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Research Article

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On-Screen Exposure to Battlefield Sights and Psychological Symptoms Among RPA Operators

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Abstract

Background: *On-screen exposure to battlefield sights can be stressful. This study aimed to investigate the link between exposure to distressing battlefield events involving severe injuries and fatalities and distress symptoms.*

Method: *A cross-sectional design study based on self-report questionnaires. The questionnaires included: State-anxiety inventory (STAI), Depression (BDI), posttraumatic stress disorder (PCL-5); and Burnout (MBI).*

Results: *The participants were 126 Israeli operators of remotely piloted aircraft (RPA), 91.3% male, 49.2% aged 18-25. Percentage of exposure to distressing sights was 34.7% (n = 42). The rate of intrusive PTSD symptoms was higher in the group that had been exposed to distressing sights than in the other group (p = .019). Burnout, depressive, and anxiety symptoms appeared in younger operators. The GLM model for predicting post-trauma symptoms (PTSS), depression, anxiety and burnout, revealed that older individuals who had been in career service for over five years were at higher risk of PTSS.*

Conclusions: *Younger RPA's are more vulnerable to anxiety, depression, and burnout symptoms, which seem to originate from their younger age and military inexperience rather than from distressing sights. Exposure to distressing sights is related to PTSD-intrusive symptoms that characterize the older RPA operators who have been exposed to a larger number of distressing sights being older and having served for a longer period.*

Limitations: *The relatively modest sample size may have limited reaching statistically significant differences in the variables.*

Key Words: Remotely piloted aircraft (RPA), anxiety, depression, posttraumatic stress disorder (PTSD)

Introduction

The extensive technological developments, especially in the past decade, has made remotely piloted aircraft (RPA) an integral part of modern warfare, and a vital operational means [1-3]. RPAs have become critical military assets, enhancing real-time intelligence, surveillance, and reconnaissance, providing close air support and facilitating precise strike operations [1].

While RPA operators are not in immediate danger during hostilities as are combatants, they are exposed to distressing sights of combat involving severe injuries and fatalities, and to the distress that accompanies combat [1, 4].

Recent studies have found that PTSS is the primary manifestation of distress among RPA operators, followed by anxiety and depression [1, 4-6]. Furthermore, higher levels of anxiety and depression symptoms appear in RPA operators than in other combat soldiers [4-7]. Finally, studies have shown that RPA operators demonstrate high levels of exhaustion and burnout [8-10].

A previous preliminary study of Israeli RPA operators found no signs of clinical PTSD [11]. However, on further examination of the personal and job-related variables, a significant association emerged between depression and length of time in the job (referred

to below as seniority). The mean depression level among more senior operators who have been in service for a long time was twice as high as that of their newer colleagues. Similarly, stress levels and the Intensity of Stress subscale derived from the Post-Trauma Questionnaire were significantly higher among operators with over 36 months in the job than in those who had been serving for a shorter time [12]. Stress levels were also significantly higher in operators aged 25 and above than in their younger colleagues [11]. Note, however, that the mentioned preliminary study investigated a rather small population.

The Present Study

The main objective of the present study was to check whether an association exists between on-screen exposure of Israeli RPA operators to distressing battlefield sights involving severe injuries and fatalities (referred to below as distressing sights) and symptoms of S-anxiety, depression, PTSS, and burnout in the RPA operators. Our first hypothesis was that such association would emerge. The second hypothesis was that older RPA operators, who have been exposed to distressing sights for longer years of military service, would show more symptoms of distress. The last hypothesis was that distress emotions would be manifested by symptoms rather than appear as a full-blown disorder (i.e., without a definite cutoff point between PTSS and PTSD, for example), and their manifestations would be indirect, e.g., burnout. We based our hypotheses on studies that have shown emotional distress in active RPA operators [13]. According to those studies, cumulative exposure to battle sights is closely associated with symptoms of distress [14-17]. Investigating and monitoring the impact of battlefield exposure on RPA operators is highly valuable towards preventing distress escalation, and allowing the IAF to design preventive interventions for this critically vulnerable population.

Method

Study design

The study was conducted using a cross-sectional design. The respondents completed self-reporting questionnaires in a pencil-and-paper format.

Materials and Procedure

Data were collected during two training days in the squadron between November 2016 and February 2017 (4 months), in which reserve personnel participated as well. All operators in all the RPA squadrons received the questionnaires and participation was voluntary. After receiving an explanation about the nature of the study, all the participants signed an informed consent form.

Participants

The studied population included 126 IAF RPA operators from five different squadrons. Table 1 presents the population characteristics.

Table 1: Population characteristics (N = 126)

Variables		N	%
Gender	Male	115	91.3
	Female	11	8.7
Age	18-25	62	49.2
	≥ 26	64	50.8
Marital status	Single	52	41.3
	Married	74	58.7
Type of military service	Compulsory	22	17.7
	Career service	60	48.4
	Reserve duty	42	33.9
Rank of officersΩ	≥ Senior	45	38.1
	≤ Junior	73	61.9
Years of service	≤ 4	35	28.0
	≥ 5	90	72.0
Weekly work hours	≤ 50	46	41.4
	≥ 51	65	58.6
Personal crises over the previous year∞	Yes	22	18.2
	No	99	81.8
Exposure to distressing sights#	None Exposed	44	36.4
	Exposed	77	63.6

Note. Ωrank (– up to captain – Junior, major and above – senior); ∞Crisis or failures in meaningful relationships over the past year #Exposure to military operation implies exposure to distressing sights including injuries and fatalities

Comparison of variables

Since the sample included only RPA operators, we compared the independent variables (demographic, personal, and military characteristics) with the dependent variables (e.g., PTSD, depression, anxiety).

Independent variables

Demographic, personal, and military characteristics. The items collected included gender; age range (young individuals, 18-25, referred to below as ≤ 26 and older ones, referred to as ≥ 26); marital status (single or married); type of military service (compulsory, career service, or reserve duty); rank (– up to captain – Junior, major and above – senior); years in service (≤4, or ≥5 years; compulsory service is three years for both male and female soldiers and RPA operators serve an extra year in career service conditions); number of working hours in a typical week in the three previous months (≤50 or >50 hours); personal crisis situations over the previous year (yes or no); and exposure to military operations that involved distressing sights and deaths (referred to as 'exposed' or

'unexposed').

Dependent variables

Posttraumatic Stress Disorder Questionnaire – PTSD - PCL- 5 (Weathers et al., 2013). This 20-item questionnaire describes the four main axes of the PTSD syndrome corresponding to the DSM-V: intrusive symptoms (e.g., "Sometimes, when things remind you of the war, do you feel or act like you are there"?), avoidance symptoms (e.g., "avoiding external factors that caused you the traumatic experience"), negative cognitions (e.g., "strong negative emotions such as fear or dread, anger, guilt or shame") and over-arousal symptoms (e.g., "feeling jumpy or easily startled"). Items were presented on a 5-point Likert scale, Cronbach's α = .95 (Weathers et al., 2013). The overall Cronbach's α in our study was α = .936.

Beck Depression Inventory – BDI (Beck & Steer, 1987). This 21-item questionnaire measures affective, cognitive, somatic, and behavioral aspects of depression. Each symptom category describes different levels of depression, presented on a 4-point scale, ranging from 0 to 3, where 3 represents a high level of depression (e.g., Lately… I do not feel sad [0], I am sad [1], I am always sad, and I can't get over it [2], and I am so sad or miserable that I can't bear it [3]). Scores for the entire questionnaire range from 0–63, where 0–8 indicates normal states; 9–21 indicates low level depression symptoms (referred to below as 'mild'), 22-29 indicates moderate symptoms of depression (referred to below as 'moderate'), and 30–63 indicates severe depression (referred to below as 'major'). The overall Cronbach's α in our study was α = .653.

State-Trait Anxiety Inventory – STAI. (Spielberger, Gorsuch, & Lushene, 1970). In this part of the study, we examined only state anxiety (20-items). The S-anxiety subscale asks respondents how they feel at the current time, using items that measure subjective feelings of apprehension, tension, nervousness, worry, and activation/arousal of the autonomic nervous system (Julian, 2011). Items are presented on a 4-point scale, ranging from 1 (does not describe me at all) to 4 (describes me a lot). Examples of S-Anxiety items include: I am tense, I am worried, I feel calm, I feel secure. Higher scores indicate more significant anxiety. A cut-off point of 39 has been suggested to detect clinically significant symptoms for the S-anxiety scale. Overall Cronbach's α in our study α = .738.

Maslach Burnout Inventory- MBI-GS. This 16-item questionnaire examines the intensity of burnout (Maslach & Jackson, 1993). The inventory comprises three subscales: (1) Emotional Exhaustion, manifested by fatigue, loss of energy, and feelings of overload (5 items; e.g.: I'm mentally drained by my work); (2) Professional Efficacy, manifested by feelings of accomplishment in one's work (6 items; e.g.: I feel I am making an effective contribution to what this organization does); (3) Cynicism, expressing mental distancing of individuals from their work (5 items; e.g.: I just want to do my job and not be bothered). Items are presented on a 7-point Likert scale, ranging from 0 (never) to 6 (every day). A general burnout score representing the average sum of the items was calculated as well. For the current sample, the overall Cronbach's α was α = .770.

Data Analysis

We used SPSS (Version 21.0 for Windows) for our statistical analysis. The significance level was set at $p < .05$. Descriptive statistics were used (means and standard deviations for continuous variables, distributions for categorical variables). The three variables — PTSD, depression, and state-anxiety — were also examined as discrete variables divided by a cut-off point. The cut-off points were: PTSD disorder ≥ 33; mild depression disorder ≥ 10; and anxiety disorder > 39. To detect associations between discrete variables we used Pearson's Chi-Square test ($\chi 2$). Since most of the variable distributions were asymmetric, Mann-Whitney and Kruskal-Wallis tests were used to compare the means of continuous variables between groups. Finally, we performed a general linear model (GLM) to evaluate the dependent variables in their continuous configuration – PTSS, depression, S-anxiety, and burnout symptoms – by the independent variables that were found significant in the univariate analyses or were determined as theoretically essential in the standardization model.

Ethics approval

The IDF Human Research Review Board [1700-2016] gave its approval to the study.

Results

As mentioned, the studied population comprised 126 RPA operators (see Table 1 for their characteristics). The majority were male (n = 115; 91.3%), 49.2% were aged 18 to 25, 50.8% were aged 26 and above. 58.7% (n = 74) were married. Time in service: 28% (n = 35) – less than 4 years (most of them still in compulsory service), 43.2% (n = 54) – 5–9 years, and 28.8% (n = 36) – 10 years or more. Of the participants, 48.4% (n = 60) were career service personnel, 17.7% (n = 22) were in compulsory service, and 33.9% (n=42) were in reserve duty. The participants' weekly workload was divided as follows: 41.4 % (n=46) worked 50 hours or less per week, and 58.6% (n=65) worked 51 hours or more per week. Of the participants,18.2% (n =22) reported that they had experienced crises in meaningful relationships over the previous year, 36.4% (n = 44) had not been exposed to distressing sights in their work; 63.6% (n = 77) reported having been exposed to 1–10 distressing sights including injuries and fatalities.

Total factors, means, standard deviations, and median of the study variables were analyzed according to the scales noted above. The results are presented in Table 2.

Table 2: Means, standard deviations, and median of the study variables (N = 126)

Variables	N	%	Mean	SD	Median	Range
PTSS	126		5.56	9.38	2.0	0-49
Depression	126		8.71	7.41	7.0	0-37
S- Anxiety	126		32.67	9.30	32.0	19-62
Burnout	126		59.56	11.94	58.50	11-97
Exhaustion	126		16.88	6.71	15.50	6-34
Cynicism	125		12.33	5.50	11.0	4-27
Professional efficacy	125		30.69	6.14	31.0	15-42
Non- PTS-Dπ	120	96.0	4.15	6.353		
PTSDπ	5	4.0	39.40	6.148		
Intrusive	125	-	1.176	2.466		
Avoiding	125	-	0.480	1.216		
Negative cognitions	125	-	2.640	5.961		
Over-arousal	125	-	1.880	3.342		
No Depression¥	78	61.9	4.077	3.247		
Depression¥	126		8.7	7.4		
Mild	37	29.4	13.514	2.353		
Moderate	10	7.9	24.200	3.676		
Major	1	0.8	37.000	-		
No Anxiety€	99	78.6	28.929	5.724		
Anxiety€	27	21.4	46.370	6.617		

Note. πPTSD (cut-off ≥ 33); ¥Depression (9–21 indicates mild symptoms; 22-29 indicates moderate symptoms; 30–63 indicates major depression); €S-Anxiety (cut-off > 39)

The correlations between demographic, personal, and military variables and between exposure to distressing battlefield sights including injuries and fatalities, are presented in Table 3.

A significant age difference emerged between non-exposed and exposed individuals. Among the younger age group, the proportion of non-exposed individuals was higher than in the older age group. A similar difference in exposure rates appeared between ranks (p = .004) and years of service (p = .011), where higher-rank individuals with longer years in service were more exposed.

Table 3: Distribution of exposure to a military operation (N = 121*) by demographic, personal, and military characteristics

Variables1		None Exposed N = 44 (36.4)		Exposed N = 77 (63.6)		Exact Sig. (2-sided)
		n	%	n	%	
Gender	Male	41	93.2	69	89.6	
	Female	3	6.8	8	10.4	.744
Age	18-25	29	65.9	32	41.6	
	≥ 26	15	34.1	45	58.4	.014
Marital status	Single	22	50.0	27	35.1	
	Married	22	50.0	50	64.9	.126
Type of military service2	Compulsory	10	23.8	11	14.3	
	Career service	23	54.8	36	46.7	
	Reserve duty	9	21.4	30	39.0	.117
Rank of officers	≥ Senior	31	81.6	41	53.2	
	≤ Junior	7	18.4	36	46.8	.004
Years of service	≤ 4	19	43.2	15	19.7	
	≥ 5	25	56.8	61	80.3	.011
Weekly work hours	≤ 50	14	36.8	30	43.5	
	≥ 51	24	63.2	39	56.5	.544
Personal crises∞	Yes	5	12.2	16	21.3	
	No	36	87.8	59	78.7	.314

Note. 1Chi square, 2Kruskal Valise; ∞Crisis or failures in meaningful relationships over the past year; * data on exposure to a military operation was missing for five operators

Table 4 shows the associations between the independent and dependent variables. Note that the tables include only the variables found to be significant, and the data of variables found to be non-substantial (e.g., gender) are not presented. PTSS. Those who reported having experienced a relationship crisis with a significant other during the previous year revealed a higher mean of total PTSS symptoms than those who did not report such a crisis (M = 9.14 ± 13.2 vs. M = 4.63 ± 8.27; p = .038). The highest mean of over-arousal via PTSD appeared as well in those who reported having crisis (p = .033). Intrusive symptoms via PTSD appeared in the group that had been exposed to distressing sights (p = .019). They revealed a higher mean of intrusive symptoms (M = 1.25 ± 2.18) compared to the group that had not been exposed to such sights (M = 0.88 ± 2.66). The mean of intrusive symptoms (p =

.031) was higher for the older operators (≥ 26 years).

Depression Symptoms: As Table 4 shows, depression symptoms were more acute among those who reported a relationships crisis during the previous year than among those who did not report such crisis (p =.010). Unmarried operators revealed a higher mean of depressive symptoms than married operators (p =.009). Since this was the only significant variable concerning marital status, the data is not presented in a table.

S-Anxiety Symptoms: Table 4 shows that the group of younger operators revealed a higher mean of S-anxiety than the older group (p = .004). The highest mean was found amongst those who reported a relationship crisis during the previous year (p = .010).

Burnout: In Table 4, significant differences appeared in total burnout as well as in exhaustion and cynicism (p < 0.001) in the younger age group. Exhaustion (p = .007) was higher for those who reported working 51 hours per week compared to those who worked less hours (data is not presented in a table, since it was the only significant variable).

As mentioned in the data analysis, the three variables-PTSD, depression, and state-anxiety-were also examined as discrete variables, divided by cut-off points. Since the scores of only five RPA operators' questionnaires (4.0%) indicated that they had PTSD, no demographic variables were found significant in this classification. Regarding S-Anxiety vs. No Anxiety, where the cut-off point was 39, the findings showed that S-Anxiety was more prevalent among junior officers than among senior ones (28.8% vs. 11.1%; p = .038). A higher rate of anxiety appeared in the younger age group. 26 (50%) of the unmarried RPA operators were found to have higher depression values than married ones (29.7%; p = .026). Junior officers scored higher on depression than senior officers (46.6% vs. 24.4%; p <.02). Finally, 59.1% (n = 22) of the RPA operators who reported having depression symptoms (cutoff ≥ 10) also reported that they had experienced crises in meaningful relationships over the previous year (p = .030). That data is not presented in the table.

Table 4: Research Variable score by Exposure to distressing sights, Age, Marital Status and Crises Categories

Variables	Exposure to distressing sights			Age			Crises		
	None Exposed	Exposed	Exact Sig.	18-25	≥26	Exact Sig	No	Yes	Exact Sig.
	N = 44 Mean±SD	N = 77 Mean±SD	(2-sided)	N=62 Mean±SD	N=64 Mean±SD	(2-sided)	N=99 Mean±SD	N=22 Mean±SD	(2-sided)
PTSS	4.16±9.52	6.03±9.08	.085	5.18±9.47	5.94±9.35	.890	4.63±8.27	9.14±13.2	.038
Intrusive	0.88±2.66	1.25±2.18	.019	0.96±2.59	1.38±2.33	.031	1.00±2.35	1.90±2.94	.118
Avoiding	0.25±0.96	0.57±1.25	.055	0.45±1.12	0.50±1.30	.583	0.42±1.13	0.72±1.63	.433
Negative Cognitions	2.77±8.22	2.36±4.20	.243	3.03±7.49	2.25±3.93	.823	2.00±4.01	3.27±5.69	.110
Over-arousal	1.43±3.52	2.10±3.28	.115	1.70±3.33	2.04±3.37	.972	1.40±2.49	3.72±5.49	.033
Depression	8.00±7.15	8.87±7.61	.610	9.72±7.36	7.71±7.37	.066	7.85±6.85	12.81±8.74	.010
S-Anxiety	31.02±8.99	33.55±9.21	.145	35.02±9.30	30.96±8.77	.004	31.53±8.55	38.00±11.19	.010
Burnout	59.18 ± 12.91	59.70 ± 11.62	.440	63.82±11.39	55.42±11.03	<.001	3.78±0.69	3.86±0.79	.650
Exhaustion	17.34 ± 6.34	16.55 ± 6.91	.347	18.96±6.27	14.85±6.54	<.001	3.35±1.33	3.55±1.36	.540
Cynicism	12.72 ± 5.14	11.98 ± 5.66	.323	14.32±5.85	10.36±4.33	<.001	2.47±1.09	2.77±1.11	.194
Professional efficacy	30.09 ± 5.99	31.15 ± 6.09	.981	30.53±5.89	30.84±6.41	.750	5.24±0.97	5.03±1.06	.506

Note. Dichotomy Variables: Mann-Whitney; Category Variables: Kruskal-Wallis for comparing means between groups.

We examined the relationship between the dependent variables using the Spearman correlation. The results of this test appear in Table 5.

A positive association was found between PTSS and depression (ρ = 0.532, p < .001), anxiety (ρ = 0.429, p < .001), and burnout (ρ = 0.225, p = .01). Depression was found to be positively associated with anxiety (ρ = 0.556, p < .001) and burnout (ρ = 0.290, p < .001). A positive association emerged between anxiety and burnout (ρ = 0.333, p < .001).

Table 5: Spearman's Correlations by variables as –a symptoms continuum

	PTSS	Depression	Anxiety	Burnout
PTSS		0.532***	0.429***	0.2252**
Depres-sion			0.556***	0.290***
Anxiety				0.333***

Note. Significance (2-tailed); ***<0.001, **<0.01, *<0.5

Finally, we performed a general linear model (GLM) to predict post-trauma symptoms, depression, anxiety and burnout (Table 6).

A GLM performed after standardization of variables showed the following features to be the significant PTSS predictors: female (OR = 1.828 [95% CI, 1.230 - 2.717] p = .003); older age (OR = 2.277 [95% CI, 1.706 - 3.048] p < .001); career service (OR = 2.517 [95% CI, 1.899 - 3.335] p < .001); junior officer (OR = 2.027 [95% CI, 1.510 - .723] < .001); over 5 years of service (OR = 1.50 [95% CI, 1.145 - 1.968] p = .003); working more than 50 hour per week (OR = 1.445 [95% CI, 1.157 - 1.805] p = .001) and reported relationship crisis (OR = 1.351 [95% CI, 1.070 - 1.706] p = .011).

After standardization of the variables, the significant predictors of depression symptoms were: single (OR = 1.498 [95% CI, 1.259 - 1.781] p < .001); career service (OR = 1.292 [95% CI, 1.019 - 1.638] p < .001); and reported relationship crisis (OR = 1.293 [95% CI, 1.086 - 1.538] p = .004).

The significant predictor of S-anxiety was a relationship crisis (OR =1.111 [95% CI, 1.009 -1.222] p = .032). Being in compulsory service was found to be the only significant protective factor (OR = 0.741 [95% CI, 0.639 -0.860] p < .001). Career service was not found significant compared to reserve service (p = .445).

Career service was found to be the only significant risk factor (OR = 1.191 [95% CI, 1.091- 1.300] p < .001) predicting burnout.

Table 6: General linear regression (GLM) mixed model: prediction of PTSS, depression, anxiety, and burnout symptoms.

			B	Odds Ratio Estimate			Asymp. Sig.
				B(exp) OR	LB	UB	
Prediction of PTSS	Intercept		1.350	3.857	2.578	5.771	<.001
(P<0.001)	Gender	Female	.603	1.828	1.230	2.717	.003
		Male	0a	1			
	Age	≥ 26	.824	2.277	1.706	3.048	<.001
		18-25	0a	1			
	Marital Status	Single	.060	1.062	.841	1.341	.614
		Married	0a	1			
	Type of military service	Compulsory	-.598	.550	.330	.916	
		Career service	.923	2.517	1.899	3.335	<.001
		Reserve duty	0a	1			
	Rank of officers	≤ Junior	.707	2.027	1.510	2.723	<.001
		≥ Senior	0a	1			
	Years of service	≥ 5	.407	1.50	1.145	1.968	.003
		≤ 4	0a	1			
	Work hours per week	≤ 50	.368	1.445	1.157	1.805	.001
		≥ 51	0a	1			
	Crisis	Yes	.301	1.351	1.070	1.706	.011
		No	0a	1			

	Exposure to distressing sights	Yes	.203	1.225	0.988	1.519	.064
		No	0a	1			
Prediction of Depression	Intercept		1.934	6.915	5.111	9.354	<.001
(p<0.001)	Gender	Female	165	1.179	936	1.486	162
		Male	0a	1			
	Age	18-25	-.023	977	751	1.272	864
		≥ 26	0a	1			
	Marital Status	Single	404	1.498	1.259	1.781	<.001
		Married	0a	1			
	Type of military service	Compulsory	-.404	668	489	.912	
		Career service	256	1.292	1.019	1.638	<.001
		Reserve duty	0a	1			
	Rank of officers	≥ Senior	.205	1.228	934	1.614	142
		≤ Junior	0a	1			
	Years of service	≤ 4	-.033	1.164	982	1.379	079
		≥ 5	0a	1			
	Work hours per week	≤ 50	152	968	801	1.169	732
		≥ 51	0a	1			
	Crisis	Yes	257	1.293	1.086	1.538	004
		No	0a	1			
	Exposure to distressing sights	Yes	091	1.095	0.936	1.282	254
		No	0a	1			
Prediction of S-Anxiety	Intercept		3.569	35.479	30.448	41.342	<.001
(p<0.001)	Gender	Female	.050	1.051	.932	1.186	.416
		Male	0a	1			
	Age	18-25	.056	1.058	.916	1.221	.445
		≥ 26	0a	1			
	Marital Status	Single	.065	1.067	.976	1.166	.153
		Married	0a	1			
	Type of military service	Compulsory	-.299	.741	.639	.860	
		Career service	-.045	.956	.850	1.074	<.001
		Reserve duty	0a	1			
	Rank of officers	≥ Senior	.045	1.046	.906	1.208	.539
		≤ Junior	0a	1			

	Years of service	≤ 4	.071	1.074	.971	1.187	.165
		≥ 5	0a	11			
	Work hours per week	≤ 50	.013	1.013	.927	1.106	.781
		≥ 51	0a				
	Crisis	Yes	.105	1.111	1.009	1.222	.032
		No	0a	1			
	Exposure to distressing sights	Yes	.016	1.015	0.937	1.100	.703
		No	0a	1			
Prediction of Burnout	Intercept		3.933	51.084	45.488	57.369	<.001
(p<0.001)	Gender	Male	.041	1.042	.951	1.143	.379
		Female	0a	1			
	Age	18-25	-.041	.960	.862	1.069	.459
		≥ 26	0a	1			
	Marital Status	Single	.061	1.063	.995	1.136	.069
		Married	0a	1			
	Type of military service	Compulsory	.030	1.030	.925	1.147	
		Career service	.175	1.191	1.091	1.300	<.001
		Reserve duty	0a	1			
	Rank of officers	≥ Senior	.061	1.063	.955	1.183	.266
		≤ Junior	0a	1			
	Years of service	≤ 4	.057	1.058	.982	1.141	.137
		≥ 5	0a	1			
	Work hours per week	≤ 50	.039	1.040	.975	1.110	.231
		≥ 51	0a	1			
	Crisis	Yes	.010	1.010	.939	1.087	.789
		No	0a	1			
	Exposure to distressing sights	Yes	-.043	.958	.903	1.017	.958
		No	0a	1			

Note. General linear model (GLM); 0a reference value

Discussion

The purpose of this study was to examine the association between on-screen exposure of Israeli RPA operators to distressing battlefield sights involving severe injuries and fatalities, and symptoms of state-anxiety, depression, PTSS, and burnout. Underlying this examination was the assumption that remote exposure, especially to distressing sights, does not prevent mental distress [18]. The findings of the present study are somewhat surprising. While intrusive symptoms via PTSD were more acute than expected in the exposed group, particularly among older individuals, depression, anxiety symptoms, and burnout appeared in younger operators, contrary to our hypotheses. These findings warrant an explanation.

Our first hypothesis was that an association would emerge between on-screen exposure to distressing sights and symptoms of distress. Indeed, intrusive symptoms via PTSD were found in the group that had been exposed longest to distressing sights. As expected in our second hypothesis, intrusive symptoms via PTSD were more

acute in the older group of operators (≥ 26 years). As mentioned, in the young age group the number of non-exposed individuals was higher than that of exposed ones, and in the older group of operators the number of non-exposed people was lower than that of exposed ones. The same pattern is noticed in the differences between the ranks and seniority in years of service. Yet, contrary to our expectations, the younger operators' group revealed a higher mean of S-anxiety than the older group.

Our last assumption was that distress would be primarily manifested by discrete symptoms rather than as a full-blown disorder, or indirectly, as, for example, burnout. The current findings support our approach. While only 4% (n=5) showed signed of PTSD, 29.4% (n = 37) suffered from mild depression, 7.9% (n = 10) had moderate depression and only 0.8% (n = 1) had severe depression. Lastly, 21.4% (n = 27) were Identified with anxiety disorder by the cutoff score. With regard to exposure to distressing sights, the cut off score did not reveal differences between the variables. Two variables emerged as significant with regard to distress symptoms: anxiety disorder was more prevalent in junior officers than in senior officers; and a mild depression disorder was more prevalent in junior officers as well as in unmarried operators and individuals who reported having gone through a relationship crisis with a significant other during the previous year.

Similar differences emerged in connection with burnout. A higher level of burnout was found in the young age group and among unmarried participants than in the older and married groups. These significant differences in burnout and in the exhaustion and cynicism subscales might not be due to exposure to distressing sights.

Before attempting to explain our findings, we note that the rate of this study's participants who meet the criteria of PTSD, depression, and anxiety disorders is in line with examinations run among other Israeli combat personnel and with the rates found in U.S. RPA operators.

Subsequently to Operation Protective Edge, the prevalence of clinically diagnosed PTSD among Israeli soldiers who had been exposed to combat and life-threatening situations was 7.8% [19, 20]. The rates of PTSD found in Israeli veterans of the Yom Kippur War and of the First Lebanon War were 10-20% [21, 22]. Among U.S. RPA operators, PTSD rates were 5% [23]. It is worth noting that we based the design of our research on the study by Chappelle and his colleagues. This allows us to use their findings on U.S. operators as reference whenever possible.

In our study, the rate of participants who meet the criteria of anxiety disorders (21.4%) and depression (38.1%) by cutoff scores, is similar to the rates found in the study by Chappelle and colleagues (2012) on U.S RPA operators, where anxiety or depression symptoms were found in 20% of the participants. Moreover, comorbidity between depression and anxiety has been well established [24-26]. This idea is supported in a study by Kroenke et al. (2007), where the severity scores of anxiety were quite similar to those of PTSD and of moderate levels of depression symptoms.

A possible explanation for the surprising finding that junior officers report more anxiety and depression symptoms than senior officers is that younger soldiers (of similar age as junior officers) display symptoms related to their job characteristics rather than to exposure to distressing sights. For example, the responsibility their job entails, workload, intensity, and combat challenges experienced by operators. It is quite possible that those job characteristics are manifested by anxiety, depression, and burnout symptoms. These findings are consistent with studies that show that among Israeli combat flight engineers and U.S PRA operators, the less experienced soldiers report more depression symptoms following their initial exposure to distressing sights [27]. Wood et al. also found that the most frequently reported psychological distress symptoms were common symptoms of depression and anxiety, such as sleep problems and anhedonia, which are not specific to posttraumatic stress.

Support for our explanation is found in Bryan and colleagues [28-37]. They claim that although the military situation contributes to distress, some distress contributors originate in other elements of the soldiers' personal circumstances. They found that due to longer deployment periods and fewer resources, USAF members are expected to "do more with less" – a situation that may well contribute to occupational burnout [28]. Indeed, in the present study, while the percentages of depression and anxiety were relatively high, PTSD (according to cutoff) appeared in less than 5% of the participants. Moreover, while depression and anxiety could be associated with job characteristics, post-trauma was associated directly with exposure to distressing sights. The younger age group may suffer distress as an outcome of the need to adjust to the unique characteristics of the job. This may manifest itself by depression, anxiety, and burnout. However, in older soldiers with more years in service and more experience, the cumulative exposure to distressing sights tends to manifest itself by intrusion symptoms rather than by anxiety and depression.

In an attempt to explain the findings, we examined which of the demographic variables would better predict the four symptom types. The GLM model for predicting post-trauma symptoms, depression, anxiety and burnout, revealed that older ages, over five years of service, and over 50 working hours per week are risk factor for PTSS. Junior officers, career service personnel and females are at greater risk of PTSS. Career service personnel are at risk of depression symptoms and burnout as well. Lastly, those who had gone through a relationship crisis with a significant other in the previous year are at risk of PTSS, depression and anxiety.

In summary, the main findings of the present study showed that younger RPA operators are more vulnerable to anxiety, depression, and burnout symptoms, which seem to originate from their younger age and military inexperience rather than from distressing sights. Exposure to distressing sights is related to PTSD-intrusive symptoms that characterize the older RPA operators who have been exposed to a larger number of distressing sights being older and having served for a longer period. Given the above, it is imperative to develop prevention and treatment programs to reduce psychological symptoms and distress. Prevention programs intended to reduce PTSD-intrusive symptoms must include intervention after exposure to distressing sights or after having taken part in a military operation that involved injuries and fatalities. The programs should also incorporate a component designed to help

young RPA operators in adjusting to the job, to reduce depression, anxiety, and burnout levels, while also developing resilience and a sense of self-efficacy that would help them cope with stressful situations.

Limitations

The limitations of this study included a relatively small sample and the absence of a control group. As in all studies based on self-report, it was also difficult to assess the reliability of the participants' responses and the extent to which they reflected authentic experiences. The important topic of this study clearly warrants further investigation, with larger samples and proper control groups.

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