

# The Impact of Repetitive and Chronic Exposure to Terror Attacks on Israeli Mothers' and Children's Functioning

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## ABSTRACT

Studies point to the pathogenic impact of exposure to terror. However, most focus on specific traumatic events. The current study focused on the impact of continuous ongoing exposure to terror attacks. It examined the extent to which children's PTSD and behavior problems are a function of mothers' PTSD, child and mother exposure to terror events, and child and mother fear. A sample of 152 mother and children dyads, all living in communities on Israel's southern border, were surveyed. Results indicate that children's posttraumatic symptoms are significantly and positively predicted by their exposure to terror events, their fear, and their mothers' posttraumatic symptoms. In addition, children's current behavioral and social problems are positively predicted by mothers' posttraumatic symptoms. Results are discussed in light of the importance of subjective interpretation. The findings suggest that further research should examine additional cognitive and social contextual factors.

## INTRODUCTION

Numerous studies indicate the pathogenic impact of exposure to traumatic events such as natural disaster (1), war, terror, and conflict events on adults as well as children and youth (2-4). However, most of the research focuses on specific traumatic events, while the impact of continuous ongoing exposure to terror attacks (e.g., suicide bombers, mortar attacks) on mental health has

rarely been examined (5-7), particularly among children. The outbreak of the Second Intifada (al-Aqsa Intifada, October 2000) in Israel, as well as the spate of subsequent attacks on Israeli civilians and continued mortar attacks from Gaza on communities in the Western Negev (6), following the disengagement from Gaza (a unilateral decision made by the Israeli government in 2005 to evacuate all Jewish settlements and Israel Defense Forces troops from the Gaza Strip) (8, 9), afforded an opportunity to narrow this knowledge gap.

Over the years, those living in the area of conflict have been exposed to attacks, both directly as well as indirectly through the injury or death of friends, family or neighbors, and ceaseless media coverage of the attacks. Thousands of missiles and mortars have been launched into this populated area, usually accompanied by the wailing of sirens, resulting in dozens of fatalities and hundreds of injuries (5). In the present study an attempt was made to examine factors associated with the coping ability of children and with the threat to their life as a result of repetitive exposure to these conflict events, while focusing on various demographic features, with particular attention to the coping processes of mothers.

Exposure to terror attacks and violence, especially continued exposure, may have significant repercussions that may result in emotional stress, such as posttraumatic stress disorder, depression and risk behaviors (4, 10-14). Although exposure to violent events affects adults as well, children constitute a special risk group. A literature review reveals that this exposure has a negative effect on children's behavior, emotions and cognitive perceptions (e.g., 15, 16). The discernable negative effects on children are higher distress levels, fear and anxiety, more symptoms of depression, and reduced concentration, memory and learning skills (15-20). Children living in war zones

perceive the social world as less secure and demonstrate more negative behaviors and disobedience (17, 18, 20).

There is a general consensus that war situations cause children great suffering, impair their normal development, and leave them with long-term and irreversible damage (19, 21). Yet, how children cope with exposure to traumatic events is associated with several factors: The extent of (subjective and objective) exposure to danger, perception and understanding of the trauma, the child's age, reactions by the child's environment and family and how they cope, are all factors that influence children's coping. For example, studies conducted in Israel during the 1991 Gulf War found that children who resided in closer proximity to the region targeted by missiles suffered from higher levels of emotional distress, compared to those of children residing further away (22), and that children with more social support were less susceptible to posttraumatic distress (23, 24).

In fact, studies show that in stressful situations parents constitute their children's main source of support. Studies consistently point to a close and direct connection between parental support and reduced emotional stress among children (25). Positive child-parent relationships were found to be associated with both reduced stress and promoting adjustment during stressful events (26-28). This relationship serves to regulate children's reactions in traumatic situations and may be the most influential factor in reported sense of distress (29-31).

The few studies that examined parental support in situations of attack found that family cohesion and parental support enhanced the resilience of children in face of military threat (24, 32). Nonetheless, it is notable that continued exposure to attack events may also influence parents' ability to provide their children with support, as they too may experience high levels of pressure and distress and be unable to support their children (33). It appears that in situations of conflict and threat, parent-child relationships are characterized by reciprocal concern about each other's well-being, conflict and vulnerability (24).

The literature states the significance of mothers' coping style for their children. Mothers' emotional adaptation serves as a defense protecting children from the effects of war and has an important role in preventing involvement of the child's disorder as well as the severity of its symptoms and its trajectory over time (34). Studies on mothers and children exposed to war and terror situations found strong associations between their psychological distress (35, 36). For example, by evaluating whether conjoined

maternal posttraumatic stress disorder and depression are associated with increased behavioral problems among preschool children after the September 11 attacks, maternal depression and PTSD were found to be associated with substantially increased child problems (37). Yet the association between the effect of mothers' distress level (PTSD) on that experienced by their children has rarely been addressed (24, 37).

The purpose of the study was to examine the extent to which children's posttraumatic symptoms and behavior problems are a function of mothers' posttraumatic symptoms, child and mother exposure to terror events, and child and mother fear. Furthermore, children's behavior problems were examined with the purpose of assessing to what extent they may be predicted by the research variables over and above past behavior problems, thus controlling for past behavior problems. The main hypotheses were that: (1) Children's levels of distress resulting from conflict tensions will be moderated by their mothers' levels of distress; (2) objective exposure and subjective exposure (exposure to incidents and level of fear) will be positively correlated; and (3) continued exposure to stressful situations will have a negative effect on children's behavioral measures. As such, a difference will be found between mothers' assessment of their children's behavior prior to the onset of mass mortar assaults on their homes (2005) and at the time of the research (2009).

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## METHOD

### PARTICIPANTS

Participants were 152 mothers and their children (a total of 304 participants). Mothers were 28-56 years old ( $M=42.17$ ,  $SD=5.26$ ). They had been living in the Western Negev for up to 55 years ( $M=20.20$ ,  $SD=13.35$ ): About a quarter had lived there 10 years or less, another quarter had lived there for 11 to 17 years, another quarter 18-28 years, and the final quarter had lived in the Western Negev for over 29 years. Eighty six percent of the sample had lived in the Western Negev for over five years. All participant families were permanent residents, and most had more than one child.

Most mothers were Israeli born ( $N=119$ , 79.9%), while others were mainly of European-American origins ( $N=23$ , 15.4%). Most mothers were married ( $N=135$ , 91.2%), while others were divorced or separated ( $N=12$ , 8.8%). They had up to 12 children, ( $M=4.01$ ,  $SD=1.79$ ). Most mothers had either an academic education ( $N=77$ , 51.0%) or a high school education ( $N=60$ , 39.7%). Most were

employed full time (N=115, 76.2%), while others were either employed part time (N=9, 6.0%) or not working (N=27, 17.9%). Most of those employed had jobs in the educational field (N=57, 47.5%), helping occupations (N=14, 15.0%), administration (N=18, 15.0%), technical occupations (N=24, 20.0%), or blue-collar non-professional jobs (N=7, 5.8%). The children in the study were 90 girls (59.2%) and 62 boys (40.8%), between the ages of 10-14 (M=11.53, SD=1.04).

## MEASUREMENTS

### *Objective exposure to terror and conflict events*

Objective exposure to terror and conflict events was assessed by Solomon and Lavi's exposure-to-war and terror questionnaire (38). The questionnaire was originally written in Hebrew. The modified version used in the present study comprises 17 items covering different types of trauma-related incidents. For example: "A relative of mine was wounded by a missile." The objective level of exposure was scored as the total number of terror incidents to which the respondent had been exposed; scores ranged from 0-17, with higher scores indicating greater exposure.

### *Subjective exposure*

For each terror and conflict incident respondents reported having experienced, they were asked to indicate the level of fear felt at the time of the incident on a 4-point scale (1= *not scared*; 4= *very scared*). Subjective level of exposure was defined as the mean of the subject's responses on this scale (see also: 12, 39).

### *PTSD Inventory*

To assess the degree of posttraumatic stress symptomatology, mothers completed the self-report version of the PTSD Inventory (40). It contains 17 items reflecting three symptom categories, based on DSM-IV-TR (41): intrusion, avoidance and hyperarousal. Respondents were asked to indicate whether or not they experienced the symptom, on a 4-point scale ranging from 1 (not at all) to 4 (very much). The inventory has both high test-retest reliability and concurrent validity compared with clinical diagnosis (40). In the current study, the mean number of PTSD symptoms, as well as the mean number of symptoms in each cluster (intrusion, avoidance and hyperarousal) was assessed. Respondents were identified as having PTSD if they endorsed at least one intrusive symptom, three avoidance symptoms, and two hyperarousal symptoms in the PTSD inventory. Internal

consistencies for total and subscale scores were high at all assessments (Cronbach's alpha .81-.93).

### *Posttraumatic Stress Disorder Reaction Index for Children*

To assess the degree of posttraumatic stress symptomatology, children completed the self-report version of the CPTS-RI (42), containing 20 items assessing PTSD symptoms by DSM criteria. Respondents were asked to indicate whether or not they experienced the symptom, on a 5-point scale ranging from 0 (not at all) to 4 (very much).

A total RI score ranging from 0-80 is obtained by summing all items after adjusting for reverse scored items. A Global Symptom Score (GSS) ranging from 0-80 is obtained by summing all items after adjusting for reverse scored items. Internal consistency for this study (Cronbach's alpha = .91) was similar to that reported by previous studies using the Hebrew version (e.g.,  $\alpha = 0.86$ ) (43). Clinical categories for PTSD symptom severity were used to classify participants according to their total RI score as follows: doubtful (0-11), mild (12-24), moderate (25-39), severe (40-59), and very severe (60-80).

### *Child Behavioral Checklist (CBCL)*

To assess levels of aggression, anxiety and social problems among the children, three CBCL subscales (44, 45, 46) were used: the Anxious/Depressed Scale (18 items); the Social Problems Scale (13 items); and the Aggressive Behavior Scale (25 items). Each item is rated on a 0-1-2 scale for how truly/accurately it describes the child (0 = does not apply to this child; 1 = occasionally or to some degree; 2 = very true or often true). Thus, the higher the score of each child the more severe his/her level of disturbance. The CBCL was designed to obtain standardized data on children's range of behavioral competencies and problems as reported by their parents, teachers, or other informants observing the children under different conditions. It has been used extensively in research on child psychopathology, including in Israel (47).

In order to check whether any change had occurred in children's behavior, mothers completed the questionnaires twice to assess their children's state both before the onset of attacks on their home and when completing the questionnaires (2009). Internal consistencies for the subscales ranged from .77-.91, demonstrating good validity (48).

## PROCEDURE

The study was approved by the National Insurance Institute of Israel and its Ethics Committee. After receiving the necessary authorizations and permits from the

National Insurance Institute, we used cluster sampling in which the level of exposure and place of residence were the sampling criteria, resulting in two areas in Israel: small communities (rural villages and kibbutzim of about 200-700 inhabitants) as well as a larger city (of about 21,000 inhabitants), all in areas that had been the target of missile attacks for years.

Participants were located using the snowball method. Meetings and interviews took place at participants' homes by prior appointment. With the mother's consent, one of her children was chosen, aged 10 or older. Children aged 10 or older were chosen for this purpose as this age is an intermediate age between childhood and adolescence. Studies exploring exposure to traumatic events treat the age criterion as a discriminant criterion (e.g., 12). A decision was made to focus on this age in particular for practical reasons. These children form a population that has been exposed to missile attacks for years. We preferred to avoid including adolescents in order to reduce effects associated with unique features of adolescence.

Before completing the questionnaires, participants were told that the questionnaires were anonymous and would be used solely for the purpose of the study. Each

mother signed an informed consent form confirming her own participation and that of her child, and then mothers and children were asked to answer the questionnaires separately, after which the purpose of the study was explained. When the questionnaires had been completed, each family received a token sum of \$27 for their participation in the study. Questionnaires were distributed and administered during 2009 (June-November).

## RESULTS

### OBJECTIVE AND SUBJECTIVE EXPOSURE TO TERROR AND CONFLICT EVENTS

In general, mothers' exposure to incidents was higher than that of their children (see Table 1). The score for mothers' fear was  $M=2.72$  ( $SD=1.09$ ), while children's was  $M=2.20$  ( $SD=1.00$ ). The difference was significant:  $t(151)=4.80$  ( $p<.001$ ), with a correlation of  $r=.79$  for mothers and  $r=.68$  for children ( $p<.001$ ).

### PTSD SYMPTOMS

Mothers' mean scores on PTSD scales ranged from 1-4. Means were: intrusion  $M=1.91$  ( $SD=0.82$ ), avoidance

**Table 1.** Percents of exposure to terror events of mother and child

Due to the situation:	Mother		Child		Z
	N	%	N	%	
1. Forego an activity	134	88.2	106	69.7	4.14***
2. Didn't get to work / school	100	65.8	134	88.2	4.45***
3. Left work / school	56	36.8	21	13.8	4.63***
4. Family left home	91	59.9	56	36.8	5.11***
5. Used other roads	104	68.4	71	46.7	4.37***
6. Stayed home to hide	110	72.4	106	69.7	0.45
7. House was hit	33	21.7	28	18.4	1.29
8. Work / school hit by missiles	51	33.6	48	31.6	0.56
9. Missile fell close by, No one was injured	64	42.1	49	32.2	2.10*
10. Missile fell close to an acquaintance, no one was injured	116	76.3	93	61.2	3.05**
11. Wounded by a missile	10	6.6	7	4.6	0.78
12. A relative was wounded by a missile	59	38.8	33	21.7	4.01***
13. An acquaintance was wounded by a missile	105	69.1	84	55.3	2.61**
14. A relative was killed by a missile	25	16.4	3	2.0	4.32***
15. An acquaintance was killed by a missile	73	48.0	40	26.3	4.37***
16. Saw a person killed	10	6.6	17	11.2	1.40
17. Other	35	23.0	36	23.7	1.51
Total exposure (1-17)	M=7.74	Sd=3.25	M=6.13	Sd=2.68	t(151)=7.41***

\* $p<.05$ , \*\* $p<.01$ , \*\*\* $p<.001$

M=1.46 (SD=0.56), and hyperarousal M=1.96 (SD=0.84). The total mean score for PTSD was rather low at 1.74 (SD=0.65). Indeed, only 18 mothers (11.8%) were clinically defined as suffering from PTSD.

Children's total PTSD score ranged from 0-60 (M=13.66, SD=11.84). Classification by clinical categories revealed that 77 children (52.0%) were categorized as doubtful, 47 (31.7%) as mild, 18 (12.2%) as moderate, five (3.4%) as severe, and only one child (0.7%) as suffering from very severe PTSD (four children were not categorized).

### CHILD BEHAVIOR PROBLEMS

Differences between current and former (retrospectively assessed) child behavior symptoms were examined with a repeated measure MANOVA. Results show significant increases in mothers' perceptions of all child behavior symptoms.

**Table 2.** Means, standard deviations and *F* tests for former and current child behavior symptoms (*N* = 148)

	Former	Current	<i>F</i> (1, 147) ( $\eta^2$ )
Aggressive behavior	4.52 (5.00)	7.74 (7.11)	54.93*** (.27)
Social problems	1.42 (2.10)	2.47 (2.87)	36.54*** (.20)
Anxious/Depressed	2.57 (3.19)	4.90 (4.39)	61.04*** (.29)

$F(3, 145) = 23.20, p < .001, \eta^2 = .32$

### PREDICTING CHILD POSTTRAUMA AND BEHAVIOR PROBLEMS

Four multiple regressions were conducted to predict child posttrauma and behavior problems. Dependent variables were: current child posttraumatic symptoms, aggression, social problems and anxiety. The three latter variables were highly interrelated as retrospectively assessed (aggression:  $r = .67$ , social problems:  $r = .68$ , anxiety:  $r = .58$ ,  $p < .001$ ). The first step in the regression included control variables: child's age, sex (defined as a dummy variable: 1-boys, 0-girls), and retrospective assessment of the respective behavior problem. Notably, other demographic variables, such as mother's age, number of children in the family, religiosity and ethnic origin, were found to be unrelated to the dependent variables, and thus were not entered in the regression analysis. Current behavior problems were found to be predicted by mothers' posttraumatic symptoms, and by child and mother objective exposure and fear of terror events, over and above the child's past behavior problems. The second step of the

regressions included mothers' variables: posttraumatic symptoms, extent of exposure, and fear of terror events, and the third step included the child's extent of exposure and fear of terror events (see Table 3).

All four regression models are significant. Mothers' variables contribute 11% to 18% of the explained variance of the dependent variables, beyond the control variables, while children's extent of exposure and fear of terror events contribute another 19% to the explained variance, beyond mothers' variables, only regarding children's posttraumatic symptoms.

Children's exposure and fear do not contribute significantly to explaining behavior problems, beyond mothers' variables. More specifically, children's posttraumatic symptoms are significantly and positively predicted by mothers' posttraumatic symptoms, children's exposure to terror events, and children's fear. Notably, children's posttraumatic symptoms are significantly predicted by children's gender as well, such that girls show a higher extent of symptoms. However, exposure to incidents and level of fear are stronger predictors than gender, and turn gender into a insignificant variable. In addition, children's current aggression, social problems, and anxiety/depression, are significantly and positively predicted by mothers' posttraumatic symptoms, beyond children's respective past behavior problems. Finally, when all variables are entered, children's age is negatively related with anxiety/depression, so that older children show less anxiety/depression symptoms.

### DISCUSSION

The present study assessed the extent to which children's posttraumatic symptoms and behavior problems are a function of their mother's posttraumatic symptoms and long-term exposure to conflict tensions and terror events. As hypothesized, children's levels of distress resulting from conflict tensions were found to be associated with their mothers' levels of distress. This is compatible with theoretical approaches claiming that parents' own emotion regulation moderates the relationship between parenting and children's emotional and behavioral functioning as well as with empirical evidence obtained in previous studies (e.g., 24, 35-37). Regression analysis findings show that children's posttraumatic symptoms may be predicted by their mother's posttraumatic symptoms, i.e., the more mothers suffer from PTSD, the higher children's reported levels of emotional distress.

Interestingly, although mothers' distress is a significant predictor of their children's distress, it is not a primary

**Table 3.** Prediction of child's PTSD symptoms and behavior problems (N=148)

Step:		PTSD ( $\beta$ )	Aggression ( $\beta$ )	Social ( $\beta$ )	Anxious/Depressed ( $\beta$ )
1	Child's sex	-.25**	.07	-.01	.03
	Child's age	-.04	-.12	-.13*	-.18**
	Past behavior	----	.67***	.67***	.59***
		R <sup>2</sup> =.06, p<.05	R <sup>2</sup> =.47, p<.001	R <sup>2</sup> =.47, p<.001	R <sup>2</sup> =.37, p<.001
2	Child's sex	-.24**	.07	.01	.03
	Child's age	-.01	-.09	-.10	-.14*
	Past behavior	----	.64***	.60***	.49***
	Mother's exposure	.09	.03	.09	.13
	Mother's fear	-.04	.02	.05	.06
	Mother's PTSD	.32**	.31***	.25***	.31***
		$\Delta$ R <sup>2</sup> =.13, p<.001	$\Delta$ R <sup>2</sup> =.12, p<.001	$\Delta$ R <sup>2</sup> =.11, p<.001	$\Delta$ R <sup>2</sup> =.18, p<.001
3	Child's sex	-.13	.05	-.02	.02
	Child's age	-.03	-.10	-.10	-.12*
	Past behavior	----	.64***	.61***	.49***
	Mother's exposure	-.15	.05	.13	.19*
	Mother's fear	.01	.02	.04	.06
	Mother's PTSD	.20*	.33***	.27***	.33***
	Child's exposure	.36***	-.01	-.09	-.12
	Child's fear	.28***	-.06	.01	-.01
		$\Delta$ R <sup>2</sup> =.19, p<.001	$\Delta$ R <sup>2</sup> =.001, ns.	$\Delta$ R <sup>2</sup> =.01, ns.	$\Delta$ R <sup>2</sup> =.01, ns.
	Model:	R <sup>2</sup> =.38, p<.001 F(7,140)=12.00	R <sup>2</sup> =.59, p<.001 F(8,139)=24.81	R <sup>2</sup> =.59, p<.001 F(8,139)=25.13	R <sup>2</sup> =.56, p<.001 F(8,139)=22.21

\*p<.05, \*\*p<.01, \*\*\*p<.001

influence, and children's own exposure and fear are a stronger predictor. Most studies that found a strong connection between mothers' and children's levels of emotional distress examined a predefined war situation (12, 36). Perhaps the absence of such a strong connection in the present study may be linked to the fact that subjects completed the questionnaires while still in what may be defined as a war zone. During the period of data collection, missile attacks on respondents' residential areas were an almost daily occurrence.

Fear has been documented in numerous studies as playing a key role in posttraumatic symptoms. A subjective sense of fear was found to be even more strongly related to posttraumatic symptoms than the actual objective exposure (e.g., 12, 49, 50). However, the current study shows that the impact of objective exposure on children's distress levels is highly significant, no less than that of fear aroused by exposure. Objective exposure and subjective sense of fear were found to be highly and positively correlated. This is in line with the claim by Lazarus and

Folkman (51) regarding the significance of subjective interpretation for understanding coping mechanisms. The significant impact of sense of fear and exposure levels also overshadows gender differences found in numerous other studies, in which girls were found to report more posttraumatic symptoms than boys (12, 52, 53). However, exposure to incidents and level of fear are stronger predictors than gender.

An examination of mothers' assessment of changes in behavior variables of their children indicates an increase in behavioral problems following the exposure to conflict events. These findings correlate with previous findings that found higher pathogenic levels among children living in border communities or in areas subjected to national conflict-related events (14, 17, 20, 54). Moreover, children's current behavior problems are positively and significantly predicted by mothers' posttraumatic symptoms, maybe since it was the mothers who assessed their children's behavioral changes, while children's exposure and levels of fear do not significantly

contribute to explaining behavioral problems over and above mothers' PTSD.

The current findings add a new dimension to the few studies that examined prolonged exposure to war and terror (e.g., 15, 20) and support the connection between parents' coping styles and those of their children (e.g., 28, 55). Overall, the results indicate that conflict events left their mark on mothers residing in areas exposed to hazardous conflict situations, as well as on their children. Findings also indicate the significant impact of exposure to events and of the interpretation attributed to them (fear), as well as the significant effect of mothers' emotional state on children's emotional state and behavior.

However, the results leave us with some unanswered questions that arise from the research limitations. First, assessment of behavior problems may be impeded by focusing only on mothers as the source of information. Relying on mothers' reports introduces a potential confusion, as maternal psychopathology may create systematic biases in the rating of children's behavioral problems (e.g., 56, 57). This may also be the explanation for the finding that children's exposure and fear do not contribute significantly to explaining behavior problems. Objective reports of behavior problems, such as assessment of children's school performance, may yield clearer findings about the behavior of children. In addition, only children above the age of 10 (relatively older children) were studied. This may affect the impact of mothers on children. The negative correlation found in the current study, where older children show less anxiety/depression symptoms, confirms the effect of the age variable. Another study found that maternal posttraumatic stress disorder and depression were associated with increased behavioral problems among preschool children after the September 11 attacks (37).

Nevertheless, the findings clearly indicate that the most significant factors were the extent of exposure and children's feelings in light of the events they experienced. Overall, the regressions explained up to 19% of the PTSD variance. This clearly leaves room for other variables accounting for the unexplained variance. For example, Hobfoll (58) proposes two main variables that mediate the connection between exposure to terror and emotional distress: loss of resources and acquisition of other resources. This model was found to be compatible with explanations of how the adult population in Israel has managed to adapt to a situation of continued terror (59). It would also be worthwhile to examine its suitability among the younger population. Furthermore, there is need for future research to assess the

effects of cognitive variables (e.g., coping strategies) and social variables (e.g., social support) on fear and PTSD. As noted by Bensimon and colleagues (60), the objective exposure component may be of less importance than the subjective exposure component when exposure to terror is chronic and on a national scale. Obviously, this reality exists not only in Israel, but also in other parts of the world (e.g., Afghanistan and Iraq), and therefore such research has global implications.

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