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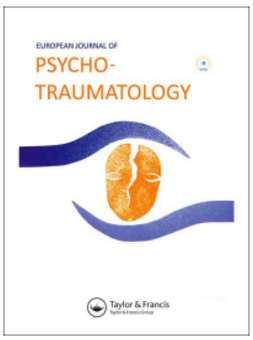

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# Constraints to liberty of movement and attachment styles significantly account for well-being in three Palestinian samples

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## ABSTRACT

**Background:** Political violence and constraints on liberty of movement can have consequences for health and well-being but affect individuals differently.
**Objective:** In three Palestinian samples, we sought to examine the relationship between key environmental and psychological factors and general and mental health, including the previously unexplored roles of constraints to liberty of movement and attachment orientation.
**Method:** Participants ($N$ = 519) in the Occupied Palestinian Territories and Jordan completed questionnaires on constraints to liberty of movement, attachment insecurity, resource loss, experience of political violence , demographics, general healthdepression, and anxiety. All measures were translated from English to Arabic and back-translated into English.
**Results:** Findings from regression and mediation analyses indicated that (1) differences in general and mental health among Palestinians in the Occupied Palestinian Territories and the diaspora in Jordan can be explained by the assessed constructs; (2) constraints to liberty of movement, attachment avoidance, and resource loss significantly accounted for poor general health; (3) constraints to liberty of movement, attachment anxiety, and resource loss significantly explained general anxiety symptoms; and (4) attachment anxiety, resource loss, and experience of political violence significantly explained depression symptoms.
**Conclusion:** The findings have theory-building implications for psychological models of human flourishing and suffering, suggesting that they are incomplete without consideration of liberty as a context, as well as implications for policymakers and champions of global health initiatives, as they highlight the psychological effects of constraints to liberty of movement on health.

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## KEYWORDS
Palestinians; refugees; liberty; attachment; health; mental health; well-being

## PALABRAS CLAVE
Palestinos; refugiados; libertad; apego; salud; salud mental; bienestar

## 关键词
关键词:巴勒斯坦人; 难民; 自由; 依恋; 健康; 心理健康; 幸福感

## HIGHLIGHTS

- Constraints to liberty (assessed with a new measure), attachment insecurity, resource loss, and experience of political violence account for general and mental health in Palestinian civilians under occupation and diaspora.

## Las restricciones a la libertad de movimiento y los estilos de apego explican significativamente el bienestar en tres muestras palestinas

**Antecedentes:** La violencia política y las restricciones a la libertad de movimiento pueden tener consecuencias para la salud y el bienestar, pero afectan a las personas de manera diferente.
**Objetivo:** En tres muestras palestinas, buscamos examinar la relación entre factores ambientales y psicológicos clave y la salud general y mental, incluidos los roles previamente inexplorados de las restricciones a la libertad de movimiento y el estilo de apego.
**Método:** Los participantes ($N$ = 519) en los Territorios Palestinos Ocupados y Jordania completaron cuestionarios sobre restricciones a la libertad de movimiento (escala de 4 ítems ideada por los autores para el propósito del presente estudio), inseguridad en el apego (Escala de Experiencias en Relaciones Cercanas - Short Form), pérdida de recursos (escala de Evaluación de Conservación de Recursos), experiencia de violencia política (Experiencia y miedo a la violencia política), demografía, salud y salud mental (PHQ4 para la depresión evaluación de 2 ítems para la ansiedad). Todas las medidas se tradujeron del inglés al árabe y retrotraducidas al inglés.
**Resultados:** Los resultados de los análisis de regresión y mediación indicaron que (i) las diferencias en la salud general y mental entre los palestinos en los Territorios Palestinos Ocupados y la diáspora en Jordania pueden explicarse por los constructos evaluados; (ii) las limitaciones a la libertad de movimiento, el apego evitativo y la pérdida de recursos explicaron significativamente la salud general deteriorada; (iii) las limitaciones a la libertad de movimiento, el apego ansioso y la pérdida de recursos explicaron significativamente los síntomas generales de ansiedad; y (iv) el apego ansioso, la pérdida de recursos y la experiencia de violencia política explicaron significativamente los síntomas de la depresión.
**Conclusión:** Los hallazgos tienen implicaciones para la construcción de teorías para los modelos psicológicos del crecimiento y el sufrimiento humano, lo que sugiere que están incompletos sin la consideración de la libertad como contexto, así como implicaciones para

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Supplemental data for this article can be accessed here.

los responsables de las políticas y los defensores de las iniciativas de salud global, ya que destacan los efectos psicológicos de las limitaciones a la libertad de circulación en la salud.

## 三个巴勒斯坦样本中对行动自由的限制和依恋风格显著影响了幸福感

**背景:**政治暴力和对行动自由的限制会对健康和幸福感产生影响,但对个人的影响不同。
**目的:**在三个巴勒斯坦样本中,我们试图考查关键环境和心理因素与一般和心理健康之间的关系,包括以前未探索过的限制行动自由和依恋方向的作用。
**方法:**巴勒斯坦被占领土和约旦的参与者 (*N*=519) 完成了关于限制行动自由的问卷 (作者为本研究目的设计的 4 项量表) 、依恋不安全感、资源损失、政治暴力经历 (政治暴力经历和恐惧)、人口统计、一般健康 和心理健康。所有测量都从英语翻译成阿拉伯语,然后再翻译成英语。
**结果:**回归和中介分析的结果表明,(i) 巴勒斯坦被占领土的巴勒斯坦人和约旦侨民在一般健康和心理健康方面的差异可以通过评估构念解释; (ii) 对行动自由的限制、依恋回避和资源损失显著解释了一般健康状况不佳; (iii) 对行动自由的限制、依恋焦虑和资源损失显著解释了一般焦虑症状; (iv) 依恋焦虑、资源损失和政治暴力经历显著解释了抑郁症状。
**结论:**研究结果对人类繁荣和痛苦的心理模型具有理论构建意义,表明如果不将自由作为背景考虑在内则不完整,以及启发了政策制定者和全球健康倡议支持者,因为它们强调了对行动自由的限制的心理影响。

## 1. Introduction

It is established that exposure to conflict environments can compromise civilian physical and mental health (Cilliers, Dube, & Siddiqi, 2016; Miller & Rasmussen, 2010), and some individuals are more affected by these environments than others. The extent to which individuals are affected is modulated by both environmental factors, such as political violence and loss of liberties and physical resources, and psychological factors, such as an individual's ability to regulate difficult emotions in the face of stress and threat. We here examine the contribution of environmental and psychological factors to physical and mental well-being in three Palestinian communities with varying levels of exposure to conflict. The environmental factors we focus on are the level of experienced political violence, the level of resource loss, and the loss of liberty of free movement. The psychological factor of interest is attachment style, a key predictor of emotion regulation in the face of threat and distress. We are informed by Human Security Theory (United Nations, 1994), Conservation of Resources Theory (Hobfoll, 1989), and Attachment Theory (Bowlby, 1969).

Liberty is a universal human right (Universal Nations General Assembly, 1948), conceptualized as the extent to which an individual 'feels free' (Hobfoll, 1989). Conflict is a context in which civilians' feelings of liberty can be constrained. Exposure to conflict is traumatic and detrimental to mental health and well-being (Cilliers et al., 2016; Miller & Rasmussen, 2010), and both Human Security Theory (United Nations, 1994) and Conservation of Resources Theory (Hobfoll, 1989) point to the key role played by personal liberty in this relationship. Human Security Theory highlights the fundamental freedoms, or liberties of life, including psychosocial factors, such as a sense of home, positive social and family support, and hope and autonomy regarding the future (Leaning, Arie, Holleufer, & Bruderlein, 2004). Conservation of Resources Theory emphasizes how mass trauma can affect individuals via loss of specific psychosocial resources. In this study, we examine the role of perceived constraints to liberty, and psychological factors in general and mental health of three Palestinian samples in the context of the Israeli–Palestinian conflict.

One type of liberty that is highly relevant to the Israeli–Palestinian conflict (Ayer et al., 2017) is liberty of free movement. Constraints to liberty have been identified to inhibit quality of life (Giacaman, Abu-Rmeileh, Husseini, Saab, & Boyce, 2007), including health generally, and mental health specifically (Ayer et al., 2017; Hobfoll, Hall, & Canetti, 2012; McNeely, Barber, Giacaman, Belli, & Daher, 2018; McNeely et al., 2014), in the West Bank and Gaza. The direct, negative effects of physical barriers such as checkpoints and the separation wall on the physical health of Palestinians, due to reduced access to healthcare, have been well documented (Batniji et al., 2009; United Nations Office for the Coordination of Human Affairs (OCHA), 2010). However, it is important to also examine the issue through a psychological lens, capturing the effect of perceived constraints to liberty. While researchers typically report poor quality of life in the Occupied Palestinian Territories (OPT) compared to other countries (Giacaman et al., 2007; Mataria et al., 2009), the measures used to conceptualize liberty do so in terms of freedom afforded by family, feelings of freedom at home, and feelings of freedom in the street. Notably, the psychological experience of living with physical constraints to movement (e.g. separation walls or checkpoints) has not been examined, despite

this being a fundamental limitation for many Palestinians (Giacaman et al., 2009).

A further factor that has received little attention from researchers of the well-being impacts of the Israeli–Palestinian conflict is attachment security, which we include because of its fundamental importance as a key individual difference psychological predictor of affect regulation and coping with threat and stress (Mikulincer & Shaver, 2016). It is measured along two dimensions of attachment insecurity: anxiety about abandonment, and avoidance of intimacy (Brennan, Clark, & Shaver, 1998). Highly anxious individuals respond to threat through the hyperactivation of affective responses (e.g. panic and a high focus on the threatening stimulus), while in the case of avoidance, threat is responded to by attempts to downplay the meaning of the threat and the down-regulation of affective responses, as well as by compulsive self-reliance (Mikulincer & Shaver, 2016). Attachment security (characterized by low levels of avoidance and anxiety) has been linked with better coping and adjustment in hundreds of studies (see Mikulincer & Shaver, 2016, for a review), including in Israeli prisoners of war (Solomon, Ginzburg, Mikulincer, Neria, & Ohry, 1998). A systematic review of the impact of the Israeli–Palestinian conflict on mental health strongly suggests that the greater the exposure to the conflict, the poorer the psychological health of individuals of both Palestinian and Israeli origin, with Palestinians fairing worse in terms of psychological health than their Israeli counterparts (Ayer et al., 2017). For Palestinian children, the exposure to ongoing military violence can lead to post-traumatic stress disorder (Veronese et al., 2017). Among Palestinian adults, loss of material and psychosocial resources is also predictive of psychological distress (Hobfoll et al., 2012).

Having highlighted the relevance of perceived constraints to liberty and attachment insecurity, and prior research evidence for resource loss and exposure to political violence as key predictors of Palestinian well-being, we sought to test a model combining all these elements and assessing their contributions to subjective health and psychological well-being (depression and anxiety). We sought to test our model using data from three distinct Palestinian communities, experiencing varying levels of exposure to political conflict and constraints to their liberty to move freely (i.e. from Gaza and the West Bank, otherwise known as OPT, and Jordan). This approach allows us to examine the effects of conflict on well-being in communities that share a political identity but differ in their liberty to move freely within and between territories. For example, within the West Bank, civilians are restricted in their movement (e.g. by checkpoints and separation walls), which hinders visiting family members and prevents easy access to services, including medical services (Giacaman et al., 2009). On the other hand, in Gaza, individuals might be free to move within their community but not to leave Gaza, while the Jordanian–Palestinian diaspora (rarely included in studies of Palestinian mental health) are free to move within and outside Jordan, but their movement to and within Palestinian territories is restricted. Although each of the three Palestinian communities we here study are constrained in some way in their liberty to move freely, they differ in the quality and extent of this constraint, and this may (or may not) differentially impact their psychological health.

We expect that attachment insecurity (on both the avoidance and anxiety dimensions), loss of psychosocial resources, experience of political violence, fear of political violence, and perceived constraints to liberty will be inversely related to general health and mental health. Specifically, we advance the following hypotheses:

H1: Higher levels of attachment avoidance, attachment anxiety, loss of resources, experience and fear of political violence, and perceived constraints to liberty, will be associated with poorer general health.

H2: Higher levels of attachment avoidance, attachment anxiety, loss of resources, experience and fear of political violence, and perceived constraints to liberty, will be associated with higher depression.

H3: Higher levels of attachment avoidance, attachment anxiety, loss of resources, experience and fear of political violence, and perceived constraints to liberty, will be associated with higher anxiety.

Miller and Rasmussen (2010) proposed that the link between exposure to war-related violence and mental health is mediated by the daily stressors that are associated with, or exacerbated by the war-related violence. Following their logic, we test a mediational model whereby the relationship between exposure to violence and health and mental health is mediated by liberty of movement, which can be conceptualized as a daily stressor associated with exposure to violence. Exposure to violence may lead people to restrict their own movement due to fear for their own safety. We therefore expect that the relationship between exposure to violence and health and mental health will be mediated by constraints to liberty of movement (H4). However, given that checkpoints and separation walls are the location of some of the political violence and persistent humiliation to which Palestinians are subjected (Abu-Zahra & Kay, 2013; Barber, McNeely, Olsen, Belli, & Doty, 2016), we also test an alternative hypothesis (H5) whereby the association between perceived constraints to liberty of movement and health and mental health might instead be mediated by exposure to violence. Testing two, alternative mediation models to tease apart the likely direction

of effects on Palestinian well-being follows the example of Hobfoll et al. (2012), who examined both psychological distress as a mediator between resource loss and subjective health, and subjective health as a mediator between resource loss and psychological distress.

Our research is the first to assess liberty of movement and how it relates to psychological well-being within the context of the Israel–Palestinian conflict, and the first to examine liberty of movement as a mediator in the relationship between exposure to political violence and mental health. Given that the three Palestinian communities differ in the quality and extent of their liberty of movement and exposure to the conflict, we tentatively predicted that psychological health would be poorer for Palestinians subjected to a greater extent of constraints to liberty of movement (i.e. Palestinians living in the West Bank and Gaza) than for Palestinian living in Jordan.

Our choice of measures for the constructs that we employ (attachment insecurity, resource loss, experience and fear of political violence, perceived constraints to liberty, general health, and mental health) are informed by prior research where possible, or constructed for this study (perceived constraints to liberty), and balanced against the need for brevity to avoid participant burden.

## 2. Method

### 2.1. Participants

Beyond being over 18 years of age, there were no specific inclusion or exclusion criteria. A convenience sample was recruited. Participants ($N$ = 519) were Palestinians aged between 18 and 78 years ($M$ = 30.59, $SD$ = 11.41) from Gaza ($n$ = 60), the West Bank ($n$ = 121), and Jordan ($n$ = 338). Seventy one per cent of participants ($n$ = 368) were male. Our sample of 519 is 0.88 powered to detect a small to medium effect size ($w$ = 0.20) at a 0.05 alpha level and 15 degrees of freedom (G*Power version 3.1.9.2) (Faul, Erdfelder, Lang, & Buchner, 2007). Fifty three per cent of the sample were married, 45% single, and 1.4% divorced. Fifty seven per cent had received higher education, while 31% had secondary and 10.9% only primary educational levels. Finally, 70.5% of the sample were in employment. The OPT and Jordanian samples consisted of 44 and 234 individuals of refugee status, respectively. The Jordanian refugee participants were recruited from three refugee camps in Amman (Baqa'a, Jerash, and Irbid). Non-refugee participants were recruited from the Palestinian community in Amman. The West Bank participants were recruited from four areas across the West Bank: Nablus, Ramallah, Al-Khaleel, and Bethlehem and East Jerusalem.

### 2.2. Measures

All measures were translated from English to Arabic and back-translated into English by an Arabic undergraduate and a professor in Arabic Studies, both of whom were fluent in Arabic and English.

#### 2.2.1. General health

A single item (Bowling, 2005) was used to assess subjective health, adapted from DeSalvo et al. (2006). Participants were asked 'How would you rate your overall health in the last 30 days?' (rated from 1 = very good to 5 = poor).

#### 2.2.2. Depression

Depression was measured using the two depression items from the Patient Health Questionnaire for Depression and Anxiety (PHQ-4) (Kroenke, Spitzer, Williams, & Löwe, 2009). The depression items require participants to state the extent to which they had experienced 'Little interest or pleasure in doing things' and 'Feeling down, depressed or hopeless' over the past 2 weeks. Ratings were from 0 (not at all) to 3 (nearly every day) and total scores were calculated, $\alpha$ = 0.64, inter-item correlation = 0.46.

#### 2.2.3. Anxiety

Anxiety was measured using the two-item screener recommended by Ballenger et al. (2001), which asks respondents whether, during the past 4 weeks, they have 'been bothered by feeling worried, tense, or anxious most of the time' and whether they are 'frequently tense, irritable, and having trouble sleeping'. Each item was answered 'yes' (1) or 'no' (2), and mean scores were reversed for ease of interpretability, $\alpha$ = 0.55, inter-item correlation = 0.38.

#### 2.2.4. Attachment

Participants completed the short form of the Experiences in Close Relationships scale (ECR-S) (Wei, Russell, Mallinckrodt, & Vogel, 2007), which consists of 12 items rated on a seven-point Likert scale (1 = disagree strongly, 7 = agree strongly). It captures variability along two attachment dimensions: avoidance ($\alpha$ = 0.63) and anxiety ($\alpha$ = 0.65 after dropping one double-negatively worded item, which might have been problematic owing to a translation issue). Items referred to close others rather than romantic partner, to measure dispositional rather than romantic attachment style (Rowe & Carnelley, 2003).

#### 2.2.5. Resource loss

To measure resource losses, we used the Conservation of Resources Evaluation scale (Hobfoll & Lilly, 1993). The scale consists of 10 items tapping loss of psychosocial and material resources. Example items include: 'Stability of your family', 'The feeling that life has

meaning and purpose', and 'Loss of employment or business'. Participants indicated the degree to which they feel that they have lost these resources on a seven-point scale, with item responses ranging from 0 (no loss) to 7 (severe loss). Mean scores were calculated, $\alpha = 0.90$.

#### 2.2.6. Experience and fear of political violence

To measure participants' experience and fear of political violence, we modified the scale used by Hobfoll, Mancini, Hall, Canetti, and Bonanno (2011). Participants were first asked to state the number of times they had experienced the death of a family member or friend, injury to a family member or friend or self, and/or imprisonment of a family member or friend or self. Response categories were: 1 = never, 2 = once, 3 = twice, 4 = three times, and 5 = four times or more. Secondly, participants reported the last time they had experienced one or more of these events. Response categories were: 1 = never, 2 = more than 5 years ago, 3 = 2–5 years ago, 4 = within the last 2 years, and 5 = within the last 12 months. The 'Experience of violence' score was calculated as a mean of these two sets of items, $\alpha = 0.89$. Finally, participants reported the extent to which they feared one or more of these events happening to them in the future, from 1 = not afraid to 7 = extremely afraid. A mean score was calculated for 'Fear of violence', $\alpha = 0.92$.

#### 2.2.7. Constraints to liberty of movement

To measure constraints to liberty of movement, we devised a four-item scale (example item: 'I am free to move around and travel wherever I need to in order to go about my daily life, to attend appointments or to visit family or friends' [reversed]). Each item was rated using a seven-point Likert scale (1 = strongly disagree to 7 = strongly agree), and a mean was calculated, $\alpha = 0.70$.

### 2.3. Procedure

Ethical approval for the study was granted by the Ethics Committee, Faculty of Science, of the University of Bristol. Paper versions of the questionnaire were administered to the refugee participants in Jordan by a researcher. All other participants received an electronic version of the questionnaire, distributed via a snowball sampling method. All participants provided informed consent prior to participation in the study and were fully debriefed (for the West Bank and Gaza samples this was done electronically).

### 2.4. Analytical approach

Regression analyses were conducted to examine the relationship of attachment insecurity (avoidance and anxiety), resource loss, direct experience of political violence, fear of political violence, and constraints to liberty, with (1) subjective health, (2) depression, and (3) anxiety. All analyses were performed while controlling for the following variables: age, gender, educational level, employment status, marital status, refugee status, and geographic area. Subjective health was examined using ordinal logistic regression suitable for discrete scoring, whereas depression and anxiety were examined using linear regression suitable for non-discrete scoring. All analyses were conducted in SPSS version 23.0, using generalized linear models (GLMs) with robust estimation, which allows for the treatment of non-normally distributed data and guards against the influence of outliers (Rousseeuw & Leroy, 2005). Effect sizes for the GLMs were calculated in terms of pseudo $R^2$ using the following formula: 1 – (Deviance/Null Deviance). In a separate set of analyses, we added, to each of these models, the interaction term of constraints to liberty × geographic area, to test whether the association of constraints to liberty with the health of Palestinians was modulated by geographic area (i.e. West Bank vs Gaza vs Jordan). Where applicable, all $p$-values were corrected for multiple comparisons with the sequential Bonferroni method. Mediation analyses were conducted with PROCESS (Hayes, 2013) for SPSS, which provides unstandardized beta values using bootstrapping analyses (5000 samples) to test for direct and indirect (mediated) effects. It should be noted that the term 'effect' here, and throughout the Results section, is used in the statistical sense, and not to imply causality. Mediation analyses were performed while entering age, gender, marital status, education, employment, refugee status, and geographic area as covariates.

## 3. Results

### 3.1. Demographic information

Sample characteristics are shown in Table 1. Participants from the three geographic areas did not differ in mean age, attachment anxiety, anxiety, or distribution of marital status. However, they differed in the distribution of gender, educational level, employment, and refugee status, as well as in their scores on attachment avoidance, resource loss, direct experience and fear of political violence, constraint to liberty of movement, subjective health, and depression.

### 3.2. Subjective health

Parameter estimates (Table 2) of the ordinal logistic regression model to test H1, focusing on subjective health ($\chi^2 = 69.96$, $df = 15$, $p < 0.001$, pseudo $R^2 = 0.051$), revealed that poorer health was reported among refugees (Wald $\chi^2 = 4.47$, $p = 0.035$), and those

**Table 1.** Sample demographic information ($N$ = 519).

| Variable | Gaza ($n$ = 60) | West Bank ($n$ = 121) | Jordan ($n$ = 338) | $p$-Value ($H/\chi^2/F$) |
|---|---|---|---|---|
| Demographics | | | | |
| Age (years) | 30.64 ± 9.94 | 29.08 ± 11.46 | 31.12 ± 11.62 | 0.164 |
| Male | 35 | 92 | 241 | 0.046* |
| Married | 34 | 58 | 185 | 0.363 |
| Educational level† | | | | |
| Primary | 1 | 11 | 44 | < 0.001*** |
| Secondary | 6 | 29 | 126 | |
| Higher | 50 | 80 | 168 | |
| Employed | 35 | 79 | 249 | 0.014* |
| Refugee | 39 | 5 | 234 | < 0.001*** |
| Measures | | | | |
| Attachment avoidance | 2.82 ± 1.05 | 3.24 ± 1.11 | 2.84 ± 1.03 | 0.001** |
| Attachment: anxiety | 4.35 ± 1.17 | 4.42 ± 1.20 | 4.13 ± 1.25 | 0.063 |
| Resource loss | 3.53 ± 1.61 | 3.67 ± 1.68 | 2.52 ± 1.33 | < 0.001*** |
| Experience of political violence | 3.04 ± 0.69 | 2.57 ± 1.23 | 1.58 ± 0.80 | < 0.001*** |
| Fear of political violence | 3.99 ± 1.53 | 4.11 ± 1.56 | 3.13 ± 1.97 | < 0.001*** |
| Constraints to liberty | 3.33 ± 1.54 | 4.87 ± 1.61 | 2.77 ± 1.27 | < 0.001*** |
| Subjective general health | 1.87 ± 1.08 | 2.21 ± 1.05 | 2.26 ± 1.12 | 0.021* |
| Depression | 3.03 ± 1.11 | 2.08 ± 1.77 | 2.41 ± 1.91 | 0.004** |
| Anxiety | 1.58 ± 0.29 | 1.49 ± 0.37 | 1.51 ± 0.43 | 0.389 |

Data are shown as mean ± SD or $n$.
Comparisons between the three geographic areas were performed using the Kruskal–Wallis ($H$) test for age and subjective general health, and chi-squared ($\chi^2$) tests for gender distribution, marital status, educational level, employment status, and refugee status. Differences on all remaining variables were tested using one-way ANOVA ($F$). Higher scores indicate worse outcome.
†Educational level numbers may not add up to sample size owing to missing data.
*$p$ < 0.05, **$p$ < 0.01, ***$p$ < 0.001.

**Table 2.** Ordinal logistic regression results for general health.

| Model: General Health | $B$† | Std. error | Lower 95% CI | Upper 95% CI | Wald $\chi^2$ | $df$ | $p$-Value |
|---|---|---|---|---|---|---|---|
| Gender (female) | 0.255 | 0.223 | −0.181 | 0.691 | 1.312 | 1 | 0.252 |
| Marital status (single) | 0.138 | 0.234 | −0.320 | 0.596 | 0.350 | 1 | 0.554 |
| Educational level | | | | | 1.358 | 2 | 0.507 |
| Primary vs higher | 0.212 | 0.312 | −0.399 | 0.823 | 0.461 | 1 | 0.497 |
| Secondary vs higher | 0.211 | 0.193 | −0.168 | 0.590 | 1.194 | 1 | 0.275 |
| Secondary vs primary | −0.001 | 0.321 | −0.629 | 0.628 | 0.000 | 1 | 0.999 |
| Employment status (unemployed) | 0.282 | 0.229 | −0.168 | 0.731 | 1.508 | 1 | 0.219 |
| Refugee status (refugee) | 0.465 | 0.220 | 0.034 | 0.895 | 4.466 | 1 | 0.035* |
| Geographic area | | | | | 14.820 | 2 | 0.001** |
| West Bank vs Jordan | −0.538 | 0.302 | −1.129 | 0.052 | 3.190 | 1 | 0.074 |
| Gaza vs Jordan | −1.287 | 0.350 | −1.972 | −0.601 | 13.543 | 1 | 0.000*** |
| Gaza vs West Bank | −0.748 | 0.418 | −1.567 | 0.071 | 3.207 | 1 | 0.073 |
| Age | 0.013 | 0.011 | −0.009 | 0.035 | 1.407 | 1 | 0.236 |
| Attachment avoidance | 0.219 | 0.086 | 0.051 | 0.386 | 6.535 | 1 | 0.011* |
| Attachment anxiety | 0.120 | 0.071 | −0.019 | 0.260 | 2.863 | 1 | 0.091 |
| Resource loss | 0.221 | 0.067 | 0.090 | 0.352 | 10.922 | 1 | 0.001** |
| Constraints to liberty | 0.137 | 0.069 | 0.003 | 0.272 | 4.005 | 1 | 0.045* |
| Fear of political violence | −0.092 | 0.051 | −0.192 | 0.008 | 3.240 | 1 | 0.072 |
| Experience of political violence | 0.160 | 0.110 | −0.057 | 0.376 | 2.090 | 1 | 0.148 |

†Positive coefficients indicate worse health and negative coefficients better health.
*$p$ < 0.05, **$p$ < 0.01, ***$p$ < 0.001.

scoring higher on attachment avoidance [$\beta(SE)$ = 0.219 (0.086), Wald $\chi^2$ = 6.54, $p$ = 0.011], resource loss [$\beta$ ($SE$) = 0.221 (0.067), Wald $\chi^2$ = 10.92, $p$ < 0.001], and constraints to liberty of movement [$\beta(SE)$ = 0.137 (0.069), Wald $\chi^2$ = 4.01, $p$ = 0.045]. There was an effect for geographic area (Wald $\chi^2$ = 14.82, $p$ < 0.001), such that poorer health was reported among participants from Jordan compared to participants from Gaza [$\beta(SE)$ = −1.287 (0.350), Wald $\chi^2$ = 13.54, $p_{corr}$ < 0.001]. Hypothesis 1 was partially supported.

### 3.3. Depression

Parameter estimates (Table 3) of the regression model testing H2, focusing on depression ($\chi^2$ = 130.44, $df$ = 15, $p$ < 0.001, pseudo $R^2$ = 0.234), revealed greater levels of depression in those scoring higher on attachment anxiety [$\beta(SE)$ = 0.305 (0.064), Wald $\chi^2$ = 22.40, $p$ < 0.001], resource loss [$\beta(SE)$ = 0.358 (0.059), Wald $\chi^2$ = 36.99, $p$ < 0.001], and experiencing political violence [$\beta(SE)$ = 0.311 (0.091), Wald $\chi^2$ = 11.58, $p$ < 0.001]. Moreover, there was an effect for

**Table 3.** Regression results for depression.

| Model: Depression | *B*† | Std. error | Lower 95% CI | Upper 95% CI | Wald $\chi^2$ | *df* | *p*-Value |
|---|---|---|---|---|---|---|---|
| Gender (female) | 0.080 | 0.187 | −0.286 | 0.446 | 0.184 | 1 | 0.668 |
| Marital status (single) | −0.087 | 0.203 | −0.485 | 0.310 | 0.184 | 1 | 0.668 |
| Education level | | | | | 0.912 | 2 | 0.634 |
| Primary vs higher | 0.171 | 0.265 | −0.348 | 0.691 | 0.418 | 1 | 0.518 |
| Secondary vs higher | 0.151 | 0.183 | −0.208 | 0.510 | 0.683 | 1 | 0.408 |
| Secondary vs primary | −0.020 | 0.288 | −0.584 | 0.544 | 0.005 | 1 | 0.945 |
| Employment status (unemployed) | −0.262 | 0.191 | −0.636 | 0.113 | 1.879 | 1 | 0.170 |
| Refugee status (refugee) | 0.004 | 0.171 | −0.331 | 0.338 | 0.001 | 1 | 0.982 |
| Geographic area | | | | | 22.362 | 2 | 0.000*** |
| West Bank vs Jordan | −1.010 | 0.215 | −1.432 | −0.588 | 22.008 | 1 | 0.000*** |
| Gaza vs Jordan | −0.059 | 0.217 | −0.484 | 0.366 | 0.074 | 1 | 0.786 |
| Gaza vs West Bank | 0.951 | 0.276 | 0.410 | 1.492 | 11.857 | 1 | 0.001** |
| Age | −0.015 | 0.009 | −0.033 | 0.003 | 2.780 | 1 | 0.095 |
| Attachment avoidance | 0.072 | 0.077 | −0.080 | 0.223 | 0.861 | 1 | 0.354 |
| Attachment anxiety | 0.305 | 0.064 | 0.178 | 0.431 | 22.403 | 1 | 0.000*** |
| Resource loss | 0.358 | 0.059 | 0.243 | 0.473 | 36.993 | 1 | 0.000*** |
| Constraints to liberty | −0.006 | 0.053 | −0.110 | 0.099 | 0.012 | 1 | 0.913 |
| Fear of political violence | −0.066 | 0.045 | −0.153 | 0.022 | 2.175 | 1 | 0.140 |
| Experience of political violence | 0.311 | 0.091 | 0.132 | 0.490 | 11.579 | 1 | 0.001** |

†Positive coefficients indicate worse depression.
**$p < 0.01$, ***$p < 0.001$.

geographic area (Wald $\chi^2 = 22.36$, $p < 0.001$), such that participants from both Jordan [*MD* (*SE*) = 1.01 (0.22), $p_{corr} < 0.001$] and Gaza [*MD* (*SE*) = 0.95 (0.28), $p_{corr} = 0.001$] reported higher levels of depression in comparison to participants from the West Bank [*M* (*SE*) = 1.61 (0.21)]. Hypothesis 2 was partially supported.

### 3.4. Anxiety

Parameter estimates (Table 4) of the regression model to test H3, focusing on anxiety ($\chi^2 = 133.47$, $df = 15$, $p < 0.001$, pseudo $R^2 = 0.239$), revealed greater levels of anxiety among women [$\beta$ (*SE*) = 0.085 (0.041), Wald $\chi^2 = 4.38$, $p = 0.036$], unmarried participants [$\beta$(*SE*) = 0.118 (0.042), Wald $\chi^2 = 7.91$, $p = 0.005$], and employed people [$\beta$(*SE*) = 0.119 (0.040), Wald $\chi^2 = 9.03$, $p = 0.003$]. Moreover, greater levels of anxiety were associated with higher scores on attachment anxiety [$\beta$ (*SE*) = 0.076 (0.014), Wald $\chi^2 = 28.19$, $p < 0.001$], resource loss [$\beta$(*SE*) = 0.069 (0.012), Wald $\chi^2 = 31.10$, $p < 0.001$], and constraints to liberty of movement [$\beta$ (*SE*) = 0.030 (0.012), Wald $\chi^2 = 5.98$, $p = 0.015$]. Moreover, there was an effect for geographic area (Wald $\chi^2 = 13.15$, $p < 0.001$), such that participants from both Jordan [*MD* (*SE*) = 0.18 (0.05), $p_{corr} < 0.001$] and Gaza [*MD* (*SE*) = 0.15 (0.06), $p_{corr} = 0.024$] reported higher levels of anxiety in comparison to participants from the West Bank [*M* (*SE*) = 1.39 (0.04)]. Hypothesis 3 was partially supported.

Adding the interaction term of constraints to liberty of movement × geographic area to each of the three models above did not result in a significant improvement (all ΔPseudo $R^2 < 0.005$, Wald $\chi^2 < 5.58$, $p > 0.062$), suggesting that the negative effect of constraints to liberty of movement on the general and psychological health of Palestinians was independent of the geographic area in which they lived.

### 3.5. Mediation analyses

First, we investigated whether constraints to liberty of movement mediated the effect of exposure to political violence on subjective general health, anxiety, and depression, while controlling for age, gender, marital status, education, employment, refugee status, and geographic area (H4). Unstandardized regression coefficients and bias-corrected 95% confidence intervals (CIs) for the indirect effects ($a \times b$) from the bootstrap-mediation analyses found that constraints to liberty of movement partially mediated the relationship between exposure to political violence and (1) subjective general health, and (2) anxiety, but not (3) depression (for detailed statistics of the mediation models see Tables S1–S3 in the supplemental material). As can be seen from Figure 1(a), there is a significant indirect effect of exposure to political violence on subjective general health through constraints to liberty of movement ($a \times b = 0.036$; bias-corrected 95% CI = 0.014–0.070), accounting for 21.63% of the total effect ($c = 0.165$). Figure 1(b) shows a significant indirect effect of exposure to political violence on anxiety through constraints to liberty of movement ($a \times b = 0.012$; bias-corrected 95% CI = 0.005–0.024), accounting for 13.51% of the total effect ($c = 0.092$). Constraints to liberty of movement did not mediate the effect of exposure to political violence on depression ($a \times b = 0.016$, bias-corrected 95% CI = −0.01–0.053) (see Table S3 in the supplemental material). Hypothesis 4 was partially supported.

Next, we tested the alternative hypothesis suggesting that the association between liberty of movement and health (subjective health, anxiety, and depression) might be mediated by exposure to political violence (H5). The results revealed that exposure to political violence partially mediated the relationship between constraints to liberty of movement and

**Table 4.** Regression results for anxiety.

| Model: Anxiety | *B*† | Std. error | Lower 95% CI | Upper 95% CI | Wald $\chi^2$ | *df* | *p*-Value |
|---|---|---|---|---|---|---|---|
| Gender (female) | 0.085 | 0.041 | 0.005 | 0.164 | 4.381 | 1 | 0.036* |
| Marital status (single) | 0.118 | 0.042 | 0.036 | 0.201 | 7.910 | 1 | 0.005** |
| Education level | | | | | 3.225 | 2 | 0.199 |
| Primary vs higher | 0.087 | 0.052 | −0.014 | 0.188 | 2.830 | 1 | 0.093 |
| Secondary vs higher | 0.043 | 0.041 | −0.037 | 0.124 | 1.108 | 1 | 0.292 |
| Secondary vs primary | −0.043 | 0.057 | −0.155 | 0.068 | 0.586 | 1 | 0.444 |
| Employment status (unemployed) | −0.119 | 0.040 | −0.196 | −0.041 | 9.034 | 1 | 0.003** |
| Refugee status (refugee) | 0.043 | 0.040 | −0.034 | 0.121 | 1.202 | 1 | 0.273 |
| Geographic area | | | | | 13.152 | 2 | 0.001** |
| West Bank vs Jordan | −0.185 | 0.051 | −0.285 | −0.084 | 12.955 | 1 | 0.000*** |
| Gaza vs Jordan | −0.031 | 0.051 | −0.132 | 0.069 | 0.370 | 1 | 0.543 |
| Gaza vs West Bank | 0.153 | 0.061 | 0.033 | 0.273 | 6.280 | 1 | 0.012* |
| Age | 0.001 | 0.002 | −0.003 | 0.004 | 0.125 | 1 | 0.724 |
| Attachment avoidance | 0.020 | 0.016 | −0.012 | 0.052 | 1.471 | 1 | 0.225 |
| Attachment anxiety | 0.076 | 0.014 | 0.048 | 0.104 | 28.194 | 1 | 0.000*** |
| Resource loss | 0.069 | 0.012 | 0.045 | 0.094 | 31.100 | 1 | 0.000*** |
| Constraints to liberty | 0.030 | 0.012 | 0.006 | 0.054 | 5.975 | 1 | 0.015* |
| Fear of political violence | −0.009 | 0.010 | −0.028 | 0.010 | 0.873 | 1 | 0.350 |
| Experience of political violence | 0.034 | 0.020 | −0.006 | 0.073 | 2.735 | 1 | 0.098 |

†Positive coefficients indicate worse anxiety.
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

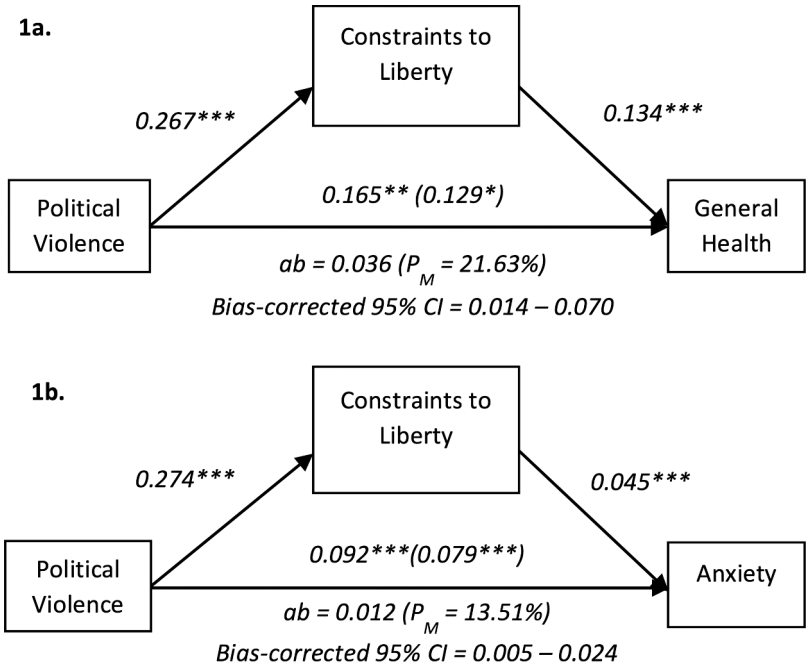


**Figure 1.** Mediation effects of constraint to liberty on the association between exposure to political violence and (a) subjective health and (b) anxiety. *ab* = represents the indirect path. $P_M$ = represents the percentage accounted for by the mediator (M) of the total effect. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

subjective general health and anxiety, and fully the relationship between constraints to liberty of movement and depression (for detailed statistics on the mediation models, see Tables S4–S6 in the supplemental material). Specifically, there was a significant indirect effect of constraint to liberty of movement on subjective general health through exposure to political violence ($a \times b = 0.017$; bias-corrected 95% CI = 0.004–0.038), accounting for 10.98% of the total effect ($c = 0.150$) (Figure 2a). Similarly, there was a significant indirect effect of constraint to liberty of movement on anxiety through exposure to political violence ($a \times b = 0.011$; bias-corrected 95% CI = 0.005–0.019), accounting for 18.76% of the total effect ($c = 0.056$) (Figure 2b). Lastly, there was a significant indirect effect of constraint to liberty of movement on depression through exposure to political violence ($a \times b = 0.078$; bias-corrected 95% CI = 0.041–0.126), accounting for 50.19% of the total effect ($c = 0.056$) (Figure 2c). Hypothesis 5 was partially supported.

## 4. Discussion

We have examined the roles of key environmental and psychological variables, including constraints to liberty of movement, experience of political violence and resource loss, and attachment insecurity,

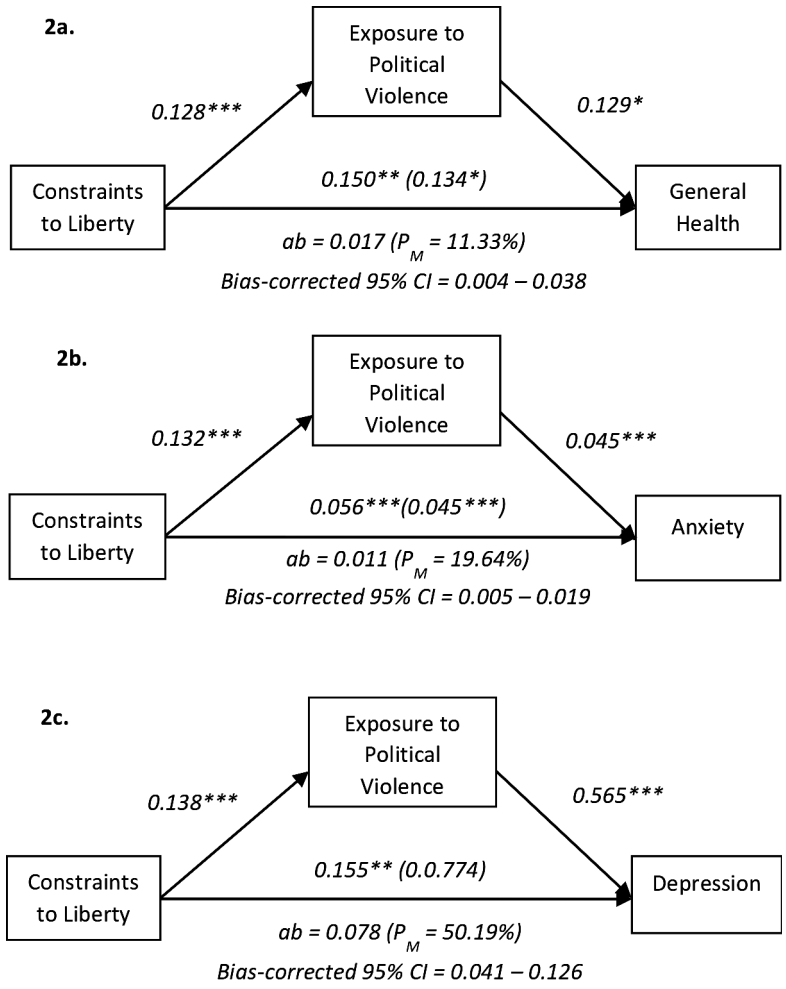


**Figure 2.** Mediation effects of exposure to political violence on the association between constraints to liberty and (a) subjective health, (b) anxiety, and (c) depression. *ab* = represents the indirect path. $P_M$ = represents the percentage accounted for by the mediator (M) of the total effect. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

in the health and mental health of three Palestinian samples. In sum, we found that: (1) perceived constraints to liberty were associated with health and anxiety, but not depression; (2) perceived constraints to liberty partially explained the relationships between exposure to political violence and both health and anxiety; (3) exposure to violence partially explained the relationships between perceived constraints to liberty and health and anxiety, and fully explained the relationship between perceived constraints to liberty and depression; (4) attachment insecurity was associated with poorer health and mental health; (5) resource loss was associated with poorer health and mental health; and (6) health and mental health differed by geographic area. We discuss these points below.

### 4.1. Constraints to liberty of movement and health and anxiety

Our measurement of perceived constraints to liberty of movement represents a novel contribution to theory and research. We found that perceived constraints to liberty of movement were associated with poorer health and greater anxiety, but not depression. That liberty of movement was related to general health makes theoretical sense, because if movement is constrained, then official permissions are required to travel either short distances to neighbouring villages or towns, or longer distances, making access to medical facilities difficult and delaying timely treatment (World Health Organization, 2013). Our study shows that perceived constraints to liberty of movement were negatively related to both the general and psychological health status of Palestinians, and is the first to show that this association is independent of the geographic area in which they lived.

The relationship between constraints to liberty of movement and anxiety is also in keeping with expectations drawn from theory and research, yet novel. Living with disrupted liberty of movement due to checkpoints is stressful (Giacaman et al., 2007; World Health Organization, 2013) and produces uncertainty, which leads to anxiety (Hirsh, Mar, & Peterson, 2012). Checkpoints can cause humiliation (Longo, Canetti, & Hite-rubin, 2014), which has been identified as a key

component of life events that contribute to mental health problems (Kendler, Hettema, Butera, Gardner, & Prescott, 2003). Consistent with this, a *post-hoc* analysis found that the well-being of chronically humiliated Palestinians was worst in areas with the most severe physical constraints to liberty of movement (e.g. Alkhaleel/Hebron) (Barber, McNeely, Olsen, Spellings, & Belli, 2013).

### 4.2. Mediation models

Following Miller and Rasmussen (2010), we found that exposure to political violence significantly accounted for health and anxiety, mediated by constraints to liberty of movement. This finding fits with the psychosocial framework proposed by Miller and Rasmussen (2010), whereby exposure to conflict impacts mental health not only directly, but also indirectly, via the daily stressors associated with the conflict. We also found evidence for the alternative hypothesis suggesting that the relationship between constraints to liberty of movement on poorer general and mental health was mediated by exposure to political violence. This is consistent with the notion that exposure to political violence often coincides with constraints to liberty of movement in the context of the Israeli–Palestinian conflict (Barber et al., 2016), which, in turn, has adverse effects on general health, perhaps due to, for example, being barred from travel for medical care (McNeely et al., 2018), and on mental health, perhaps due to persistent humiliation of Palestinians (Abu-Zahra & Kay, 2013; Barber et al., 2016) and trauma-related stress (McNeely et al., 2014). That we found support for both formulations of the mediations implies possible bidirectional effects between exposure to political violence and constraints to liberty of movement. Future research would need to employ longitudinal methods to better specify these effects.

### 4.3. Attachment insecurity and health, depression, and anxiety

We found that attachment avoidance and attachment anxiety were, respectively, associated with poor general health and poor mental health. The association of attachment avoidance with poor general health is consistent with research on the relationship between attachment orientation and health in non-conflict situations. Attachment avoidance is characterized by attempts to suppress emotional responses, particularly negative ones. This can lead avoidant individuals to neglect their own physical symptoms and illness (Kotler, Buzwell, Romeo, & Bowland, 1994). Indeed, highly avoidant individuals are known to have poorer self-care in the face of chronic conditions (Bennett, Fuertes, Keitel, & Phillips, 2011; Ciechanowski et al., 2004). Self-neglectful tendencies of avoidant individuals towards their own health may be exacerbated in conflict scenarios. We should point out that attachment avoidance, albeit at moderate levels, may be an adaptive strategy in conflict environments. Moderate levels of avoidance reflect independence, self-reliance, and a distancing from emotions, including difficult emotions (Mikulincer & Shaver, 2016). In conflict environments, these characteristics, far from being harmful, may actually be helpful.

Attachment anxiety was associated with poor mental health (both anxiety and depression), which is consistent with previous research conducted in non-conflict zones (Mikulincer & Shaver, 2016). In addition, and consistent with our findings, attachment anxiety, but not avoidance, has been linked with depression and PTSD, which can be considered an anxiety disorder (Zoellner, Rothbaum, & Feeny, 2011), in Israeli civilians exposed to the Israeli–Palestinian conflict (Besser & Neria, 2010). The hyperactivating affect regulation strategies employed by those high in attachment anxiety render them particularly reactive to threat (Williams & Riskind, 2004). Furthermore, researchers have reported the relationship of attachment anxiety with the 'pessimistic explanatory style' of attribution (Abramson, Metalsky, & Alloy, 1989), which confers vulnerability for depression (Williams & Riskind, 2004). Reactivity to threat and pessimistic explanatory style may be mechanisms by which attachment anxiety negatively impacts mental health in populations experiencing conflict, and this could be an avenue for future research.

### 4.4. Resource loss and health, depression, and anxiety

That resource loss was related to both poor general health and poor mental health chimes with previous research. In their research on Palestinians in the West Bank, Gaza, and East Jerusalem, Hobfoll et al. (2012) found that resource loss, exposure to political violence, and social support were all predictive of psychological distress (measured as depression and PTSD but collapsed together in analysis) and indirectly predictive of general health (via psychological distress).

### 4.5. Demographic factors

General health differed by geographic area, such that poorer general health was reported among participants from Jordan compared to participants from Gaza, supporting previous research suggesting that refugee status detrimentally affects health (Porter & Haslam, 2005), and that Palestinians and Palestinian refugees outside the OPT show poor health (Sabatinelli, Pace-shanklin, Riccardo, & Shahin, 2009). That the Gazan sample reported better health than participants from the West

Bank or Jordan is, however, surprising, particularly when nearly half of Gazan households suffer moderate to severe food insecurity (United Nations Office for the Coordination of Human Affairs (OCHA), 2016). One potential explanation, however, comes from a study of subjective well-being in Palestinian teachers in Israel and the OPT (West Bank and Gaza) (Veronese, Pepe, Dagdukee, & Yaghi, 2018), showing that constituent dimensions of subjective well-being varied across the groups. It is possible that the subjective health of Gazans in our study is precipitated by a different set of beliefs. Latent analysis of constituent variables of subjective health is an important direction for further research. A further possible explanation is related to our sampling methods. Our Gazan sample were 58% employed, which is considerably higher than the general population. In addition, 83% of the Gazan sample had received higher education, which is considerably higher than the West Bank sample (65%) and the Jordan sample (49%). This may suggest that our sampling methods resulted in an overrepresentation of people with better access to health services as a result of their employment status, who, in turn, report better health.

Depression and anxiety also differed by geographic area, such that participants from both Jordan and Gaza reported higher levels of depression than those from the West Bank. Given that the Gazan population is particularly in an incessant state of conflict with Israel, and suffers from elevated levels of resource deprivation, it is not surprising that levels of depression here are higher than in the West Bank. It is perhaps, at least on the surface, more surprising that Jordanian Palestinians show higher levels of depression than those observed in the West Bank. Our Jordanian sample was composed of refugees and non-refugees. Very little is known about mental health in diaspora populations, and as far as we are aware, this is the first study to examine this relationship in the context of the Israeli–Palestinian conflict. We do know, however, that refugee mental health outcomes can be poor in the longer term (Hynie, 2018). Also, research would suggest that the broader context in which members of the diaspora live plays an important role in their mental health: while low post-migration discrimination, a sense of belonging, and economic opportunity can minimize mental health problems (Beiser & Hou, 2017; Porter & Haslam, 2005), the experience of previous trauma can act to maximize them (Hynie, 2018; Steel, Silove, Phan, & Bauman, 2002). Arguably, these conditions may disproportionately apply to Palestinian diaspora populations relative to Palestinians living in the OPT.

### 4.6. Limitations

Our research has addressed an important gap in the literature. However, our methods are not without limitations. One limitation is our sampling, which relied on convenience and so may not be representative. For pragmatic reasons, we exclusively used self-report measures. These are not without merit, but equally can be subject to demand characteristics. Furthermore, it is possible that the translation process affected the reliability of the scales used. Notably, the alpha values for the ECR-S were lower than commonly found (e.g. Rowe, Shepstone, Carnelley, Cavanagh, & Millings, 2016). Our design was cross-sectional, thus limiting our findings in terms of establishing causal direction. Future research should seek to use longitudinal designs, whereby the roles of the key environmental and psychological variables identified here could be isolated from the continuation of previous health and general health status (i.e. controlling for them at timepoint 1 in an analysis to predict them at timepoint 2).

## 5. Conclusions and implications

In the context of the Israeli–Palestinian conflict, constraints to liberty can encourage violence, whereas the easing of checkpoints in the West Bank has led to a significant reduction in support for violence and militant views (Longo et al., 2014). Our findings suggest that constraints to liberty (along with other factors) also have deleterious effects on general health and mental health. Future research is needed to examine the likely positive impacts on general health and mental health of removing constraints to liberty, and whether these might be related to a reduction in support for militancy. Policymakers could then consider the relationship between relaxing constraints on liberty of movement and health and mental health in decision-making around optimal strategies for peace-building and de-escalation of conflict.

In addition, our findings speak to Human Security Theory (United Nations, 1994) and Conservation of Resources Theory (Hobfoll, 1989), both of which highlight the importance of liberty for general human functioning. Despite the key role of liberty in human functioning, before now, there was no established measure of the extent to which individuals perceive that their liberty of movement is constrained. We have identified the importance of self-reported constraints to liberty of movement, along with other variables, in the general health and mental health of Palestinians within the OPT and the diaspora. In so doing, we have shown that measuring constraints to liberty of movement can provide an important context for models of human well-being.

## Data availability statement

Due to the nature of this research, participants of this study did not agree for their data to be shared publicly, so supporting data are not available.

## Disclosure statement

No potential conflict of interest was reported by the authors.

## Ethics statement

Ethical approval was obtained from the Ethics Committee of a UK University. All participants provided informed consent prior to their participation in this research.

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