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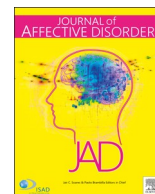
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## Research paper

## Refugee trauma work: Effects on intimate relationships and vicarious posttraumatic growth

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## ABSTRACT

**Background:** Bearing witness to Syrian refugee atrocities may result in aid-workers' vicarious traumatization (VT). This study examined work stressors and organizational support and their associations with vicarious posttraumatic growth (VPTG) and intimate relationships. It also examined the potential mediating effects of differentiation of the self and finding meaning in trauma-work.

**Methods:** Aid-workers ( $N = 317$ ) from organizations in Jordan were surveyed. Univariate statistics and structural equation modeling (SEM) were utilized to test hypothesized relationships.

**Results:** Increased VT was associated with increased VPTG, decreased intimacy and decreased differentiation. Increased needs addressed by NGOs was associated with increased VPTG, differentiation, and finding meaning. Increased trauma-exposure was associated with increased finding meaning. Increased co-workers support was associated with increased intimacy and finding meaning. Higher differentiation was associated with decreased VPTG, and increased intimacy. Whereas, increased finding meaning was associated with increased VPTG and intimacy.

Differentiation partially mediated the associations between VT, and both VPTG and intimacy, and between needs at work and VPTG. Differentiation fully mediated the association between needs at work and intimacy. Finding meaning fully mediated the associations between extent of trauma-exposure, and both VPTG and intimacy, and between co-workers support and VPTG; needs at work and intimacy. It partially mediated the associations between needs at work and VPTG; co-workers support and intimacy.

**Limitations:** The study is cross-sectional and generalization is limited to aid-workers who provide services to Syrian refugees in Jordan.

**Conclusions:** Organizational support is crucial in mitigating the negative impacts of trauma-work, and in enabling a nurturing space for potential growth.

## 1. Introduction

Working with traumatized populations involves high exposure to atrocities, work stressors and organizational demands. Trauma aid-work has been associated with decreased wellbeing, reduced physical and mental health, as well as impaired intimate relationships (Rizkalla and Segal, 2019a; Rizkalla et al., 2017; Pack, 2010; VanDeusen and Way, 2006). There are, however, potential positive changes and growth that aid-workers may experience due to their involvement in such work (Tedeschi and Calhoun, 1996; Cohen and Collens, 2013). Studies on the mental health of refugee service providers are scarce. Research on the wellbeing of aid-workers is needed,

given the ever-increasing numbers of refugees who are experiencing protracted stays in host countries.

The Syrian refugee influx to Jordan placed governmental and non-governmental organizations (NGOs) with the best intentions in a challenging position (Achilli, 2015). These humanitarian and relief organizations were caught unprepared to meet the enormous needs of refugees (Al-Qdah and Lacroix, 2017). This study examines the consequences of the crisis on trauma aid-workers. It considers the work stressors and organizational support provided to aid-workers and potential personal outcomes associated with providing services to Syrian refugees in Jordan, most notably impacts on their intimate relationships and their experiences of vicarious posttraumatic growth (VPTG).

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## 2. Crisis challenges

The arriving Syrians evidenced a high prevalence of post-traumatic stress disorder (PTSD), depression, and anxiety, presented with physical health and somatization sequelae due to violent combat, forced evacuation, injuries, illnesses, family separation, and loss of social support systems. They experienced human rights violations such as torture and sexual violence. Syrian refugees in Jordan are also confronted daily with displacement challenges including housing issues, unmet survival needs, unemployment, poverty, and local hostility, which posed a continuous threat to their physical and mental health (Al-Shagran et al., 2015; Rizkalla et al., 2020; Rizkalla and Segal, 2018; Rizkalla and Segal, 2019b). Aid-workers encountering Syrian refugees on a daily basis were exposed to overwhelming volumes of trauma stories (case-load), with potential negative implications for their own mental health and intimate lives, but also a potential for vicarious growth.

### 2.1. Vicarious traumatization

One of the risks of trauma work has been defined as vicarious traumatization (VT). It refers to personal and relational changes experienced by trauma workers resulting from their cumulative and empathic engagement with trauma clients (McCann and Pearlman, 1990). Such exposure can lead to negative long-term transformations of cognitive schemas related to their perceptions, beliefs, and expectations of themselves, others, and the world, distress symptoms that may parallel those who they assist (Finklestein et al., 2015; McCann and Pearlman, 1990). VT was found to be associated with interruptions in intimate relationships (Cohen and Collens, 2013; Pack, 2010; Taylor et al., 2018; VanDeusen and Way, 2006). It has been associated with development of negative coping strategies, enhanced personal stress, trauma history, decreased professional experience, age, education, socioeconomic status, and female gender (Halevi and Idisis, 2018; Michalopoulos and Aparicio, 2012; Sabin-Farrell and Turpin, 2003). VT's associations with trauma history (Dunkley and Whelan, 2006) and other demographic variables have, however been inconsistent (Bober and Regehr, 2006; Brooks et al., 2015; Sabin-Farrell and Turpin, 2003).

Aid-workers have coped with VT with diverse strategies including positive efforts like self-care, exercising, healthy eating, meditating, listening to music, taking vacations, and encouraging a greater balance between work and personal lives (Bober and Regehr, 2006; Finklestein et al., 2015; Harrison and Westwood, 2009; Hunter and Schofield, 2006; Iliffe and Steed, 2000; Splevins et al., 2010). They have reached out to family and friends for support (Harrison and Westwood, 2009; Hunter and Schofield, 2006; Splevins et al., 2010) and sought personal therapy (Barrington and Shakespeare-Finch, 2013). Aid-workers have also relied on harmful coping strategies such as excessive alcohol consumption (Jachens et al., 2016), increased use of tobacco, caffeine, tranquilizers, medication, substance use, and speeding (Iliffe and Steed, 2000; Fond et al., 2018).

### 2.2. Work environment

Organizational factors contributing to VT include personal safety concerns, lack of resources, limited benefits, poor living conditions, inadequate equipment, and high organizational demands (Brooks et al., 2015; Posselt et al., 2019). High caseload and exposure to trauma stories have produced inconsistent associations (Brooks et al., 2015; Dunkley and Whelan, 2006; Harrison and Westwood, 2009; Sabin-Farrell and Turpin, 2003). A supportive working environment, professional supervision and training, as well as acknowledgement of the suffering faced by trauma providers assisted with VT management (Bober and Regehr, 2006; Brooks et al., 2015; Clemans, 2004; Cohen and Collens, 2013; Finklestein et al., 2015; Harrison and Westwood, 2009; Hunter and Schofield, 2006; Iliffe and Steed, 2000;

Pistorius et al., 2008). Aid-workers who provided services to Syrian refugees in Jordan and felt connected to their NGO reported higher intimate relationships and wellbeing (Rizkalla and Segal, 2019a).

### 2.3. Vicarious posttraumatic growth

Positive changes following highly challenging/crisis circumstances have been defined as posttraumatic growth (PTG). Five components of PTG have been delineated: Appreciation of Life, New Possibilities, Personal Strength, Relating to Others, and Spiritual Change (Tedeschi and Calhoun, 1996). Service providers, including those working with refugees, have experienced vicarious posttraumatic growth (VPTG) (Arnold et al., 2005; Barrington and Shakespeare-Finch, 2013; Linley and Joseph, 2007; Splevins et al., 2010). Such experiences have been described as “psychological growth following vicarious brushes with trauma” (Arnold et al., 2005; p. 243).

Researchers trying to explain the association between VT and VPTG have theorized that greater trauma exposure would produce more growth (Brockhouse et al., 2011; Linley and Joseph, 2007; Veronese et al., 2017). PTG-study results, however, suggested that negative posttraumatic impacts may coexist simultaneously and independently from positive changes (Cohen and Collens, 2013; Shakespeare-Finch and Lurie-Beck, 2014; Sleijpen et al., 2016).

Participants in some studies reported feeling inspired by their trauma clients, amazement by the strength of human spirit and its resilience (Clemans, 2004; Roberts et al., 2018; Splevins et al., 2010), and felt an increased sense of self-worth as professionals, self-awareness, empowerment, self-validation, and appreciation of life (Cohen and Collens, 2013; Veronese et al., 2017). Some participants added value to their family and social ties and experienced positive changes in interpersonal relationships (Barrington and Shakespeare-Finch, 2013; Splevins et al., 2010; Veronese et al., 2017). Aid-workers described changes to the meanings they attributed to their work, and valued their profession more than before (Barrington and Shakespeare-Finch, 2013). They reported that witnessing the growth of their clients contributed to their own growth (Roberts et al., 2018; Splevins et al., 2010).

Researchers suggest that the process of experiencing VPTG involves two processes; first, negative schemas change following the exposure to client's trauma and feeling shock, and second, positive schemas change triggered by the client's own growth. Both processes lead aid-workers to engage in existential questioning and meaning making about the purpose of their work (Cohen and Collens, 2013; Barrington and Shakespeare-Finch, 2013).

### 2.4. Differentiation of the self

Differentiation is a self-regulating mechanism divided into two interrelated levels. The first is an intra-psycho level, which enables balance between intellectual and emotional functioning, even when facing stressful situations. The other is an inter-personal level, which enables balance between separation and closeness with significant others (Bowen, 1978). Higher level of differentiation is manifested in adaptive functioning, flexibility, high resilience, clear sense of self, and mature and mutual relationships, whereas, lower level of differentiation is manifested in conflicting thoughts and emotions, and fusion or detachment from others (Bowen, 1978; Skowron and Friedlander, 1998).

Differentiation of the self was identified as one of the personal features that mitigated risk factors when coping with stress (Bowen, 1978). It was associated with regulating social anxiety (Peleg and Zoabi, 2014), separation anxiety (Peleg and Yitzhak, 2011), enhancing social skills in problem solving and psychological adjustment (Krycak et al., 2012; Skowron et al., 2004), and was associated with intimacy in Middle Eastern samples (Rizkalla and Rahav, 2016; Rizkalla and Segal, 2019a). Higher differentiation was associated with decreased VT symptoms (Halevi and Idisis, 2018). Differentiation also mediated the association between stress and psychological distress

(Krycak et al., 2012), academic and financial stress and adjustment (Skowron et al., 2004) and PTSD-symptoms and sexual satisfaction (Lahav et al., 2019). Among aid-workers who assisted Syrian refugees in Jordan, differentiation mediated the associations between secondary traumatic stress (STS) and feeling connected to NGO and wellbeing, intimacy and PTSD-symptomology (Rizkalla and Segal, 2019a).

Based on the literature review above, we hypothesized: (1) Increased exposure and VT will be associated with increased VPTG and decreased intimacy. (2) A more supportive work environment (needs addressed by NGOs and co-workers support) will be associated with increased VPTG and intimacy. (3) Higher differentiation and finding meaning will be associated with increased VPTG and intimacy. (4) Increased exposure and VT will be associated with decreased differentiation and increased finding meaning. (5) A more supportive work environment will be associated with increased differentiation and finding meaning. (6) Differentiation and finding meaning will mediate the associations between the study's variables.

### 3. Methods

#### 3.1. Participants and data collection

Aid-workers ( $N = 317$ ) were recruited from 15 governmental, and non-governmental organizations that were international, national and local/charities operating throughout Jordan. The study's purposes and procedures were explained in staff meetings following NGOs approval. Data collection took place from March to August 2014 and in May 2015; 96% of the surveys were in Arabic, 4% in English. Scales in Arabic were previously used in Palestinian-couples and Syrian-refugee samples (Rizkalla and Segal, 2018, Rizkalla and Segal, 2019b; Rizkalla and Rahav, 2016). The VT-scale was translated with blind back-translation to English with the help of two independent professionals. Five aid-workers who did not participate in the study, reviewed the scale and adjusted the translation to the context in Jordan. Participation was anonymous, voluntary and did not include incentives. Qualifications for inclusion were: (1) Being humanitarian aid-worker, (2) Working at an NGO in Jordan, (3) Providing services to Syrian refugees in camps, host communities, or both, and (4) Being + 19 years of age. Participants sealed their completed survey in an envelope and directly delivered it to the researchers. The survey included a consent form, which did not require a signature to ensure safe space and authentic responses without imposing any threat to aid-workers' jobs. Participation rate was 70%; however aid-workers who refused participation delivered empty surveys in sealed envelopes. The study was approved by the Committee for the Protection of Human Subjects, University of California Berkeley (CPHS, February 2014).

#### 3.1.1. Measures

Data gathering included socio-demographic information, trauma work and organizational related variables and coping mechanisms.

Trauma work stressors were measured by two indicators (the first was created for this study):

- 1 Extent of exposure to trauma stories inquiring: "To what extent in your work with refugees are you exposed to descriptions of traumatic events/experiences?" (1 item), ranging from 1 = not at all to 4 = largely.
- 2 Vicarious traumatization was assessed by the Trauma and Attachment Beliefs Scale (TABS; Pearlman, 2003). The scale, 84 Likert-type items, ranging from 1 = disagree strongly to 6 = agree strongly, measures changes in beliefs and perceptions about oneself and others. Higher scores reflect greater VT, i.e., greater disturbance in cognitive schemes undermining self and others. Alpha Reliability for total VT scores was  $\alpha = 0.95$ .

Organizational support was measured by two indicators (both were

created for this study):

- 1 Co-workers support inquiring: "To what extent do you have significant others at work who can provide support to you when you need it?" (1 item), ranging from 1 = very low to 5 = very high.
- 2 The Needs at Work Assessment Scale (21 items), measured the services provided to aid-workers by their organizations—e.g. supervision, training, benefits, social activities, life insurance, satisfying salary, medical insurance, transportation, security and safety, etc. Current sample's Cronbach's  $\alpha = 0.89$ .

Both scales of "co-workers support" and "needs at work assessment" are defined as organizational support, however in cases when they are unmet, they might become work stressors.

Potential mediating factors were measured using two indicators (the first was created for this study):

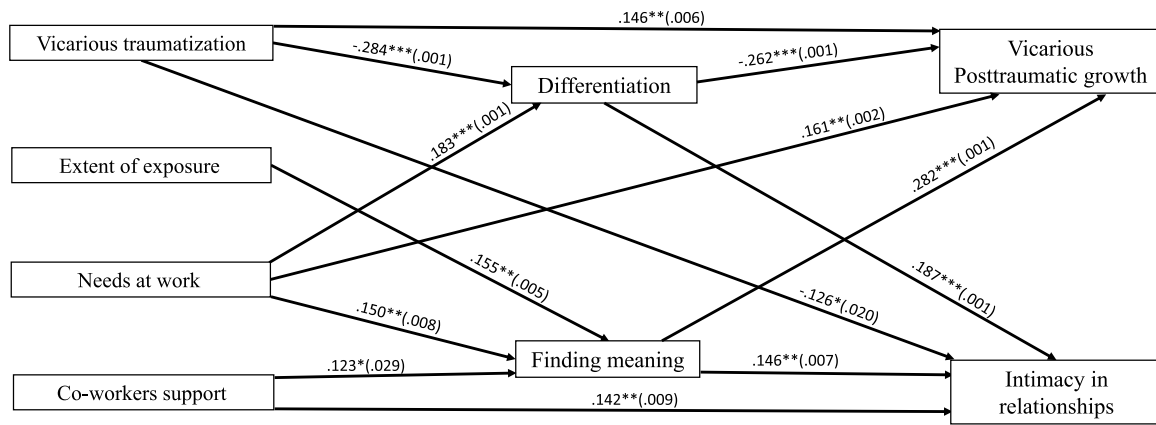
- 1 Finding meaning inquiring: "To what extent your work in helping others makes you continue doing it?" (1 item), ranging from 1 = very low to 5 = very high.
- 2 The Differentiation of Self Inventory-Revised (DSI-R; Skowron and Schmitt, 2003), measures intra-psycho features of emotional reactivity and I position; and inter-personal features of emotional cutoff and fusion with others. The scale has 46 items (response-range from 1 = not at all true of me to 6 = very true of me, e.g. "I wish that I weren't so emotional" and "I tend to feel pretty stable under stress"). Higher scores indicate greater differentiation. Reliability of the study's total DSI-R scores was  $\alpha = 0.81$ .

Outcome variables were measured using two indicators:

- 1 Vicarious posttraumatic growth was measured utilizing The Posttraumatic Growth Inventory (PTGI; Tedeschi and Calhoun, 1996), which examines participants' perceptions and positive changes they attributed to working with Syrian refugees in Jordan. The scale includes 21-items (item response-range from 0 = I didn't experience to 5 = experienced to a very great degree, e.g. "knowing I can handle difficulties" and "I accept needing others"). The total score ranges from 0 to 105. The higher scores indicate greater PTG. PTGI's Cronbach's was  $\alpha = 0.97$ .
- 2 Personal Assessment of Intimacy in Relationships (PAIR; Schaefer and Olson, 1981), measures the perception of intimacy as it is currently experienced (e.g. "we enjoy the out of doors together" and "my partner can really understand my hurts and joys"). The original scale contained 30 items, six of which measuring social desirability, were excluded from the analyses. In addition, four items related to coping with anger in an intimate relationship were added (Hershlag, 1984). Higher scores indicate greater intimacy in the relationship. Reliability of the total PAIR scores was  $\alpha = 0.81$ .

#### 3.1.2. Data analysis

Univariate descriptive statistics, correlations, Alpha reliabilities and missing data substitution were conducted utilizing SPSS version 25. Structural equation modeling (SEM) analysis was performed to examine the model fit, utilizing AMOS version 25. Bootstrap analyses that included 2000 bootstrap resamples with 95% confidence intervals were conducted to examine the specific direct path estimates between the variables. AMOS can only calculate the total indirect effects of mediators. Therefore, the specific indirect effects of the two mediators were calculated using Monte Carlo method for assessing mediation (Selig and Preacher, 2008) and the Sobel test (Preacher and Hayes, 2008). Overall, among most of the study's variables 2.5% to 10.1% of data were missing, whereas 26.5% of the intimacy data were missing. To determine the pattern of missing data, the test of Little's Missing Completely at Random (MCAR) (Collins et al., 2001) was conducted, yielding that the data were completely missing at random,



**Fig. 1.** SEM model assessing the associations between vicarious traumatization, extent of exposure, needs at work, co-workers support, differentiation, and finding meaning, in predicting vicarious posttraumatic growth and intimacy in relationships among aid-workers. Note. Model fit indices:  $\chi^2(5) = 4.19, p = .522, CFI = 1.000, NFI = 0.983, TLI = 1.020, RMSEA = 0.000$ . Solid lines represent significant predictions,  $*p < .05, **p < .01, ***p < .001$ .

Dashed lines representing non-significant predictions and curved lines representing covariates between constructs were omitted for clarity. The associations between co-workers support  $\rightarrow$  VPTG; co-workers support  $\rightarrow$  differentiation; extent of exposure  $\rightarrow$  differentiation; and VT  $\rightarrow$  finding meaning were omitted from the model to gain a better model fit.

$\chi^2 = 34,901.73; df = 104,157; p = 1.000$ . However, we decided to handle the missing data with the rigorous method of maximum likelihood (ML) imputation (Schafer and Graham, 2002). The model contained two outcomes of VPTG and intimacy in relationships as potentially mediated by differentiation and finding meaning. Potential work stressors were VT, extent of exposure to trauma stories, and organizational support were needs at work provided by NGOs, and co-workers support (Fig. 1).

**4. Results**

Demographics, trauma work related variables and coping mechanisms are presented in Table 1. The participating organizations were Japan Emergency NGO, Save the Children, International Medical Corps, Center for Victims of Torture, Mercy Corps, International Orthodox Christian Charities, UN Women, Jordan Health Aid Society (JHAS), Noor Al-Hussein Foundation, The Jordanian Women's Union, Waqea, Dar Alkarama, Green Crescent, Bader Center, and Naher El Rahmeh. Aid-workers operated in diverse locations in Jordan: Refugee camps (64%), Amman (17%), Irbid (9%), Ar-Ramtha (7%), Al-Mafraq (1.5%), and Jerash (1.5%). However, 51.7% reported that their salary was insufficient for living, and the majority (71.4%) received emotional support from NGOs. Aid-workers used multiple self-care strategies, e.g. talking (52.8%), sports (33.6%), shopping (24.4%), eating (19.5%), dancing (9.1%), drinking alcohol (6.2%), massages (4.9%), sex (4.9%), sleeping (3.5%), meeting family/friends (2.8%), music (2.2%), computer (1.6%), yoga/relaxation techniques (1.3%), and working in different fields (0.9%). Aid-workers reported on their unmet needs at work; supervision (60.8%), benefits (57.7%), social activities (54.1%), life insurance (53.8%), satisfying salary (49.8%), medical insurance (47.5%), fair working-hours (42.5%), security and safety (37.5%), preparation training (36.3%), consulting (30.5%), training during work (30.4%), and enrichment lectures/workshops (30.1%).

**5. Assessment of major scales**

The VT scale indicated that 29% ( $n = 92$ ) of aid-workers screened below average (low), 45% ( $n = 143$ ) on average, and 26% ( $n = 82$ ) above average (high), out of which 4% ( $n = 13$ ) screened extremely high with an immediate clinical concern. On the VPTG possible score

range (0 to 105), aid-workers scored from 0 to 105, with average total scale score of 62.76. On the intimacy in relationships scale the screen ranged from 0.50 to 4 ( $M = 2.23, SD = 0.43$ ), and differentiation ranged from 2.24 to 5.35 ( $M = 3.77, SD = 0.52$ ).

Descriptive statistics and Pearson's r intercorrelations between the main study measures are presented in Table 2. The strongest correlations were observed between increased met needs at work and receiving co-workers support, increased VT and decreased differentiation, increased intimacy and differentiation, increased finding meaning and increased VPTG, increased co-workers support and intimacy, as well as increased finding meaning and intimacy. The most surprising correlation was the negative association between differentiation and VPTG. Demographic variables were not associated with the rest of the study's variables, excluding gender, which was associating with VT and intimacy, indicating that women experienced higher intimacy, whereas men experienced higher VT.

**6. The research model**

We first examined a model without the mediation effects of differentiation and finding meaning. This model yielded a non-satisfactory fit indices:  $\chi^2(2) = 7.19, p = .027, CFI = 9.969, NFI = 0.961, TLI = 0.671, RMSEA = 0.091$ . Then we placed differentiation and finding meaning as mediators with the full model including all possible associations between variables with 20 path-coefficients, which yielded a saturated model. We then used maximum likelihood estimation (MLE) to estimate the model and adjusted it according to modification indices in AMOS, concordant with previous studies (e.g. Krycak et al., 2012) by eliminating non-significant path-coefficients, until we reached the final path model with good fit indices indicating that the theoretical model was a good representation of the data:  $\chi^2(5) = 4.19, p = .522, CFI = 1.000, NFI = 0.983, TLI = 1.020, RMSEA = 0.000$  (Fig. 1). After placing the mediators in the model, we have eliminated the correlated residuals from the model to test for their influences and the model still yielded a good fit as follows:  $\chi^2(6) = 10.13, p = .119, CFI = 0.981, NFI = 0.959, TLI = 0.913, RMSEA = 0.047$ . The model explained 20.2% of VPTG variance, and 17.4% of intimacy variance.

The associations between co-workers support and VPTG; co-workers support and differentiation; extent of exposure and differentiation; as well as VT and finding meaning were omitted from the model to gain a better model fit.



**Table 1**  
Socio-demographics, trauma work related variables, and coping mechanisms of aid-workers.

Demographics	Range	Mean	SD	N	%	–	–	–
Sex: Women	–	–	–	180	56.8	–	–	–
Men	–	–	–	137	43.2	–	–	–
Age	19–68	29.32	7.91	317	–	–	–	–
Nationality: Jordanian	–	–	–	288	90.8	–	–	–
Syrian	–	–	–	26	8.2	–	–	–
Other	–	–	–	3	1	–	–	–
Marital status: Single	–	–	–	166	52.4	–	–	–
Married	–	–	–	144	45.3	–	–	–
Divorced/Separated	–	–	–	7	2.3	–	–	–
Years of marriage	0–49	3.68	7.24	317	–	–	–	–
Number of children	0–13	0.97	1.84	317	–	–	–	–
Religion: Muslim	–	–	–	302	95.2	–	–	–
Christian	–	–	–	11	3.5	–	–	–
Druze	–	–	–	3	0.9	–	–	–
Other	–	–	–	1	0.3	–	–	–
Religiosity: Secular	–	–	–	17	5.4	–	–	–
Traditional	–	–	–	106	33.3	–	–	–
Religious	–	–	–	183	57.9	–	–	–
Very religious	–	–	–	11	3.4	–	–	–
Years of education: Women	10–24	15.69	2.00	180	56.8	–	–	–
Men	4–26	16.01	2.78	137	43.2	–	–	–
Income: High	–	–	–	21	6.5	–	–	–
Medium	–	–	–	204	64.5	–	–	–
Low	–	–	–	92	29.0	–	–	–
<b>Work related variables</b>	–	–	–	–	–	–	–	–
Employment: Full time	–	–	–	268	84.7	–	–	–
Part time	–	–	–	25	7.8	–	–	–
Volunteer	–	–	–	24	7.5	–	–	–
Profession:	–	–	–	–	–	–	–	–
Administrative	–	–	–	75	23.6	–	–	–
Managers, coordinators, supervisors	–	–	–	71	22.3	–	–	–
Medical professions	–	–	–	66	20.9	–	–	–
Non-mental health professions	–	–	–	58	18.5	–	–	–
Mental health professions	–	–	–	47	14.7	–	–	–
Years of experience	0–45	3.09	5.54	317	–	–	–	–
Working hours per week	1–100	35.79	15.72	317	–	–	–	–
Number of hours exposed to trauma stories per week	0–61	18.38	13.76	317	–	–	–	–
<b>Coping mechanisms</b>	–	–	–	<b>Very high</b>	<b>High</b>	<b>Moderate</b>	<b>Low</b>	<b>Very low</b>
Emotional support from close cycles (family, friends)	1–5	2.31	1.04	25.2%	33.3%	30.3%	7.2%	3.8%
Feeling safe while serving	1–5	2.44	0.81	8.8%	49.1%	32.1%	8.5%	1.2%
Work assisted in coping with personal difficulties	1–5	2.55	0.86	11.7%	31.8%	47.9%	6.3%	2.2%
Personal therapy provided tools to cope at work	1–5	2.79	1.01	9.1%	28.9%	43.3%	10.3%	7.6%
Extent of satisfaction from what you do at work	1–5	2.50	0.89	13.6%	33.4%	43.7%	6.6%	2.2%
Satisfaction with refugee services provided at your work	1–5	2.72	0.97	9.1%	32.2%	39.6%	14.5%	4.4%

**7. Hypotheses**

(1) Increased extent of exposure and VT will be associated with increased VPTG and decreased intimacy.

The first hypothesis was partially confirmed. Increased VT was associated with increased VPTG ( $\beta = 0.146, p < .006$ ), and decreased intimacy ( $\beta = -0.126, p < .020$ ), confirming this part of the hypothesis. However, increased extent of exposure was not associated with VPTG ( $\beta = 0.087, p < .090$ ), or intimacy ( $\beta = 0.097, p < .063$ ), and therefore not confirming this part of the hypothesis. This lack of association between increased trauma exposure and VPTG, or intimacy, however, in the literature may be partially explained by researchers who suggest that low and high levels of exposure are associated with the lowest levels of PTG, yielding a U-shape association (Kira et al., 2013; Shakespeare-Finch and Lurie-Beck, 2014; Solomon and Dekel, 2007). In order to consider this hypothesis the variable “extent of exposure” was transformed to hypothetically reflect a “U” shaped relationship with VPTG. The model was rerun with the transformed exposure variable. The path from extent of exposure to VPTG was still not significant, i.e. it failed to confirm the “U” shaped theoretical hypothesis. We also tested this association using curve estimation regression analyses, including linear, logarithmic, inverse, quadratic, and

cubic models. The extent of exposure was not found to be a significant linear or curvilinear predictor of VPTG in our sample.

(2) Increased supportive work environment (needs addressed by NGOs and co-workers support) will be associated with increased VPTG and intimacy.

The second hypothesis was partially confirmed. Increased needs addressed by NGOs was associated with increased VPTG ( $\beta = 0.161, p < .002$ ), but was not associated with intimacy ( $\beta = 0.074, p < .177$ ). Increased co-workers support was associated with increased intimacy ( $\beta = 0.142, p < .009$ ), but not associated with VPTG ( $\beta = -0.017, p < .746$ ). The last association was omitted from the model to gain a better model fit.

(3) Higher differentiation and finding meaning will be associated with increased VPTG and intimacy.

The third hypothesis was partially confirmed. Opposite to what we hypothesized higher differentiation was associated with decreased VPTG ( $\beta = -0.262, p < .001$ ), whereas higher differentiation was associated with increased intimacy ( $\beta = 0.187, p < .001$ ), concordant with this part of the hypothesis. Increased finding meaning was

**Table 2**  
Pearson's r intercorrelations between the main study measures (N = 317).

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. VT	3.01	.63	–											
2. Extent of exposure 1 = not at all, 4 = largely	2.81	.93	–0.123*	–										
3. Needs at work 0 = no, 1 = yes	.65	.26	.017	–0.034	–									
4. Co-workers support 1 = very low, 5 = very high	2.78	1.17	–0.134*	.065	.298**	–								
5. DSI-R	3.77	.52	–0.281**	.028	.178**	.112*	–							
6. Finding meaning 1 = very low, 5 = very high	1.98	.84	–0.032	.162**	.181**	.187**	.168**	–						
7. Intimacy	2.23	.43	–0.213**	.154**	.171**	.239**	.278**	.237**	–					
8. VPTG	3.08	1.11	.203**	.102	.165**	.046	–0.224**	.276**	.092	–				
9. Age	29.32	7.91	.009	–0.041	.020	.020	–0.045	.126*	–0.001	.090	–			
10. Years of experience	3.09	5.54	–0.099	.051	.053	.071	.034	.089	.013	.065	.621**	–		
11. Gender 1 = men, 2 = women	1.57	.50	–0.146**	.058	–0.006	.090	–0.069	.101	.130*	.093	–0.092	–0.062	–	
12. Religiosity	2.59	.65	–0.048	–0.028	.016	–0.059	–0.106	–0.046	–0.063	.009	–0.037	–0.056	.055	–

Note. VT = Vicarious traumatization; DIS-R = Differentiation of the self; VPTG = Vicarious posttraumatic growth. \*  $p < .05$ ; \*\*  $p < .01$ .

associated with increased VPTG ( $\beta = 0.282, p < .001$ ), and intimacy ( $\beta = 0.146, p < .007$ ), confirming this part of the hypothesis.

(4) Increased extent of exposure and VT will be associated with decreased differentiation and increased finding meaning.

The fourth hypothesis was partially confirmed. Increased VT was associated with decreased differentiation ( $\beta = -0.284, p < .001$ ), but was not associated with finding meaning ( $\beta = 0.001, p < .984$ ). Increased extent of exposure was associated with increased finding meaning ( $\beta = 0.155, p < .005$ ), but not associated with differentiation ( $\beta = 0.000, p < .994$ ). The associations between VT and finding meaning, as well as extent of exposure and differentiation were omitted from the model to gain a better model fit.

(5) Increased supportive work environment will be associated with increased differentiation and finding meaning.

The fifth hypothesis was partially confirmed. Increased needs addressed by NGOs was associated with increased differentiation ( $\beta = 0.183, p < .001$ ), and increased finding meaning ( $\beta = 0.150, p < .008$ ), concordant with this part of the hypothesis. However, increased co-workers support was only associated with increased finding meaning ( $\beta = 0.123, p < .029$ ), but not associated with differentiation ( $\beta = -0.002, p < .722$ ), and therefore not confirming this part of the hypothesis. The last association was omitted from the model to gain a better model fit.

(6) Differentiation and finding meaning will mediate the associations between the study's variables.

To examine the mediation effects of the model, bootstrapping analyses for the direct effects and Monte Carlo method for assessing mediation (Selig and Preacher, 2008) and the Sobel test (Preacher and Hayes, 2008) analyses for the specific indirect effects of the two mediators were calculated (Table 3). Evaluating the size of effect in mediation models is still an evolving area of research and has been quantified by diverse approaches and measures. However, "each of these [measures] has significant problems that limit their value"

(Hayes, 2018, p. 133). Therefore, the sizes of effect in our mediation model were not measured. Differentiation partially mediated the associations between VT and both VPTG, and intimacy. Differentiation fully mediated the association between needs at work and intimacy and partially mediated the association between needs at work and VPTG. No significant associations were found between both extent of exposure and co-workers support and differentiation. Therefore, no mediation effects were calculated for these associations. Finding meaning fully mediated the associations between extent of exposure and both VPTG and intimacy, and the associations between co-workers support and VPTG, and needs at work and intimacy. In addition, finding meaning partially mediated the associations between needs at work and VPTG, and co-workers support and intimacy. No association was found between VT and finding meaning, and thus no mediation effect was calculated for this association.

### 8. Discussion

Aid-workers who provided services to Syrian refugees in Jordan were affected by bearing witness to refugee trauma, resulting in shattered schemas that they originally held (McCann and Pearlman, 1990). They were largely exposed to refugee trauma, experienced high rates of VT, had many unmet needs at work, which negatively impacted their regulating mechanism of differentiation and decreased their intimate relationships. Alongside these negative ramifications, aid-workers have enjoyed the support of co-workers to some extent, and found meaning to their work in a large extent, as well as experienced high rates of VPTG.

Increased VT was associated with increased VPTG, concordant with other studies (Brockhouse et al., 2011; Linley and Joseph, 2007; Veronese et al., 2017), and with decreased intimacy (Cohen and Collens, 2013; Pack, 2010; Taylor et al., 2018; VanDeusen and Way, 2006). The extent of exposure was not found to be a significant linear or curvilinear predictor of VPTG in our sample. Extent of exposure was only associated with VPTG and intimacy through the mediating effect of finding meaning. It could be that aid-workers who are exposed to trauma stories in all levels need to psychologically process such exposure in finding meaning related to their work in order to experience growth and enhanced intimacy.

**Table 3**

Standardized regression coefficients, standard errors, and bootstrap 95% confidence intervals for predicting VPTG and intimacy through differentiation of the self and finding meaning.

Measure	VPTG		Intimacy	
	95% CI Lower, Upper	$\beta$	95% CI Lower, Upper	$\beta$
1. Direct VT	[0.024, 0.268]*	0.146	[-0.222, -0.030]*	-0.126
Indirect VT through differentiation	[0.066, 0.211]*	3.595	[-0.064, -0.014]*	-2.885
Indirect VT through finding meaning	—	—	—	—
2. Direct needs at work	[0.050, 0.265]**	0.161	[-0.027, 0.174]	0.074
Indirect needs at work through differentiation	[-0.368, -0.078]*	-2.819	[0.017, 0.110]*	2.436
Indirect needs at work through finding meaning	[0.044, 0.348]*	2.368	[0.005, 0.081]*	1.910
3. Direct extent of exposure	[-0.006, 0.183]	0.087	[-0.001, 0.196]	0.097
Indirect extent of exposure through differentiation	—	—	—	—
Indirect extent of exposure through finding meaning	[0.015, 0.096]*	2.538	[0.002, 0.022]*	1.996
4. Direct co-workers support	[0.000, 0.000]	—	[0.022, 0.257]*	0.142
Indirect co-workers support through differentiation	—	—	—	—
Indirect co-workers support through finding meaning	[0.003, 0.070]*	2.006	[0.000, 0.016]*	1.704

Note. The associations between co-workers support → VPTG; co-workers support → differentiation; extent of exposure → differentiation; and VT → finding meaning were omitted from the model to gain a better model fit. \* $p < .05$ ; \*\* $p < .01$ . The specific indirect effects were calculated via Monte Carlo method for assessing mediation (Selig and Preacher, 2008) and the Sobel test (Preacher and Hayes, 2008).

Aid workers whose organizations addressed their needs reported increased VPTG. This finding reinforces other studies that recommend providing aid-workers with the adequate resources, benefits, and professional supervision and training to enhance growth (Brooks et al., 2015; Cohen and Collens, 2013; Finklestein et al., 2015; Posselst et al., 2019). However, met needs at work was not associated with intimacy. Perhaps aid-workers who had their needs addressed at work, were not preoccupied with work-issues and did not bring them home (Pack, 2010), which might partially explain the lack of association between met needs at work and intimacy. In addition, increased co-workers support was associated with increased intimacy. It could be that aid-workers shared their work experiences with their professional peers (Bober and Regehr, 2006; Clemans, 2004; Cohen and Collens, 2013; Pistorius et al., 2008), which may have played a buffer against negative impacts on their intimate relationships. Nonetheless, co-workers support was not associated with VPTG, similar to the findings of Brockhouse et al. (2011). Taking into account that VPTG engages two processes, i.e. negative schemas change following shock and witnessing clients' growth (Cohen and Collens, 2013), it could be that these processes occur in the intrapsychic level of aid-workers that do not involve co-workers' support.

Finding meaning was associated with increased VPTG. This finding provides empirical support to the theories and qualitative studies on the involvement of trauma aid-workers in existential questioning and meaning making about the purpose of their work as part of the process resulting in VPTG (Cohen and Collens, 2013; Barrington and Shakespeare-Finch, 2013; Linley and Joseph, 2011). Finding meaning was also associated with increased intimacy. Perhaps finding meaning to their work and witnessing their clients' growth (Roberts et al., 2018; Splevins et al., 2010), contributed not only to aid-workers' own growth, but also enhanced their self-esteem, appreciation of life and relating to others (Brooks et al., 2015), which in turn enhanced their intimacy.

Surprisingly, lower differentiation was associated with increased VPTG. It could be that the regulating mechanism of balancing between emotions and thoughts, was negatively impacted by the increase in VT, which increased the potential for growth (Brockhouse et al., 2011; Linley and Joseph, 2007; Veronese et al., 2017). Studies suggested that separation from work stressors contributed to decreased stress (Cohen and Collens, 2013). However, when aid-workers are unable to regulate their emotions and thoughts, or separating themselves from the trauma work, it may present grounds for elevated stress that enhances VPTG, especially when VPTG is potentially experienced in highly challenging/crisis life circumstances (Tedeschi and Calhoun, 1996). Additionally, higher differentiation was associated

with increased intimacy, similar to other studies' findings (Rizkalla and Rahav, 2016; Rizkalla and Segal, 2019a).

While increased VT was associated with decreased differentiation, similar to studies reporting that trauma workers felt detached (Clemans, 2004), had difficulty in maintaining boundaries, and in “switching off after work (Splevins et al., 2010), and that increased STS was associated with decreased differentiation (Rizkalla and Segal, 2019a); VT was not associated with finding meaning. Perhaps the negative schemas change were shocking to an extent that aid-workers could not enable themselves the space in delving into meaning making (Cohen and Collens, 2013; Posselst et al., 2019). Furthermore, increased extent of exposure was associated with increased finding meaning, but not associated with differentiation. It could be that aid-workers who were extensively exposed to refugee trauma, were able to witness the positive changes in refugees' lives and their contribution to such change, which contributed to the process of finding meaning to their work (McCormack and Joseph, 2013; Posselst et al., 2019; Wang et al., 2011). However, lack of association between extent of exposure and differentiation might be attributed to the fact that trauma exposure alone is not enough to alter the regulating mechanism of differentiation. It could be that PTSD symptoms stemming from personal trauma history of aid-worker would have added to the broader picture of explaining changes occurring in the regulating mechanism (Rizkalla and Segal, 2019a). Perhaps the mechanism behind changes in differentiation encompasses psychic processes pertaining mental health impacts such as emotional and behavioral alterations occurring in STS, or cognitive ones in VT.

Increased met needs provided by NGOs was associated with increased differentiation and finding meaning. One study found that aid-workers who felt connected to their NGOs experienced increase in their differentiation (Rizkalla and Segal, 2019a). It could be that meeting the needs of aid-workers in providing diverse resources enabled aid-workers to have enough space to regulate the work stressors and delve into meaning making processes (Cohen and Collens, 2013; Barrington and Shakespeare-Finch, 2013). Additionally, increased co-workers support was associated with increased finding meaning, concordant with other studies, suggesting that colleagues encourage each other in reframing trauma experiences in positive ways, and focusing on finding meaning and purpose in their lives and work (Brooks et al., 2015; Pack, 2010; Posselt et al., 2019). However, co-workers support was not associated with differentiation. Again, it seems that changes in differentiation need to occur in a deep process or through mental health impacts, and not only through co-workers support.

In this study differentiation mediated the associations between VT



and both VPTG and intimacy, and between needs at work and both VPTG and intimacy. Increased differentiation was a protective factor against second hand trauma in contributing to aid-workers intimate lives (Lahav et al., 2019; Rizkalla and Segal, 2019a). However, VT negatively impacted differentiation, while met needs at work enhanced differentiation, which in turn increased VPTG. Aid-workers differentiation enabled the maintenance of clear and flexible boundaries with refugees, and balance between their emotional and intellectual resources, which allowed them to separate their world from the one of refugees (Halevi and Idisi, 2018) to an extent of decreasing their VPTG. It could be that only with experiencing the negative ramifications of VT and unmet needs at work that aid-workers identify with refugees trauma experiences that blur their boundaries and separation, which decreased their VPTG.

Furthermore, finding meaning fully mediated the associations between extent of exposure and both VPTG and intimacy, and the associations between co-workers support and VPTG, and needs at work and intimacy. In addition, finding meaning partially mediated the associations between needs at work and VPTG, and co-workers support and intimacy. Finding meaning in trauma work may play a buffering role against the negative implications and provide aid-workers with an opportunity for growth (Cohen and Collens, 2013; Brooks et al., 2015; Linley and Joseph, 2011) and strengthen their ties with intimate partners (Barrington and Shakespeare-Finch, 2013; Splevins et al., 2010; Taylor et al., 2018; Veronese et al., 2017), with the assistance of co-workers and organizational support (Brooks et al., 2015; Pack, 2010; Posselt et al., 2019).

## 9. Limitations

Generalization is limited to aid-workers who provide diverse services to Syrian refugees in Jordan. Most participants were Jordanians and Muslims, which might have an impact on their responses, and further limits generalization to other populations who work in the humanitarian sector. The cross-sectional design may not accurately reflect the contextual situation of aid-workers ongoing exposure to refugee trauma. Such trauma work may oscillate in intensity and volume of trauma exposure. Further, while the primary exogenous variables precede in time and thus causal order the model criteria of VPTG and intimacy, they are contemporary with the mediators, differentiation and finding meaning. Longitudinal study should provide greater validation of the hypothetical causal ordering of these variables in the model. The data collection relied upon self-report surveys, thus, subjective perceptions of participants. It took place few years after the influx of refugees and may be changed with the protracted situation of the refugees and the prolonged assistance aid-workers have provided. Despite these cross-sectional limitations, the data in this study were collected from multiple NGOs, wherein aid-workers provided services to refugees in diverse geographical locations, and held different professions and positions with varied extent of trauma exposure, work stressors and organizational support. Still, future studies examining the study's variables among other aid-workers in the Middle East, may reinforce the associations found in our findings. Nonetheless, this study holds important contributions to understanding refugee trauma-work and its implications for aid-workers mental health and personal lives, and the process contributing to their growth.

## 10. Conclusions

Increasing awareness of potential VPTG may hold positive consequences for aid-workers and refugees alike. Organizations need to address the long-term involvement of their aid-workers in providing services to refugees given the risks of VT resulting from accumulative and empathetic engagement with clients. Their support is crucial in mitigating the negative impacts of VT, as well as in facilitating and enabling a nurturing space for potential growth. In addition,

organizations need to consider enhancing cohesion and support among their staff, as well as emphasizing joint goals to encourage team work. Interventions that promote positive thinking and education on appropriate coping strategies are also recommended.

## CRedit authorship contribution statement

**Niveen Rizkalla:** Visualization, Data curation, Project administration, Formal analysis, Writing - original draft. **Steven P. Segal:** Funding acquisition, Writing - original draft, Writing - review & editing, Resources.

## Declaration of Competing Interest

There were no conflict of interest.

## Disclaimers

The views expressed in the manuscript are the authors own opinions, and not an official position of the institution or funder that supported this study.

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## Ethics approval

This study was approved by the Committee for the Protection of Human Subjects, University of California, Berkeley (CPHS, February 2014).

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## Supplementary materials

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