The transmission of intergenerational trauma and protective factors in survivors of the lebanese civil war and their adult offspring

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A R T I C L E   I N F O

A B S T R A C T

Background: The aim of the study was to examine the transmission of intergenerational trauma in survivors of the Lebanese civil war and their adult offspring. To examine potential mechanisms, it was hypothesized that the relationship between parental war exposure and offspring psychopathology was statistically mediated by (i) parental psychopathology and (ii) offspring exposure to adverse childhood experiences (ACE). Finally, it was predicted that spirituality and social support might buffer against the effects of adversity and therefore moderate the association between trauma exposure and psychopathology.
Method: An online questionnaire-based study was conducted, recruiting 110 dyads of parents who had lived through the Lebanese civil war and their post-war born adult offspring. Parental war exposure and trauma symptoms [with the Harvard Trauma Questionnaire (HTQ)] and offspring adverse childhood experiences and trauma symptoms [with Adverse Childhood Experiences International Questionnaire (ACE-IQ) and Impact of Events Scale Revised (IES-R)] were assessed. Both parents and offspring's distress [with Beirut Distress Scale (BDS-10)], depression and anxiety symptoms [with Depression, Anxiety, and Stress Scale (DASS-21)], perceived social support [with Multidimensional Scale of Perceived Social Support (MSPSS)], and perceived spirituality [with Spiritual Well-Being Scale (SWBS)] were measured.
Results: Parental war exposure and offspring psychopathology were statistically mediated by parental psychopathology, but not ACE exposure. Offspring of parents with (vs without) high levels of psychopathology had 3.72 times higher odds of reporting high levels of psychopathology themselves. Findings showed that the correlation between trauma exposure and psychopathology was moderated by perceived social support and spirituality. However, the correlation was only significant for higher levels of social support and spirituality.
Discussion: These results suggest that the presence of the proximal risk factor "low social support" may affect psychopathology negatively no matter the amount of adverse experiences consistent with a recency model of adversity. If social support is at least moderate, the distal risk factor "adverse experiences/ war trauma" impacts psychopathology. Overall, these findings highlight the need for trauma-informed mental health support for people fleeing from or residing in countries with ongoing or recent armed conflicts.

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Introduction

Lebanon is a lower middle-income country with a total Lebanese population of around 6.8 million people (World Bank, 2021). Located within the Eastern Mediterranean WHO-defined region, it is bordered by neighbouring countries at war. An estimated two million Syrians and one million Palestinians sought refuge in Lebanon, "making it the largest concentration of refugees per capita in the world" (Fouad et al., 2021, pp. 2). Other than dealing with the refugee crises, Lebanon has been grappling with an economic collapse, political and civil unrest, and war trauma (Bosqui, 2020). On top of that, the outbreak of COVID-19 and the port explosion that devastated its capital Beirut have burdened an already struggling country and vulnerable population (Fouad et al., 2021). It is reported that one in four people living in Lebanon suffer from mental health disorders (El-Khoury et al., 2020). In comparison to estimates in England, one in six people meet the criteria for mental health problems (The National Archives, 2018). The estimates in Lebanon are high enough to mark mental illness as one of the most prevalent health issues in the country (Karam et al., 2006).

One of the risk factors to developing psychopathology is exposure to war or violence (El Hajj, 2021). From 1975 until 1990, a civil war occurred in Lebanon. It started when the agreement of distributing power and governance between Muslims and Christians fell apart. According to international press, around 90,000 people were killed. However, data was collected under extreme difficulties, where the real number of lives lost is estimated to exceed 100,000, of whom around 20,000 were kidnapped or disappeared, over 100, 000 were seriously injured, and a million Lebanese were displaced. It was a prolonged war known for random shelling, barricaded streets, kidnapping, torturing, massacres, massive displacement waves, destroyed residential areas and infrastructure. Furthermore, Farhood and Dimassi (2011) conducted a study on six villages in Lebanon and found that villages closest to the borders, which experienced severe war exposure, showed very high and comorbid PTSD and depression rates.

Intergenerational trauma (IGT) is defined as the transmission of trauma across generations (R. D. Goodman, 2013). Early studies showed that the offspring of holocaust survivors were at high risk of experiencing mental health difficulties such as depression and anxiety (Felsen, 1998). A more recent study (Fossion et al., 2015) examined IGT in families of holocaust survivors by assessing their ability to cope with change (adaptability) and to maintain healthy emotional relationships (cohesion). Holocaust survivors presented with high levels of internalising disorders. Their children also reported high levels of internalising disorders, but also PTSD. Overall, IGT compromised coping strategies such as having a sense of coherence and/or resilience, and thus putting children at higher risk of psychopathology.

IGT could be explained through different mechanisms. For instance, parents who experienced trauma may be at higher risk of negative parenting behaviours which put their children at risk for the development of mental health problems, or parental psycho-pathology following trauma could pose a risk factor for child psychopathology. This was supported in a recent systematic review on the link between parental ACEs and child psychopathology (Rowell & Neal-Barnett, 2022). It is however unclear how this applies to parental war trauma experienced later in life.

A number of protective factors might buffer against the negative impact of adverse experiences on mental health. A meta-analysis identified social support to be a main protective factor against developing psychopathology following ACEs (Yule et al., 2019). Another protective factor is spirituality which can play a role in buffering the effect of trauma on mental health (Brewer-Smyth & Koenig, 2014). Spiritual beliefs may give meaning to the traumatic event, allowing to view suffering from a new perspective and regulate emotional responses to it (cognitive reappraisal or mental renewal). Another way spiritual well-being acts as a resilient factor is when individuals engage in faith-based social communities, which provides support.

After the horrific experiences the people of Lebanon have been through in the Civil War, it is remarkable how individuals and communities use protective resources to not only survive but also thrive (Baddoura & Merhi, 2015). Thus, there is a need to explore the long-term negative effects of war trauma experienced by parents on their descendants' mental health and the role of resilience factors in buffering these effects.

Given the similar yet different experiences of war and PTSD in Lebanese and other Arab countries (Baddoura & Merhi, 2015), the way trauma is transmitted across generations may also translate differently. There has been growing evidence for intergenerational trauma (IGT) since the Holocaust, and there is a consensus that trauma experienced in one generation could be transmitted to the next and thus impact children's mental health and family functioning.

Despite the growing research on IGT, there are no studies among Lebanese families. What is less understood is how trauma is transmitted and experienced (biologically, ecologically, psychologically, behaviourally, etc.), specifically in the Lebanese population. Thus, having a comprehensive and culturally sensitive understanding of the client's trauma and protective factors will enable the development and administration of more relevant and appropriate mental health interventions (Fossion et al., 2015; Isobel et al., 2019).

Therefore, the purpose of the study was to fill this gap and investigate the presence (1), potential mechanisms of IGT (2), and (3) the role of potentially protective factors social support and spirituality among Lebanese families. We hypothesized positive within gen-eration correlations between war exposure/ ACEs and psychopathology. We expected these associations to be moderated by social support and/ or spirituality (i.e. no correlation between adversity and mental health under high social support/ spirituality and a positive correlation when social support/ spirituality were low). We further expected intergenerational positive correlations between parental war exposure and/or parental psychopathology and offspring ACEs and/ or psychopathology. We expected these associations to be mediated by parental psychopathology and/or offspring ACEs (i.e. higher war trauma predicts higher parental psychopathology/ ACEs in offspring which in turn predicts higher psychopathology).

Method

Participants

Data was collected from Lebanese parent-adult offspring dyads. The offspring sample included 41 males (37%) and 69 females (63%) (N = 110) with ages ranging between 18 to 32 years (M= 23.44, SD= 4.15). Forty-one percent of offspring completed a college/ university degree while 36% completed secondary/high school. Participants with a postgraduate degree made up 19% of offspring. Most offspring reported living in Lebanon (90%), while the rest reported living abroad.

Regarding the parent sample, 66% were females (n = 73) and 34% were males (n = 37). The mean age was 46.94 years (SD= 11.17), with ages ranging from 32 to 78 years. Thirty-three percent of the group completed a college/university degree, 30% completed a secondary/high school, 24% graduated primary school, and 10% achieved a postgraduate degree. Most of the parents were living in Lebanon when they completed the survey (95%).

In comparison to the general Lebanese population, our sample contained more participants with a university or secondary school degree, but a similar number of participants with a primary school level education (Lebanese general population: 21.4%, 15.5% and 25.7% respectively (Central Administration of Statistics, 2018, Table ED 19 A)).

Procedure

Participants were recruited using a snowballing sampling technique, mostly through word of mouth and social media advertisement. At first, online survey links were sent to the first author's family, friends, and acquaintances living in Lebanon or abroad, who forwarded the link to others (less than 5% of the total sample). To obtain a more representative sample of the Lebanese population, with participants differing in age, gender, religion, education level and socioeconomic status, three Lebanese individuals volunteered to go door-to-door and further distributed the surveys to families across Lebanon.

The research was carried out between April and July 2022, recruiting a total sample of N = 110 dyads with sufficient data (N = 220 individuals). All participants were required to be Lebanese, able to read Arabic or English, and capable of filling in the survey online. Dyads needed to consist of a parent who lived through the Lebanese civil war which ended in 1990 and an adult offspring born after the civil war (after 1990). Participants were excluded because they either failed to complete at least 70% of responses or did not have a matching ID linking parent and offspring surveys (N = 391 surveys).

The surveys were administered online via Qualtrics and took between 20 to 30 min to complete. Offspring were instructed to complete the survey first. A unique ID was then generated and a link to the parent survey was displayed. Offspring were asked to forward this information to one of their parents to enable linking of surveys.

Measures

The study used standardized questionnaires with existing English and Arabic version. For the study, it was important that scales had not merely been translated into Arabic, but had also been validated in Arabic or ideally Lebanese populations to ensure cultural sensitivity. For instance, questions on experiences of sexual violence during childhood were found unsuitable for Iraqi culture (Al Shawi & Riyadh, 2015), but given the recent "#NoShameNoBlame campaign" are suitable for a Lebanese context. Additionally, as Western and non-Western mental health concepts can differ (e.g., in Arab countries somatic representation of mental health symptoms are culturally more accepted (Sayed, 2003)), cultural sensitivity of measures is important (Cork et al., 2019). Participants were given the choice of completing the English or Arabic version of the survey.

Psychopathology

Parents' Intensity of War Exposure and PTSD Symptoms. The Harvard Trauma Questionnaire (HTQ) was used to measure intensity of war exposure and severity of PTSD symptoms (Mollica et al., 1992). The culturally adapted HTQ shows good test-retest reliability (traumatic events: $r = 0.89$, trauma symptoms: $r = 0.92$) (Farhood & Dimassi, 2011). It includes five sections: "trauma events" (42 items), "personal description" (two open ended questions, excluded), "brain injury" (6 items), "torture history" (34 items) and "trauma symptoms" (45 items). To specifically assess parental war exposure, data was collected from items in sections 1, 3, and 5 (section 2 was qualitative and thus excluded). HTQ items in these sections are answered with either "Yes" (1) or "No" (0). We summed the total score of trauma incidents/experiences: the higher sum scores indicated a higher intensity of war exposure. Section 4 was used to measure parental severity of PTSD symptoms, where items are answered with 1 = not at all; 2 = a little; 3 = quite a bit; 4 = extremely. We added up item scores and divided by total number of items (45 items). Individuals with a calculated resulting score greater than 2.5 (or cut off score of 113)were considered symptomatic for PTSD (Sharma et al., 2022).

Offspring's Intensity of Adverse Childhood Experiences. The Adverse Childhood Experiences International Questionnaire (ACE-IQ) was used to assess ACEs prior to the 18th birthday (Almuneef et al., 2014). Only section B (31 items) was used to collect information on neglect, physical, emotional, and sexual abuse, household dysfunction, peer, community and collective violence. Some ACE-IQ items are measured using a five-Likert scale ranging from "never" (1) to "always" (5) while others by four graduating responses ranging from "refuse/never", "once", to "a few times" and "many times". Other items collect information with "yes", "no", or "refuse" answer format. Also, there are two items measured with "refused", "never", "rarely" to "sometimes", "most of the time", and "always". Responding to each item reflected an exposure to ACE and was calculated as one event. Thus, before analysing, binary coding was

implemented and affirmative answers were coded into 1, and "never", "refuse" was coded into 0. The total score of offspring's ACE was calculated by summing up the number of events. The higher the ACE total score, the higher the intensity of experienced childhood adversity. The questionnaire has been validated in various Arabic contexts (Almuneef et al., 2014; El Mhamdi et al., 2018) and culturally adapted to Arab populations (Al-Shawi & Lafta, 2015). In this study, the ACE-IQ showed good internal consistency (Cronbach's α = .82).

Offspring's PTSD Symptoms. Offspring PTSD symptoms were measured via the 22-item Impact of Events Scale Revised (IES-R) across three domains: intrusion, hyperarousal, and avoidance (Weiss, 2007). IES-R (Weiss, 2007). Items are rated on a five-point Likert scale (0 = not at all, 1 = a little bit, 2 = moderately, 3 = quite a bit, and 4 = extremely). Scores range between 0 and 88, with a score of 25 or above indicating clinical concern and scores above 33 indicating a probable PTSD diagnosis. For the overall score, the current study reported excellent internal reliability (Cronbach's α = .95) and previous studies reported excellent test-retest reliability of.95 (Ali et al., 2022).

Psychological Distress Symptoms. Psychological distress in parent and offspring was assessed using the 10-item Beirut Distress Scale (BDS-10), a measure with good validity in Lebanon (Malaeb et al., 2021). Internal consistency in the current study was excellent (Total score: Cronbach's α = .90). Responses are measured on a four-point Likert scale (0 = never, 1 = slightly, 2 = moderately, and 3 = a lot or frequently). Higher scores represented higher psychological distress. Scores of 0, 1 to 8 and above 9 indicated low, moderate and high levels of distress respectively.

Depression and Anxiety Symptoms. Symptoms of depression and anxiety were assessed via two subscales of the 21-item Depression, Anxiety, and Stress Scale (DASS-21; Lovibond & Lovibond, 1995). The stress subscale was removed since we used the Beirut Distress Scale (BDS-10) instead as it is a more culturally sensitive for the Lebanese population. Items are rated on a four-point Likert scale (0 = Did not apply to me at all, 1 = Applied to me to some degree, 2 = Applied to me to a considerable degree, or a good part of the time, and 3 = Applied to me very much, or most of the time). Cut-off scores are suggested for mild, moderate, severe and extreme symptom levels (depression: 10–13, 14–20, 21–27, >27; anxiety: 8–9, 10–14, 15–19, >19). To compare with other scores, we summed up normal and mild to make up low scores (scores from 0–13 are low cut offs) and summed up severe and extremely severe (21–28 +) to make up high scores.

The Arabic version has been validated in a Jordanian sample (Al-Shannaq et al., 2021) and showed high internal consistency in this study (depression: offspring Cronbach's α = .92, parents Cronbach's α = .91, anxiety: offspring Cronbach's α = .87, parents Cronbach's α = .92).

Protective factors

Social Support. To assess social support, the 12-item Multidimensional Scale of Perceived Social Support (MSPSS) was used (Merhi & Kazarian, 2012). Items are rated on a seven-point Likert scale (1 = very strongly disagree to 7 = very strongly agree). To calculate the total score, we summed all 12 items. Higher sum scores indicate higher perceived social support (cut-offs: 12–35 low social support, 36–60 medium, 61–84 high), according to Zimet et al. (1988). The MSPSS has shown satisfactory stability over time with a test-retest reliability of r = .85 for the total score (Zimet et al., 1988). The Arabic MSPSS version has been validated and adapted in a Lebanese community sample (Merhi and Kazarian, 2012). In this study, excellent internal consistency was found for both offspring (Cronbach's α = .94) and parents (Cronbach's α = .95).

Spirituality. The overall Spiritual Well-Being Scale (SWBS), consisting of 20 items, was used to assess spirituality, religiosity, and existentialism (Ellison & Smith, 1991). This scale is not biased towards religious people, instead it targets other groups who are spiritual but not particularly religious. Each item is rated on a six-point Likert scale (1 = strongly disagree to 6 = strongly agree), with a higher score indicating higher spiritual wellbeing (20–40 low overall spiritual wellbeing, 41–99 moderate, 100–120 high). Negatively worded items were reverse scored. The scale showed good internal reliability for offspring (Cronbach's α = .89) and parents (Cronbach's α = .88). Moreover, it has shown to be culturally valid and sensitive for Arabic populations (Musa & Pevalin, 2012).

The parent's survey included five measures: The Harvard Trauma Questionnaire (HTQ), Beirut Distress Scale (BDS-10), Depression, Anxiety and Stress Scale (DASS-21), Multidimensional Scale of Perceived Social Support (MSPSS), and Spiritual Wellbeing Scale (SWBS). The offspring's survey consisted of six measures: Adverse Childhood Experiences International Questionnaire (ACE-IQ), Impact of Events Scale Revised (IES-R), DASS-21, BDS-10, MSPSS, and SWBS.

Data analysis

Data was analysed using SPSS version 28.0. The PROCESS plugin version 4 (Hayes, 2022) was used for moderation and mediation analyses. After cleaning the data, overall amount of missing data left was less than 10% and appeared to have happened at random. Therefore, no participants were excluded due to missing data and the missing cases were ignored (Rubin, 1976).

Correlation analyses

Data was checked for outliers in SPSS using boxplots and subsequently winsorised by substituting them with highest or lowest value in data that was not an outlier (see Field, 2018). Scatterplots indicated linear relationships between variables. The assumption of independence of data was met (Durbin Watson test= 1.9 (approximately 2)). Normal distribution of values was checked by dividing the skewness value by the standard error to calculate a z-score. Almost all variables had a z-score above 1.96 (see Field, 2018 for a description of the method). Given the assumption violations, nonparametric Spearman correlations were conducted, and

bootstrapping (1000 bootstraps) was applied to receive robust confidence intervals (Field, 2018). All hypotheses were tested against a significance level of $p < .05$.

Linear regression analyses

Prior to analyses, all predictor variables were mean centred. Multicollinearity was tested and variance inflator factor (VIF) values were all less than 5 raising no concern that predictors were highly correlated. Scatter plots indicated the presence of heteroscedasticity, and thus a Davidson-MacKinnon correction was applied. To receive robust confidence intervals, bootstrapping (1000 bootstraps) was applied to all models.

Model 4 (simple mediation model with one mediator) in PROCESS was used to test the hypothesised mediating roles of parental psychopathology and offspring ACEs between parental intensity of war exposure and offspring psychopathology. Moderation analyses were carried out using model 1 (moderation analysis with one continuous moderator) in PROCESS. For this, simple slopes at $+/-1$ standard deviation of the moderator mean were created (the default option in PROCESS; Hayes, 2020).

The aim was to assess buffering effects of spirituality and social support on each of the following relationships: between parental war exposure and their psychopathology, and between offspring ACEs and their psychopathology (all continuous variables).

Results

Descriptive statistics

Means, standard deviations, sample sizes, and number of missing data were determined for each study variable (Table 1).

To better illustrate the relative severity of parental war trauma, parental exposure to war-related traumatic events (TEs) was divided into quartiles. Results showed that 50% of parents were exposed to less than 9 TEs and 25% to more than 17 TEs. Moreover, 90% of parents reported having been exposed to at least 1 TE during the civil war. Most parents (90%) showed to be below the cut-off for presenting PTSD symptoms.

Most offspring (98%) showed an ACE score of at least 1%, and 85% a score of equal to or greater than 4, which is considered clinically significant (Almuneef et al., 2014). Also, 1%, 12%, and 2% of offspring had ACE scores of 1, 2, and 3, respectively. Furthermore, 47% of offspring reported PTSD symptoms of clinical concern, and 36% of offspring met the criteria for PTSD diagnosis, according to the IES-R screening measure.

With regards to other psychopathology and protective variables, Table 2 explores the parental and offspring frequency percentages on anxiety, depression, distress, social support, and spirituality.

Within group correlations

Given the high correlations between psychopathology variables a psychopathology composite score was created through summation. As hypothesized, offspring's ACE intensity correlated with all four offspring psychopathology domains (PTSD, anxiety, depression, and psychological distress) and the composite score (Table 3).

Since parental psychopathology domains were highly correlated, they were combined into a composite score. As expected, parents' intensity of war exposure correlated with all four psychopathology domains (PTSD, anxiety, depression, and psychological distress) and the psychopathology composite score (Table 4).

Table 1
Means, Standard Deviations, and Number of Missing Data for Questionnaire Variables.

Variable (measure)	M (SD)	n (missing)
Offspring		
Adverse Child Experiences (ACE)	7.70 (4.17)	110 (0)
PTSD (IES-R)	25.20 (19.15)	108 (2)
Anxiety (DASS-21)	8.51 (9.08)	109 (1)
Depression (DASS-21)	12.13 (11.40)	109 (1)
Distress (BDS-10)	10.50 (7.41)	108 (2)
Social Support (MSPSS)	64.37 (15.37)	108 (2)
Spirituality (SWBS)	84.84 (18.16)	108 (2)
Psychopathology	56.02 (41.53)	108 (2)
Parents		
War Exposure (HTQ)	11.00 (8.31)	110 (0)
PTSD (HTQ)	74.64 (26.57)	107 (3)
Anxiety (DASS-21)	8.91 (9.96)	108 (2)
Depression (DASS-21)	9.59 (9.83)	108 (2)
Distress (BDS-10)	8.40 (6.71)	107 (3)
Social Support (MSPSS)	60.04 (16.18)	107 (3)
Spirituality (SWBS)	86.34 (15.26)	104 (6)
Psychopathology	101.38 (46.35)	107 (3)

Table 2
Frequency Percentages for Parents and Offspring Psychopathology and Protective Variables.

Variable (measure)	Frequency % Cut-Off Scores		
	Low	Moderate	High
Offspring			
Anxiety (DASS-21)	64%	12%	24%
Depression (DASS-21)	64%	12%	25%
Distress (BDS-10)	7%	38%	55%
Social Support (MSPSS)	6%	34%	61%
Spirituality (SWBS)	4%	76%	20%
Parents			
Anxiety (DASS-21)	63%	12%	26%
Depression (DASS-21)	70%	15%	14%
Distress (BDS-10)	12%	41%	47%
Social Support (MSPSS)	8%	38%	54%
Spirituality (SWBS)	0%	80%	20%

Note. For Frequency Percentage Cut-Off Scores of Depression and Anxiety (DASS-21) for parents and offspring, low levels included normal and mild scores and high levels included severe and extreme scores. Note: As there was no available cut-off for PTSD symptoms, they have not been included into the table.

Table 3
Spearman's rho Correlations for Offspring's Psychopathology Variables.

		ACE	PTSD	Anxiety	Depression	Distress	Offspring Psychopathology (Composite Score)
PTSD	Correlation Coefficient	.33**		.73**	.72**	.71**	
	N	107		107	107	107	
Anxiety	Correlation Coefficient	.21*	.73**		.81**	.76**	
	N	107	107	107		107	
Depression	Correlation Coefficient	.26**	.72**	.81**		.72**	
	N	107	107	107	107		
Distress	Correlation Coefficient	.38**	.71**	.76**	.72**		
	N	107	107	107	107	107	
ACE	Correlation Coefficient		.33**	.21*	.26**	.38**	.35**
	N		107	107	107	107	105

Note. * p < .05, * * p < 0.01

Table 4
Spearman's rho Correlations for Parents' Psychopathology Variables and Composite Score.

		War Exposure	PTSD	Anxiety	Depression	Distress	Parental Psychopathology (Composite Score)
PTSD	Correlation Coefficient	.27**		.65**	.72**	.71**	
	N	107		107	107	107	
Anxiety	Correlation Coefficient	.26**	.65**		.85**	.69**	
	N	107	107		108	107	
Depression	Correlation Coefficient	.25*	.72**	.85**		.76**	
	N	107	107	108		107	
Distress	Correlation Coefficient	.36**	.71**	.69**	.76**		
	N	107	107	107	107		
War Exposure	Correlation Coefficient		.27**	.26**	.25*	.36**	.32**
	N		107	107	107	107	105

Note. *p < 0.05, * * p < 0.01

Intergenerational effects

Table 5 shows Spearman correlations between outcome variables. Intergenerational positive correlations were found between parental war exposure and offspring ACE intensity, parental and offspring psychopathology but not between parents' intensity of war exposure and offspring psychopathology and parents' psychopathology and offspring ACE intensity (see Table 5).

Moderation effect of spirituality

Parents

Results showed a negative main effect of parent's own spirituality on parents' psychopathology and a positive main effect of

Table 5
Spearman's rho Correlations of Study Variables.

		Offspring Psychopathology	Parental Psychopathology	Offspring ACE
Parental War Exposure	Correlation Coefficient	.06 [− .147;.259]	**.32**[**] [.11;.52]	**.26*** [.05;.46]
	N	105	105	105
Offspring Psychopathology	Correlation Coefficient		**.39**[**] [.18;.55]	**.35**[**] [.14;.55]
	N		105	105
Parental Psychopathology	Correlation Coefficient			-.05 [− .29;.18]
	N			105

Note. *p < .05, * *p < .01
BCa 95% CI = Bias corrected and accelerated bootstrap 95% Confidence Intervals (CI)

intensity of war exposure on parents' psychopathology. The relationship between parent's intensity of war exposure and psychopathology was statistically moderated by spirituality ($R^2 =$.30; $F(3, 100) = 18.62$, $p < .001$, see Table 6). Simple slope follow-up analyses revealed that for parents with low spirituality, intensity of war exposure was not associated with parent psychopathology (B=.19, SE=.68, $t = .28$, $p = .78$, 95% CI [−.16, 1.54]). However, intensity of war exposure was associated with psychopathology for parents reporting moderate (B= 1.91, SE=.53, $t = 3.65$, $p < .001$, 95% CI [.88, 2.96]) and high levels of spirituality ($B = 3.65$, $SE =$.80, $t = 4.54$, $p < .001$, 95% CI [2.06, 5.24]) (see Fig. 1a).

Offspring

Another moderation analysis was run to assess if offspring spirituality moderated the relationship between offspring ACEs and psychopathology. Overall, the model was significant (R^2=.20; $F(3, 103) = 8.57$, $p < .001$). There was a negative main effect of level of spirituality on offspring psychopathology ($B= −.67$, bootstrapped SE=.27, bootstrapped 95% CI [−1.35, −.32]). ACE intensity in offspring was positively associated with offspring psychopathology ($B= 2.77$, bootstrapped $SE= 1.01$, bootstrapped CI [.85, 4.70]). However, there was no significant interaction between ACE intensity and spirituality ($B= −.5$, bootstrapped SE=.07, bootstrapped 95% CI [−.13,.12]).

Moderation effect of social support

Parents

The overall model was significant ($R^2 =$.18; $F(3, 103) = 7.21$, $p < .001$). A negative main effect was found for parents' perceived social support and intensity of war exposure. Results showed an interaction effect between parents' war exposure intensity and their perceived social support. Simple slope follow-up analyses showed that for parents with low perceived social support, intensity of war exposure did not predict parent psychopathology (B=.99, SE=.76, $t = 1.30$, $p = .198$, 95% CI [−.52, 2.50]), but war exposure predicted psychopathology for parents with moderate ($B= 2.00$, SE=.54, $t = 3.74$, $p < .001$, 95% CI [.94, 3.07]) and high levels of social support ($B = 3.02$, $SE =$.78, $t = 3.86$, $p < .001$, 95% CI [1.47, 4.57]) (see Fig. 1b).

Offspring

The overall model was significant ($R^2 =$.19; $F(3, 102) = 10.17$, $p < .001$). A significant negative main effect for level of perceived social support was found to be a predictor of offspring psychopathology. Likewise, ACE intensity predicted offspring psychopathology. There was a significant interaction between offspring's ACE intensity and their perceived social support (see Table 6). The simple slope

Table 6
Results of Moderation Analyses Predicting Psychopathology with 95% BCa CIs.

	B	SE	LLCI	ULCI
Parents				
War Exposure	1.92	.50	**.96**	**2.92**
Spirituality	-1.13	.27	**-1.68**	**-.62**
War Exposure x Spirituality	.11	.03	**.05**	**.18**
War Exposure	2.00	.52	**1.00**	**3.01**
Social Support	-.71	.35	**-1.54**	**-.19**
War Exposure x Social Support	.06	.03	**.01**	**.14**
Offspring				
ACE	3.19	3.21	**1.22**	**5.33**
Social Support	-.68	-.66	**-1.13**	**-.14**
ACE x Social Support	.10	.11	**.004**	**.22**

Note: BCa 95% CI = Bias corrected and accelerated bootstrap 95% Confidence Intervals (CI); ACE = Adverse Childhood Experiences; B = moderation or interaction effect; SE = Standard Error; LLCI = Low Limit Confidence Interval; ULCI = Upper Level Confidence Interval
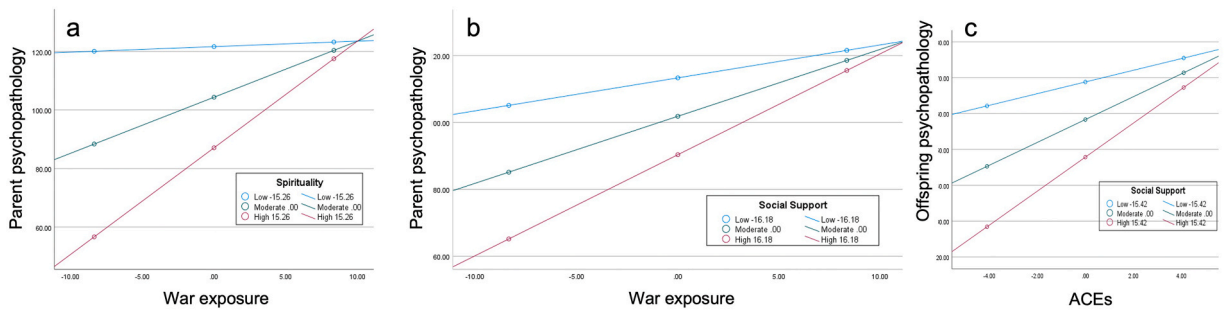
Fig. 1. (a) Moderation effect of spirituality on the association between parental war trauma and psychopathology, (b) Moderation Effect of perceived social support on the association between parental war trauma and psychopathology, (c) Moderation effect of perceived social support on the association between offspring ACEs and psychopathology.

follow-up analyses revealed for offspring with low perceived social support, intensity of ACE did not significantly predict offspring psychopathology ($B=$ 1.63, $SE=$.1.14, $t=$ 1.43, $p=$ .15, 95% CI [−.62, 3.88]). However, intensity of ACE significantly predicted psychopathology for offspring with moderate levels of social support ($B=$ 3.19, $SE=$.1.10, $t=$ 2.91, $p<$ .0045, 95% CI [1.01, 5.36]) and high levels of social support ($B=$ 4.75, $SE=$ 1.56, $t=$ 3.05, $p<$ .0029, 95% CI [1.66, 7.83]) (see Fig. 1c).

Intergenerational mediation effects

Mediation effect of offspring ACEs

Results showed that ACEs did not mediate the effect of parents' intensity of war exposure on offspring psychopathology. There was no significant indirect effect (completely standardized $b=$.07, bootstrapped $SE=$.04, 95% BCa CI [−.001,.14]).

Mediation Effect of Parents' Psychopathology

However, findings revealed that parents' psychopathology statistically mediated the effect of parents' intensity of war exposure on offspring psychopathology (Fig. 2). To explore this effect further, we compared psychopathology levels for offspring of parents below and above at least one cut-off for high levels of distress, depression, anxiety and PTSD using a t-test with bootstrapped and bias-corrected accelerated 95% confidence intervals. Offspring of parents with high psychopathology showed higher levels of psychopathology ($t=$ −3.89, $p<$ .001, [−44.09; −13.45]). The effect was of moderate size (d= −.749, Fig. 3). We further determined the number of offspring above the cut-off for high symptoms in at least one psychopathology domain to calculate the odds ratio. Offspring of parents with (vs without) high levels of psychopathology had 3.72 times higher odds of reporting high levels of psychopathology themselves.

Discussion

This study aimed to understand the impact of life experiences on Lebanese families. Three main questions were investigated: presence of IGT, potential mechanism of trauma transmission between parent-offspring dyads, and the role of potentially protective
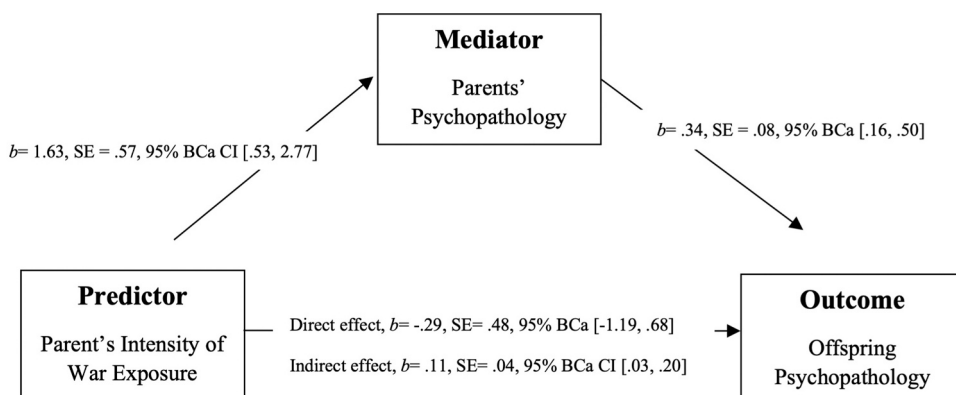

Fig. 2. Model of Parent's Intensity of War Exposure as a Predictor of Offspring's Psychopathology, Mediated by Parents' Psychopathology (95% BCa CI based on 5000 Samples).
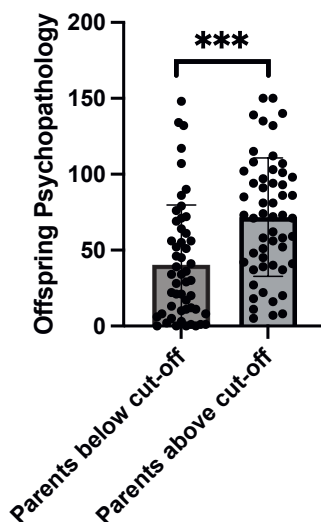
Fig. 3. Psychopathology difference of offspring of parents above and below the cut-off for high levels of psychopathology in at least one symptom domain (depression, anxiety, PTSD, distress).

factors on the relationship between trauma and psychopathology.

As anticipated, we found a positive moderate correlation between parents' intensity of war exposure and their psychopathology. This association was moderated by perceived social support and spirituality. Unexpectedly, the correlation between war exposure and psychopathology was only significant for higher levels of social support and spirituality- a result which was replicated for social support in the offspring sample. While war exposure was associated with offspring ACEs (small effect), it was not associated with offspring psychopathology. Despite this, there was an indirect effect from parental war exposure to offspring psychopathology through increased parental psychopathology, but not increased ACEs in the offspring. An exploratory analysis showed that offspring of parents with a high symptom load in at least one psychopathology domain show higher rates of psychopathology (moderate effect). The main discussion points are (i) the unexpected directionality of the moderation effects, (ii) the lack of a mediation effect through ACEs, (iii) parental psychopathology as a mediator between war exposure and offspring psychopathology, (iv) and cross-cultural comparisons of trauma experiences with other war exposed samples.

(i) Surprisingly, parental war exposure's effect on psychopathology was not buffered by moderate and/or high levels of spirituality and social support. Instead, higher war exposure predicted higher psychopathology, only when parents reported moderate or high levels of spirituality inconsistent with other findings (Brewer-Smyth & Koenig, 2014; R. D. Goodman, 2013; Yamout & Chaaya, 2011; Yule et al., 2019). Rather, spirituality and social support acted as protective factors with "additive effects"(Yule et al., 2019), as both showed negative associations with psychopathology regardless of war exposure intensity.

Our data is however consistent with the following interpretation. Perceived social support and spirituality generally have a protective effect on psychopathology, the higher both are, the lower psychopathology. When the level of adverse experiences is high, psychopathology is high independent of the level of perceived social support or spirituality. In other words, these factors lose their protective effect under high adversity. When social support is low, there is no association between adverse experiences and psychopathology. In this case, the proximal risk factor "low social support" increases psychopathology no matter of whether a person experienced adversity. So, the proximal risk factor "low social support" becomes more influential than the distal risk factor "adversity". When social support is perceived to be moderate or high, the distal risk factor "adversity" has an impact on psychopathology. This is consistent with research on children and young people reporting an association between perceived social support and depression (Rueger et al., 2016), and findings by Dunn and colleagues (2018) showing that a recency model of adversity explained psychopathology better than a sensitive period model.

(ii) In case of other types of adversity (i.e., abuse or neglect), parental experiences of adversity predict ACEs of their own children (van IJzendoorn et al., 2020). It might be that war trauma is not translated to the family context in a similar fashion. However, a review by Catani (2010) found that war trauma leads to higher rates of child maltreatment within the family. A potential explanation for our negative finding could be the age of the offspring. In a study testing different developmental models of the effect of adversity on development, the link between adversity during childhood and child psychopathology was best explained by a recency model (Dunn et al., 2018). Given that we studied adult parent-offspring dyads, the strength of the association might have waned over time.

(iii) Parental war trauma still had an indirect effect on offspring psychopathology through higher levels of parental psychopathology and an exploratory analysis showed that parental psychopathology was associated with 3.72 times higher odds of high psychopathology load in offspring. While parental psychopathology is a well-known risk factor for child psychopathology (Goodman et al., 2011; Kane & Garber, 2004), our results, though cross-sectional, highlight the potential of these effects to be long-lasting. It further highlights the importance of mental health support for civilian survivors of armed conflict to prevent the transmission of trauma to the next generation.

(iv) Finally, the level of trauma experience showed to compare to typical levels of trauma in other samples exposed to war. PTSD prevalence rates vary in different countries around the word (Baddoura & Merhi, 2015). In Arabic countries, PTSD prevalence ranges between 35–50%, which is much higher than other countries such as China (0.3% PTSD rates), USA (3.9%), and New Zealand (6.1%). Also, the causes of trauma differ globally, where war and conflict are shown to be the common reasons for PTSD in Arab countries, while rape and crime in others. PTSD rates in Lebanon increased from 15.4% to 35% during the 2006 July war. This rate is comparable to PTSD rates in Iraqis where 35.3% reported PTSD symptoms after the war in Baghdad. PTSD rates for Syrian refugees range between 36% to 62%. Furthermore, the article by Baddoura and Merhi (2015) explored the transgenerational transmission of war trauma in Kuwaiti families and its long-term negative effects on future generations: family dysfunction, higher rates of depression and anxiety in children whose parents reported having PSTD, difficulties expressing emotions and affection, problems in communication and relationship building. The HTQ values in our sample showed to be comparable with the score from other war exposed sample. For instance, Klarić et al. (2007) collected HTQ data from a group of directly war exposed women in Bosnia and Herzegovina who reported a mean number of traumatic events of 0.1..

Strengths, limitations, and future research

This study benefited from many methodological strengths. First, it is one of the first studies to examine IGT and resiliency among Lebanese families, and thus closing a major gap in literature. Second, its dyadic research design allowed the exploration of a wider and more in-depth understanding of trauma's transmission between family members (parent-adult offspring), than just on an individual level. Third, it used culturally sensitive scales to assess study variables. All measurements were tested in Arabic and/or Lebanese populations, and thus were standardized to study non-English speaking cultural groups, instead of depending only on translation.

Despite its strengths, the study has several limitations, starting with its cross-sectional design which does not allow for causal interference. Given our findings, this study however highlights the need for longitudinal studies to examine IGT in parent-child dyads and the moderating roles of spirituality and perceived social support. Moreover, our decision to use a compound score due to the high correlations between variables might have reduced the ability for more fine-grained interpretations of our findings regarding the type of psychopathology, and this approach has been criticised by some (McNeish & Wolf, 2020). We have used a similar approach in other publications (Golm et al., 2020).

Furthermore, the study did not control for cumulative risk factors including a history and more recent experiences of non-war related adversity. For instance, Lebanon is currently facing one of its worst economic crises with more than half of the population falling below the poverty line (World Bank, 2021). Studies have shown that trauma's effect can be prolonged by ongoing economic, social and political unrest, and that individuals living in economic crises are more vulnerable to develop mental illnesses (Shaar, 2013). Thus, financial instability has shown to be frequently correlated with psychopathology development, especially PTSD (Farhood et al., 2006; Farhood & Dimassi, 2011).

Furthermore, parents' ACEs and mental health status prior to war are unknown in this study. Other studies showed that parental ACE explained 31.2% of the variance in parents' and offspring's mental health and was associated with negative parenting, children's ACE and their reported psychopathology (Seteanu & Giosan, 2021). Thus, future studies should expand the inclusion of risk factors.

Another limitation is retrospectively measuring trauma exposure and mental health, in which according to a systematic review and meta-analysis of 16 studies (Baldwin et al., 2019), prospective and retrospective assessments of childhood maltreatment showed poor agreement. More than half (52%) of individuals having prospective experiences of childhood maltreatment did not retrospectively report it, and more than half (56%) of those who retrospectively reported childhood maltreatment did not show prospective observations. Therefore, retrospective and prospective assessments seem to identify different populations and it is unclear whether the same mechanisms are at work. There is some evidence that retrospective reports have a higher association with psychopathology, possibly due to the cognitive processing of the trauma. It would therefore be good to replicate findings in a cohort with more proximal trauma exposure (Danese & Widom, 2023).

Lastly, we were unable to gather data on war trauma from both parents/ caregivers which depending on its extent could increase or decrease offspring risk. However, our data is consistent with the notion one parent's war trauma alone can have a negative effect of offspring psychopathology through parental psychopathology.

Practical implications

The results from this research are relevant to Arabian countries with ongoing armed conflicts including Syria but should also extend to European countries such as Ukraine. Parental trauma and mental health problems might pose additional risk factors for child development to the children's own war trauma. Our results suggest that children whose parents experienced war-related trauma still have a remarkable chance of not suffering any impairment of mental well-being if it is ensured that parents do not develop psychopathology. Our results therefore highlight the potential importance of parental mental health support for parent or caregivers who experienced war trauma in order to prevent negative downstream consequences on child mental health.

Thus, interventions need to be trauma informed which involves recognizing signs and symptoms of trauma (especially IGT) and making sure care centres are sensitive to trauma, preventing risk of re-traumatization (Isobel et al., 2020). One way trauma informed care could be done is through implementing a trauma-informed family focused practice (FFP) where clinicians take into consideration IGT and collaboratively plan the treatment course with family (e.g., safety plans) and goals (e.g., child's recovery) (Foster et al., 2016). Having awareness of IGT and knowing the importance of family in effective treatment will help clinicians understand the transmission mechanism and carry out the most appropriate intervention. For example, if the mechanism is dysfunctional communication, the

clinician may create a safe space for family members to have honest and open discussions about past trauma and current struggles, and thus find the best way forward.

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Ethical Statement

The study received ethical approval by the Faculty Research Ethics Committee (FREC) at the University of Southampton (Ethics/ ERGO Number: 71368). Upon publication, data will be available via the University of Southampton's data repository (https://eprints. soton.ac.uk).

CRediT authorship contribution statement

Dennis Golm: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Resources, Supervision, Visualization, Writing – original draft, Writing – review & editing. **Jennifer Tarabay:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Software, Visualization, Writing – original draft, Writing – review & editing.

Declaration of Competing Interest

The authors have no relevant conflicts of interest to disclose.

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