Maternal Trauma Affects Prenatal Mental Health and Infant Stress Regulation among Palestinian Dyads

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Abstract

We examined how diverse and cumulated traumatic experiences predicted maternal prenatal mental health and infant stress regulation in war conditions and whether maternal mental health mediated the association between trauma and infant stress regulation. Participants were 511 Palestinian mothers from the Gaza Strip who reported exposure to current war trauma (WT), past childhood emotional (CEA) and physical abuse (CPA), socio–economic status (SES), prenatal mental health problems (posttraumatic stress disorder [PTSD] and depression symptoms), and perceived stress during their second trimester of pregnancy (T1), as well as infant stress regulation at four months (T2). While all trauma types were associated with high levels of prenatal symptoms, CEA had the most wide-ranging effects and was uniquely associated with depression symptoms. Concerning infant stress regulation, mothers' CEA predicted negative affectivity but only among mothers with low WT. Against hypothesis, the effects of maternal trauma on infant stress regulation were not mediated by mental health symptoms. Mothers' higher SES was associated with better infant stress regulation, while infant prematurity and male sex predisposed for difficulties. Our findings suggest that maternal childhood abuse, especially CEA, should be a central treatment target among war-exposed families. Cumulated psychosocial stressors might increase the risk for transgenerational problems.

Keywords: childhood abuse, war trauma, prenatal mental health, infant stress regulation, Palestinian

The core task of early mothering is to keep the infant alive and guarantee his or her beneficial development and wellbeing (Stern, 1995). Mothers expecting and caring for an infant in war conditions face extraordinary challenges in fulfilling this task. According to Save the Children (2014), more than 250 million children under the age of five live in countries affected by armed conflicts. In addition to the dangers caused by war, such families often face the constant stress of poverty and a lack basic resources such as clean water, proper nutrition, health care, and medication. The participants of this study are Palestinian women and their infants living in the Gaza Strip, which has been under Israeli military siege and international economic boycott since 2007. These women's families have experienced wars and multiple military attacks in recent years, resulting in extensive human and material losses (UN, 2009; UN Human Rights Council, 2015).

Traumatic war events can be especially harmful in the prenatal period as they may interfere with both the mental health of the mother and the stress and emotion regulation of the infant via in utero exposure to maternal hormonal imbalance (Brand, Engel, Canfield, & Yehuda, 2006; Kaitz, Levy, Ebstein, Faraone, & Mankuta, 2009; Yehuda et al., 2005). Consequently, the co-regulated mother–infant relationship can be put at risk. Further, attachment theory postulates that pregnancy reactivates mothers' own attachment experiences, including memories of childhood abuse (Bretherton & Munholland, 2008). Still, little is known about the interplay between mothers' childhood abuse and war trauma, which possibly poses a risk to the pre- and postnatal wellbeing of mothers and infants.

Research from peaceful countries confirms that mothers' childhood physical and emotional abuse are associated with both maternal prenatal psychopathology (Huth-Bocks, Krause, Ahlfs-Dunn, Gallagher, & Scott, 2013) and disturbances in infant stress regulation (Brand et al., 2010; Lang, Gartstein, Rodgers, & Lebeck, 2010), and that different childhood relational adversities can contribute to mental health and parenting problems in diverse ways (Briere & Jordan, 2009; Macmillan et al., 2001). Trauma research in turn shows that current war trauma can activate earlier

traumatic experiences (Mikulincer & Shaver, 2012) and that early life trauma increases vulnerability to later stressors and adversities (de Kloet, Sibug, Helmerhorst, & Schmidt, 2005; Roth, Pelcovitz, van der Kolk, & Mandel, 1997). Thus, current threat and trauma, as well as a mother's childhood abuse by caregivers, can create severe risks in the pre- and postnatal periods.

The impacts of childhood abuse and war trauma on maternal and infant wellbeing have been mostly analyzed separately. Thus, studying the unique and joint effects of childhood and current maternal trauma on pre- and postnatal periods is pivotal. Also, researchers have suggested that infants' in utero exposure to maternal prenatal mental health symptoms and stress might be especially potent in continuously dangerous environments (Glover, O'Connor, & O'Donnell, 2010). Accordingly, we analyze the associations between Palestinian mothers' past childhood abuse and current war trauma on maternal prenatal mental health and perceived stress, as well as on infant stress reactivity.

Maternal Trauma and Prenatal Mental Health

Researchers suggest that the nature of trauma may have specific impacts on mental health. Interpersonal violence has been shown to be more harmful than other types of trauma and earlier onset of exposure to have more severe impacts than later trauma (Punamäki, 2014). Childhood abuse by caregivers can imply both a lack of parental regulatory help and exposure to parent-inflicted stress. This can result in disturbances in the development of stress and emotion regulation (Maccari Krugers, Morley-Fletcher, & Brunton, 2014; Tarullo & Gunnar, 2006), increasing the risk for future mental health problems (Cloitre, Miranda, Stovall-McClough, & Han, 2005). Some research suggests that children exposed to physical and emotional abuse may suffer from various types of emotion dysregulation and psychopathology in later life (Tyler Kimberly, 2002). War trauma, in turn, has been shown to be associated with posttraumatic stress disorder (PTSD), depression, and dissociative symptoms (Brewin, Garnett, & Andrews, 2011; Punamäki, 2014).

There is some evidence that interpersonal trauma has especially harmful effects in the prenatal period. Schwerdtfeger and Goff (2007) showed that interpersonal trauma, rather than trauma exposure in general, was associated with pregnant mothers' PTSD symptoms. Also, past childhood abuse as a specific form of interpersonal trauma has been shown to have a unique association with heightened maternal prenatal PTSD symptoms when current partner violence was controlled for (Huth-Bocks et al., 2013). In the same study, mothers' experiences of emotional violence were more strongly associated with prenatal PTSD than were their experiences of physical or sexual violence. There is less research on the effects of war trauma on prenatal mental health. Yet, a study on prenatal exposure to the 9/11 terror attack showed that a high share (46%) of exposed pregnant women developed PTSD (Brand et al., 2006).

We could not find earlier research analyzing the unique or joint impacts of childhood abuse and war trauma on maternal mental health in the prenatal period. However, two studies focused on the nature of trauma in the general population, comparing the impacts of early interpersonal and adult trauma on later psychosocial wellbeing. Ehring and Quack (2010) reported that survivors of childhood interpersonal trauma suffered from more severe PTSD symptoms than did survivors of single-incident later trauma, such as an accident or disaster. However, a Palestinian study found that both past childhood abuse and current war trauma increased the risk for depression and PTSD, but only childhood abuse negatively impacted social relations (Punamäki, Komproe, Qouta, El-Masri, & De Jong, 2005).

Maternal Traumatization and Infant Stress Regulation Development

Prenatal maternal stress and psychopathology disturb the central nervous system's hypothalamic–pituitary–adrenal (HPA) axis functioning and consequently the in utero secretion of the stress hormone cortisol (Davis, Glynn, Waffarn, & Sandman, 2011; Glover et al., 2010). Trauma exposure and PTSD have similar emotional dysregulating effects (Brand et al., 2010; Yehuda et al., 2005). Infants' central nervous systems' stress and emotion regulation structures are molded by their

prenatal experiences, which makes them vulnerable to in utero hormonal imbalances (Glover et al., 2010; Talge, Neal, & Glover, 2007). Postnatal regulative caregiver–infant interactions continue to mold the infant's stress reactivity and consequent their regulation abilities (Crockenberg & Leerkes, 2000; Tronick et al., 2005). Still, infants' stress regulation deficits originating from the prenatal period contribute substantially to these interactions (Beeghly, Frank, Rose-Jacobs, Cabral, & Tronick, 2003; Field, 2010). After birth, the in utero exposure can manifest as infant irritability, oversensitivity to environmental stimuli, and inability to soothe and recover from stressful experiences (Davis et al., 2011; Pesonen, Räikkönen, Strandberg, & Järvenpää, 2005).

More research is available on the links between mothers' childhood abuse and infant stress regulation than on the effects of war trauma. A study among North American mothers with a lifetime history of depression found that mothers' childhood abuse was associated with both their own and their infants' deviating (lower) cortisol levels (Brand et al., 2010). Furthermore, infants whose mothers had both a childhood abuse history and current PTSD showed greater stress reactivity than did infants of mothers with no PTSD. The findings are important, as lower cortisol levels also indicate PTSD risk (Morris et al., 2012; Yehuda, 2002).

The results have thus far been inconclusive as to whether mothers' childhood emotional and physical abuse play different roles in their children's stress responses. Jovanovic and colleagues (2011) found that in low-SES African-American families, mothers' physical abuse was associated with their school-age children's greater stress reactivity, whereas emotional abuse was associated with children's poorer recovery from distress (Jovanovic et al., 2011). However, a study based on a white North American sample found that mothers' physical, but not emotional, abuse history was related to their one-year-old children's poor recovery from distress (Lang et al., 2010). The study further showed that mothers' depression increased their infants' difficulties with emotion and stress regulation.

Research on the 9/11 terrorist attacks provides information on prenatal maternal trauma impacting infant stress regulation. Infants whose mothers developed PTSD following exposure to the attacks manifested lower cortisol levels (Yehuda et al., 2005) and expressed more distress to novelty than infants with mothers without PTSD (Brand et al., 2006). Interestingly, maternal depression was not associated with infants' low cortisol levels (Yehuda et al., 2005).

Previous research thus confirms that both past interpersonal and current trauma can increase risks for maternal prenatal psychopathology and disturb the development of infant stress regulation. The effects of maternal childhood abuse on infant stress regulation seem to transmit both directly and via maternal mental health problems, and may vary according to the type of abuse. The impacts of war trauma (terrorist attacks) have been reported to mediate via posttraumatic psychopathology, namely PTSD. To our knowledge, no studies analyze the impacts of childhood emotional and physical abuse and current trauma exposure on maternal prenatal mental health and infant stress regulation among dyads living in life-endangering conditions of war. This is the task of the present study.

Research Questions

We examine the role of past and current maternal trauma in the pre- and postnatal periods among Palestinian women in the Gaza Strip. The present study fills a gap in the earlier literature by analyzing the unique and joint impacts of mothers' exposure to childhood abuse and war trauma on maternal prenatal mental health and infant stress regulation. The specific research questions are as follows:

1) How are mothers' experiences of childhood emotional (CEA) and physical abuse (CPA) and current war trauma (WT) associated with their prenatal mental health (depression and PTSD symptoms) and perceived stress? We hypothesize:

    a. CEA, CPA, and WT are all associated with elevated levels of prenatal mental health symptoms and perceived stress.

b. Mothers with high levels of both childhood abuse (either CEA or CPA) and WT are most vulnerable to prenatal mental health symptoms and experience the highest levels of perceived prenatal stress.

2) Do maternal prenatal mental health symptoms and perceived stress mediate the association among maternal CEA, CPA, and WT, as well as infant stress regulation at four months? In accordance with prior studies, we hypothesize:

a. CEA and CPA are associated with poorer infant stress regulation, both directly and via mothers' prenatal mental health symptoms and stress.

b. The effects of maternal WT on infant stress regulation are mediated via mothers' PTSD symptoms and perceived maternal stress.

Method

Participants and Procedure

The participants were 511 Palestinian women from the Gaza Strip who were interviewed during the second trimester of pregnancy (M = 17.59 weeks of gestation; SD = 3.08) (T1) and again when their infants were four months old (T2). From T1 to T2, 34 participants (6.7%; total N at T2 = 477) dropped out. Dropout was not associated with differences in demographic or mental health variables (for further details on the reasons for dropout, see Qouta, Diab, Isosävi, Kuittinen, & Punamäki, in press).

Mothers were recruited from 10 maternal clinics in government primary health care centers (PHCC) representing the five Gaza Strip governorates: North (2 clinics, N=136), Gaza City (3 clinics, N=191), Middle (1 clinic, N=55), Khan Youniss (2 clinics, N=69), and Rafah (2 clinics, N=60). Inclusion criteria were living in the geographic area and being in the second trimester of pregnancy. The data were collected between August and September 2013 (T1) and April and June 2014 (T2).

The ethics board of the Palestinian Ministry of Health (MoH) approved the study. Ten fieldworkers with Bachelor of Arts degrees in relevant fields and experience with research work attended a comprehensive training with the second and fourth authors on research procedures, interviewing skills, ethical rules, and conducting home visits. In addition, the trainers supervised the field workers every other week.

The study protocol was identical for all participants. Research visits were conducted at PHCCs at T1, lasting approximately 45 minutes, and in the families' homes at T2, lasting about 60 minutes. Families received a small gift for participating. At T1, the participants were informed of the purpose of the study and the study protocol, as well as the voluntary nature of their participation, and they provided informed consent. Data were collected by interviewing the mothers and writing their answers on paper and/or audio recording them. The protocol ensured that the mothers similarly understood the questions and were helped if they needed clarification. In addition, as the questions involved sensitive topics such as trauma experiences and mental health, the interviews helped to form a good alliance between the participants and the field workers.

Measures

Demographic and obstetric characteristics. At T1, the women answered open questions about their age, number of children, and length of marriage, and selected among alternatives for educational level (1 = no formal schooling, 2 = elementary school, 3 = secondary school, 4 = high school, 5 = professional schooling, 6 = university or polytechnic, 7 = other), civic status (1 = married, 2 = cohabiting, 3 = single, 4 = divorced, 5 = widow), and employment (1 = permanent work, 2 = part time work, 3 = self-employed/entrepreneur, 4 = unemployed, 5 = staying home taking care of children, 6 = retired, 7 = other). Families' financial status was indicated by two questions: difficulties in paying their bills (1 = no difficulties, 5 = extreme difficulties) and sufficiency of monthly income (1 = sufficient means, 4 = not enough money to cover monthly expenses).

Concerning obstetric information, mothers reported whether they had diagnoses of pregnancy-related obstetric complications (high blood pressure, high blood sugar level, bleeding, early contractions, threat of miscarriage, abnormalities in ultrasound, and/or other problems; 1 = yes, 0 = no). At T2, mothers reported the method of delivery (1 = normal vaginal, 2 = assisted vaginal, 3 = planned caesarean, 4 = emergency caesarean).

Childhood emotional (CEA) and physical abuse (CPA). At T1, women were presented with a 13-item questionnaire developed by the Transcultural Psychosocial Organization (TPO; Punamäki et al., 2005). Abuse experiences were probed in relation to both the mother and the father, covering the age of 12 and younger. Seven items refer to emotional abuse (e.g., verbal threats, humiliation, ridiculing) and four items to physical abuse (e.g., being slapped or beaten). The scale includes two positive relational items that were omitted from this analysis. Mothers reported how often they had experienced each type of abuse on a 5-point scale (0 = never; 4 = always). Averaged composite scores were constructed separately for CEA and CPA; Cronbach's α values were .83 for CEA and .86 for CPA.

War trauma (WT). At T1, a 25-item questionnaire was used to measure traumatic events common and typical during the 2008–2009 Gaza War and the 2012 military offensive. Six events refer to human losses (family member, friend), four to material losses (home damaged, having to flee home, loss of livelihood), four to being injured or witnessing persons close to them getting injured, and 11 to being exposed to and/or witnessing warfare (shelling, bombing, witnessing injury and death in war). The women reported whether they had been exposed to each war event (1 = yes, 0 = no). A summed composite score of total war trauma events was constructed.

Posttraumatic stress symptoms (PTSD). At T1, women responded to the 31-item Harvard Trauma Questionnaire (HTQ; Mollica & Caspi-Yavin, 1991). The current analysis involves the 16 items that indicate PTSD symptoms (according to DSM-III-R criteria). The mothers evaluated the extent to which they had suffered from each of the symptoms during the previous month on a 4-

point scale (0 = not at all, 3 = severely). The three core symptoms of avoidance, intrusion, and hypervigilance were used as parcel indicators in the analysis (see Statistical Analysis). A cut-off score for clinical PTSD was constructed by taking the arithmetic mean of the 16 items, with a result of 2.5 or higher signifying clinically recognizable PTSD (Ichikawa, Nakahara, Wakai, 2006). The PTSD symptom scales have been found to be reliable and valid in Arab populations, including Palestinians (Salo, Qouta, & Punamäki, 2005). In this sample, internal consistencies were $\alpha = .77$ for intrusive, $\alpha = .75$ for avoidance, and $\alpha = .83$ for hyperarousal symptoms.

Depression symptoms. At T1, the 10-item Edinburgh Depression Scale (EDS; Cox, Holden, & Sagovsky, 1987) was applied to measure maternal prenatal depression symptoms, covering depression-related feelings, thoughts, and behaviors. Mothers estimated which alternative best fit their experience during the last seven days on a 4-point scale (0–3). As suggested by previous studies, a cut-off score of ≥ 12 was used to detect mothers with clinically recognizable depression (Adouard, Glangeaud-Freudenthal, & Golse, 2005; Deave, Heron, Evans, & Emond, 2008; Su et al., 2007). The measure has been found reliable and valid among pregnant women in multiple samples (Bergink et al., 2011), including among Arab postnatal women (Ghubash, Abou-Saleh, & Daradkeh, 1997). A composite score was constructed and had an α value of .78.

Perceived stress. At T1, the 10-item Perceived Stress Scale (Cohen, 1994) was applied. The scale probes feelings of controlling and coping with everyday challenges and hassles, and being stressed, angry, anxious, and/or overwhelmed. Mothers evaluated the frequency of their experiences on a five-point scale (0 = never, 4 = often). The measure has been found reliable and valid among Arab pre- and postpartum women (Chaaya, Osman, Naassan, & Mahfoud, 2010). In this sample, a nine-item version had an α value of .74, as one non-correlating item was omitted.

Newborn characteristics. At T2, mothers reported the infant's sex, need for immediate treatment in a neonatal intensive care unit (NICU) or other observational ward (1 = yes, 0 = no), and later hospitalization during the first months, (1 = yes, 0 = no). The NICU and later

hospitalization variables were combined (1 = need for hospitalization at any point, 0 = no need for hospitalization). Mothers also reported their infants' gestational age, and a dummy variable was created to indicate prematurity (1 = premature [gestational age < 37 weeks], 0 = full-term infant born at gestational week 37 or later).

Infant stress regulation. The Infant Behavior Questionnaire-Revised (IBQ-R, short version; Gartstein & Rothbart, 2003; Putnam, Helbig, Garstein, Rothbart, & Leerkes, 2014) was used to assess infant stress regulation at T2. The 91-item questionnaire assesses how parents evaluate their infant's typical behavior during the last seven days. As the participants were interviewed and did not fill out the questionnaires themselves, the original seven-point answer scale was modified to a three-point scale (0 = never or rarely, 1 = sometimes, 2 = often/always) according to feedback from participants that the wider range was confusing. One broad dimension (negative affectivity, consisting of subscales of sadness, distress to limitations, fear, loading negatively, and falling reactivity) and one specific scale (soothability) were used as indicators of infants' stress reactivity. Negative affectivity refers to the infant's tendency to react to stressors with anger, irritability, fear, or sadness (Rothbart, Ahadi, & Hershey, 1994), and is considered the core quality of infant negative temperament (Paulussen-Hoogeboom, Stams, Hermanns, & Peetsma, 2007). Soothability reflects success in caregiver-initiated regulation: how the infant will recover and calm down when sung to, held, rocked, and so on (Garnstein & Rothbart, 2003). The selected IBQ-R short form scales have been found to have acceptable reliability and validity (Putnam et al., 2014).

Translation of methods. All instruments were used in Arabic. The childhood abuse, war trauma, and PTSD questionnaires were already available in Arabic. A bilingual researcher translated the EDS, perceived prenatal stress, and IBQ scales from English to Arabic, and the second author conducted a back-translation to check for accuracy.

Statistical Analyses

A structural equation modeling (SEM) approach with a mix of latent and observed variables (Bollen, 1989) was applied to simultaneously test the unique and joint effects of mothers' CEA, CPA, and WT experiences on prenatal mental health (depression and PTSD symptoms) and perceived stress, as well as on infant stress regulation. Both direct effects on infant stress regulation and effects mediated via prenatal maternal mental health and stress were tested. Mothers' CEA, CPA, and WT experiences were included in the model as exogenous, continuous observed variables. Mothers' prenatal mental health and stress and infant stress regulation were modeled as latent variables. Figure 1 presents the measurement model for these latent constructs and their manifest indicators.

Parceling was used for indicators of constructs modeled as latent in order to improve reliability and communality and to decrease the likelihood of distributional violations and levels of Type II errors (Bagozzi & Heatherton, 1994; Little, Cunningham, Shahar, & Widaman, 2002; Little, Rhemtulla, Gibson, & Schoemann, 2013). A balancing approach or single-factor analysis parceling (Landis, Beal, & Tesluk, 2000) was applied for constructs judged to be theoretically unidimensional (maternal depression symptoms and perceived stress, and infant soothability). An internal consistency parceling approach (Little et al., 2002) was applied to better represent the multidimensional phenomenology of PTSD. A three-indicator structure with three facet-representative parcels was modeled corresponding to the avoidance, intrusion, and hypervigilance dimensions, loading onto a single latent PTSD construct. Parcel scores were thus the arithmetic means of items in each of the three subscales. According to the instructions for the IBQ-R scoring sheet (Rothbart & Gartstein, 2000), infant negative affectivity was likewise modeled to consist of facet-representative parcels corresponding to the four dimensions of distress to limitations, falling reactivity, fear, and sadness, each represented by one scale of the IBQ-R. In addition, soothability was examined as an independent latent construct with three balanced parcels, as described above.

Infant gender, infant prematurity, need for infant hospital treatment, and the family's SES and number of children were included into the model as covariates. Research suggests that newborn

characteristics (de Bruijn, van Bakel, & van Baar, 2009; Weinberg, Tronick, Cohn, & Olson, 1999) and family SES (Bradley & Corwyn, 2002; Rich-Edwards et al., 2006) may influence early maternal mental health and infant development. Family size is relevant because, in the Palestinian context, mothers are almost exclusively responsible for the home and for childcare. This, combined with poverty and poor and often crowded living conditions, may influence mothers' and infants' wellbeing (Rahim et al., 2009). SES was modeled as a latent construct with three indicators: the mother's level of education and the two questions on the family's financial status. The other covariates were observed manifest variables, with number of children modeled as continuous and the rest as binary.

For statistical analysis, confirmatory factor analyses (CFA) with single factor models were first performed to assess the functioning of the multi-item measures used and their degree of unidimensionality. Second, a measurement model in which the latent constructs were all allowed to covary freely with all loadings free to vary was estimated, and its fit was assessed. Third, for the latent variables modeled with the balancing approach, loadings were set to equality (thus assuming tau equivalent parcel indicators), another measurement model with these specifications was estimated, and the reduction in fit assessed. Finally, an a priori specified structural model was imposed on the measurement model to reflect the research hypotheses and account for the temporal sequence of the measurements. In this model, the maternal prenatal variables (depression and PTSD symptoms, and perceived stress) were regressed on mothers' trauma experiences (CEA, CPA, and WT), as well as on the interaction terms of CEA * WT and CPA * WT. The infant stress regulation constructs (negative affectivity and soothability) were regressed on the maternal prenatal variables and mothers' trauma experiences, as well as their interactions. The paths to the maternal prenatal variables were controlled for the effects of SES and the number of children. The paths to the infant stress regulation outcome variables were controlled for the effects of all covariates (SES, gender, prematurity, hospital treatment, and number of children.

All exogenous variables were allowed to covary freely, and the means and variances of the exogenous variables were included in the estimated model. The residuals of the three latent endogenous maternal prenatal variables, as well as the two infant stress regulation latent variables, were likewise allowed to covary to reflect shared sources of variance not included in the model.

The fit and parameters of this initial structural equation model were estimated. Non-significant interaction paths were then removed from the model to improve the interpretability of unique effects, arriving at the final model. The final model was then estimated and evaluated for significant direct or indirect effects. The significance of indirect (mediated) effects was tested with the product of coefficients method, using a first- and second-order Taylor series approximation for the standard error of the product (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002).

Weighted least squares means and variance adjusted estimation was used for confirmatory factor analyses with categorical items. Full-information maximum likelihood (FIML) estimation with robust standard errors was used for all other analyses. Using all available data in estimating model parameters, these approaches apply missing data without excluding dropouts, and they are robust to deviations from normality assumptions. For variables included in the structural equation model, there were 1191 missing data points (8.63 % of total data), which is an acceptable amount when using FIML.

All analyses were carried out using Mplus 7.4 (Muthén & Muthén, 1998–2015). Input scripts used to carry out the analyses are available from the second author on request.

Results

Descriptive Statistics

Mothers' descriptive and obstetric characteristics and infant-related risks are summarized in Table 1. The women's ages ranged between 16 and 46 years old, with the majority (80.2%) younger than 30. A minority of the women were expecting their first child, while the majority (81.9%, n = 406) already had one to 11 children. Almost all (99.6%, n = 509) women were married, most

(80.4%) for ten years or less. About two-thirds of the women (68.2%, n = 348) had secondary or lower schooling. Working outside the home was rare, as more than eight out of ten women were occupied taking care of children at home. Concerning economic status, nearly all (99.4%, n = 508) mothers reported their family having a moderate to high degree of financial difficulties.

Diagnosed obstetric complications were rare, with only 5.3% of mothers reporting diagnostic risks. Over 80% of the mothers had a vaginal birth, about 10% a planned caesarean delivery, and 7% an emergency caesarean operation. A little over a half (54.3%, n = 260) of the infants were boys, and 45.7% (n = 219) were girls.

Prevalence of mothers' past and current traumatic experiences, as well as prenatal mental health symptoms and stress, are summarized in Table 2. The majority of mothers reported experiencing at least some degree of both childhood emotional (CEA) and physical (CPA) abuse. The most common abuse experiences were parents scaring them (by the father: 45.5%, n = 227; by the mother: 46.5%, n = 234), humiliating them and shouting at them (by the father: 41.9%, n = 211; by the mother: 45.1, n = 228), and threating beatings (by the father: 37.1%, n = 187; by the mother: 38.3%, n = 193). Concerning war trauma (WT), almost all the mothers reported experiences of war trauma, such as bombings, shellings, fires, and witnessing people getting injured and killed. Over 80% of the mothers reported experiencing an injury to themselves or to someone close to them, as well as material losses. In addition, almost seven out of ten mothers reported having lost a person close to them due to war.

The mothers reported a high level of prenatal mental health symptoms and perceived stress. Over half met the suggested cut-off point (EDS 12 points or higher) for depression (M = 12.03, SD = 5.95). Concerning PTSD (M = 46.19; SD = 12.56), a little less than a fifth of the mothers exceeded the clinical cut-off score. Further, 81.8% (n = 490) of the mothers reported levels of prenatal stress exceeding the previously observed female mean of the perceived stress scale ($\geq$13.7; Cohen, 1994). The mean for this sample was 19.62, and the standard deviation was 6.56.

Confirmatory Factor Analyses

All items of the CEA and CPA scales and the EDS loaded on single factors with standardized loadings of .43–.64, .64–.83, and .22–.79, respectively. One item of the Perceived Stress Scale did not load significantly on the common factor and was removed from further analysis. The remaining nine items loaded significantly, with standardized loadings ranging between .21 and .68.

For PTSD, all items loaded significantly to one of the three factors, with standardized loadings of .55–.77 for intrusion, .64–.76 for hypervigilance, and .28–.65 for avoidance. One item of the avoidance factor had a low, though still significant loading (standardized loading = .28), while the other items of the factor had significant loadings of .51–.65.

For the IBQ scales, all items of the soothability subscale and the sadness subscale loaded on single factors with standardized loadings of .36–.77 and .34–.90, respectively. One item of the distress to limitations subscale was removed from analysis due to a non-significant negative loading on the common factor. The remaining six items loaded on a common factor with standardized loadings of .16–.99. One item of the falling reactivity scale was likewise removed due to a non-significant loading, and the remaining five items had standardized loadings of .19–.95. One item of the fear scale was similarly removed, and the remaining five items had loadings of .60–.86.

Structural Equation Modeling (SEM)

A correlation matrix for variables included in the SEM is presented in Table 3. The results show significant correlations aomong all trauma types. Further, both past and current traumatic experiences correlate significantly with maternal mental health symptoms, and these symptoms correlate to some extent with infant stress regulation outcomes.

The measurement model had a good fit to the data (χ^2 (137) = 217.43, p < .001; RMSEA = .03 [90 % CI: .03–.04]; CFI = .97; SRMR = .05). Although the $\hat{G}$ (χ^2) statistic indicates misfit, it is well known to greatly exaggerate misfit with larger samples (Bentler, 1990; Yuan, Hayashi, & Bentler, 2007). One indicator of the IBQ negative affectivity latent construct (the falling reactivity subscale)

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was only marginally significant (standardized loading $\lambda = .17$, $p = .08$), but because of its theoretical significance to the construct, it was retained in the measurement model.

Setting the indicator loadings of the balancing parceled latent constructs (maternal depression symptoms and perceived stress, and infant soothability) to be tau equivalent did not result in significant worsening of fit [Satorra-Bentler scaling corrected χ^2_{diff} (6) = 6.48, $p = .38$]. Thus, the applied final measurement model had tau equivalent loadings for these variables and still fit the data well enough (χ^2 (143) = 224.21, $p < .001$, RMSEA = .03 [90% CI: .025–.042], CFI = .97; SRMR = .05).

The final model combining the measurement and structural parts and including the covariates likewise fit the data well (χ^2 (260) = 402.71, $p < 0.001$; RMSEA = .03, [90 % CI: .03–.04]; CFI = .95; TLI = 0.94; SRMR = .04).

Maternal Trauma Experiences and Prenatal Mental Health

The final SEM model with path estimates is presented in Figure 2. As hypothesized, CEA, CPA, and WT experiences were all separately associated with elevated levels of maternal prenatal mental health symptoms and perceived stress. CEA was found to have a unique effect on prenatal depression symptoms. However, our hypothesis that exposure to both maternal childhood abuse and war trauma would be associated with high levels of prenatal mental health problems and perceived stress was not supported, as the interaction effects of maternal childhood abuse and WT were non-significant.

Maternal CEA had an effect on all prenatal mental health indicators: depression symptoms (fully standardized $\beta = .15$, $p < .05$), PTSD symptoms ($\beta = .17$, $p < .01$), and perceived stress ($\beta = .16$, $p = .01$). Instead, CPA had only a marginal effect on prenatal PTSD symptoms ($\beta = .11$, $p = .06$). WT was in turn positively associated with levels of prenatal stress ($\beta = .14$, $p < .01$) and PTSD symptoms ($\beta = .27$, $p < .001$).

The results further showed that mothers' low SES was associated with high levels of CPA and WT (r = -.13, $p < .05$ and r = -.18, $p < .01$, respectively), but not with CEA. Mothers' SES was also negatively associated with prenatal depression symptoms ($\beta = -.33, p < .001$), PTSD ($\beta = -.27, p < .001$), and perceived stress ($\beta = -.35, p < .001$).

Maternal Trauma Experiences, Prenatal Mental Health, and Infant Stress Regulation

The hypothesis that maternal childhood abuse would have a direct effect on infant stress regulation (negative affectivity or soothability) did not receive support. However, there was a significant CEA * WT interaction effect on infant negative affectivity ($\beta = -.21, p = .002$). As Figure 3 illustrates, the association between CEA and infants' negative affectivity differed according to the level of WT. Only in dyads in which the mother was exposed to a low level of WT was high exposure to CEA associated with higher infant negative affectivity.

The results further showed that, against our hypothesis, the impacts of CEA, CPA, or WT on infant stress regulation were not mediated via maternal prenatal mental health symptoms or perceived stress. Instead, we found that prenatal maternal depression symptoms had a marginally significant, yet unexpected, positive effect on infant soothability ($\beta = .28, p = .06$). Even though mothers' exposure to CEA was positively associated with prenatal depression symptoms, and these in turn were associated with higher infant soothability, the indirect effect of CEA on soothability via depression symptoms was nonsignificant (coefficient = .04, $p = .40$).

The results further showed that mothers' high SES was marginally, positively associated with infant soothability ($\beta = .15, p = .09$). Infant characteristics were also found to be important, although only marginally significant, contributors to stress regulation: infant prematurity was negatively associated with soothability ($\beta = .11, p = .08$) and male sex was positively associated with negative emotionality ($\beta = -.11, p = .09$). It should be noted that male sex was also associated with infant prematurity (r = -.13, $p < .01$).

Discussion

War and military conflict affect millions of infants and their parents. It is vital to understand the dynamics of intergenerational effects of trauma in order to provide evidence-based interventions for families in conflict areas and seeking asylum in peaceful countries. Early-life traumatic experiences may contribute to survivors' vulnerability, especially during the transition to parenthood. The present study therefore analyzed how Palestinian mothers' childhood emotional (CEA) and physical abuse (CPA) and current war trauma (WT) experiences separately and jointly influenced their mental health and the development of their infants' stress regulation during the specific life phase of the pre- and postnatal periods.

Practically all the Gazan mothers had experienced war events, such as losing family members, witnessing killings, or fleeing for their lives. However, CEA and CPA experiences were also common, as about 40% of the women reported childhood abuse. As hypothesized, both childhood abuse and WT heightened mothers' prenatal mental health symptoms and perceived stress. Importantly, childhood emotional abuse had more wide-reaching effects than childhood physical abuse or war trauma, as CEA contributed to all prenatal risk indicators: depression and PTSD symptoms and perceived stress. Mothers' WT was also associated with PTSD symptoms and perceived stress, but CPA was only marginally associated with PTSD symptoms.

Childhood emotional abuse by parents, such as ridicule or belittlement of one's feelings, uniquely increased depression symptoms when becoming a mother. The finding is important, because as many as half of the mothers in this study reported clinical levels of depression symptoms. Previous studies confirm that prenatal depression strongly predicts postnatal depression (Milgrom et al., 2008), and these cumulative mental health problems can pose a risk for the quality of the mother–infant relationship (Field, 2010; Martins & Gaffan, 2000).

The finding that CEA poses specific vulnerability to prenatal depression differs from that of Huth-Bocks and colleagues (2013), who instead found that childhood emotional abuse uniquely contributed to prenatal PTSD. Together, these results might suggest that maternal CEA-related

prenatal vulnerability is universal. Thus, it is important to consider its role as a risk factor and a treatment target in non-Western contexts among women and their children who are exposed to acute stress and life threats. This study's results also concur with earlier studies demonstrating the general harmfulness of CEA on mental health and specific tie to increased depression (Chapman et al., 2004; Gibb, Chelminski, & Zimmerman, 2007; Spertus, Yehuda, Wong, Halligan, & Seremetis, 2003).

Against our hypothesis, we did not find that childhood abuse experiences added vulnerability in the face of later war trauma. Attachment theory might help in understanding why the effects of childhood abuse, especially CEA, on prenatal mental health were unique rather than cumulative with later trauma. It is plausible that experiences of CEA reflect insecure attachments, and when an insecure mother-to-be is revisiting her childhood experiences, she lacks necessary representations of adequately sensitive and loving parental figures (Brazelton & Cramer, 1990; Stern, 1995). Also, in reflecting a lack of warmth and positive and regulating interactions, CEA in particular might make mothers-to-be vulnerable to emotional regulation difficulties resulting in negative expectations in later life phases and transitions (Riggs, 2010).

Socio–economic status was found to play an important role in mothers' trauma experiences and in prenatal wellbeing. The results showed that mothers with higher SES reported fewer CPA and WT experiences and less prenatal PTSD and depression symptoms, as well as perceived stress, than mothers with lower SES. Previous research has identified childhood abuse as a core characteristic of a generally disadvantageous childhood, in which parenting stress, parental mental health problems, and low SES together with abuse contribute to developmental risks (Appleyard, Egeland, Dulmen, & Sroufe, 2005; Sidebotham & Golding, 2001). It might be that mothers with high CPA exposure later experience low SES and mental health symptoms as intergenerationally transmitted problems and that they are also more vulnerable to war trauma. In the Palestinian context, these cumulating risk factors should be understood as part of the wider context of wars,

displacement, and military conflicts that endanger parents' abilities to offer stable environments for their children's development.

Regarding infants' stress regulation, we hypothesized that mothers' childhood abuse experiences would influence their infants' negative affectivity and soothability both directly and via prenatal mental health symptoms and perceived stress, and that WT would hamper infant stress regulation via related prenatal PTSD and perceived stress. The results offered partial support for the direct transmission of childhood abuse, as mothers' high CEA was associated with increased infant negative affectivity, but only among mothers who had low levels of WT. Mothers exposed to high levels of war trauma did not show a similar connection between CEA experiences and infants' negative affectivity.

The finding seems perplexing as, against the expectations, mothers with the most cumulated trauma exposure reported that their infants were less stress-reactive than did mothers with less WT. As the results are based on the mothers' *ratings* of their infants' behavior, a tentative explanation is that extreme and recent WT can blur mothers' perceptions of their infants' characteristics. Research confirms that severe trauma exposure can negatively alter post-traumatic mental states, such as through dissociation (Maercker, Beauducel, & Schützwohl, 2000). Severe life threats might also interfere with mothers' capacity for caregiving (Belsky, 2008; George & Solomon, 2008) and could thus also disturb their attunement to infant stress signals. Therefore, a more realistic impact of CEA might come across in evaluations of less war traumatized mothers. This interpretation, of course, raises concerns about the most severely traumatized mothers' capacities to read and sensitively respond to their infants' signals. In the future, using psychophysiological data in addition to maternal ratings could illuminate the complex traumatic impacts on maternal perceptions and interpretations of infants' signals.

A competing explanation why CEA did not seem to impact infant stress regulation among severely war traumatized dyads relates to the specific Palestinian national ethos in war conditions.

Earlier research suggested that WT might mobilize social support as survivors of enemy violence are considered heroes (Punamäki et al., 2005). In our case, more severely war-traumatized mothers might enjoy strong social affiliation and respect and receive help in caring for their infants, which might ameliorate their experiences of infant stress reactions. Investigating the role of social support and the value placed on interpersonal and military hardships is a task for further study. Qualitative analyses of meanings given to war experiences and infants' communications, as well as conceptualizations of motherhood, might help in understanding mothers' responses in this particular socio–political environment.

Surprisingly, the results did not support the hypothesis that prenatal mental health and perceived stress mediate the link between maternal trauma and infant stress reactivity. On the contrary, mothers' higher prenatal depression symptoms were associated with better infant soothability, although the link was only marginally significant. This unexpected finding makes sense when considering that soothability is actually a measure of parent–infant co-regulation of infants' arousal and stress (Gartstein & Rothbart, 2003). The literature on depressed mother–infant dyadic interactions emphasizes infants' need to over-adjust to low-stimulating and withdrawn mothers (Beebe, 2006; Tronick & Reck, 2009). Thus, infants of more depressed mothers might indeed appear easy to soothe. If this is the case, infants' excessive responsibility for regulating their own and dyadic responses suggests problems in the early dyadic interaction and in early child development (Beebe et al., 2000; Feldman, Greenbaum, & Yirmiya, 1999; Jaffe, Beebe, Feldstein, Crown, & Jasnow, 2001).

In addition to CEA and depressive symptoms, the family's SES and infant characteristics contributed to mothers' perceptions of infant stress regulation. Mothers with higher SES experienced their infants as more easy to soothe than did mothers with lower SES. It is plausible that mothers' better overall resources and fewer everyday socio–economic burdens can facilitate attending to the needs of an infant. Understandably, mothers of premature infants reported more

hard-to-soothe experiences than did mothers of full-term infants. This finding is consistent with well-established knowledge of preterm infants' regulatory difficulties (e.g., Clark, Woodward, Horwood, & Moor, 2008).

The findings that neither CPA nor WT were associated with infant stress regulation and that prenatal mental health and stress did not mediate connections between maternal trauma and infant regulation deserve some thought. Culturally salient parenting practices and beliefs may be an extra factor affecting maternal ratings of their infants' stress reactivity. In collectivistic cultures such as that of Palestine, proximal parenting practices prevail. Parents keep their babies constantly close, and infants might be soothed in advance rather than needing their mothers to respond to communications of distress (Keller, 2007; Kuittinen et al., 2015). Further, preliminary findings from the same data show that, in their socialization goals, Palestinian mothers promote emotion regulation and obedience in their small children rather than independence and a sense of self (Kuittinen et al., 2015). Although these suggestions are tentative, it is clear that more research is needed on the interconnectedness of culture, trauma, and early infant development. Future studies on cultural and trauma-specific effects on parenting and infants' wellbeing should apply multi-level approaches that measure objective and subjective levels of maternal, infant-related, and dyadic characteristics.

In addition to cultural and trauma-related factors, postnatal caregiving quality is likely to influence the ways that infants of war-traumatized mothers regulate stress and emotions (van Ee, Kleber, & Mooren, 2012). There is some evidence that when maternal war trauma results in dysfunctional parenting, very young children can suffer from pathological states of stress dysregulation such as PTSD (Feldman & Vengrober, 2011). Future research needs to study the effects of both the pre- and postnatal periods when considering how maternal trauma and mental health symptoms influence infant regulatory development.

Clinical Implications

The results of this study show that both mothers' early and current traumatic experiences affect the pre- and postnatal periods in war conditions. Thus, they should be probed for during maternal and infant care. Our results also hint that those mothers who have been most severely traumatized by war might not report infant-related problems. Screening for severity of recent maternal traumatization might serve as an indicator of risks to early child development in families that do not communicate worries. Discrepancies between maternal reports of infant characteristics and clinicians' evaluations of infants might also help in evaluating how well traumatized mothers suffering from mental health problems detect and respond to their infants' communications. Further, in this study, socio–economic disadvantages and infant characteristics increased the risk for mothers' mental health symptoms and infant regulation problems. Accordingly, infants in families with cumulated socio–psychological and medical risks are a key group to be identified and referred to treatment in conflict areas.

Such interventions should start during pregnancy, as the mothers in this study already suffered from high levels of mental health symptoms and stress prenatally. Theory suggests that pregnancy gives a mother a special openness to explore her own early experiences (Stern, 1995; Raphael-Leff, 1991). Our results show that especially experiences of childhood emotional abuse are harmful among war-affected mothers in early parenthood. Thus, identifying mothers' early abuse histories during pregnancy and working through such experiences in therapeutic relationships could help decrease the intergenerational risk for mothers in war conditions.

Limitations of the Study

The study deserves criticism for single reporting measures, the validity of some constructs, and retrospective accounts of childhood abuse. Mothers' self-reports were the sole source of information on infant stress regulation. Especially when working with a traumatized, high-risk group, maternal perceptions of their infants can deviate from those of professionals (van Ee et al., 2012). Hence, more research is needed with both objective and subjective measures. On the other

hand, parents' *perceptions* of their infants' characteristics are clinically relevant as they, in addition to objectively measured infant characteristics, contribute to the development of children's regulatory abilities (Ghera, Hane, Malesa, & Fox, 2006).

Overall, the reliability of the applied measurements was acceptable to good. Yet, the functioning of the IBQ-R items and scales in this sample was less than satisfactory. When examined by CFA, several items did not load significantly onto their common factor and were therefore not included in the analyses. Several other items had loadings that, while significant, were still relatively low. This contributed to larger confidence intervals in the estimates of SEM parameters, which may have obscured some effects. Also, it should be noted that a version of the IBQ-R with a modified scale was used in this study, and reducing the range of the scale might have had some impact on the findings.

Finally, we retrospectively inquired into past maternal emotional and physical abuse. Evidence shows that current moods may color our memories (Young, Erickson, & Drevets, 2012), and thus, depressive mothers may remember their traumatic past better or exaggerate it. On the other hand, research on autobiographic memory shows that depressive persons tend to have more general memories (Williams et al., 2007), which would suggest that depressive mothers can underreport their past trauma. All in all, a prospective longitudinal research setting would have allowed for more reliable conclusions about the timing and nature of trauma.

Concluding Remarks

The results of our study show that early adverse relational experiences are important determinants of pre- and postnatal development in acutely dangerous environments. This, together with the finding that prenatal mental health problems were highly common among Palestinian mothers in war conditions, calls for maternity- and infancy-informed psychological interventions for the families of infants in war zones, in addition to providing them material and medical aid. Further research is needed in considering how broader family relations, social support, cultural

parenting practices, and beliefs, as well as postnatal mother–infant interactions, contribute to the

mental health and stress regulation of mother–infant dyads in war conditions.

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Table 1

Distribution of background and pregnancy-related characteristics (%)

	Participants	
	%	*n*
Age (years)		
16–20	26.6	136
21–30	53.6	274
31–40	18.2	93
41-46	1.6	8
Number of children		
Exepting the first child	18.1	90
1-3	58.9	292
4-6	20.0	99
7-11	3.0	15
Length of marriage (years)		
< 5 years	41.3	211
5 – 10 years	39.1	200
11 – 20 years	17.6	90
> 20 years	1.8	9
Education		
No formal education	1.2	6
Elementary school	11.4	58
Secondary school	55.6	284
Higher education	29.9	153
Other	2.0	10
Job status		
Home taking care of the children	82.4	421
Working outside the home	3.9	20
Student	9.8	50
Other	3.9	20
Financial status [a]		
No financial difficulties	.6	3
Some/ moderate difficulties	48.9	250

A lot of financial difficulties	50.5	258
Obstetric complications		
Any obstetric risk	5.3	27
High blood pressure	2.5	13
Gestational diabetes	.4	2
Abnormalities in the ultrasound	1.4	7
Early contractions	2.2	11
Method of delivery		
Vaginal	82.4	393
Planned caesarean	10.3	49
Emergency caesarean	7.3	35
Infant-related risks		
Primaturity	5.4	18
NICU[b]	14.2	67
Need for hospitalization later	9.1	43

[a] Financial status is indicated from a three-class sum variable constructed of 1) mothers' reports of difficulties to pay the bills and 2) sufficiency of the family's monthly income.

[b] NICU = Neonatal intensive care unit.

Table 2

Maternal trauma experiences and prenatal mental health (%)

	Participants	
	%	*n*
Childhood abuse experiences[a]		
Emotional	65.6	334
Physical	77.6	395
War experiences		
Human losses	69.3	350
Self/ close persons injured	81.5	414
Material losses	80.7	410
Witnessing war events	96.9	492
Depression		
Clinical cutoff ≥ 12	51.5	263
PTSD		
Clinical cutoff ≥ 2.5	18.4	92
Prenatal stress[b]		
2 - 13	18.2	93
14 - 22	49.3	252
23 - 38	32.5	166

[a]Occurence of abuse experiences is calculated from dummy variables. Occurence refers to abuse experienced from "sometimes" to "always".

[b] Cohen (1997) reports that a score of 13.7 was the mean for females in a sample of 2387 US respondents.

Table 3

Zero-Order Bivariate Correlations between Observed Variables and Indicators Included in Structural Equati...

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 War exposure																		
2 CPA	.14***																	
3 CEA	.19**	.66***																
4 Intrusions	.33***	.19***	.16***															
5 Avoidance	.33***	.30***	.32***	.63***														
6 Hypervig.	.28***	.24***	.29***	.68***	.72***													
7 Stress 1	.19***	.14**	.21***	.23***	.36***	.39***												
8 Stress 2	.18***	.16***	.20***	.27***	.39***	.37***	.55**											
9 Stress 3	.13**	.12**	.14**	.19***	.33***	.33***	.55***	.53***										
10 Depression 1	.13**	.16***	.17***	.19***	.31***	.27***	.46****	.47***	.43***									
11 Depression 2	.10*	.18***	.18***	.26***	.37***	.37***	.44***	.47***	.39***	.57***								
12 Depression 3	.17***	.15**	.22***	.23***	.40***	.41***	.52***	.51***	.45***	.59***	.58***							
13 Distress	.04	.04	.03	-.03	.02	-.07	.01	.03	-.01	-.07	-.03	-.05						
14 Sadness	-.04	-.01	.02	-.06	-.06	-.10*	-.05	.00	-.03	-.07	-.06	-.03	.42***					
15 F. reactivity	-.02	.05	.05	.04	.00	.03	.02	.00	.02	-.08	.01	.02	.17**	.08				
16 Fear	.00	-.03	-.01	.02	.05	-.02	-.02	.03	.04	.04	.01	.00	.18**	.18**	-.01			
17 Sooth. 1	.04	-.04	-.03	-.06	-.04	-.02	-.06	.01	-.01	.06	.05	.03	.01	.11*	-.18**	.01		
18 Sooth. 2	.05	.00	-.06	.02	.02	-.01	.02	-.01	-.01	.05	.00	.03	-.14**	-.04	-.23**	-.06	.42**	
19 Sooth. 3	.03	.01	.00	-.01	.02	.01	-.04	.01	-.07	.02	.04	.01	.00	.10*	-.23**	.05	.54**	.49**
20 Education	-.10*	-.08	-.01	-.07	-.13**	-.11*	-.11*	-.09*	-.04	-.10*	-.18***	-.13**	.04	.04	-.04	.02	-.10*	-.05
21 Econ. 1	-.10*	-.08	-.11*	-.30***	-.28***	-.21***	-.21***	-.15**	-.12*	-.18***	-.19***	-.20***	.02	.09	.00	-.05	.15**	.04
22 Econ. 2	-.11*	-.03	.01	-.15***	-.14**	-.15**	-.16***	-.09*	-.15**	-.12*	-.12**	-.15**	.08	.04	.05	-.04	.02	.06
23 Children	.11*	.04	.01	.04	.07	.06	.11*	.05	.01	.12**	-.05	.07	-.01	-.05	-.09	-.02	-.03	-.08
24 Gender	-.07	.03	.01	.03	.02	.07	-.03	-.02	.03	-.01	.00	-.04	-.10*	-.07	.01	-.01	-.02	-.05
25 Prematurity	-.02	.06	.04	-.07	-.07	-.05	.07	-.02	.05	-.02	.01	.00	.02	-.03	-.03	-.03	-.02	-.08
26 Hospital need	.08	.11*	.10*	.06	.11*	.05	.05	.10*	.09	.11*	.07	.08	.04	.00	-.01	-.03	.04	.00

Note. N = 334–511. CPA = Maternal childhood physical abuse. CEA = Maternal childhood emotional abuse.

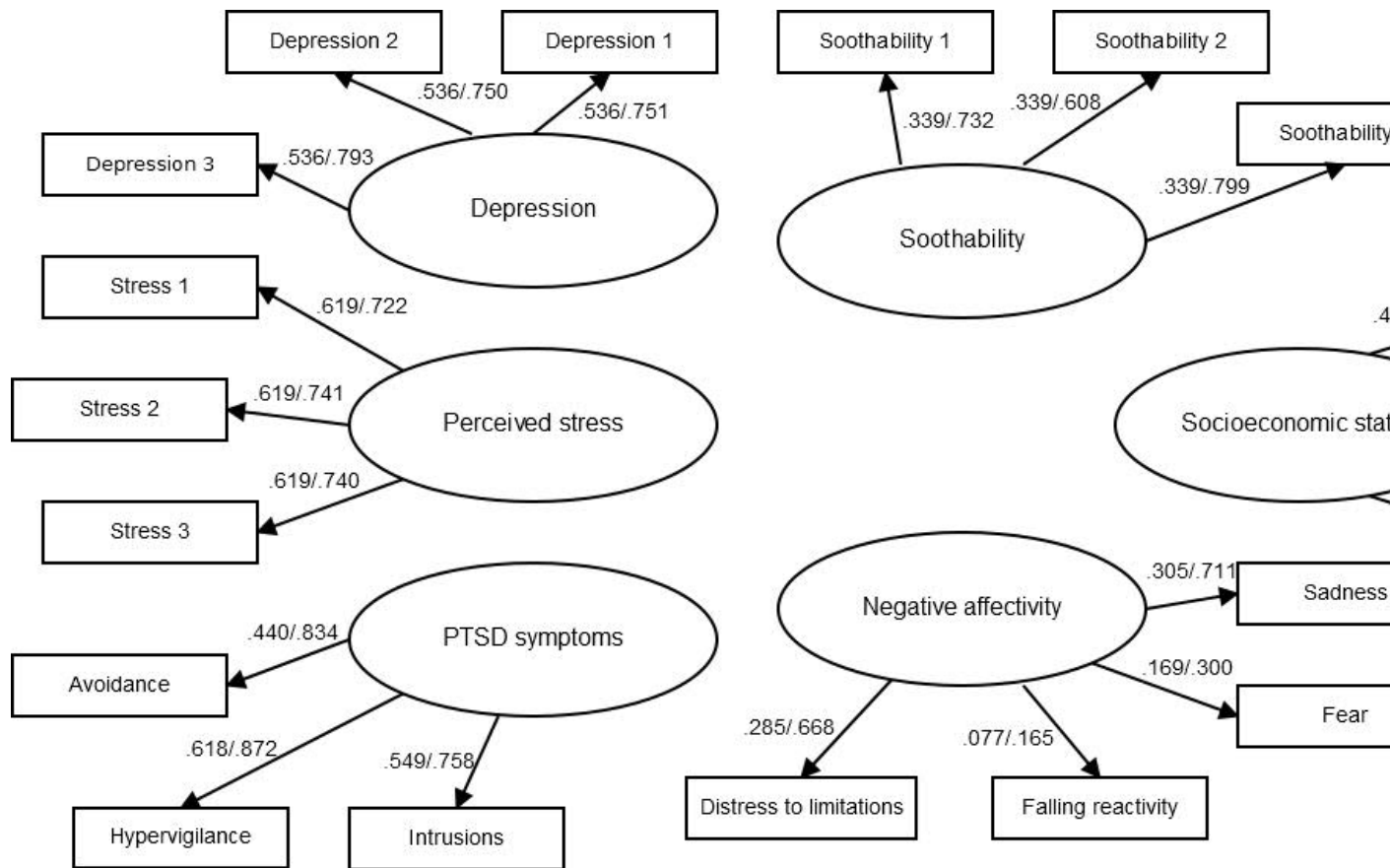symptoms. F. reactivity = Falling reactivity. Sooth. = Soothability. Econ. = Economic well-being. *p < .05;

Figure 1. Measurement model for latent variables included in the structural equation modeling.

Note. All latent variables allowed to covary freely – covariances not depicted for clarity. Non-standardi

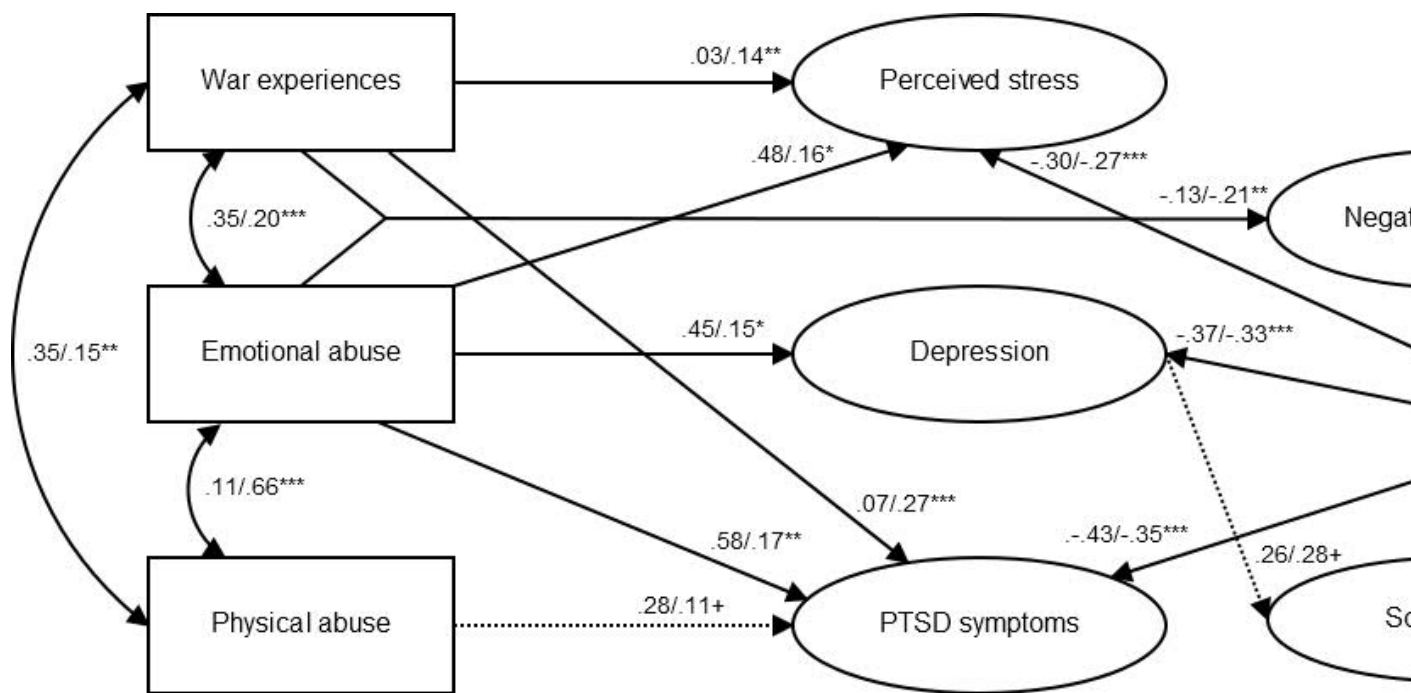loadings significant at the *p* < 0.001 level, except for falling reactivity, where for the standardized loading *p* =

Figure 2. Final structural equation model linking maternal childhood abuse and war experiences, maternal pr[...]

infant stress regulation, and socioeconomic status. Unstandardized/fully standardized robust maximum likelih[...]

(dotted) lines indicate statistically significant (nearly significant) paths. Fused line indicates interaction term.[...]

symptoms and perceived stress controlled for effects of number of children. Paths to infant stress regulation v[...]

number of children, child prematurity, child gender, and child need for hospital care. Indicators of latent varia[...]

covariances, and error/disturbance terms omitted for clarity. χ^2 (260) = 402.71, p < .001; root mean square err[...]

confidence interval .026–.039]; comparative fit index = 0.949; Tucker-Lewis index = 0.937; standardized roo

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