Journal of Research in Personality 44 (2010) 335–341

Contents lists available at ScienceDirect

Journal of Research in Personality

journal homepage: www.elsevier.com/locate/jrp

The effects of insecure attachment orientations and perceived social support on posttraumatic stress and depressive symptoms among civilians exposed to the 2009 Israel–Gaza war: A follow-up Cross-Lagged panel design study

Avi Besser [a,*], Yuval Neria [b,c]

[a] Department of Behavioral Sciences, and Center for Research in Personality, Life Transitions, and Stressful Life Events, Sapir Academic College, D.N. Hof Ashkelon, Israel
[b] Trauma and PTSD Program, The New York State Psychiatric Institute, New York, NY, USA
[c] Department of Psychiatry, College of Physicians and Surgeons, Columbia University, New York, NY, USA

ARTICLE INFO

Article history:
Available online 18 March 2010

Keywords:
Adult attachment
Depressive symptoms
Perceived social support
PTSD
War zone
Students
Evacuees

ABSTRACT

A follow-up Cross-Lagged-design was used to test the effects of attachment orientations and perceived social support on posttraumatic stress disorder (PTSD) and major depressive disorder symptoms (MDD) in a sample of 135 Israeli students who were evacuated from a university campus located near the Israel–Gaza border in response to increased missile-fire in the area. An internet-based data collection procedure enabled the simultaneous survey of evacuees located up to 40 km from the border at war, both during the fighting and 4 months after the ceasefire. Proximity to the border did not affect levels of PTSD or MDD symptoms, attachment orientation, or levels of perceived social support. Analyses involving Cross-Lagged Panel Correlation (CLPC) path models revealed that Attachment–Anxiety had significant positive effects on PTSD, MDD, and perceived social support. Neither PTSD nor MDD nor perceived social support had any reciprocal follow-up effect on Attachment–Anxiety. These findings underscore the central role of individual trait personality differences in predicting changes in both mental health problems and interpersonal relations over time, following exposure to trauma.

1. Introduction

Exposure to war trauma may place civilians at risk for short- and long-term mental health problems and will most likely mobilize internal and external resources for coping with stress. For the last 8 years, civilian populations in southwestern Israel and the Gaza Strip have been exposed to ongoing military conflict between the Hamas and Islamic Jihad forces located in the Gaza Strip and Israeli military forces. Large numbers of civilians in southern Israel have been exposed to ongoing rocket and missile attacks, as well as mortar fire.

A number of recent studies have systematically examined the mental health impact of this life-threatening, ongoing exposure in Israeli populations (see Besser & Neria, 2009; Besser, Neria, & Haynes, 2009; Besser & Priel, 2010). Recently, the ongoing low-level conflict escalated into a massive military conflict, as large Israeli forces invaded the Gaza Strip and Hamas and Islamic Jihad forces in Gaza launched long-distance missiles at numerous locations deep inside Israel (Besser & Neria, in press; Neria, Besser, Kiper, & Westphal, in press). The war lasted 22 days, from December 27, 2008 through January 17, 2009. The present study focuses on this recent war.

Little is known about the longitudinal role of personality vulnerabilities in cases of exposure to war trauma. Previous research has shown that personality traits may shape individuals' perceptions of and reactions to traumatic events, and play a significant role in vulnerability to PTSD (e.g., Cox, MacPherson, Enns, & McWilliams, 2004). To expand on these findings, we used a follow-up Cross-Lagged design to evaluate the follow-up relationships between attachment orientations, perceived social support, and symptoms of posttraumatic stress disorder (PTSD) and major depressive disorder (MDD).

Attachment theory posits that early relationships with caregivers are internalized in the form of mental representations of both the self and others. These representations lead to the incorporation of internal working models, which, in turn, guide the formation of cognition, affect, and expectations in future relationships (Bowlby, 1980). Adult attachment research has focused on the roles of Attachment–Anxiety and Attachment–Avoidance (e.g., Mikulincer & Shaver, 2007) in emotional self-regulation (e.g., Mikulincer & Shaver, 2003) and in individuals' responses to situations of distress (Mikulincer, Birnbaum, Woddis, & Nachmias, 2000). Individuals scoring high on the Attachment–Anxiety dimension tend to intensify negative emotional states (*hyperactivation* strategies), whereas

* Corresponding author at: Department of Behavioral Sciences, Sapir Academic College, D.N. Hof Ashkelon 79165, Israel. Fax: +972 8 6610783.
E-mail address: besser@mail.sapir.ac.il (A. Besser).

0092-6566/$ - see front matter © 2010 Elsevier Inc. All rights reserved.
doi:10.1016/j.jrp.2010.03.004

those with high scores on the Attachment–Avoidant dimension tend to distance themselves from emotional situations (*deactivation* strategies); consequently, they appear to be less sensitive to stress (see Mikulincer and Shaver (2007) for a review). The relationship between attachment style and psychopathology has received much scientific attention (see Mikulincer et al., 2000). For example, the Attachment–Anxiety dimension, in particular, has been found to predict various mental health problems, such as distress (e.g., Besser & Priel, 2006; Lopez, Mitchell, & Gormley, 2002), anxiety (e.g., Mikulincer, Florian, & Weller, 1993), depression (e.g., Besser & Priel, 2005, 2009; Wei, Mallinckrodt, Russell, & Abraham, 2004), and negative affect (e.g., Simpson, 1990). These findings offer strong empirical support for the hypothesis that insecure attachment orientations constitute a risk factor for a wide range of psychopathologies (for a review, see Mikulincer & Shaver, 2007).

Correlational findings have documented the associations between insecure attachment orientations and PTSD in a number of populations exposed to trauma (e.g., war veterans, military recruits, prisoners of war, Holocaust child survivors, and high-exposure survivors of the 9/11 terror attacks; see Mikulincer and Shaver (2007) for a review and the references therein). Recently, similar findings have also been reported for a civilian population directly exposed to prolonged terror attacks in southern Israel (see Besser et al., 2009). These findings suggest that anxiously attached individuals have increased vulnerability to negative reactions. These findings are compatible with attachment theory, but they do not necessarily reveal a causal relationship. Recently, Mikulincer, Shaver, and Horesh (2006) examined the causal role of attachment in the development of PTSD. Their study reported on Israelis' psychological reactions during the 2003 US–Iraq war, during which Israel came under missile attack, and examined the effects of attachment orientation measured *before* the war on PTSD symptoms, which were assessed daily for 21 days. Their findings indicated that attachment shapes daily responses to the trauma of war, with anxiously attached individuals exhibiting more war-related PTSD symptoms. However, no study to date has examined the role of insecure attachment orientations measured *during* a war, as well as after the ceasefire or the reciprocal effects: whether the internal models of attachment affect negative responses to the traumatic events, or whether the internal models of attachment are affected by levels of negative responses to the traumatic events.

Perceived social support is a primary interpersonal resource that has been consistently found to be associated with psychological well-being in times of stress (Norris & Kaniasty, 1996), and is considered to be a protective factor for individuals who have experienced a disaster (Norris et al., 2002) or terror attack (e.g., Hobfoll, Canetti-Nisim, & Johnson, 2006). Individuals who maintain supportive social relationships are more resilient in the face of life-threatening conditions (e.g., Norris & Kaniasty, 1996; Shalev, Tuval, Frenkiel-Fishman, Hadar, & Eth, 2006). Higher levels of perceived social support have also been linked to resilience and recovery with respect to negative responses and PTSD (e.g., King, King, Foy, Keane, & Fairbank, 1999). What remains unknown, however, is whether levels of negative responses to traumatic events are affected by levels of perceived support, or whether negative responses to traumatic events affect perceptions of social support.

In the context of adult attachment theory, empirical studies have shown that securely attached individuals deal with distress by acting constructively and turning to others for emotional and instrumental support (e.g., Mikulincer & Shaver, 2003), whereas insecurely attached adults report less available support (see Mikulincer and Shaver (2007), for a review). Accordingly, anxiously attached individuals tend to overreact to their negative feelings in order to elicit support from others and individuals scoring high on the Attachment–Avoidance dimension tend to distance themselves from others when faced with stressful events (e.g., Mikulincer & Florian, 1995; Mikulincer et al., 1993). What remains unknown, however, is whether internal working models of attachment affect perceptions of social support, or whether the levels of security of attachment are affected by levels of perceived availability of social support.

1.1. The purpose of the present study

The goal of the present study is to extend the current knowledge by conducting a follow-up study aiming to examine the sequence of effects among attachment orientations, perceived social support, and symptoms of PTSD and MDD, by using Cross-Lagged Panel Correlation (CLPC) path analyses, so that the effects of insecure attachment orientations on symptoms and perceived social support, as well as the reciprocal effects of symptoms and perceived social support on insecure attachment orientations could be examined.

2. Method

2.1. Participants and procedures

The data for this report are derived from a large longitudinal research program designed to study the mental health effects of the 2008–2009 Israel–Gaza war among first-year, Jewish undergraduate students from Sapir College in southern Israel, which is located approximately seven km from the Israel–Gaza border (Besser & Neria, in press; Neria et al., in press). The participants were mostly females (84%) with a mean age of 23.85 (SD = 2.15) years. The data for the present analyses are based on two waves of data collection: Time-1 of the survey was conducted on January 7, 2009, at war, and a follow-up survey conducted on May 8, 2009, 4 months after ceasefire (Time-2). Due to the emergency conditions in the region in which Sapir College is located, students were asked to evacuate the college at the beginning of the war. Despite this evacuation, the data suggest that most students remained within the range of the long-distance missiles (up to 40 km from the border, as defined by the Israeli Home Front Command). Forty-seven participants (34.8%) relocated to towns and villages up to 20 km from the border, 40 participants (29.6%) relocated to areas between 20 and 30 km from the border, and 48 participants (35.6%) relocated to areas between 30 and 40 km from the border.

We administered the study via the "e-learn" web system of the college, enabling quick and simultaneous data collection. The data collection process lasted no more than 24 h at each time point regardless of the location of the participant. In order to recruit the sample, we initially sent personal e-mail invitations to all students enrolled in an introductory psychology class at the college (n = 200; 170 females and 30 males). To facilitate participation in all stages of the study, as well as quick responses to the invitations, participants were asked whether they would agree to take part in both waves of the study and, if so, to send back an electronic consent form within 48 h of the invitation and submit the completed surveys within 24 h of receiving them. One hundred and fifty students (75%) were interested enough to review the consent form and the survey. Of these students, 135 (90%; 113 females and 22 males) consented and submitted the survey at Time-1, and 133 (112 females and 21 males) of the participants at Time-1 submitted the survey at Time-2.

2.2. Measures

2.2.1. Adult attachment insecurities

Participants' self-reported attachment scores on the anxiety and avoidance dimensions were evaluated using the Experiences in

Close Relationships – Revised scale (ECR-R; Fraley, Waller, & Brennan, 2000). ECR-R scores are computed into two dimensions, Avoidance (or *discomfort with closeness and discomfort depending on others*) and Anxiety (or *fear of rejection and abandonment*). [See Fraley et al. (2000) for more information on the reliability and validity of this instrument and its scoring.] In the present study, we obtained internal consistency reliability coefficients of Cronbach's $\alpha = 0.88$, 0.81, 0.86, and 0.82 for Attachment–Anxiety and Attachment–Avoidance, for Time-1 and 2, respectively.

Perceived social support. The Multidimensional Scale of Perceived social support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988) was used to assess perceived social support. The MSPSS is a 12-item questionnaire containing three subscales, each consisting of four items, which measure perceived availability of social support from friends, family, and a significant other. Items are scored on a 7-point Likert-type scale, ranging from 1 (*very strongly disagree)* to 7 (*very strongly agree)* for each item. For this study, we calculated an overall MSPSS score for each participant. [See Canty-Mitchell & Zimet (2000) for more information on psychometric properties.] This scale has been found to demonstrate high internal consistency in previous studies (e.g., Besser & Priel, 2010). In the present study, we obtained internal consistency reliability coefficients of Cronbach's $\alpha = 0.91$ and 0.93 at Time-1 and 2, respectively.

2.2.2. Post traumatic stress disorder (PTSD) symptoms

PTSD was measured using the Hebrew version of the PTSD Inventory (Solomon et al., 1993), which includes 17 items, to which participants respond using a 4-point scale (1 = *not at all* to 4 = *extremely*). Respondents were asked to rate the extent to which they had been bothered by each symptom in the past month in relation to the Israel–Gaza war, allowing determination of prevalence of PTSD and assessment of symptom severity. The average score across *all* symptoms served as the overall PTSD symptom severity score. This scale demonstrated high internal consistency in previous studies (e.g., Solomon et al., 1993), as well as high convergent validity when compared with diagnoses based on structured clinical interviews (e.g., SCID; Solomon et al., 1993). In the present study, we obtained internal consistency reliability coefficients of Cronbach's $\alpha = 0.87$ and 0.85 for Time-1 at Time-2, respectively.

2.2.3. Major depressive disorder (MDD) symptoms

The survey forms included the Patient Health Questionnaire-9 (PHQ-9; Kroenke, Spitzer, & Williams, 2001), to assess current symptoms of DSM-IV major depressive disorder (MDD). This questionnaire is comprised of nine items that directly relate to each of the nine symptoms of depression, as defined by the DSM-IV. Each of these items is scored from 0 to 3, resulting in a maximum total score of 27, with higher scores representing more severe depression. In the present study, we obtained internal consistency reliability coefficients of Cronbach's $\alpha = 0.88$ and 0.93 for Time-1 and 2, respectively.

All questionnaires were administered in Hebrew [The original English versions of the MSPSS and of the MDD were previously translated into Hebrew using the back-translation (Besser & Neria, in press; Neria et al., in press; and Besser & Priel, 2010)]. Potential order effects were controlled by means of a randomized presentation of the questionnaires within and between participants and time of measurement.

3. Results

3.1. Symptom levels of PTSD and MDD

In order to test whether the levels of mental health problems have significantly declined over time when mean symptoms of each outcome (contingence scores) were calculated, we conducted *t* tests with within-subject dependent repeated measures. The results indicated a significant large decrease in levels of PTSD ($p < 0.001$), a medium decrease in levels MDD ($p < 0.001$) and a significant medium increase in levels of perceived social support ($p < 0.001$). Levels of Anxiety and Avoidance insecure attachment orientations remained relatively stable. Although the decrease in Attachment–Anxiety is found to be significant ($p < 0.05$) it should be regarded as a less than small decrease in terms of its effect size (Cohen's $d < 0.20$). *M* and *SD* values for PTSD, MDD and perceived social support at each time point and *t* and Cohen's *d* values are presented in Table 1.

3.2. The associations between PTSD and MDD, and proximity to the war zone

ANOVAs were used to examine whether the proximity of the participants to the war zone (i.e., the distance from the Israel–Gaza border after evacuation as defined by the Israeli Home Front Command: areas up to 20 km, areas between 20 and 30 km, and areas between 30 and 40 km from the border) is associated with their levels of mental health problems (PTSD and MDD) at each time point. Our findings indicated no significant associations between proximity to the border and levels of symptoms at Time-1 or Time-2 (*Fs* < 1.0 ns). Furthermore, analyses of the associations between proximity to the border and the remaining study variables indicated no significant associations with any of the other study variables (*Fs* < 1.0 ns).

3.3. Insecure attachment orientations, perceived social support, and PTSD and MDD symptoms

Table 2 shows the zero-order correlations between the continuous study variables. As shown in this table, Attachment–Anxiety at Time-1 was significantly associated with low perceived social support and high levels of both PTSD and MDD at both Time-1 and Time-2. Attachment–Avoidance, however, was not significantly associated with any of the study variables at any time point. Perceived social support was significantly associated with low levels of PTSD and MDD at both times. The levels of Attachment–Anxiety, Attachment–Avoidance, PTSD, MDD, and perceived social support at Time-1 were each significantly associated with their respective levels at Time-2. Since Attachment–Anxiety, but not Attachment–Avoidance was found to be a potential significant predictor, Attachment–Avoidance was excluded from subsequent analyses.

Table 1
Means and standard deviations of PTSD, MDD, Insecure attachment orientations, and perceived social support among civilians exposed to the 2008–2009 Israel–Gaza war at war and 4 months after ceasefire.

	At war (7 January 2009)		4 months after ceasefire (10 May 2009)		*t*	Effect size *d*
	M	*SD*	*M*	*SD*		
PTSD	2.07	0.63	1.63	0.53	10.09***	0.88
MDD	9.33	5.57	6.15	4.44	6.72***	0.60
AnxAtt	3.37	1.06	3.24	1.14	2.01*	0.17
AvoidAtt	2.81	0.75	2.88	0.81	−1.23 ns	0.11
Perceived social support	67.95	16.48	73.93	10.72	−4.59***	0.42

Note: AnxAtt = Attachment–Anxiety. AvoidAtt = Attachment–Avoidance.
* $p < 0.5$.
*** $p < 0.001$ (two-tailed).

Table 2
Correlations among insecure attachment orientations, perceived social support, PTSD and MDD symptoms among civilians exposed to the 2008–2009 Israel–Gaza war at war and 4 months after ceasefire.

Variable	1	2	3	4	5	6	7	8	9
At war (7 January 2009)									
1. AnxAtt	–								
2. AvoidAtt	0.22	–							
3. Perceived social support	−0.34***	−0.10	–						
4. PTSD symptoms	0.36***	−0.04	−0.62***	–					
5. MDD symptoms	0.36***	0.08	−0.35***	0.72***	–				
4 months after ceasefire (10 May 2009)									
6. AnxAtt	0.76***	0.07	−0.27***	0.36***	0.25**	–			
7. AvoidAtt	0.13	0.64***	−0.03	−0.07	−0.04	0.20	–		
8. Perceived social support	−0.40***	−0.11	0.46***	−0.26***	−0.15	−0.37***	−0.14	–	
9. PTSD symptoms	0.41***	0.04	−0.42***	0.63***	0.57***	0.49***	0.00	−0.20	–
10. MDD symptoms	0.35***	0.10	−0.27**	0.39***	0.43***	0.44***	0.12	−0.30***	0.68***

Note: AnxAtt = Attachment–Anxiety; AvoidAtt = Attachment–Avoidance. To ensure that the overall chance of a type I error remained <0.05, a full Bonferroni correction was implied.
** $p < 0.01$.
*** $p < 0.001$ (two-tailed).

3.4. Cross-Lagged path models: Attachment–Anxiety predicts PTSD, depression, and perceived social support

We used Cross-Lagged Panel Correlation (CLPC) path models to explore the causal sequence between Attachment–Anxiety and Perceived social support at Time-1 and symptomatology at Time-2 (PTSD or MDD). Path models were constructed using AMOS software based on the variance–covariance matrix (Version 4.01; Arbuckle, 1999), we tested the fit of these models using maximum-likelihood estimations.

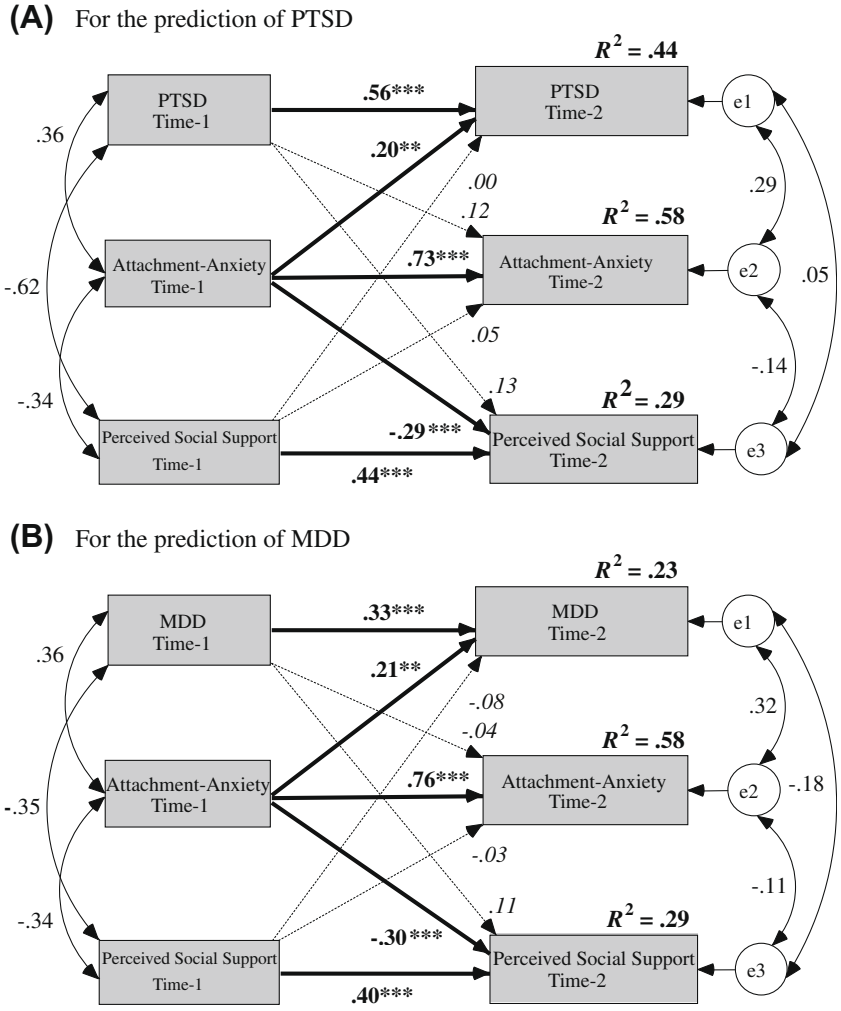

Fig. 1. The Cross-Lagged models. (A) For the prediction of PTSD. (B) For the prediction of MDD. Note: Rectangles indicate measured variables. Small circles reflect residuals (e); bold numbers above or near endogenous variables represent the amount of variance explained (R^2). Unidirectional arrows depict hypothesized directional or "causal" links/associations. Standardized maximum-likelihood parameters are used. Bold estimates are statistically significant at $^{**}p < 0.01$ and $^{***}p < 0.001$. The dotted paths indicate nonsignificant, "causal" links/associations.

We first examined the full models (see Fig. 1A and B for the models predicting PTSD and MDD, respectively). Several components of these models are noteworthy. First, they include two time points and the effects of insecure Attachment–Anxiety and perceived social support on PTSD or MDD are estimated. These aspects of the models are referred to as Cross-Lagged effects. Second, the model also includes the influence of Attachment–Anxiety at the first time point on Attachment–Anxiety at the later time point. The same is true for perceived social support, PTSD, and MDD. These aspects of the model, called autoregressive effects, can be thought of as indicators of the temporal stability of the measures. Estimations of these parameters in the model control for the stability of the variables. Thus, any Cross-Lagged effects can be considered effects that add predictive power over and above that which can be simply obtained from the stability of the measures. Finally, note that Attachment–Anxiety, perceived social support, PTSD, and MDD are each allowed to intercorrelate within each time point, represented by the curved, double-headed arrows. These aspects of the model called synchronous correlations. Estimating these errors in the model allows for correlations between variances in PTSD or MDD and Attachment–Anxiety and perceived social support that are not already explained by the influences of the variables from earlier time points (see Fig. 1). To ensure that perceived social support, PTSD and MDD symptom scores, within each time point, do not convey essentially the same information, multicollinearity diagnostic analyses were performed. Eigenvalues of the scaled and uncentered cross-products matrix, condition indices, and variance-decomposition proportions, along with variance inflation factors (VIF) and tolerances from multicollinearity diagnostic analyses indicated the absence of multicollinearity. Thus, the measures of perceived social support and of PTSD and MDD symptoms were not redundant.

The full models showed a nonsignificant effect of Time-1 Symptoms on Time-2 Attachment–Anxiety ($\beta = 0.12$, $t = 1.62$, ns and $\beta = -0.04$, $t = -0.65$, ns for the prediction of PTSD and MDD, respectively) and perceived social support ($\beta = 0.13$, $t = 1.31$, ns and $\beta = 0.11$, $t = 1.28$, ns for the prediction of PTSD and MDD, respectively), as well as nonsignificant effects of Time-1 perceived social support on Time-2 Attachment–Anxiety ($\beta = 0.05$, $t = 0.74$, ns and $\beta = -0.03$, $t = -0.43$, ns for the prediction of PTSD and MDD, respectively) and symptoms ($\beta = 0.00$, $t = 0.03$ ns and $\beta = -0.08$, $t = -0.91$, ns for the prediction of PTSD and MDD, respectively). In contrast, Time-1 Attachment–Anxiety had a noteworthy and statistically significant follow-up effect on both symptoms and perceived social support, such that higher levels of Attachment–Anxiety at one time point were related to an increased level of symptoms ($\beta = 0.20$, $t = 2.90$, $p < 0.004$ and $\beta = 0.21$, $t = 2.46$, $p < 0.01$ for the prediction of PTSD and MDD, respectively) and a decreased level of perceived social support ($\beta = -0.29$, $t = -3.68$, $p < 0.0001$ and $\beta = -0.30$, $t = -3.71$, $p < 0.0001$ for the prediction of PTSD and MDD, respectively) at the subsequent time point, as evidenced by the statistically significant Cross-Lagged parameters. However, these models had zero degrees of freedom, so fit could not be estimated.

To obtain the most parsimonious model and allow the evaluation of the overall goodness-of-fit of the path models, we calculated final models in which we removed the nonsignificant paths found in the full models. In these final models, we delineated the effect of symptoms at Time-1 on symptoms at Time-2, the effect of Attachment–Anxiety at Time-1 on Attachment–Anxiety at Time-2, and the effect of perceived social support at Time-1 on perceived social support at Time-2, as well as the effects of Attachment–Anxiety on symptoms and perceived social support at Time-2, while controlling for the predictors' associations and outcome error terms. These models had acceptable indices of fit: [$\chi^2(4) = 5.1$, $p = 0.28$, $\chi^2/df = 1.28$, *NNFI* = 1.0, *CFI* = 1.0, *RMSEA* = 0.04 (C.I. 0.000–0.05)] for the prediction of PTSD (see Fig. 1A) and [$\chi^2(4) = 2.53$, $p = 0.64$, $\chi^2/df = 0.63$, *NNFI* = 1.0, *CFI* = 1.0, *RMSEA* = 0.000 (C.I. 0.000–0.09)] for the prediction of MDD (see Fig. 1B). These findings indicate with considerable certainty that Attachment–Anxiety at war (at Time-1) predicted or affected participants' symptomatology and perceived levels of support at Time-2 (4 months after ceasefire), and that participants' symptomatology or perceived levels of support at Time-1 did not predict or affect levels of Attachment–Anxiety at Time-2.

4. Discussion

The goal of the present study was to examine the relationships between insecure attachment orientations, perceived social support, PTSD, and MDD via a follow-up study. The study was conducted in a sample of Israeli students who were forced to evacuate a college campus in southern Israel due to an armed conflict between Israel and the Hamas regime in the Gaza Strip (December 27, 2008 through January 17, 2009).

Our data suggest that proximity to the border was not associated with symptoms or any other study variables. Thus, regardless of the objective threat (i.e., the amount of time one had to take cover between the moment the air raid siren sounded and the moment the incoming rocket or missile hit, which was a function of one's distance from the Israel–Gaza border), our findings suggest that the evacuation did not yield improved psychological symptoms among evacuees who continued to be exposed to missile attacks. The elevated prevalence PTSD and MDD at Time-1 can be explained by the powerful threat to life that participants experienced during the war. It is noteworthy that many participants in this sample may have continued to be exposed to long-distance missiles (up to 40 km from the Gaza–Israel border) even after evacuation. Nevertheless, our findings indicate a significant and sharp decrease in mean levels of PTSD and MDD symptoms at 4 months after ceasefire, as well as significant increases in the perceived availability of social support and decrease in reported levels of Attachment–Anxiety. Consistent with previous studies in civilians exposed to terrorism (e.g., Galea et al., 2003), these findings suggest an overall resilience and an impressive ability to bounce back over time among the participants in this study.

The present study demonstrates the vulnerability of individuals scoring high for the attachment anxiety orientation, as compared to those scoring high for the avoidance orientation. This finding is consistent with previous studies that have consistently documented the link between attachment anxiety orientation and psychological distress (Mallinckrodt & Wei, 2005; Wei, Heppner, & Mallinckrodt, 2003; Wei, Russell, Mallinckrodt, & Zakalik, 2004), PTSD (Declercq & Willemsen, 2006: Zakin, Solomon, & Neria, 2003), life stress (Neria et al., 2001), as well as with findings from a study documenting the association between attachment avoidance regulation strategy and decreased sensitivity to stress (Lopez & Brennan, 2000). Individuals with different attachment orientations seem to differ in the strategies they use to deal with stress, as well as in their associated symptomatology. Those scoring high for the attachment anxiety orientation may be hypervigilant to sources of distress and hypersensitive to the problems they experience; whereas individuals scoring high for the avoidance attachment orientation seem to divert negative emotions from awareness (Kobak & Sceery, 1988; Mikulincer, Florian, & Tolmatz, 1990).

Consistent with previous studies, these results show that anxiously attached individuals with low levels of perceived social support are more likely to exhibit increased levels of symptomatology when exposed to traumatic events. Indeed, findings of previous

correlational studies, as well as this study's findings for Time-1, point to the potential coexistence of attachment effects on reactions to ongoing exposure to trauma, as well as to the possible effects of adults' exposure to ongoing threats on their internal working models of attachment (Besser et al., 2009). However, importantly, the current study's follow-up findings indicate Cross-Lagged effects in which Attachment–Anxiety had a significant effect over time on both levels of symptoms and perceptions of social support, such that higher levels of Attachment–Anxiety at the time of exposure (at war) were related to increased levels of symptoms and decreased levels of perceived social support 4 months later.

Importantly, no reciprocal effects were found. In other words, although higher levels of Attachment–Anxiety predicted increased levels of PTSD and MDD symptoms and decreased levels of perceived social support 4 months after ceasefire, PTSD, MDD, and perceived social support did not have any effects on Attachment–Anxiety over time.

These findings are interesting for a number of reasons. First, they provide further evidence for Attachment–Anxiety as a vulnerability factor, given that it was found to increase the severity of PTSD and MDD symptoms and reduce levels of perceived support 4 months after ceasefire. Thus, although our findings indicate an overall resilience in the sample, with an increase in perceived social support and a decrease in symptoms over time, individuals with high levels of Attachment–Anxiety have remained vulnerable and, therefore, exhibited high levels of PTSD and MDD symptoms. Moreover, these individuals have perceived their social networks as being less supportive under situations of continuous stress and have maintained these views over time. It is possible that anxiously attached individuals tend to overreact to their negative feelings in order to elicit support from other individuals (Mikulincer & Florian, 1995). Future research should investigate whether highly anxiously attached individuals facing extreme traumatic stress may become overly needy and overtax significant others. The results of the analysis conducted using the Cross-Lagged models further support the relative stability of individual differences in personality vulnerability factors and their moderately strong predictive effects on both positive and negative outcomes in trauma-exposed individuals.

The present study has several limitations. First, the study utilized a selected sample of college students, with underrepresented proportion of men and therefore does not necessarily represent the general population. Second, our sample was small and relatively homogeneous in terms of demographics and trauma exposure. Third, due to the unique circumstances under which it was conducted, this study did not include a control group of evacuated students located outside the range of the missile-fire. Despite these limitations, our study investigated a unique phenomenon, focusing on real-time major stressful events that may well have significant ecological validity. The study focused on participants who reported on their experiences as they were occurring, under "in vivo" life-threatening conditions, and 4 months later. Moreover, to our knowledge, the present study represents the first attempt toward efforts to further understand the relationships between civilians' insecure attachment orientations, perceived social support, PTSD, and MDD, over time, through the use of a Cross-Lagged design. An important next step will be to use longitudinal designs to explore the underlying mechanisms of trauma related emotional problems. For example, one possible direction would be to examine the longitudinal role of various affect regulation strategies as potential mediators and/or moderators of the obtained Cross-Lagged effects. Taken as a whole, the present study pointed to the central role of individual differences in personality vulnerability factors in mental health problems and interpersonal relations in response to war trauma exposure.

Acknowledgments

Grateful thanks are extended to all of the participants in this study. We would like to thank the anonymous reviewers for their constructive suggestions and comments on an earlier draft of the paper.

References

Arbuckle, J. L. (1999). *Amos: A structural equation modeling program*. Chicago: Small Waters.

Besser, A., & Neria, Y. (in press). When home isn't a safe haven: Insecure attachment, perceived social support, and PTSD symptoms among Israeli evacuees from a battlefront still under threat. *Psychological Trauma: Theory, Research, Practice, and Policy*.

Besser, A., & Neria, Y. (2009). PTSD symptoms, satisfaction with life, and prejudicial attitudes towards the adversary among Israelis exposed to ongoing terrorist attacks. *Journal of Traumatic Stress, 22*, 268–275.

Besser, A., Neria, Y., & Haynes, M. (2009). Adult attachment, perceived stress, and PTSD among civilians continuously exposed to terrorism in southern Israel. *Personality and Individual Differences, 47*, 851–857.

Besser, A., & Priel, B. (2005). The apple does not fall far from the tree: Attachment styles and personality vulnerabilities to depression in three generations of women. *Personality and Social Psychology Bulletin, 31*, 1052–1073.

Besser, A., & Priel, B. (2006). Models of attachment, confirmation of positive affective expectations, and satisfaction with vacation activities: A pre–post panel design study of leisure. *Personality and Individual Differences, 41*, 1055–1065.

Besser, A., & Priel, B. (2009). Emotional responses to a romantic partner's imaginary rejection: The roles of attachment anxiety, covert narcissism, and self-evaluation. *Journal of Personality, 77*, 287–325.

Besser, A., & Priel, B. (2010). Personality vulnerability, low social support, and maladaptive cognitive emotion regulation under ongoing exposure to terrorist attacks. *Journal of Social and Clinical Psychology, 29*, 166–201.

Bowlby, J. (1980). *Attachment and loss, sadness, and depression. Vol. 3*. New York: Basic.

Canty-Mitchell, J., & Zimet, G. D. (2000). Psychometric properties of the multidimensional scale of perceived social support in urban adolescents. *American Journal of Community Psychology, 28*, 391–400.

Cox, B., MacPherson, P. S. R., Enns, M. W., & McWilliams, L. A. (2004). Neuroticism and self-criticism associated with posttraumatic stress disorder in a nationally representative sample. *Behaviour Research and Therapy, 42*, 105–114.

Declercq, F., & Willemsen, J. (2006). Distress and post-traumatic stress disorders in high risk professionals: Adult attachment style and the dimensions of anxiety and avoidance. *Clinical Psychology and Psychotherapy, 13*, 256–263.

Fraley, R. C., Waller, N. G., & Brennan, K. A. (2000). An item-response theory analysis of self-report measures of adult attachment. *Journal of Personality and Social Psychology, 78*, 350–365.

Galea, S., Vlahov, D., Resnick, H. S., Ahern, J., Susser, E. S., Gold, J., et al. (2003). Trends of probable post-traumatic stress disorder in New York City after the September 11 terrorist attacks. *American Journal of Epidemiology, 158*, 514–524.

Hobfoll, S. E., Canetti-Nisim, D., & Johnson, R. (2006). Exposure to terrorism, stress-related mental health symptoms, and defensive coping among Jews and Arabs in Israel. *Journal of Consulting and Clinical Psychology, 74*, 207–218.

King, D. W., King, L. A., Foy, D. W., Keane, T. M., & Fairbank, J. A. (1999). Posttraumatic stress disorder in a national sample of female and male Vietnam veterans: Risk factors, war-zone stressors, and resilience-recovery variables. *Journal of Abnormal Psychology, 108*, 164–170.

Kobak, R. R., & Sceery, A. (1988). Attachment in late adolescence: Working models, affect regulation, and representations of self and others. *Child Development, 59*, 135–146.

Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine, 16*, 606–613.

Lopez, F. G., & Brennan, K. A. (2000). Dynamic processes underlying adult attachment organization: Toward an attachment theoretical perspective on the healthy and effective self. *Journal of Counseling Psychology, 47*, 283–301.

Lopez, G., Mitchell, P., & Gormley, B. (2002). Adult attachment orientations and college student distress: Test of a mediational model. *Journal of Counseling Psychology, 49*, 460–467.

Mallinckrodt, B., & Wei, M. (2005). Attachment, social competence, social support, and psychological distress. *Journal of Counseling Psychology, 52*, 358–367.

Mikulincer, M., Birnbaum, G., Woddis, D., & Nachmias, O. (2000). Stress and accessibility of proximity-related thoughts: Exploring the species-typical and intra-individual components of attachment theory. *Journal of Personality and Social Psychology, 78*, 509–523.

Mikulincer, M., & Florian, V. (1995). Appraisal of and coping with a real-life stressful situation – The contribution of attachment styles. *Personality and Social Psychology Bulletin, 21*, 406–414.

Mikulincer, M., Florian, V., & Tolmatz, R. (1990). Attachment styles and fear of personal death: A case study of affect regulation. *Journal of Personality and Social Psychology, 58*, 273–280.

Mikulincer, M., Florian, V., & Weller, A. (1993). Attachment styles, coping strategies, and posttraumatic psychological distress: The impact of the Gulf war in Israel. *Journal of Personality and Social Psychology, 64*, 817–826.

Mikulincer, M., & Shaver, P. R. (2003). The attachment behavioral system in adulthood: Activation, psychodynamic, and interpersonal processes. In M. P. Zanna (Ed.). *Advances in experimental social psychology* (Vol. 35, pp. 53–152). San Diego, CA: Academic Press.

Mikulincer, M., & Shaver, P. R. (2007). *Attachment in adulthood: Structure, dynamics, and change*. New York: Guilford Press.

Mikulincer, M., Shaver, P. R., & Horesh, N. (2006). Attachment bases of emotion regulation and posttraumatic adjustment. In D. K. Snyder, J. A. Simpson, & J. N. Hughes (Eds.), *Emotion regulation in couples and families: Pathways to dysfunction and health* (pp. 77–99). Washington, DC: American Psychological Association.

Neria, Y., Besser, A., Kiper, D., & Westphal. M. (in press). A longitudinal study of posttraumatic stress disorder, depression and generalized anxiety disorder in civilians exposed to war trauma. *Journal of Traumatic Stress*.

Neria, Y., Guttman-Steinmetz, S., Koenen, K., Levinovsky, L., Zakin, G., & Dekel, R. (2001). Do attachment and hardiness relate to each other and to mental health in real life stress? *Journal of Social and Personal Relationships, 18*, 844–858.

Norris, F. H., Friedman, M. J., Watson, P. J., Byrne, C. M., Diaz, E., & Kaniasty, K. (2002). 60,000 disaster victims speak: Part I. An empirical review of the empirical literature, 1981–2001. *Psychiatry, 65*, 207–239.

Norris, F. H., & Kaniasty, K. (1996). Received and perceived social support in times of stress: A test of the social support deterioration deterrence model. *Journal of Personality and Social Psychology, 71*, 498–511.

Shalev, A. Y., Tuval, R., Frenkiel-Fishman, S., Hadar, H., & Eth, S. (2006). Psychological responses to continuous terror: A study of two communities in Israel. *American Journal of Psychiatry, 163*, 667–673.

Simpson, J. A. (1990). The influence of attachment styles on romantic relationships. *Journal of Personality and Social Psychology, 59*, 971–980.

Solomon, Z., Benbenishty, R., Neria, Y., Abramovitz, M., Ginzburg, K., & Ohry, A. (1993). Assessment of PTSD: Validation of the revised PTSD inventory. *Israel Journal of Psychiatry and Related Sciences, 30*, 110–115.

Wei, M., Heppner, P. P., & Mallinckrodt, B. (2003). Perceived coping as a mediator between attachment and psychological distress: A structural equation modeling approach. *Journal of Counseling Psychology, 50*, 438–447.

Wei, M., Mallinckrodt, B., Russell, D. W., & Abraham, W. T. (2004). Maladaptive perfectionism as mediator and moderator between attachment and negative mood. *Journal of Counseling Psychology, 51*, 201–212.

Wei, M., Russell, D. W., Mallinckrodt, B., & Zakalik, R. A. (2004). Cultural equivalence of adult attachment across four ethnic groups: Factor structure, structured means, and associations with negative mood. *Journal of Counseling Psychology, 51*, 408–417.

Zakin, G., Solomon, Z., & Neria, Y. (2003). Hardiness, attachment style, and long term distress among Israeli POWs and combat veterans. *Personality and Individual Differences, 34*, 819–829.

Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The multidimensional scale of perceived social support. *Journal of Personality Assessment, 52*, 30–41.