

# Relative influence of different stresses on PTSD in a Canadian EMS service

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## Introduction

Emergency medical service (EMS) providers are regularly exposed to a variety of stressors endemic to the profession, all of which may contribute to stress reactions like posttraumatic stress disorder (PTSD).

These stressors may be related to the provision of patient care (critical incident stress), the organization and the culture in which the responder is working (organizational stress), or the stresses associated with working on an ambulance (operational stress).

Previous research has identified a relationship between operational stress, organizational stress, critical incident stress and PTSD; however it is unclear if this relationship persists in the Canadian context.

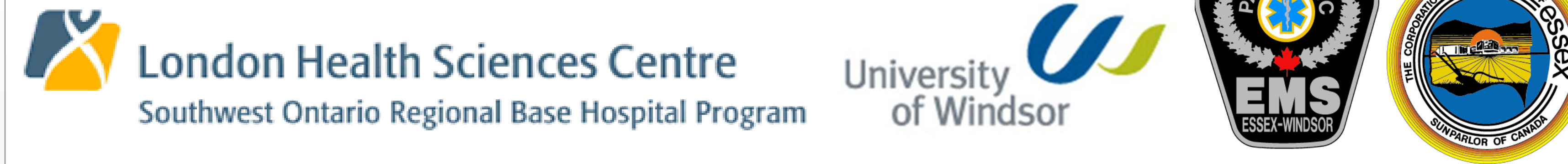
## Objective

The objective of this study was to investigate how different types of occupationally-related stress may contribute to stress reactions for paramedics working in a county-based service in southwest Ontario.

## Methods

All paramedics in a municipally-operated service (annual call volume 80,000) were invited to complete a 167-item online survey examining self-reported levels of operational stress, organizational stress, critical incident stress, posttraumatic stress symptomatology (PTSS) and demographic characteristics.

Pearson correlation coefficients were used to estimate linear dependence between stress variables. OLS regression determined predictor variables independently associated with PTSS.



## Results

145 paramedics (a 54% response rate) completed the questionnaire.

Analysis revealed a significant relationship between

- operational stress and PTSS ( $r=0.508$ ;  $p<0.001$ ),
- organizational stress and PTSS, ( $r=0.419$ ,  $p<0.001$ )
- critical incident stress and PTSS. ( $r=0.433$ ,  $p<0.001$ )

When controlling for demographic factors, operational stress was independently associated with PTSS ( $p<.001$ )

An interaction effect between operational stress and critical incident stress ( $p=.001$ ) created a robust final model with an  $R^2$  of .391.

## Results

### Unstandardized Coefficients from OLS Regression of PTSS

	Model 1			Model 2			Model 3			Model 4		
	b	SE	P	b	SE	P	b	SE	P	b	SE	P
Constant	31.078	11.561	.008	19.551	9.948	.052	16.854	9.761	.087	17.806	9.309	.058
Level of certification	-1.378	2.840	.628	-.974	2.364	.681	.022	2.338	.992	-.655	2.237	.770
Length of service	.078	.197	.694	.142	.169	.402	.088	.166	.595	.030	.159	.851
Age	.012	.193	.949	-.001	.162	.994	.009	.158	.957	.019	.150	.901
Gender	-1.814	2.399	.451	-2.548	1.994	.204	-3.028	1.954	.124	-3.337	1.865	.076
Hours worked weekly	.751	1.815	.680	-.874	1.522	.567	-.788	1.485	.597	-.249	1.424	.862
Income	.109	.801	.892	.168	.668	.802	.175	.652	.789	.144	.621	.817
Ethnicity	-.984	1.054	.352	-1.003	.875	.254	-1.057	.854	.218	-1.205	.815	.142
Operational stress				.532	.102	.000	.447	.105	.000	.435	.100	.000
Organizational stress				.018	.089	.840	.029	.087	.742	.041	.083	.623
Critical incident stress							.066	.025	.010	.039	.025	.125
CI stress x Operational stress										.006	.002	.001
Adjusted R <sup>2</sup>			-.022			.297			.331			.392
Change in R <sup>2</sup>						.312**			.037*			.061**

\* $p<.01$ , \*\* $p<.001$

## Limitations

- Non-experimental design
- Modest response rate
- Not generalizable
- Open to non-response, self report, and recall biases

## Conclusion

In the Canadian context, exposure to a multiplicity of stressors increases the risk of paramedics developing a posttraumatic stress reaction.

Operational stress independently increases the risk for a posttraumatic stress reaction; critical incident stress interacts with operational stress to further exacerbate the risk.

These findings indicate that health and wellness initiatives should address the impact of both critical incident stress as well as chronic work-related stress.

## Implications for Future Research

These findings illustrate the need for the development and validation of evidence-based interventions addressing the multiplicity of factors that can contribute to the development of stress reactions in paramedics.

## Acknowledgements

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