



Coping resources and stress reactions among Bedouin Arab adolescents during three military operations

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ABSTRACT

This study aimed to examine coping resources (sense of coherence and hope) and stress reactions among Bedouin Arab adolescents in southern Israel during three periods of escalated political violence. Two main questions were examined: 1) Did adolescents report different coping resources and levels of stress reactions during these three different periods? 2) Were there any differences in the pattern of the associations between coping resources and stress reactions across those periods? Data were gathered from 81, 91, and 192 Bedouin Arab adolescents, who were 14–18 years old, during three periods. Participants completed self-report questionnaires including the sense of coherence (SOC) scale, a hope index, a measure of state anxiety and state anger, a measure of psychological distress, and a demographic questionnaire. Across the three periods, differences were observed in both coping resources and levels of stress reactions. Over time, SOC was found to be a significant predictor of those stress reactions; whereas the association between hope components and stress reactions weakened over time. These findings support the hypothesis that SOC is a significant component of coping with stressful political events and emphasize the importance of addressing differences in the roles of personal resources over time and transition processes.

1. Introduction

1.1. Background

Adolescents are vulnerable to stress as result of political violence (Dyregrov et al., 2002). The Bedouin Arab minority in southern Israel faces difficulties and disadvantages as an ethnic minority group. These difficulties are expressed in the social, cultural, political, and financial domains of everyday life. This population is the youngest in the country (over 60% are under age 19) and suffers from high levels of poverty (RHA Center for Bedouin Studies and Development, 2010). Bedouin Arab culture is highly collectivistic, patriarchal, and authoritarian (Peleg-Popko et al., 2003).

During January 2009 (Operation Cast Lead), November 2012 (Operation Pillar of Cloud), and July 2014 (Operation Protective Edge), hundreds of missiles were directed at cities and other sites around Israel and an intensive military operation was directed at the Gaza Strip. Those periods of political violence may have imposed additional stress upon Bedouin Arab adolescents due to the distressing political situation with which they were faced. On the one hand, some of these adolescents had relatives and family members in Gaza (as a result of marriages with women from Gaza; Welfare Office, Rahat Municipality, personal communication, June 12, 2014). On the other hand, they were living under the enormous threat of hundreds of missiles, which were falling on the region, including their city, Rahat.

In this study, we examined coping resources [sense of coherence (SOC) and hope] and stress reactions among Bedouin Arab adolescents in southern Israel during three periods of escalated political violence. Research in the field of coping with political violence has employed two important models: the deterioration model and the inoculation model. The deterioration model suggests that coping resources (such as SOC and hope) decrease and stress reactions (such as anger, anxiety and somatic psychological distress) increase over time and with repeated escalations in political violence (Braun-Lewensohn and Sagy, 2010; Sagy and Braun-Lewensohn, 2009). In contrast, the inoculation model suggests that coping resources and stress reactions do not change or may even increase\ decrease(respectively) over time and repeated escalations in political violence (Dekel and Nuttman-Shwartz, 2009; Laufer and Solomon, 2006; Zeidner, 2005). It is important to test the predictions of the deterioration model and those of the inoculation model. Thus, the aim of the study was to explore differences in the levels of coping resources and stress reactions across the three periods escalated political violence. We also aimed to assess any differences in the pattern of the associations between coping resources and stress reactions across those periods.

Antonovsky (1979) suggested that SOC is a major coping resource. It is a global orientation, a lasting tendency to see and perceive the world as rational, understandable, coherent, and expected. The individual believes that he or she has the required resources to deal with events and stressors, and is motivated to cope and emotionally invest in

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the coping process (Antonovsky, 1987). Therefore, SOC has important implications for how a person deals with stressful events (for a review, see Eriksson and Lindström, 2006; Braun-Lewensohn, 2015).

SOC has been found to be related to lower levels of depression, anxiety, and neuroticism. Furthermore, adolescents with a strong SOC will tend to feel less intimidated by the events of war, such as missile attacks, and will be less vulnerable after experiencing such events (Braun-Lewensohn, 2015).

Previous studies have explored SOC among Western-individualistic and Eastern-collectivistic groups around the world and the results of those studies have been inconsistent. While some Eastern-collectivistic groups exhibit strong SOC that is similar to that of Western-individualistic groups (Ying and Akutsu, 1997; Lee et al., 2002), other Eastern-collectivistic groups exhibit weaker SOC than their Western-individualistic counterparts (e.g., Braun-Lewensohn and Sagy, 2011; Abu-Kaf et al., 2017; Al-Said et al., 2018). In terms of the implications of SOC for stress reactions, the notion that “the better one's health is perceived to be, the higher one's SOC and, simultaneously, the less severe one's subjective health or mental health complaints” has been questioned in recent studies that have included population samples from Bedouin Arab society in Israel (Daoud et al., 2014a,b; Abu-Kaf et al., 2017; Al-Said et al., 2018; Braun-Lewensohn et al., 2018). These studies yielded two important findings. First, differences in the levels and association patterns of SOC were observed among different subgroups within Bedouin Arab society. Among the urban adolescents, negative associations were seen between SOC and stress reactions. In contrast, there was a positive association between SOC and stress reactions among the adolescents from unrecognized villages. Second, the associations between SOC and the stress-reaction variables varied as a function of the different types of stress reactions (i.e., state anger vs. state anxiety; Abu-Kaf et al., 2017; Al-Said et al., 2018). In the current study, we have a great opportunity to examine the differences in levels of SOC and the associations between SOC and three indices of stress reactions among different groups of adolescents during three periods (spread across six years) in the same city (Rahat).

1.2. Hope

Staats (1991) defined hope as “intrinsically a positive affective cognition in the subjective present” (p. 22). Hope has a dual cognitive-affective nature and includes cognitive elements of visualization and expectation, as well as emotional elements of feeling good about expected positive outcomes (Staats, 1987, 1991).

In general, different researchers have argued that hope combines emotional elements of expectation with cognitive and deductive thinking to pursue new ideas and solutions (Staats, 1987, 1989; Lazarus, 1991; Jacoby, 1993; Snyder, 1994, 2002).

Folkman (2010) addressed this variable from the perspective of stress and coping theory. By this view, hope can support coping, when a person moves forward to cope with new demands and a challenging reality. Previous studies have recognized the importance of hope as a personal resource that has continuing effects on an individual's ability to cope with stressful situations (Folkman, 2010; Kintanar and Bernardo, 2013). Hope seems to be particularly essential among youths, who are known to be prone to develop pessimism and learned helplessness, as well as depression (Kintanar and Bernardo, 2013). Hope includes collectivistic (hope for the other) and individualistic (hope for the self) elements (Staats, 1989).

As members of the Bedouin Arab collectivistic culture, Bedouin Arab individuals are motivated to wish for and pursue the goals of others (the collective) before or at the expense of their own goals (Dwairy, 2004; Lavee and Ben-Ari, 2004; Hofstede and Hofstede, 2005). However, the population of Bedouin Arab youth that we studied may also be affected by more Western-individualistic values that they may have been exposed to through the rapid transition process being experienced by their community, and those values would encourage them

to wish for, expect to achieve, and further their own personal goals (Sedikides et al., 2003).

In the past decade, several studies that examined individual and collective hope among Bedouin youth during periods of political violence reported that individual hope significantly explained state anger (but not state anxiety); whereas collective hope did not contribute to the explanation of either outcome (state anxiety or state anger; Abu-Kaf et al., 2017). The latter finding may reflect rapid cultural changes and the adoption of more Western-individualistic values, which may be an important part of the experience of Bedouin Arab adolescents. The current research enables us to examine the differences in the levels and patterns of associations of hope components and stress reactions among three samples of Bedouin Arab adolescents during three periods of escalated political violence.

1.3. The current research

The current study employed a repeated cross-sectional research design (including three cross-sectional assessments with a different sample used in each assessment). This research examined personal coping resources (i.e., SOC and individual and collective hope) and stress reactions [i.e., state anxiety, state anger, and somatic psychological distress (SPD)] among Bedouin Arab adolescents in southern Israel. Two main questions were asked:

- 1) Did adolescents report differences in coping resources and stress reactions during the three different periods? Based on the deterioration model, over long periods of repeated escalations in political violence, we would expect their coping resources to weaken and their stress reactions to increase (Braun-Lewensohn and Sagy, 2010; Sagy and Braun-Lewensohn, 2009). In contrast, based on the inoculation model, we would expect to see coping resources and stress reactions remain unchanged or increase/decrease (respectively) over time (Dekel and Nuttman-Shwartz, 2009; Laufer and Solomon, 2006; Zeidner, 2005).
- 2) Were there any differences in the pattern of the associations between personal resources and stress reactions across those periods? Based on the literature in this field, we would expect that, over time, the personal resource of SOC would become more meaningful in the explanation of stress reactions (Al-Said et al., 2018).

2. Methods

2.1. Participants

We employed a repeated cross-sectional research design. The current study was conducted during three periods of escalated political violence (Period A: January 2009, Operation Cast Lead; Period B: November 2012, Operation Pillar of Cloud; and Period C: July 2014, Operation Protective Edge). Participants were recruited using a convenience-sampling method: for Period A, 78 adolescent participants with a mean age of 16.77 ($SD = 1.14$); for Period B, 91 participants with a mean age of 16.48 ($SD = 1.14$), and for Period C, there were 202 participants with a mean age of 15.57 ($SD = 1.33$). A demographic analysis revealed age differences between the three groups of participants; the Period C participants were the youngest. A detailed description of the demographic characteristics of the participants is presented in Table 1.

2.2. Measures

2.2.1. Sense of coherence (SOC)

SOC (Antonovsky, 1993) was measured using 13 series of semantic differential items rated using a 7-point Likert scale that had an anchoring phrase at each end. High scores indicated a strong SOC. The scale included such items as “Doing the things you do every day is” with

Table 1
Demographic characteristics: differences between the samples for the different periods.

	Period A N = 78 (%)	Period B N = 91 (%)	Period C N = 202 (%)	F/ χ^2
Mean age (SD)	16.77 (1.14)	16.48 (1.14)	15.57 (1.33)	33.52* A > C; B > C
Gender				25.66*
Male	45	12	37	
Female	55	88	63	
Religiosity				1.5
Not religious	2.6	2.2	2.5	
Somewhat religious	35.9	34.4	31.5	
Religious	60.2	63.4	64.0	
Very religious	1.3	0.0	2.0	

Note:

* $p < 0.001$.

answers ranging from 1 (*a source of pain and boredom*) to 7 (*a source of deep pleasure and satisfaction*). In the present study, we used the Arabic version of the SOC. This version was used in several previous research projects and has been found to be reliable and suitable for use among the Bedouin Arab population (Abu-Kaf et al., 2017; Al-Said et al., 2018; Braun-Lewensohn and Sagy, 2011; Daoud et al., 2014a,b). In the current study, we found Cronbach alpha coefficients of 0.84 for Period A, 0.72 for Period B, and 0.70 for Period C.

2.2.2. Hope index (HI)

We used a version of the Hope Index (Staats, 1989). This instrument included 16 items, which were presented in a table that had three columns. The items were listed in the second column. In the first column, participants are asked to indicate how much they wish that the situation suggested by the item would occur using a 5-point Likert scale: 0 (*not at all*) to 5 (*very much*). In the third column, participants were asked to use a similar scale to indicate what they believe to be the likelihood of the occurrence of the situation described in the items. These scores are multiplied one by one and added up to produce a global score of hope. The Hope Index included items that refer to the self (individual hope), such as “to do well in school or in my job” and “to have good health,” as well as terms that refer to others (collective hope), such as “resources for all” and “other people will be helpful.” In the present study, the Arabic version of the instrument was used (Sagy and Adwan, 2006). This version of the instrument has been used previously and is considered acceptable (Abu-Kaf et al., 2017; Al-Said et al., 2018; Braun-Lewensohn and Sagy, 2011). The Cronbach's alpha coefficients for the Hope Index, individual hope, and collective hope ranged from 0.85 to 0.95 in the three samples.

2.2.3. State anxiety and state anger

Adolescents' anxiety was measured in terms of state anxiety and their anger was measured in terms of state anger (Spielberger et al., 1970). The Arabic version of the measure was developed by Braun-Lewensohn et al. (2009), who used a translation from English into Arabic prepared by an Arabic translator. Another translator then back-translated the instrument from Arabic into English. Finally, a bilingual psychologist compared the meanings of the items in the two versions. Items that were found to have different meanings in the different versions were retranslated. The subscale for state anxiety consists of 11 items, which were each rated on a 4-point Likert scale. (Examples of items: “I am afraid of disasters” and “I am worried.”) The state-anger subscale consisted of six items, which were each rated on a 4-point Likert scale. (Examples of items: “I am angry” and “I feel frustrated.”) The Cronbach's alpha coefficients for state anxiety and state anger ranged from 0.73 to 0.90 across the three periods.

2.2.4. Somatic psychological distress (SPD)

Somatic psychological distress (SPD) was assessed via a six-item psychosomatic-symptom scale (Ben-Sira, 1979). Items referring to frequency of occurrence of familiar psychological symptoms were rated on a 4-point Likert scale ranging from 1 (*never*) to 4 (*frequently*). This scale was adapted by Sagy and Dotan (2001) for use in a population of children, with some of the symptoms modified (e.g., stomachache instead of sore hands) and one item (nervous breakdown) deleted. The Arabic version of the instrument was used, as it has been used previously and is considered acceptable (Abu-Kaf et al., 2017; Al-Said et al., 2018; Braun-Lewensohn and Sagy, 2011). The Cronbach's alpha coefficients for the five-item scale ranged from 0.70 to 0.81 in the three samples.

2.2.5. Demographic questionnaire

This questionnaire included questions regarding participant sex, age, and religiosity.

2.3. Procedure

Prior to administration of the questionnaires, the research was evaluated and approved by the ethics committee of the Conflict Management & Resolution Department of Ben-Gurion University of the Negev. In accordance with the requirements of the ethics committee, written informed consent was obtained from the adolescents (and their parent, in the case of participants under age 16). Data were collected using Arabic versions of the questionnaires.

All participants were informed that the researchers were interested in their experiences during the period of escalated political violence; participation was voluntary and anonymity was emphasized.

Bedouin Arab adolescents were recruited from the city of Rahat, which was the only Bedouin community within the range of missile-fire during Periods A and B. In the beginning of Period A, the research team tried to contact Arab adolescents and their families via the Internet. However, we had a very low response rate. The families and the adolescents were uncomfortable discussing their experiences with the stressful situation with strangers (online). Thus, we decided that a Bedouin Arab researcher (the first author of this work) would contact them personally and emphasize the anonymity of this study. No inclusion or exclusion criteria were used with the exception of age (14–18 years).

2.4. Statistical analysis

We used IBM SPSS Statistics 25 software. Prior to the main analysis, data were screened by analyzing frequencies and descriptive statistics such as means, standard deviations, and ranges. No outliers or out-of-scale points were found. A preliminary one-way ANOVA and χ^2 analysis explored age differences and other demographic characteristics among the three samples. Then, *t*-tests for independent samples were used to examine gender differences in the study variables during the three periods (i.e., A, B, and C). In addition, three main sets of analyses were conducted. First, a MANCOVA was performed with six dependent variables (i.e., SOC, individual hope, collective hope, state anxiety, and SPD) to explore the differences in two variables (i.e., personal coping resources and stress reactions) among the three samples. In this analysis, gender was treated as a covariate. Given the significance of the test results, we carried out post hoc tests (Tukey's HSD) to find out which specific group means were different from one another. Then, we computed zero-order correlations between personal coping resources and stress reactions among the participants for each of the three periods (each period was evaluated separately). Fisher's test was used to examine the significance of the difference between each two correlation coefficients. Finally, regression analyses were employed to examine the differences in the contribution of coping resources in predicting stress reactions across the three periods.

Table 2

Gender differences in personal coping resources and stress reactions among Bedouin adolescents during the three periods (A, B, and C).

Study variables	Period A			Period B			Period C		
	Females <i>M</i> (<i>SD</i>)	Males <i>M</i> (<i>SD</i>)	<i>t</i> -test	Females <i>M</i> (<i>SD</i>)	Males <i>M</i> (<i>SD</i>)	<i>t</i> -test	Females <i>M</i> (<i>SD</i>)	Males <i>M</i> (<i>SD</i>)	<i>t</i> -test
SOC	3.93 (0.69)	4.32 (0.92)	1.72	3.96 (0.84)	4.31 (0.59)	1.70	4.32 (0.90)	4.42 (0.83)	0.76
Individual hope	16.33 (5.14)	15.55 (5.29)	−0.58	18.22 (5.66)	15.36 (3.78)	−2.19*	19.43 (5.68)	16.09 (5.90)	−3.97**
Collective hope	15.66 (7.06)	12.78 (6.40)	−1.72	16.08 (7.54)	13.09 (5.39)	−1.63	18.44 (7.28)	12.65 (6.69)	−5.78**
State anger	2.16 (0.73)	2.27 (0.78)	0.59	2.09 (0.73)	2.03 (0.54)	−0.26	2.09 (0.80)	2.04 (0.81)	−0.47
State anxiety	2.53 (0.47)	2.57 (0.54)	0.30	2.46 (0.51)	2.36 (0.49)	−0.66	2.46 (0.59)	2.31 (0.64)	−1.74
SPD	2.06 (0.67)	2.14 (0.89)	0.43	2.36 (0.68)	2.06 (0.54)	−1.70	2.10 (0.71)	1.88 (0.87)	−1.98*

Note.

* $p < 0.05$.** $p < 0.001$.

3. Results

3.1. Gender differences in coping resources and stress reactions across the three periods

In light of the composition of the three samples, which each had a higher percentage of females than males (this issue was particularly acute for the Period-B sample), we examined gender differences in the study variables for each period. The findings of this analysis are presented in Table 2. This analysis revealed significant gender differences in collective hope, individual hope, and SPD during Period C. During that period, female adolescents presented higher levels of collective hope, individual hope, and SPD, as compared to male adolescents.

In Period B, the only significant gender difference related to individual hope. Female adolescents presented higher levels of individual hope than male adolescents. Due to the gender differences found for some of the study variables, in subsequent analyses, gender was treated as a covariate.

3.2. Differences in coping resources and stress reactions across the three periods

The first research question was related to differences in coping resources and stress reactions among Bedouin adolescents during the three different periods. This analysis revealed a significant multivariate main effect for period [Wilks' $\lambda = 0.92$, $F(6, 358) = 2.76$, $p < 0.01$, $\eta^2 = 0.04$]. Given the significance of the results of the overall test, the univariate main effects were examined and are reported in Table 3. Gender was found to be a significant covariate [$F(6, 358) = 5.96$, $p > 0.001$, $\eta^2 = 0.07$].

We found that period had a main effect on SOC, individual hope, collective hope, and SPD across the three periods (see Table 3). Post hoc tests (Tukey's HSD) identified differences between the different periods in terms of SOC and hope components. The SOC levels were significantly higher during Period C than they were during Periods A (mean difference = -0.31 , $p < 0.01$) and B (mean difference = -0.30 , $p < 0.01$). Moreover, the levels of individual and collective hope were significantly lower during Period A than they were during Periods B (mean difference = 1.64 , $p < 0.05$; mean difference = 0.72 , $p < 0.05$, respectively) and C (mean difference = 2.39 , $p < 0.001$; mean difference = 1.94 , $p < 0.05$, respectively). With regard to the stress reactions, differences were found only in SPD. The SPD levels were significantly higher during Period B than they were during Periods A (mean difference = -0.23 , $p < 0.01$) and C (mean difference = -0.25 , $p < 0.01$). No significant differences were found between the levels of state anger or state anxiety during the three periods.

Table 3Means (*M*), standard deviations (*SD*), and univariate *F* results for personal coping resources and stress reactions during the three periods (A, B, and C) with gender as a covariate.

	Period A <i>N</i> = 78 <i>M</i> (<i>SD</i>)	Period B <i>N</i> = 91 <i>M</i> (<i>SD</i>)	Period C <i>N</i> = 202 <i>M</i> (<i>SD</i>)	<i>F</i> -value	Comparisons
SOC	4.03 (0.76)	4.01 (0.83)	4.36 (0.88)	5.87**	A = B A < C B < C
Individual hope	16.15 (5.16)	17.79 (5.51)	18.14 (5.98)	5.49**	A < B A < C B = C
Collective hope	14.98 (6.98)	15.71 (7.35)	16.20 (7.58)	3.01*	A < B A < C B = C
SPD	2.08 (0.72)	2.31 (0.65)	2.02 (0.78)	3.56*	A < B A = C B > C
State anxiety	2.54 (0.49)	2.45 (0.51)	2.40 (0.61)	1.49	
State anger	2.19 (0.74)	2.07 (0.67)	2.07 (0.81)	0.75	

Note.

* $p < 0.05$.** $p < 0.01$.

3.3. Associations between coping resources and stress reactions across the three periods

To address the second research question, we computed zero-order correlations between personal resources and stress reactions for each period separately (see Table 4). For Period A, hope components were found to be negatively correlated with SPD and anxiety, but not with state anger. High levels of collective hope were significantly associated with low levels of anxiety and marginally associated with low levels of SPD. In contrast, high levels of individual hope were negatively correlated with SPD, but not with states of anger and anxiety. However, for Period A, SOC was not found to be correlated with any of the stress reactions. For Period B, SOC was negatively correlated with state anger and SPD, but not state anxiety. High levels of SOC were associated with low levels of SPD and state anxiety. At the same time, hope components were marginally correlated with state anxiety, but not with SPD or state anger. High levels of collective and individual hope were marginally related to low levels of state anxiety. For Period C, SOC was negatively correlated with all three indices of stress reactions. High levels of SOC were associated with low levels of state anger, state anxiety, and SPD. The correlations between SOC and state anger, and SOC and SPD were stronger during Period C than they were during Period B, but the changes in the correlation coefficients were not significant ($z = 1.29$, $p = 0.09$; $z = 1.1$, $p = 0.14$, respectively). Moreover, for this period, the association between SOC and SPD was stronger than the association

Table 4
Zero-order correlations between coping resources and stress reactions across the three periods.

	1	2	3	4	5	6
Period A						
1. SOC	1					
2. Individual hope	-0.08	1				
3. Collective hope	-0.01	0.70***	1			
4. State anger	0.01	-0.11	-0.06	1		
5. State anxiety	0.14	-0.15	-0.26*	0.48***	1	
6. SPD	0.01	-0.36**	-0.23*	0.29*	0.18	1
Period B						
1. SOC	1					
2. Individual hope	0.19	1				
3. Collective hope	0.13	0.70***	1			
4. State anger	-0.23*	-0.23*	-0.20	1		
5. State anxiety	-0.13	-0.17	-0.14	0.63***	1	
6. SPD	-0.21*	-0.12	-0.03	0.30**	0.29**	1
Period C						
1. SOC	1					
2. Individual hope	0.07	1				
3. Collective hope	-0.01	0.58***	1			
4. State anger	-0.38***	0.04	0.04	1		
5. State anxiety	-0.20**	-0.12	-0.04	0.41***	1	
6. SPD	-0.34***	-0.05	-0.02	0.40***	0.21**	1

Note.
* $p < 0.05$;
** $p < 0.01$;
*** $p < 0.001$.
^ $p < 0.08$.

between SOC and state anxiety ($z = -1.92, p = 0.05$). However, the associations between individual and collective hope, on the one hand, and the stress reactions, on the other, completely disappeared. Interestingly, between Period A and Period C, a drop was observed in the strength of the relationship between the individualistic and the collectivistic components of hope ($z = 2.03, p = 0.04$).

3.4. The contribution of coping resources to the prediction of stress reactions across the three periods

To more closely examine the complex associations of coping resources and stress reactions among Bedouin Arab adolescents, we employed three regression analyses. Levels of state anger, state anxiety, and SPD served as outcomes in these regressions. In Block 1, the predictors were dummy-coded variables representing gender (0 = female), age, and period (-1 = Period A, 0 = Period B, 1 = Period C). In Block 2, main effects of SOC, individual hope, and collective hope were examined. In Block 3, the five 2-way interactions between period and the three coping resources and the two-way interactions involving the two hope components and SOC were examined (see Table 5).

When anger and anxiety served as the outcomes, Block 1 accounted for a nonsignificant 1% and 2% of the variance of outcomes, respectively. Gender, age, and period were not statistically significant predictors. Block 2 explained an additional 3% and 7% of the variance of the outcomes, respectively. In this block, SOC (but not individual or collective hope) was a significant predictor of the outcomes. In other words, higher levels of SOC were associated with lower level of anger and anxiety. Block 3 added another 2% and 3% to the variance of the outcomes explained by the regression model, but that addition was statistically significant only in the prediction of anxiety; it was insignificant in the prediction of anger. Importantly, the only significant two-way interaction was observed between the SOC and period. None of the two-way interactions involving the two hope components and SOC was a statistically significant predictor of anger and anxiety.

When SPD served as the outcome, Block 1 accounted for a statistically significant 4% of the variance of outcome. Gender and age were found to be significant predictors. In other words, female adolescents

reported higher levels of SPD than male adolescents. Moreover, being older was associated with higher levels of SPD. Block 2 explained an additional 7% of the variance in SPD. In this block, SOC and individual hope (but not collective hope) were significant predictors of the outcome. Higher levels of SOC and collective hope were associated with lower levels of SPD. Block 3 accounted for another 4% of the variance in the outcome. In this block, significant two-way interactions were observed between SOC and period, and between individual hope and period, although the latter two-way interaction was only marginally significant. None of the two-way interactions involving the two hope components and SOC was a statistically significant predictor of SPD.

To further examine the role of the interaction term involving SOC and period in predicting anger, anxiety, and SPD, three regression analyses were run for each of the three periods with SOC as a predictor. SOC was entered as an independent variable for the dependent variables of anger, anxiety, and SPD in each period (see Table 6). These analyses revealed that the role of SOC varied substantially across the periods. In Period A, SOC was not a significant predictor of the three outcomes. However, in Period B, SOC significantly contributed to the prediction of anger and SPD (but not anxiety). In Period C, this resource was a significant predictor of all three outcomes.

To further examine the role of the interaction term involving individual hope and period in predicting SPD, a regression analysis was run for each of the three periods with individual hope as a predictor. Individual hope was entered as the independent variable for the dependent variable of SPD in each period (see Table 6). These analyses revealed changes in the role of individual hope across the periods. In Period A, individual hope was a significant predictor of SPD. However, in Periods B and C, individual hope was not a significant predictor of this outcome.

To sum up, our findings reveal gender differences in collective hope and individual hope, as well as SPD. Female adolescents presented higher levels of collective hope, individual hope, and SPD, as compared to male adolescents.

Our findings also reveal differences in SOC, individual hope, collective hope, and SPD across the three periods. SOC levels were higher during Period C than they were during Periods A and B. Levels of individual and collective hope were higher during Period B and C than they were during Period A. SPD levels were higher during Period B than they were during Periods A and C. Over the different periods, SOC was found to be closely related to and a significant predictor of stress reactions; whereas the association of hope (individual and collective) and stress reactions, and the predictive power of individual hope weakened over time.

4. Discussion

The current study examined differences in coping resources, stress reactions, and the associations between those variables among Bedouin Arab adolescents across three periods of escalated political violence. The first hypothesis related to differences in coping resources and stress reactions during repeated periods of escalated political violence (Braun-Lewensohn and Sagy, 2010). Our findings support the inoculation model (Zeidner, 2005; Sagy and Braun-Lewensohn, 2009), but not the deterioration model, as they point to an increase in the levels of coping resources and stress reactions mainly remain unchanged across the three periods. As regards the hope components, higher levels were found during Periods B and C than during Period A. Moreover, SOC levels were higher during Period C than they were during the two earlier periods.

Our findings related to the components of hope may be explained by the work of Lazarus (1991) and Tong et al. (2010). Those researchers claimed that the majority of positivity resources emerge during periods of safety, when a person feels safe and satisfied. However, hope is an exception to this rule. Hope comes into play when circumstances are grave, when things are not going well, or when there is considerable

Table 5
Results of the hierarchical multiple regression analysis predicting anger, anxiety, and SPD ($N = 364$).

Predictor variable	State anger					State anxiety					SPD				
	R ²	B	SE B	β	t	R ²	B	SE B	β	t	R ²	B	SE B	β	t
Block 1	0.01					0.02					0.04				
Gender		0.00	0.12	0.00	0.00		-0.17	0.12	-0.08	-1.43		-0.23	0.11	-0.11	-2.05*
Age		0.48	.04	0.06	1.22		0.04	0.04	0.05	0.93		0.09	0.04	0.13	2.43*
Period		-0.06	0.07	-0.05	-0.87		-0.10	0.07	-0.08	-1.52		-0.05	0.06	-0.04	-0.79
Block 2	0.07					0.03					0.07				
Gender		0.05	0.12	0.02	0.4		-0.23	0.12	-0.10	-1.89 [^]		-0.22	0.12	-0.10	-1.88 [^]
Age		0.04	0.04	0.05	0.97		0.03	0.04	0.04	0.79		0.09	0.04	0.12	2.35*
Period		-0.01	0.07	-0.01	-0.01		-0.05	0.07	-0.04	-0.79		0.02	0.06	0.01	0.27
SOC		-0.26	0.05	-0.27	-5.15***		-0.11	0.05	-0.11	-2.09*		-0.23	0.05	-0.23	-4.55***
Individual hope		-0.02	0.07	-0.02	-0.35		-0.08	0.07	-0.08	-1.19		-0.13	0.07	-0.13	-2.01*
Collective hope		-0.01	0.07	-0.01	-0.08		-0.07	0.07	-0.07	-1.06		0.04	0.07	0.04	0.64
Block 3	0.03					0.03					0.04				
Gender		0.05	0.12	0.02	0.44		-0.23	0.12	-0.10	-1.86 [^]		-0.21	0.12	-0.10	-1.81 [^]
Age		0.04	0.04	0.06	1.13		0.03	0.04	0.04	0.82		0.09	0.04	0.13	2.52*
Period		0.01	0.07	0.01	0.03		-0.07	0.07	-0.06	-1.05		0.03	0.06	0.02	0.39
SOC		0.20	0.17	0.20	1.22		0.31	0.17	0.31	1.84 [^]		0.22	0.16	0.22	1.36
Individual hope		-0.35	0.23	-0.35	-1.54		0.02	0.23	0.02	0.10		-0.50	0.22	-0.51	-2.26*
Collective hope		0.05	0.23	0.05	0.21		-0.29	0.24	-0.29	-1.23		0.08	0.22	0.08	0.34
SOC × Period		-0.20	0.07	-0.49	-2.99**		-0.18	0.07	-0.44	-2.62**		-0.19	0.06	-0.49	-2.98**
Individual hope × Period		0.14	0.09	0.35	1.55		-0.04	0.09	-0.09	-0.38		0.16	0.09	0.40	1.81 [^]
Collective hope × Period		-0.03	0.09	-0.06	-0.24		0.08	0.10	0.21	0.88		-0.02	0.09	-0.04	-0.19
SOC × Individual hope		0.02	0.07	0.02	0.37		0.04	0.07	0.04	0.59		-0.23	0.06	-0.02	-0.41
SOC × Collective hope		0.01	0.05	0.01	0.13		0.03	0.05	0.03	0.47		0.03	0.05	0.03	0.49

Note.
 * $p < 0.05$, two-tailed test.
 ** $p < 0.01$, two-tailed test.
 *** $p < 0.001$, two-tailed test.
[^] $p < 0.07$.

Table 6
Roles of SOC and individual hope in predicting anger, anxiety, and SPD during each of the three periods.

Predictor variable	Period A					Period B					Period C				
	R ²	B	SE B	β	t	R ²	B	SE B	β	t	R ²	B	SE B	β	t
Anger	0.00					0.05					0.15				
SOC		0.03	0.12	0.02	0.21		-0.22	0.10	-0.23	-2.23*		-0.39	0.07	-0.38	-5.82**
Anxiety	0.02					0.02					0.04				
SOC		0.14	0.11	0.15	1.32		-0.13	0.10	-0.14	-1.29		-0.22	0.07	-0.21	-3.00**
SPD	0.00					0.05					0.12				
SOC		0.02	0.12	0.02	0.15		-0.21	0.09	-0.23	-2.18*		-0.35	0.07	-0.34	-5.16**
SPD	0.13					0.01					0.00				
Individual hope		-0.38	0.11	-0.36	-3.45**		-0.05	0.09	-0.06	-0.52		-0.02	0.07	-0.02	-0.31

Note.
 * $p < 0.05$, two-tailed test.
 ** $p < 0.001$, two-tailed test.

uncertainty about how things will turn out. Those researchers related to hope as a construct that seems to have an important place in an individual's life, especially when the present is difficult to tolerate, such as periods of escalated political violence.

The higher level of SOC observed during Period C may be explained by two factors. The first is related to cultural changes and the modernization process (gradual adaptation of more Western-individualistic values) underway within Bedouin Arab society and, particularly, among the urban youth of that society. This finding is in line with those of a recent study conducted among different subgroups within Bedouin Arab society (Al-Said et al., 2018). The authors of that work found a lower level of SOC among adolescents from unrecognized villages (which are considered more traditional, conservative, and collectivistic), as compared to adolescents from recognized villages.

The second factor is related to the living conditions and basic infrastructure available in the local community. Over the past five years, the city of Rahat has experienced development in the domains of transportation, industry, formal education (particularly higher

education), and informal education. It is also now home to a youth center and mental health services. During the last five years, the youth of Rahat have had access to more instrumental and emotional resources than they did in the past (Welfare Office, Rahat Municipality, personal communication, March 20, 2017). Those resources contribute to the manageability aspect of SOC, which refers to the individual's perceptions regarding the availability of resources necessary to cope with challenges and stressful situations (Antonovsky, 1979, 1987).

Alternatively, the differences in the results of this work and those of that earlier study (Braun-Lewensohn and Sagy, 2010) could be due to differences between the situations examined in the two studies. The earlier study (upon whose results we based our own hypothesis) involved Jewish Israeli adolescents living under a continuous threat of rockets falling on their neighborhoods/communities in southern Israel. In that case, coping resources were indeed weakened dramatically over period of several years. However, the current study was based on a population of Bedouin Arab adolescents who experienced three periods of escalated political violence, during which rockets fell around their

communities. Those periods of rocket-fire were spread out over a longer period of almost six years. This traumatic stress was not continuous; rather there were three periods of rocket-fire separated by periods of relative quiet.

The higher level of SPD observed during period B can be explained by the characteristics of this period. As compared to the period A and C, the period B was very intense. During eight days, hundreds of missiles were fired from Gaza in other cities and sites throughout Israel.

Our second hypothesis was that, over time, a stronger association would be found between the personal resource of SOC and stress reactions. Our findings completely confirmed this hypothesis. Over the different periods, the personal resource of SOC became more closely related to stress reactions while the association between the personal resource of hope (individual and collective) weakened, as did the stress reactions. This finding confirms previous research conducted by Al-Said et al. (2018), which found SOC to be negatively related to stress reactions among urban Bedouin Arab adolescents. In contrast, the opposite trend, or no relationship, has been observed among the more traditional, rural parts of the Bedouin Arab community (Daoud et al., 2014a,b; Abu-Kaf et al., 2017; Al-Said et al., 2018).

Gradually, across the three periods, the notion that “the better one's health is perceived to be, the higher one's SOC and, simultaneously, the less severe one's subjective health or mental health complaints” became increasingly accurate. Over time, SOC was found to be more closely related to more aspects of stress reactions (such as state anxiety). Despite the significant associations between SOC and the three stress reactions, the relationship between SOC and SPD was stronger than the relationship between SOC and state anxiety. Our findings underscore the relevance of the type of stress reaction for the determination of the role of the personal resource of SOC (Abu-Kaf et al., 2017; Al-Said et al., 2018). Moreover, this finding may be related to the favorable idiom of distress among the Bedouin Arab culture, that is, the tendency for individuals to somaticize distress (through somatic symptoms in the SPD) as opposed to psychologizing distress (e.g., anxiety symptoms). This tendency is also commonly observed in countries with non-Western individualistic cultures, such as China, India, and the United Arab Emirates (Hamdi et al., 1997; Kleinman, 2004; Consedine et al., 2014). Cultural changes and the effects of modernization (i.e., the gradual adaptation of more Western-individualistic values) may also have implications for the tendency to psychologize distress through anxiety and this idiom of distress may have become more relevant as an index of stress reactions during Period C.

Another interesting finding relates to associations between the personal resource of hope and stress reactions. Over time, this personal resource lost its relevance for the three indices of stress reactions. Another finding that may shed more light on the changes in this resource and its roles is the weakening of the association between the two components of hope. Between Period A and Period C, a drop was observed in the strength of the relationship between the individualistic and the collectivistic components of hope. These differences between the two components of hope may reflect a sense of confusion among the sampled population. The surveyed youth may be affected by the rapid cultural-transition process and may wish for and expect to achieve and further their own personal goals before or at the expense of the goals of the other (Sedikides et al., 2003).

4.1. Limitations and avenues for future research

The current study has some limitations that should be addressed. First, the data were collected in the midst of missile attacks. Therefore, some degree of potential sample bias should be taken into account. For example, the three samples each included a higher percentage of females than males (This issue was particularly acute for the Period B sample.) Therefore, future studies should recruit larger samples of male and female adolescents from Bedouin Arab communities. Moreover, the current study employed a cross-sectional repeated design to examine

differences in the levels of personal resources, differences in stress reactions, and the associations between those resources and stress reactions among three different samples of Bedouin Arab adolescents during three periods of escalated political violence. Further studies should adopt a longitudinal design, to follow the same sample of adolescents across different periods. That type of study would be the best way to examine changes in the levels of different variables and the associations between those variables among the same individuals over time.

4.2. Conclusion

The significance of this research lies in its examination of personal coping resources and stress reactions among three different samples of Bedouin Arab adolescents during three periods of escalated political violence. The findings support the inoculation model (but not the deterioration model); increases in the coping resources of SOC and hope components were observed. In addition, over time, SOC become more closely related to stress reactions and was a significant predictor of those reactions. In contrast, the associations between the components of hope and stress reactions weakened across the three periods. These findings underscore the importance of SOC as a significant personal resource for coping with stressful political events among adolescents within the urban Bedouin Arab population. Our results underscore the significance of addressing differences and changes in the roles of personal coping resources across different samples\periods, particularly in cultural contexts characterized by rapid cultural change and transition processes.

References

- Abu-Kaf, S., Braun-Lewensohn, O., Kalagy, T., 2017. Youth in the midst of escalated political violence: sense of coherence and hope among Jewish and Bedouin Arab adolescents. *Child Adolesc. Psychiatr. Ment. Health* 11 (1), 42.
- Al-Said, H., Braun-Lewensohn, O., Sagy, S., 2018. Sense of coherence, hope, and home demolition are differentially associated with anger and anxiety among Bedouin Arab adolescents in recognized and unrecognized villages. *Anxiety Stress Coping* 1–11. doi.org/10.1080/10615806.
- Antonovsky, A., 1979. *Health, Stress, and Coping: New Perspectives On Mental and Physical Well-Being*. Jossey-Bass, San Francisco, CA.
- Antonovsky, A., 1987. *Unraveling the Mystery of Health*. Jossey-Bass, San Francisco, CA.
- Antonovsky, A., 1993. The structure and properties of the sense of coherence scale. *Soc. Sci. Med.* 36, 725–733.
- Ben-Sira, Z., 1979. A scale of psychological distress. *Res. Commun. Psychol. Psychiatr. Behav.* 4, 337–356.
- Braun-Lewensohn, O., 2015. Coping and social support in children exposed to mass trauma. *Curr. Psychiatr. Rep.* <https://doi.org/10.1007/s11920-015-0576-y>.
- Braun-Lewensohn, O., Huss, E., Ganayeim, H., Al-Said, H., 2018. Bedouin adolescents: are their coping resources stable over time? In: Moore, K.A., Buchwald, P. (Eds.), *Stress and Anxiety. Coping and Resilience*. Logos, Berlin.
- Braun-Lewensohn, O., Celestin-Westreich, S., Celestin, L.P., Verte, D., Ponjaert-Kristoffersen, I., 2009. Adolescents' mental health outcomes as a function of different types of exposure to ongoing terrorism. *J. Youth Adolesc.* 38 (6), 850–862.
- Braun-Lewensohn, O., Sagy, S., 2010. Sense of coherence, hope and values among adolescents under missile attacks: a longitudinal study. *Int. J. Child. Spirit.* 15 (3), 247–260.
- Braun-Lewensohn, O., Sagy, S., 2011. Coping resources as explanatory factors of stress reactions during missile attacks: comparing Jewish and Arab adolescents in Israel. *Community Ment. Health J.* 47 (3), 300–310.
- Consedine, N.S., Chentsova-Dutton, Y.E., Krivoshekova, Y.S., 2014. Emotional acculturation predicts better somatic health: experiential and expressive acculturation among immigrant women from four ethnic groups. *J. Soc. Clin. Psychol.* 33 (10), 867–889.
- Daoud, N., Braun-Lewensohn, O., Eriksson, M., Sagy, S., 2014a. Sense of coherence and depressive symptoms among low-income Bedouin women in the Negev, Israel. *J. Ment. Health* 23 (6), 307–311.
- Daoud, N., Shoham-Vardi, I., Urquia, M.L., O'Campo, P., 2014b. Polygamy and poor mental health among Arab Bedouin women: do socioeconomic position and social support matter? *Ethn. Health* 19 (4), 385–405.
- Dekel, R., Nuttman-Shwartz, O., 2009. Posttraumatic stress and growth: the contribution of cognitive appraisal and sense of belonging to the country. *Health Soc. Work* 34 (2), 87–96.
- Dwairy, M., 2004. Individuation among Bedouin versus urban Arab adolescents: ethnic and gender differences. *Cult. Divers. Ethn. Minor Psychol.* 10 (4), 340–350.
- Dyregrov, A., Gjestad, R., Raundalen, M., 2002. Children exposed to warfare: a longitudinal study. *J. Trauma Stress* 15, 59–68.
- Eriksson, M., Lindström, B., 2006. Antonovsky's sense of coherence scale and the relation

- with health: a systematic review. *Epidemiol. Community Health* 60, 376–381.
- Folkman, S., 2010. Stress, coping, and hope. *Psycho-Oncology* 19 (9), 901–908.
- Hamdi, E., Amin, Y., Abou-Saleh, M.T., 1997. Problems in validating endogenous depression in the Arab culture by contemporary diagnostic criteria. *J. Affect. Disord.* 44, 131–143.
- Hofstede, G., Hofstede, G.J., 2005. *Cultures and Organizations: Software of the Mind*. McGraw-Hill, New York, NY.
- Jacoby, R., 1993. The miserable hath no other medicine, but only hope: some conceptual considerations on hope and stress. *Stress Health* 9 (1), 61–69.
- Kintanar, N.S.M., Bernardo, A.B.I., 2013. Hope and internal working models of the self and others: a correlational study on Filipino adolescents. *Psychol. Stud.* 58 (1), 48–53.
- Kleinman, A., 2004. Culture and depression. *N. Engl. J. Med.* 351 (10), 951–953.
- Lavee, Y., Ben-Ari, A., 2004. Cultural orientation, ethnic affiliation, and negative daily occurrences: a multidimensional cross-cultural analysis. *Am. J. Orthopsychiatr.* 74 (2), 102–111.
- Laufer, A., Solomon, Z., 2006. Posttraumatic symptoms and posttraumatic growth among Israeli youth exposed to terror incidents. *J. Soc. Clin. Psychol.* 25 (4), 429–447.
- Lazarus, R.S., 1991. Progress on a cognitive-motivational-relational theory of emotion. *Am. Psychol.* 46 (8), 819.
- Lee, J.W., Jones, P.S., Mineyama, Y., Zhang, X.E., 2002. Cultural differences in response to a Likert scale. *Res. Nurs. Health* 25, 295–306.
- Peleg-Popko, O., Klingman, A., Abu-Hanna Nahhas, I., 2003. Cross-cultural and familial differences between Arab and Jewish adolescents in test anxiety. *Int. J. Intercult. Relat.* 27, 525–541.
- RHA Center for Bedouin Studies and Development, 2010. *Statistical Yearbook of the Bedouins in the Negev*. Ben-Gurion University, Beer-Sheva, Israel.
- Sagy, S., Adwan, S., 2006. Hope in times of threat: the case of Israeli and Palestinian youth. *Am. J. Orthopsychiatry* 76 (1), 128–133.
- Sagy, S., Braun-Lewensohn, O., 2009. Adolescents under rocket fire: when are coping resources significant in reducing emotional distress? *Glob. Health Promot.* 16 (4), 5–15.
- Sagy, S., Dotan, N., 2001. Coping resources of maltreated children in the family: a salutogenic approach. *Child Abuse Neglect* 25 (11), 1463–1480.
- Sedikides, C., Gaertner, L., Toguchi, Y., 2003. Pancultural self-enhancement. *J. Pers. Soc. Psychol.* 84, 60–79.
- Snyder, C.R., 1994. Hope and optimism. In: Ramachandran, V.S. (Ed.), *Encyclopedia of Human Behavior* 2. Academic Press, San Diego, CA, pp. 535–542.
- Snyder, C.R., 2002. Hope theory: rainbows in the mind. *Psychol. Inquiry* 13 (4), 249–275.
- Spielberger, C.D., Gorsuch, R.L., Lushene, R.E., 1970. *Manual for the State-Trait Anxiety Inventory*. Consulting Psychologists Press, Palo Alto, CA.
- Staats, S., 1987. Hope: expected positive affect in an adult sample. *J. Genet. Psychol.* 148 (3), 357–364.
- Staats, S., 1989. Hope: a comparison of two self-report measures for adults. *J. Pers. Assess.* 53 (2), 366–375.
- Staats, S., 1991. Quality of live and affect in older persons: hope, time frames and training effects. *Curr. Psychol. Res. Rev.* 1, 21–30.
- Tong, E.M., Fredrickson, B.L., Chang, W., Lim, Z.X., 2010. Re-examining hope: the roles of agency thinking and pathways thinking. *Cogn. Emot.* 24 (7), 1207–1215.
- Ying, Y., Akutsu, P., 1997. Psychological adjustment of Southeast Asian refugees: the contribution of sense of coherence. *J. Community Psychol.* 25, 125–139.
- Zeidner, M., 2005. Contextual and personal predictors of adaptive outcomes under terror attack: the case of Israeli adolescents. *J. Youth Adolesc.* 34 (5), 459–470.