large scope of the sample can contribute to knowledge about the consequences of continuous exposure to threat in a volatile reality in which extreme events such as major military operations are interspersed with sporadic missile attacks and relatively quiet periods (Lahad & Leykin, 2010). Thus, notwithstanding the time that has elapsed since the data were collected, the findings contribute to knowledge regarding the impact of continuous exposure to a security threat on stress reactions and violence among children and youth.

Another limitation of the study is that it only included Israeli children. Clearly, it would be worthwhile to conduct research among Palestinian children and youth who are also exposed to the security threat. Nonetheless, the findings highlight the significance of the social context for person-environment relationships as reflected in the sense of belonging to the school and to the place of residence, as well as in the type of locality as predictors of stress reactions such as emotional distress or violent behavior.

Despite these limitations, the study contributed substantially to knowledge about the consequences of exposure to an ongoing security threat for distress among children and adolescents, as well as to the growing body of literature on mental vulnerability under a constant threat of terror. The findings suggest that exposure to threat and routine activities exist side by side, and that populations at risk for developing aggressive behavior versus post-traumatic stress reactions differ in terms of age, gender, and trauma history. In

addition, the findings shed light on the complexity of exposure to a security threat as well as exposure to other traumatic events which both intensify PTSS and are considered risk factors, such as being a victim at school and sense of fear. These factors are dominant in developing stress responses and need to be addressed in order to reduce the level of fear and the amount of violence children and adolescents experience at school.

Finally, the findings highlight the importance of differential interventions with children who show post-traumatic stress symptoms versus those who show aggressive behavior, which does not appear to be a result of exposure to threat. The security situation should not overshadow social issues which need to be regularly addressed, such as family violence and aggression among school children. Accordingly, schools should play a greater role in helping children and adolescents cope with these stress situations.

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