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Coping styles as moderating the relationships between terrorist attacks and well-being outcomes

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Abstract

This study aims to explore use of coping strategies among adolescents and their relationships with well being in the context of ongoing terrorism. Furthermore, we aim to explore to what extent coping styles in addition to exposure variables explain well being of adolescents facing ongoing terror. During September 2003, after three years of ongoing terror attacks, 913 Israeli adolescents aged 12–18 years, completed the following questionnaires during regular class sessions: Demographics, Achenbach's Youth Self Report; Exposure to Terror and Post Traumatic Stress (PTS) questionnaire; Adolescent Coping Scale (ACS) and Brief Symptoms Inventory. Adolescents employed mainly problem solving strategies which mean they have the capacity to cope well in spite of stressful events. Emotional focused coping was associated with PTS and mental health problems. Regression analysis of different exposure and coping variables revealed that exposure, appraisal (subjective exposure) and coping styles explained 26–37% of the variance of different psychological problems.

The findings highlight the importance of appraisal (subjective exposure) and coping strategies, for understanding adolescents' mental health outcomes. Moreover, these findings are relevant to the development of

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prevention/intervention programs that facilitate youth's cognitive and emotional adjustments to ongoing trauma risks and terror threats.

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Introduction

The present study aims to explore the use of coping strategies by adolescents facing ongoing terrorism. It also aims to strengthen insight into the process of adjustment cognitively and emotionally to ongoing terror risks by investigating relationships between coping styles and mental health outcomes.

The importance of coping has indeed been stressed throughout research in recent years. Generally, coping strategies have been found to moderate the relationship between exposure to stress and anxiety outcomes. Coping can be defined as the actual effort that is made in the attempt to render a perceived stressor more tolerable and minimize the distress induced by the situation. Most models of coping assume that individuals who cope more effectively with stressful life events show lower levels of anxiety or depression (Lazarus & Folkman, 1984). Thus, different studies in the domains of adolescents' coping with stressful situation show that emotion focused strategies of reference to others and non-productive coping tend to be associated with more psychological problems while problem focused strategies or active coping tend to be linked to more well being (Frydenberg & Lewis, 1999; Lewis & Frydenberg, 2002).

The period of adolescence is crucial to the development of coping skills. Adolescents more readily tend to engage in experiences or encounter situations that are associated with increased risks for developing emotional and behavioral problems. Teenagers are also at the stage of developing their personal styles of coping. It is during these years that from one experience of using certain mechanisms of coping to another, coping strategies can be reviewed, modified as needed and crystallized (Frydenberg, 1997). From puberty on, youth also develop more advanced cognitive and emotional mastery, enabling them to see the perspective of others, plan ahead to see future consequences of an action and manage emotions more effectively thus, facilitating their abilities to deal with sources of conflict, and threatening or stressful events in a variety of contexts (Garnefski, Legerstee, Kraaij, Van den Kommer, & Teerds, 2002; Xianchen, Jenn-Yun, & Zhongtang, 2004).

Research in different domains of exposure to potentially traumatic experiences has shown that similar exposure does not necessarily lead to similar extents of psychological problems among individuals. Research repeatedly demonstrates that dynamic processes such as coping tend to function as strong mediators between stressors and their mental health outcomes, notably in the context of various types of emotional and behavioral problems in youth (Aldwin, 1994; Celestin & Celestin-Westreich, 2006; Dempsey, 2002). When attempting to understand the psychological implications of adolescents' exposure to terrorism, recent studies converge to suggest similar relevance of a coping perspective for our insight into the dynamics through which

experiences of terror attacks impact on youth's well being (Cardena, Dennis, Winkel, & Skitka, 2005; Gil & Caspi, 2006; Zeidner, 2005).

Despite this evidence and although research of adolescents exposure to terrorist acts has grown consistently in recent years, few studies to date have specifically addressed the usage of coping mechanisms in adolescent populations in the context of facing terrorism (e.g. Cardena et al., 2005; Wadsworth et al., 2004). In the Israeli context of exposure to ongoing terrorism, Zeidner (2005) explored the use of coping strategies of adolescents in Haifa confronted with a continuing threat of terrorism. Another study in the context of the Palestinian–Israeli conflict explored trait coping (pre-attack) and state coping (post attack) of first year undergraduate students before and after a bus explosion in Haifa (Gil & Caspi, 2006). These studies found emotion focused strategies and avoidance coping to be meaningful predictors of maladaptive outcomes while problem focused strategies were found to be a weak predictor or did not predict stress or other psychological problems at all.

Since research in the broader context of war, including terrorism, leads to conflicting results as to which coping strategies come with more or less psychological distress, some findings between suggestive of avoidance and denial as effective strategies while others advocate the importance of problem focused coping (Muldoon & Cairns, 1999; Zeidner, 1993, 2005). Further exploration of the role of coping styles in the context of ongoing terrorism is needed.

Exposure to terror attacks

When investigating adolescents' mental health outcomes in the context of terrorism, most research to date has quite naturally considered direct, physical exposure to the attacks as being a primary factor in determining subsequent PTSD, emotional and behavioral problems. Several studies have demonstrated that higher levels of physical exposure to terrorist attacks elicit more adverse psychological reactions, such as higher rates of PTSD, anxiety and functional impairment (e.g. Hoven et al., 2002). However, after terrorist attacks this type of exposure appears to explain a limited amount of variance in youth's mental health problems (Pfefferbaum et al., 2001). An additional type of exposure via relationship with a victim has been postulated as a significant moderating variable especially when focusing on children or adolescents, given that youth's developmental status may render them more vulnerable to the loss of loved-ones (Pynoss & Eth, 1985). Several studies showed that adolescents who knew a victim experienced more PTSD and stress related symptoms than those who did not know a victim (e.g. Hoven et al., 2002; Pfefferbaum et al., 1999; Ronen, Rahav, & Appel, 2003).

In the context of terrorism, subjective exposure was studied less. However, reports of initial fears and worries for safety of family members and friends after the Oklahoma City and Nairobi bombings seemed to be significant predictors of PTSD (Pfefferbaum et al., 2002; Pfefferbaum et al., 2003). In addition, when subjective exposure was defined by fear levels, adolescents who were more exposed physically were not always found to report higher sense of fear (Solomon, Laufer, & Lavi, 2005).

Pat Horenczyk (2003) addressed another concept of exposure; 'near miss' experience (e.g. 'miss the bus that later exploded'). She found that youths who were less physically exposed and knew fewer people who were hurt in terrorist attacks, reported more PTSD symptoms, overall distress

and malfunctioning in the domains of family functions and risk-taking behavior. A suggested explanation for these results maybe that those adolescents reported more near miss experiences.

Media exposure as an additional dimension of exposure seems to contribute to post traumatic stress symptoms even for those who weren't directly exposed (Pfefferbaum et al., 2001). A longitudinal study estimating the effects of the September 11th attacks on adolescents' mental health concluded that while neither physical nor family exposure predicted change in mental health after September 11th, media exposure did predict an increase in PTSD symptoms (Aber, Gershoff, Ware, & Kotler, 2004). These examples suggest that the media have significant role in determining mental health outcomes following terror attacks.

Thus, this study aims to examine how adolescents are affected by situational determinants in different types and levels of exposure to terrorist attacks in a broader framework taking into consideration also primary appraisal as subjective exposure (perception of endangerment) and coping styles.

Emotional reactions to terror attacks

Recent research of adolescents' responses to terrorist attacks and prolonged exposure to political violence has shown these incidents to have a substantial impact on their emotional and behavioral functioning. Adverse mental health outcomes are indeed found to vary widely both in terms of type and extent, ranging from mild stress reactions, through PTSD to psychopathological responses including somatic complaints, depression, anxiety, conduct disorder, functional impairment, panic attacks etc. (e.g. Hoven et al., 2002; Pat Horenczyk & Doppelt, 2005; Solomon & Lavi, 2005; Thabet & Vostanis 2002). Studies to date have mainly identified factors such as age, gender, prior trauma and type of exposure to diversely mediate these posttraumatic and mental health difficulties. However, these variables appear to explain only relatively limited amounts of the variance in mental health outcomes. For example, gender was found to explain about 2–12% while different types of exposure explain 3–13% in youth's terror-related mental health difficulties across studies (Pfefferbaum et al., 2002; Pfefferbaum et al., 2001; Solomon et al., 2005). Therefore, it seems that the role of coping styles may shed some light into the process in which adolescents facing ongoing terror do or do not develop psychological problems.

Research background and aims

During the al-Aqsa Intifada which started in late September 2000, Israeli society has been confronted with a wave of terrorist attacks, including, among others, drive-by shootings, break-ins and suicide bombings. By September 2003, when the present study was conducted, numerous children and adolescents had witnessed such attacks directly or indirectly, thus raising questions about the psychological impact of these potentially traumatic experiences.

The aim of this study was to explore the use of coping strategies among adolescents who faced ongoing threat of terrorist attacks over several years. We investigated the relationships between the different coping strategies and exposure variables as well as the relationships between the coping strategies and the different psychological and behavioral problems. Finally, we investigated the role of exposure variables and coping styles to explain the well-being of adolescents following terror attacks. We formulated the following research hypotheses:

- 1 Based on previous research we hypothesize that adolescents throughout Israel will mainly use problem solving strategies to deal with the stressful situation of ongoing terrorism (Zeidner, 2005).
- 2 Problem solving strategies will be linked to better well being while non-productive coping or coping with reference to others will be linked to more psychological problems (Cardena et al., 2005; Zeidner, 2005).
- 3 The different exposure variables and the different coping scales will have contributed to explaining the different psychological problems. Thus, subjective exposure as well as ‘non-productive’ coping are expected to be the most significant contributors to the different psychological problems (Gil & Caspi, 2006; Solomon et al., 2005; Zeidner, 2005). While non-productive coping is expected to have a negative effect, problem solving is expected to have positive contribution (Dempsey, 2002).

Methods

Population sample

This study has comprised a sample of 913 Israeli adolescents aged 12–18 years. No other inclusion or exclusion criteria were used aside from age and availability at the time the questionnaires were administered. The demographic characteristics of participants are shown in Table 1.

Students attending four different schools (junior and senior high schools) in four locations in Israel were chosen to represent different levels of exposure. Three of the schools (Central Israel, Southern Israel and Jordan Valley) belong to the same educational sub-system (Department of Rural Education), which is part of the ‘Mamlachty’ educational system and the only one that has schools scattered throughout Israel. Most of the schools under this system are located in suburbs or in rural areas, with students living in kibbutzim¹, moshavim² or small towns. The Jerusalem school, in turn, serves different neighborhoods of Jerusalem and nearby small towns. All participating schools are “open access” (no selective admission procedures). In the Jordan Valley School, the entire age-relevant population participated. For the other schools, three classes from each grade (out of 6–9 classes), with an available schedule at the time of research participated. As shown in Table 1, participants were distributed quite evenly regarding gender and age across schools/locations.

The sample’s Socio-Economic Status (SES) was obtained via parental work, grouped according to the ‘Central Bureau of Statistics’ classification into three levels (‘low’, ‘average’ and ‘high’, for respectively below average, average and above average wages) (Table 1).

Measures

Adolescents filled out a comprehensive standardized self-report battery comprising a demographic; ‘Exposure to Terror’ and ‘Post Traumatic Stress’ (EPTS) Questionnaire designed specifically for this study’s purpose; Achenbach Youth Self Report (YSR, Hebrew version); the

¹ Kibbutz: collective farm or settlement in Israel.

² Moshav: a cooperative settlement of small individual farms in Israel.

Table 1
Demographic characteristics of sample.

Characteristic	No.	%
Age of participants, mean (SD) [range years]	14.45 (1.27) [12–18]	
Gender		
Girls	462	50.6
Boys	447	49
Grade level		
8th grade	335	36.7
9th grade	302	33.1
11th grade	276	30.2
Age group		
Youngest 12–13.5	305	33.4
Middle 14–15.5	349	38.2
Oldest 16–18	255	27.9
Schools		
Central Israel	250	27.4
Jordan Valley	183	20
Southern Israel	226	24.8
Jerusalem	254	27.8
Socio-economic status		
Low	242	26.1
Average	487	52.5
High	116	12.5

‘Adolescent Coping Scale’ (Frydenberg & Lewis, 1993a); Brief Symptom Inventory (BSI) of Derogatis.

Demographics

The demographic inventory included questions regarding age, class, school, gender, place of residence and parental work.

Exposure to Terror and Post Traumatic Stress Questionnaire (EPTS)

We designed this questionnaire to comprehensively assess subjects’ exposure from a multidimensional perspective (part 1) along with self-reported Post Traumatic Stress symptoms (part 2). The items regarding the different types of exposure were subsequently combined into indexes as follows:

The “Global Objective Exposure Index” included items regarding the number of attacks one was exposed to, geographical location at the time of each the attack, time of the attacks in relation to the investigation as well as items regarding the closeness of relationship to a terror-attack victim, the number of victims known, severity and time of injury. Some items were presented in tables so youngsters had to mark each relevant cell. For example, one table included the type of a terror attack in addition to the time (e.g. in the past week, in the past month etc.). In a different table the student had to mark the geographical location at the time of the attack

(e.g. I was at the scene among the people who were hurt.... I wasn't at the scene but heard the police sirens and the ambulances on their way to the hospital). Other items were presented as simple questions. For example, if an individual answered yes to the question 'were any of the people you know were hurt?', he/she had to continue and circle each person they know who was hurt in addition to the severity of injury. Relationships were presented to them from mom/dad to neighbor and others.

The "Subjective Exposure Index" consists of three items regarding feelings of danger for self, family and friends, along with an item regarding the perceived possibility of losing a family member. Factor analysis was computed yielding one factor with 74.09% of the variance explained. Cronbach alpha reliability for the four items was 0.88.

Furthermore, "Near Miss Experiences" included two items regarding "nearly having been exposed to an attack", being "Did you have to be in a place where a blast occurred and for some reason did not get there (e.g. missed a bus that later exploded)?" and "Have you ever left a place and shortly after a bomb blasted there?"

Finally, "Media Exposure" consists of one item (After a terror attack do you watch TV, listen to the radio, read newspapers with regards to the attack?) on a 5 point scale, ranging from never to very frequent.

The "Post Traumatic Stress Scale" consists of rewording the DSM IV criteria for PTSD into a yes/no question format, thus including 16 items with satisfactory cronbach alpha reliability ($\alpha = 0.74$).

Prior to the actual data collection, the EPTS questionnaire was administered to a small panel of youth not belonging to the sample ($n = 10$), to assure that the items were clear and could easily be understood.

Achenbach Youth Self Report

The Achenbach Youth Self Report for ages 11–18 (*Hebrew version*) (Achenbach & Rescola, 2001) measures a broad range of behavioral and emotional problems through 112 items yielding a total problem score along with two broad band scales- (internalizing and externalizing), eight subscales and six DSM scales. The YSR form has proven good internal consistency, test–retest reliability (0.87) and content validity (Achenbach & Rescola, 2001). Cronbach alpha for the Total scale in our study was 0.91.

Adolescent Coping Scale (ACS) (Frydenberg & Lewis, 1993b) *short form* comprises 18 items on a 5 point scale, drawn from the 79 items which compose the original long version. Each of the 18 items represent a coping strategy, which are reduced to three global coping styles labeled "Problem Focused Coping", "Coping by Reference to Others" and "Non-Productive Coping". Given that these are a key component of this research and for the sake of comparability across studies, which often adopt different labels for similar coping strategies/styles, Table 2 provides a full listing of the items constituting each style. According to the manual the three scales have sufficient internal consistency to justify the separate use of these scales. Factor analysis was performed and three factors appear to correlate those in the long form. Additionally, the three scales appear to discriminate quite satisfactorily and show moderate reliability as well as high correlations with the three global scales from the long version. Cronbach alpha reliability for the global coping scales in our sample was: problem solving = 0.80; reference to others = 0.56 and non-productive coping = 0.70.

Table 2
Items constituting the three global coping styles.

Problem focused	Reference to others	Non-productive coping
Work at solving the problem to the best of my ability; Work hard; Improve my relationship with others; Look on the bright side of things and think of all that is good; Make time for leisure activities; Keep fit and healthy	Talk to other people about my concern to help me sort it out; Join with people who have the same concern; Pray for help and guidance so that everything will be all right; Ask a professional person for help	Worry about what will happen to me; Spend more time with boy/girl friend; Improve my relationship with others; Wish a miracle will happen; I have no way of dealing with the situation; Find a way to let off steam- e.g. cry, scream, drink, take drugs etc.; Shut myself off from the problem so that I can avoid it; See myself at fault; Don't let others know how I am feeling

Brief Symptom Inventory

The Brief Symptom Inventory (BSI) (Derogatis, 1993) is a 53 item scale on 5 Likert points that measures nine dimensions of psychological and psychiatric problems, summarized in a “Global Severity Index” (GSI). The BSI has good internal consistency for the GSI (0.90) and its subscales (0.68–0.91) (Derogatis, 1993). Due to restrictions made by the Ministry of Education in Israel, five items from this questionnaire had to be omitted (namely, “Thoughts of ending your life”, “Spells of terror or panic”, “Feelings that you are watched or talked about by others”, “The idea that someone else can control your thoughts” and “The idea that you should be punished for your sins”). Given that the manual states that omitting up to 25% (≤ 13 for the GSI and ≤ 1 for the subscales) does not harm the reliability of the scales, only the subscale of “Psychotics” needed to be omitted due to too few remaining items. Cronbach alpha reliability for this sample for the GSI was 0.93.

The ACS and BSI questionnaires were translated into Hebrew and back into English to assure accuracy.

Procedures

In conducting this study, we adhered to all ethical procedures required by the Israeli Ministry of Education. The proposal and questionnaires were sent to the office of the “Central Scientist” and were reviewed both by the ‘Central Scientist’ and the ‘Counseling and Psychological Services’ of the Ministry of Education. After receiving their approval, permission to enter schools was received by each principal following and meeting all requirements made by the Ministry of Education.

Data were gathered during the month of September 2003. The self-report questionnaires were filled out anonymously during regular class periods. The time of completion varied according to age, ranging from approximately 25–45 min. Students were informed that the researcher was interested in their experiences as a result of the ongoing terrorist attacks. The researcher informed the students that participation was voluntary, and that should they feel uneasy or uncomfortable at any time during questionnaire administration, they were free to terminate their participation. Few (20 students or less than 2%) chose not to participate and stopped before completing the questionnaire. Many participants expressed enthusiasm while completing the questionnaires, mentioning that they were glad to have the opportunity to share their experiences.

Data analysis

First, frequencies and percentages of the sample's demographic characteristics were explored. Second, use of global coping styles and specific coping strategies were explored. Third, Pearson correlations were calculated to find out relationships between the coping styles and exposure variables and psychological and behavioral problems. Finally, stepwise regression calculated the explanation of PTS, GSI (BSI) and Total problems of Achenbach by the different exposure variables and coping styles.

Statistical analyses were conducted with the statistical software SPSS Version 12 accepted p levels for interpretation being set at $\alpha < 0.05$.

Results

Adolescents reported using a wide variety of coping strategies to deal with the threat of ongoing terrorist attacks (Table 3). The three items endorsed most frequently to deal with this stressful situation are: "Make time for leisure activities", "Spend more time with boy/girl friend" and "Look on the bright side of things and think of all that is good". Regarding global coping styles, "Problem Focused Coping" comes forward as being most used and "Reference to Others" least in use.

The relationships between coping styles, exposure variables and outcome scales are presented in Table 4. Results show that 'reference to others' and 'non-productive' coping are both linked weakly to all exposure variables except 'subjective exposure' which is linked moderately to these

Table 3
Styles of coping – range, mean and SD.

Coping strategy/scale	Range	M (SD)
Solving the problem	18–90	53.31 (18.11)
Reference to others	20–100	37.38 (14.66)
Non-productive coping	18–76	40.91 (12.36)
Talk to others	1–5	2.29 (1.19)
Work at solving the problem to best ability	1–5	2.83 (1.42)
Work hard	1–5	2.34 (1.29)
Worry	1–5	2.36 (1.28)
Spend more time with a friend	1–5	3.26 (1.43)
Improve relationships	1–5	2.98 (1.37)
Wish for a miracle	1–5	2.71 (1.58)
No way of dealing with the situation	1–5	1.89 (1.16)
Let off steam	1–5	1.55 (1.07)
Join with people with same concern	1–5	1.72 (0.99)
Shut off self from the problem	1–5	1.97 (1.21)
Being at fault	1–5	1.37 (0.80)
Don't let others know of feelings	1–5	2.38 (1.35)
Pray for help and guidance	1–5	2.03 (1.32)
Look on the bright side	1–5	3.19 (1.44)
Ask for professional help	1–5	1.44 (0.92)
Make time for leisure activities	1–5	3.40 (1.49)
Keep fit and healthy	1–5	3.04 (1.57)

Table 4
Relationships between the different coping scales, exposure variables and outcome scales.

	1	2	3	4	5	6	7	8	9	10
1. Problem solving	–									
2. Reference to others	0.47**	–								
3. Non-productive coping	0.57**	0.57**	–							
4. Objective exposure	0.03	0.08*	0.09*	–						
5. Subjective exposure	0.02	0.26**	0.30**	0.18**	–					
6. Near miss experience	0.06	0.11**	0.13**	0.27**	0.13**	–				
7. Media exposure	0.10*	0.20**	0.14**	0.14**	0.23**	0.06	–			
8. Post traumatic stress	0.07*	0.35**	0.46**	0.23**	0.44**	0.13**	0.14**	–		
9. Global severity index	0.07*	0.35**	0.49**	0.13**	0.35**	0.13**	0.04	0.69**	–	
10. Total problems	–0.03	0.22**	0.38**	0.13**	0.26**	0.09**	–0.05	0.60**	0.69**	–

coping styles. ‘Solving the problems’ in turn is associated only with media exposure. This association is very weak.

Stronger associations appear between the different coping styles and mental health outcomes compared to the associations with the exposure variables. Thus, ‘non-productive coping’ has the strongest link with each of the global outcome scales. While ‘reference to others’ follow the same pattern but with moderate association, ‘problem solving’ is associated weakly with PTS symptoms and with GSI only.

All outcome scales appeared to be significantly related to all exposure scales except media. The strongest correlation appeared between subjective exposure and the different psychological problems.

Stepwise regression was computed for the exposure variables and the global coping styles to find out their contribution in explaining the outcome psychological scales (Total, GSI and PTS). A pattern of ‘non-productive coping’ and ‘subjective exposure’ as the dominant variables explaining the different psychological problems appeared. For total Achenbach and GSI scales non-productive coping is the strongest explanatory factor (10.1%; 14.5%) while for PTS it seems that subjective exposure is the strongest contributor with 18.3%. The results mean that more reports of subjective exposure and use of non-productive coping are linked to more psychological problems (Table 5).

As for the other coping styles, problem solving comes forward as an important explanatory factor for the various psychological problems – Total (6.3%); GSI (4.8%) and PTS (3.2%). Usage of more ‘problem solving’ seems to be linked to better well being. ‘Reference to others’ in turn, seems to be the weakest explanatory factor with only 1% of the variance.

The exposure variables apart from ‘subjective exposure’ explained limited amount of the variance (1–2%) of the different psychological problems. While ‘objective’ and near miss experiences were positively linked to the different psychological problems, media exposure was related negatively to ‘total’ Achenbach scale.

Discussion

The present study has aimed to investigate adolescents’ use of coping styles when facing ongoing terror attacks. We have further aimed to explore relationships between these styles

Table 5
Stepwise regression – exposure and coping variables on global outcomes.

Total	GSI				PTS									
	<i>B</i>	β	SE	<i>t</i>	<i>B</i>	β	SE	<i>t</i>	<i>B</i>	β	SE	<i>t</i>		
Step 1														
Subjective exposure	2.26	0.09	0.89	2.54**	Subjective exposure	0.11	0.14	0.03	4.03***	Subjective exposure	0.90	0.23	0.13	7.10***
Near miss	2.93	0.10	1.03	2.85**	Near miss	0.08	0.09	0.03	2.81**	Objective exposure	0.17	0.12	0.05	3.74***
Media exposure	-2.44	-0.13	0.61	-4.00***						Near miss	0.29	0.06	0.15	1.99*
Objective exposure	0.68	0.07	0.32	2.10**										
Step 2														
Non-productive	0.83	0.53	0.06	12.69***	Non-productive	0.03	0.52	0.00	12.02***	Non-productive	0.11	0.44	0.01	10.71***
Problem solving	-0.33	-0.31	0.04	-7.87***	Problem solving	-0.01	-0.30	0.00	-7.68***	Problem solving	-0.04	-0.26	0.01	-6.76***
					Reference to others	0.01	0.13	0.00	3.19**	Reference to others	0.03	0.13	0.01	3.50***
$R^2 = 0.26$					$R^2 = 0.33$					$R^2 = 0.37$				

* $p \leq 0.05$ ** $p \leq 0.01$ *** $p \leq 0.001$.

Step 1 – exposure variables; Step 2 – coping strategies.

and different psychological difficulties. Finally, we wanted to discover which factors of exposure and coping explain different emotional and behavioral problems. We hypothesized that Israeli adolescents who face ongoing terrorism and risk of terrorism will tend to use a mostly problem solving style of coping to deal with these stressful events. Our investigation indeed shows that Israeli adolescents, aged 12–18 years, use a wide diversity of coping strategies to deal with the threat of ongoing terrorism with problem solving being most frequently used and reference to others the least style in use. As problem solving strategies seem to reflect a capacity of coping well with stressful events (Lewis & Frydenberg, 2002) it seems that Israeli adolescents even under such continuing stressful event illustrate such a capacity. Thus, the present findings may indicate that Israeli adolescents who are continuously exposed to ongoing terrorism experience an adaptive process. Creative ‘problem solving’ strategies become predominant in dealing effectively with the related stress; for instance, meeting with peers in alternative safe places (e.g. homes, building halls...) rather than shopping malls; organizing parental carpools to joint meeting places rather than using public transportation (Zeidner, 1993, 2005; Pat Horenczyk, Schiff, & Doppelt, 2007).

Our second hypothesis was that while ‘non-productive’ coping will be positively linked to the different problems, ‘problem solving’ will be negatively related to these problems. Consistent with this hypothesis our results showed that ‘reference to others’ and ‘non-productive’ (emotion focused) coping are related with more PTS and other emotional and behavioral symptoms. The results are congruent with some research in this field (Zeidner, 2005); however, they conflict with research in the broader context of war which has sometimes indicated strategies such as denial and distancing to be related to fewer symptoms (Muldoon & Cairns, 1999; Weisenberg, Schwarzwald, Waysman, Solomon, & Klingman, 1993). Such differences in results undoubtedly underscore the need to further develop a specific research base as regards dealing with terror-related experiences, given that both appraisal and adaptive coping are likely to differ as a function of the contextual determinants.

The present research represents an attempt to examine how adolescents’ mental health outcomes in the context of ongoing terror are affected by situational determinants such as levels of different dimensions of exposure to terror attacks, primary appraisal of perceived danger for self and significant others formulated as subjective exposure, as well as coping strategies. As indicated, given the scant number of published studies on coping strategies in an adolescent population in the context of terror attacks (Cardena et al., 2005; Gil & Caspi, 2006; Wadsworth et al., 2004; Zeidner, 2005), our research ties together important variables which were previously studied in the context of terrorism. These are objective, subjective media exposure and near miss experiences as well as coping strategies to estimate their impact on mental health difficulties. This investigation brings forward the importance of the appraisal of the situation, which in this context is the perceived danger or ‘Subjective Exposure’. Subjective exposure showed the strongest link to ‘non-productive’ and ‘reference to others’ coping strategies in this context. In other words, adolescents who to a larger extent appraised the situation as dangerous, referred more to others, relied on them more for help and worried more about what will happen. Significantly, both ‘negative’ primary appraisal and the above mentioned coping strategies were significantly associated with less well-being, indicating the need to work on these issues when helping adolescents who face long periods of terrorist attacks. On the other hand, problem solving strategies such as being optimistic making time for leisure, keeping fit and healthy etc. were associated with better well being. Such findings in the context of terrorism are in

line with findings from other domains of psychopathological functioning (Dempsey, 2002; Frydenberg & Lewis, 1999).

Thus, the present findings contain relevant implications for building prevention and/or intervention programs for youth dealing with persistent sources of trauma and stress. Both appraisal and coping strategies are subject to guidance; for example through cognitive restructuring. In the long run, working on the reciprocal adjustments of cognitions (how is the situation viewed, what can be done, what can be learned from experiences...) and emotions (feelings of danger, insecurity, anger, hope...) with adolescents, individually or in groups, may prove crucial to minimize adverse outcomes and enhance psychological well-being. This has been experienced in other settings of developmental psychopathology through the multi-site FACE[®] program with youth that are dealing with diverse sources of trauma and stress (Celestin & Celestin-Westreich, 2006). Applied to the investigated context, such programs can teach youth which types of appraisal and coping strategies are more likely to minimize psychological distress. Given the present findings, which contribute towards building a growing body of evidence, guidance towards usage of more problem solving strategies could assist adolescents who are facing ongoing risks for terror to be able to manage such sources of stress more effectively.

Study limitations and implications for future research

When considering interpretation options for our findings, a number of study limitations should be taken into account. Since all data are retrospective self-reports, the extent to which adolescents' self-reported stress and mental health difficulties correspond to external observations and/or clinical assessment remains to be investigated. Measuring adolescents' psychological outcomes from multiple perspectives is thus needed to fully assess the implications hereof, especially as regards levels of functional impairment. Furthermore, since we do not have base rate information regarding PTS symptoms and other mental health indicators prior to the study period, we cannot with certainty ascribe the observed outcomes solely to the impact of terrorism. Finally, although the relatively large study sample was chosen to represent different segments of the Israeli adolescent population in terms of location, age range and levels of exposure, generalization of findings is limited.

Investigating which elements impact youth's appraisal (subjective exposure) may provide further insight into associated protective or vulnerability factors. This could be of serve when screening for enrollment in prevention/intervention programs. This seems to be important since subjective exposure such as perceived danger comes forward as one of the important contributors to mental health outcomes in a context of ongoing terror. Finally, ethno-cultural and religious influences may serve as additional sources of vulnerability or resilience, as needs to be assessed in future research.

Conclusion

With continued universal risks of exposure to terror attacks, Israeli adolescents are obvious candidates for research into the psychological implications of this type of experience. The goal of this investigation has been to explore the use of coping strategies and their relationships to emotional and behavioral problems in adolescents who have been exposed to ongoing terrorism. After three years of ongoing terror attacks Israeli adolescents reported using a wide diversity of

coping strategies mainly of problem solving style to deal with the threat of ongoing terror attacks. The different exposure dimensions as well as the different coping strategies, accounted for 26–37% of the variance in exposed adolescents' post traumatic stress, emotional, behavioral, and related mental health problems.

Our findings show that perceived danger (subjective exposure), as well as certain coping strategies, such as, emotional focused coping, bear adverse effects on adolescents' mental health. In contrast, a more positively oriented appraisal along with problem focused coping may shield protective effects of mental health on adolescents facing a ongoing terrorist attacks. This means that factors referring to the dynamics of the psychological process that is activated when adolescents face ongoing terror-related trauma and stress, (such as subjectively perceived danger and coping) provide important windows of action for prevention and intervention programs to foster adolescents' well-being.

Future research should help sorting out more precisely how primary appraisal, which in its initial stage bears particular relevance for further coping process, maybe articulated against diverse family, community and socio-cultural factors.

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