Hazardous Alcohol Use and Alcohol Use Disorder in Canadian Public Safety Personnel

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Background

As a result of their occupation, Canadian public safety personnel (PSP) face a great deal of trauma (e.g., exposure to life-threatening events) and workplace stressors (e.g., negative comments from public) much more regularly than the general public.

These exposures theoretically increase their risk for hazardous drinking and alcohol use disorder development.

Supported by research internationally (e.g., Ballenger et al., 2010; Swatt et al., 2007); however, little relevant research in the Canadian context.

Canadian PSP Study: Alcohol Sub-Study

Goals: Investigate rates and predictors of hazardous drinking
and alcohol use disorder (AUD) in large sample of Canadian PSP

Participants & Recruitment

All participants from the larger Canadian PSP Study (Carleton et al., 2018, Canadian Journal of Psychiatry) who provided complete data on the Alcohol Use Disorders Identification Test (AUDIT); N = 4540 PSP (~3% of PSPs)

Recruited through emails from Public Safety Steering Committee of the Canadian Institute for Public Safety Research & Treatment, provincial/municipal PSP agencies, & advocacy organizations; social media and website advertising

Web-based survey in English & French; data collection: 1 Sept 2016-31 Jan 2017

Sample Demographics

Sex	N	%
Male	3053	67.2
Female	1471	32.4

Note: N=16 did not specify their sex (0.4%)

Age Group	N	%
18-29 years	263	5.8
30-39 years	1198	26.4
40-49 years	1669	36.8
50-59 years	1190	26.2
60+ years	193	4.3

Note: N=27 did not specify their age (0.5%)

PSP Type	N	%
Call Centre Dispatcher or Operators (e.g., 911)	202	4.4
Corrections Workers	621	13.7
Firefighters	687	15.1
Paramedics	599	13.2
Municipal and Provincial Police	1144	25.2
Royal Canadian Mounted Police (RCMP)	1100	24.2

Note: N=187 were PSP that did not fit into 6 groups above, or did not specify PSP type (4.2%)

Measures

Construct	Measure	Reference	# items	alpha	Sample items/focus of items
AUD symptoms	AUDIT	Saunders et al. (1993)	10	.821	Hazardous consumption, dependence symptoms, harms
Heavy Alcohol Consumption	AUDIT-C	Bush et al. (1998)	3	.693	Drinking frequency, drinking quantity, frequency of binge drinking
Coping Drinking Motives	CMM	Author compiled	3	.772	Drinking to manage pain, emotional distress, or symptoms of mental health disorder
Workplace Stressor Exposure	PSO-Stress	Smith et al. (2008)	40	.961	Negative comments from public; work-related health issues (e.g., back pain); risk of injury on job
Trauma Exposure	LEC-5	Weathers et al. (2015)	17	.846	Physical assault; sudden violent death; severe human suffering
Anxiety Symptoms	GAD-7	Spitzer et al. (2006)	7	.918	Nervous, anxious, on edge
Depression Symptoms	PHQ-9	Kroenke et al. (2001)	9	.897	Feeling down, depressed, hopeless
PTSD Symptoms	PCL-5	Weathers et al. (2015)	20	.961	Intrusive memories, hyperarousal, avoidance
Social Anxiety Symptoms	SIPS	Reilly et al. (2012)	40	.947	Public scrutiny fears, anxiety around social interaction
Panic Disorder Symptoms	PDSS-SR	Shear et al. (1997)	7	.929	Panic frequency, distress during panic, agoraphobic avoidance

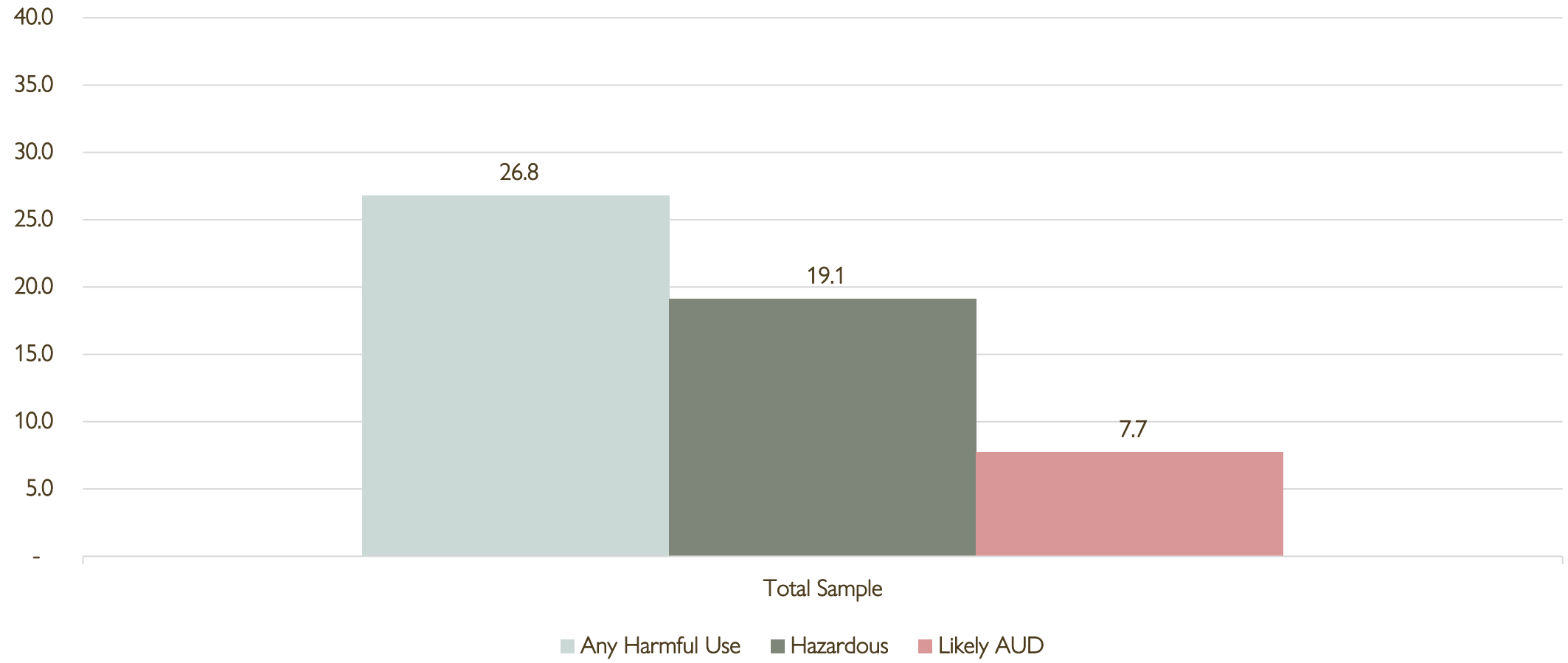
Rates of Hazardous Use & Alcohol Use Disorder

AUDIT Category Comparisons with General Population & Across PSP Type, Gender, and Age Group

Rates of Hazardous Use and Likely AUD in Full Sample

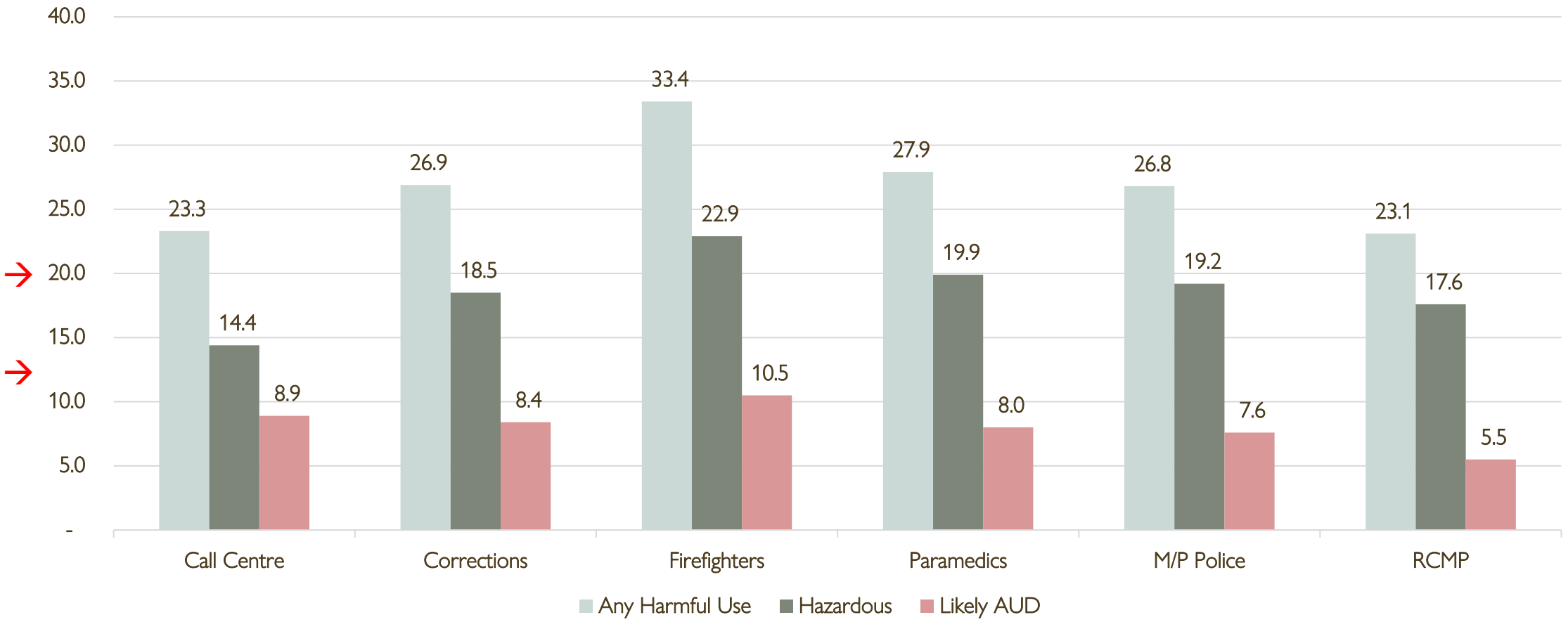
19.6% any harmful use (Cunningham et al. 2012) →

13.0% any harmful use (Nigatu et al. 2020) →



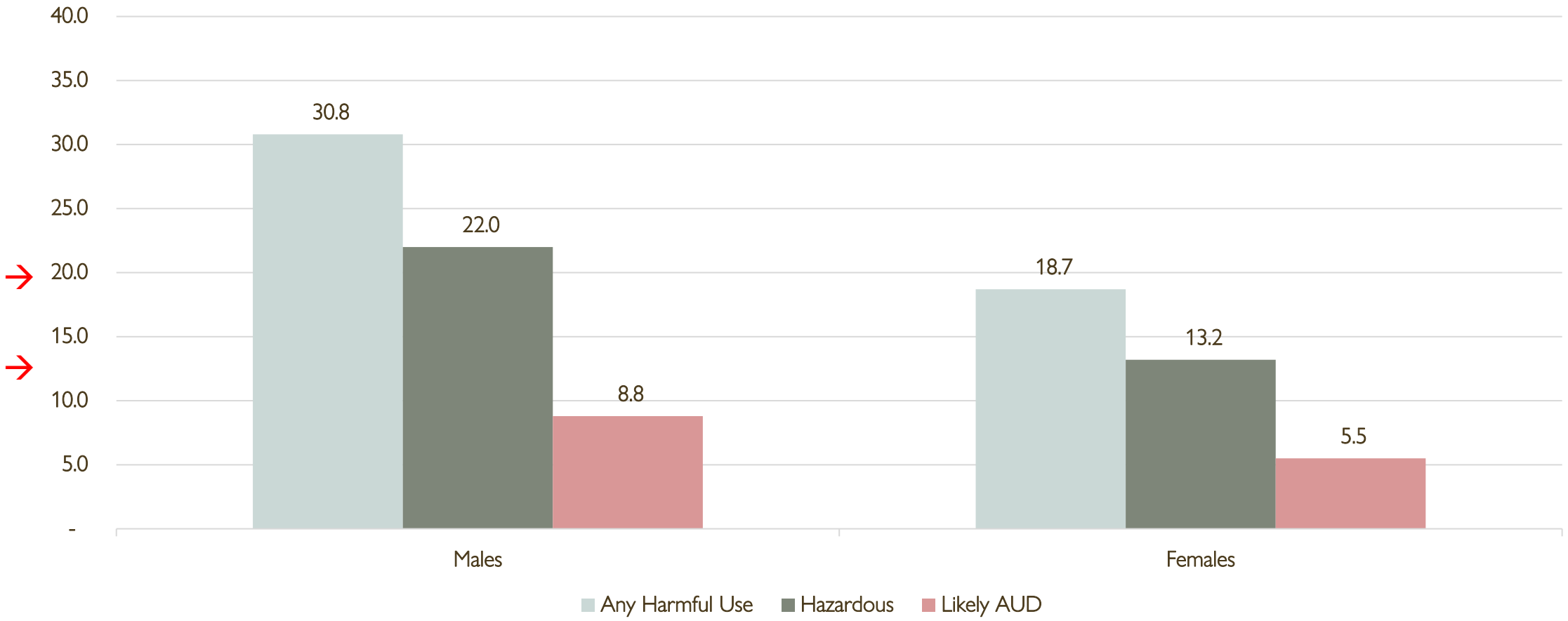
Note: Rate of any harmful use similar to rate of 26% seen in recent study of Canadian military vets (Thorisdottir et al., 2020)

Rates by PSP Type

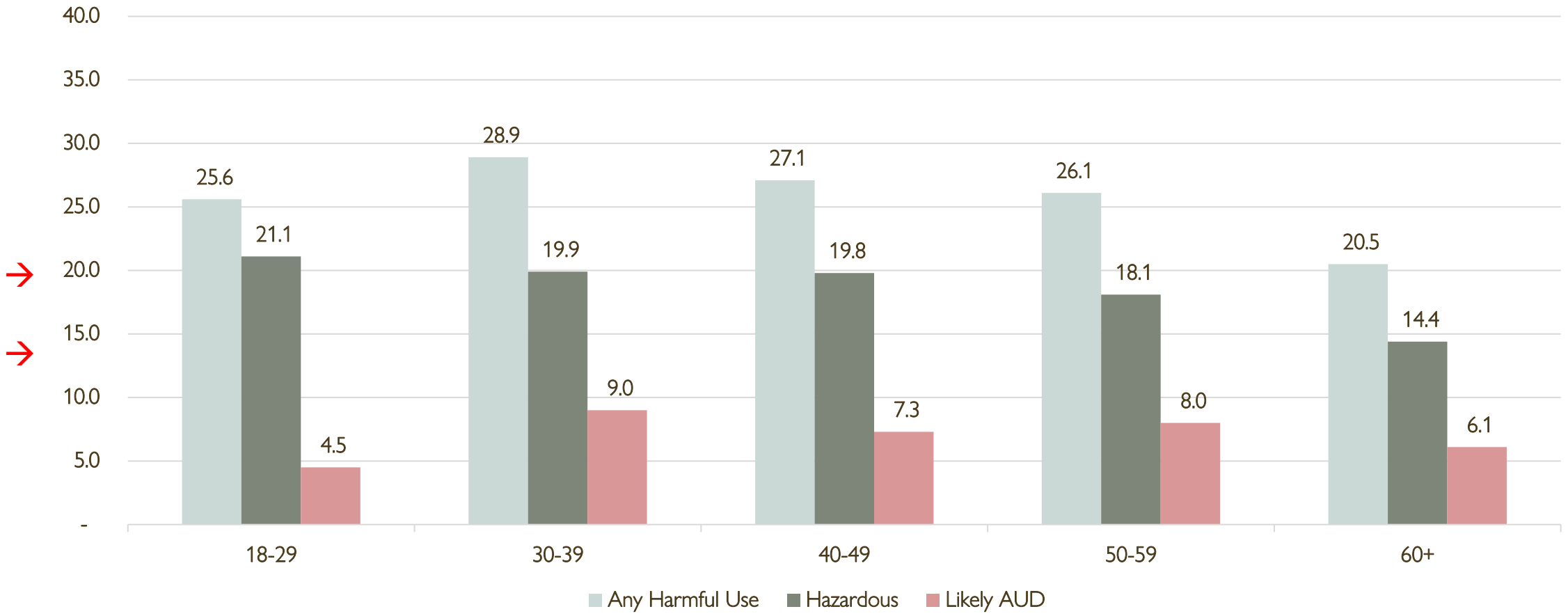


PSP and Alcohol: Stewart

Rates by Sex


40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
-
30.8
22.0
8.8
18.7
13.2
5.5
Males
Females
Any Harmful Use
Hazardous
Likely AUD

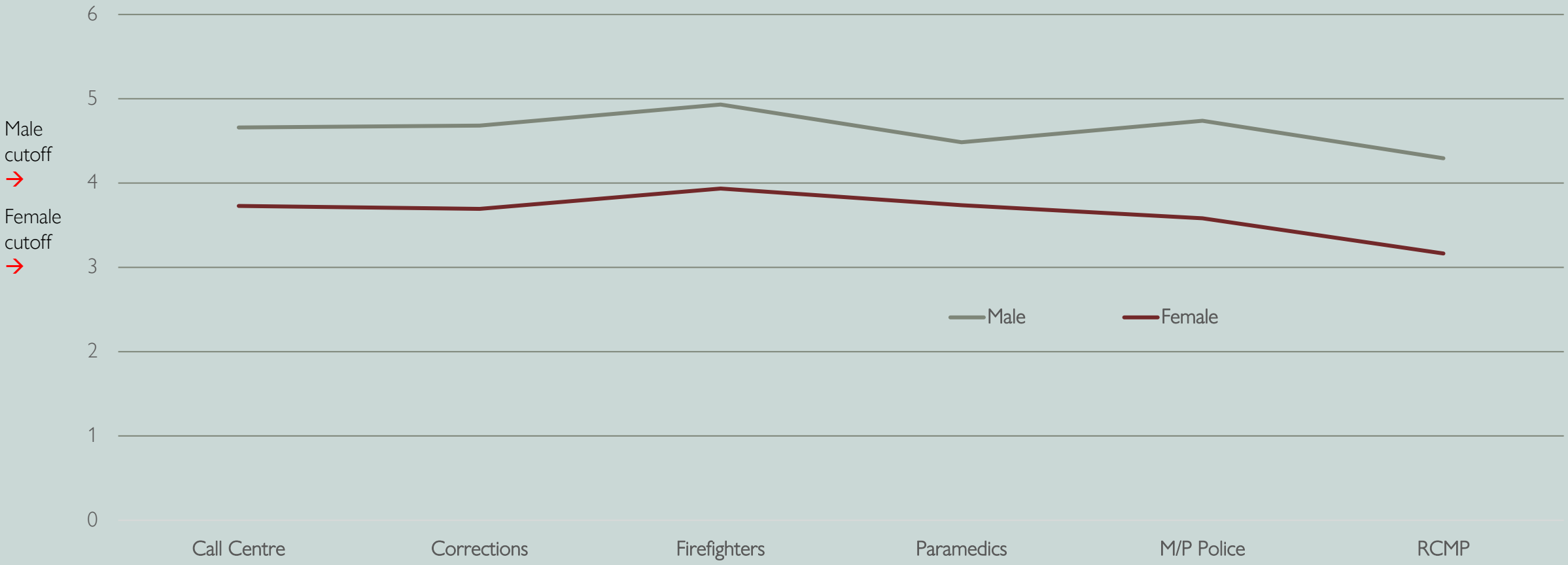
Rates by Age Group



Alcohol Consumption Levels in PSP

AUDIT-C Score Comparisons with Cut-points for Risky Drinking & Across PSP Type and Gender

AUDIT-C by PSP Type and Sex



Note: Recent Canadian norms suggest that 27% of Canadians have AUDIT-C ≥ 4

Relations of Alcohol Use Disorder with Emotional Disorders in PSP

Correlations of Emotional Disorder Positive Screens with Alcohol Use Disorder Positive Screens

PSP Type	PTSD	MDD	GAD	SAD	Panic
Call Centre (n = 202)	.19*	.28*	.33*	.01	.28*
Corrections (n = 621)	.17*	.14*	.13*	.09	.13*
Firefighters (n = 687)	.20*	.26*	.21*	.10	.17*
Paramedics (n = 599)	.13*	.17*	.14*	.04	.09
M/P Police (n = 1144)	.13*	.15*	.19*	.12*	.13*
RCMP (n = 1100)	.19*	.20*	.19*	.18*	.17*
Total Sample (n = 4540)	.14*	.17*	.16*	.09*	.13*

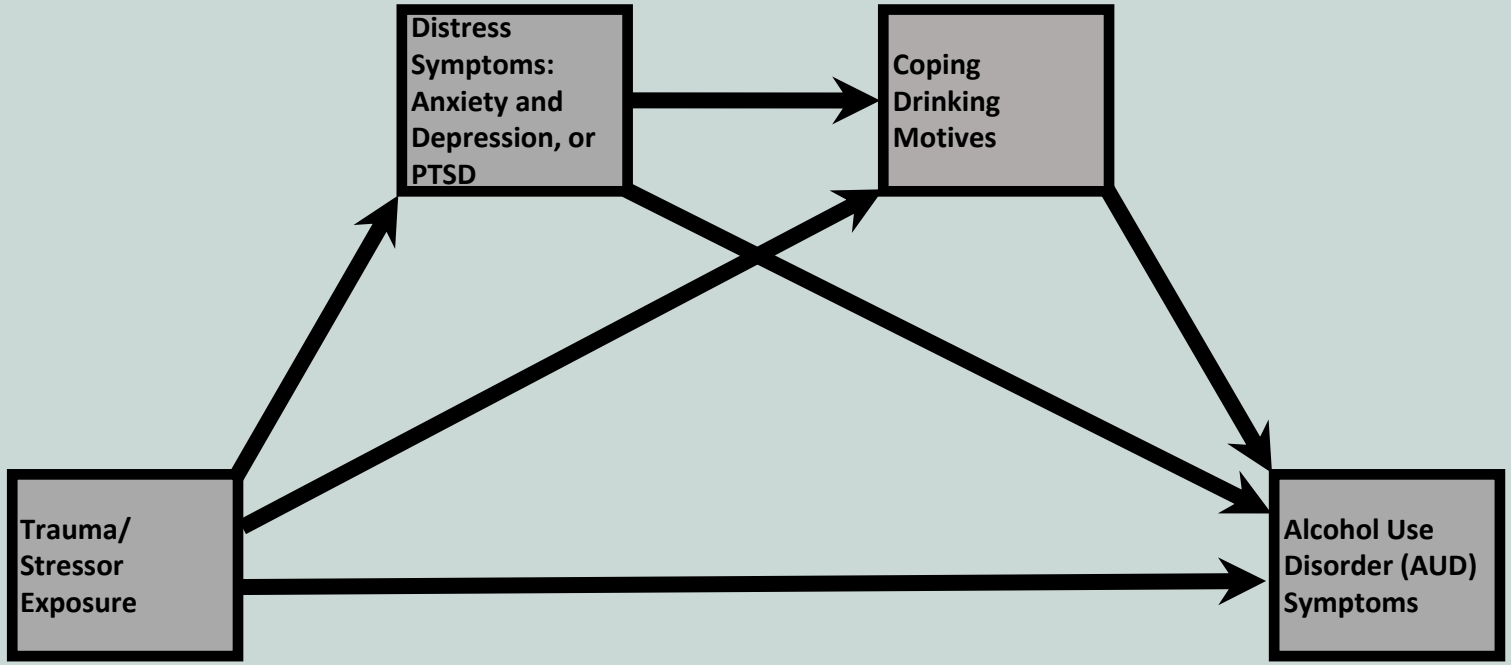
PSP and Alcohol: Stewart

Notes: N=187 PSP that did not fit into the 6 groups above or did not specify PSP type included in total sample; *$p \leq .001$; AUD screen: AUDIT total > 15; from Carleton et al. (2018) Canadian Journal of Psychiatry

A Model Explaining Alcohol Use Disorder Symptoms in PSP

A Chained Mediational Model from Trauma/Stress to AUD Symptoms

Theoretical Chained Mediational Model



Chained Mediational Model Linking Trauma to AUD Symptoms

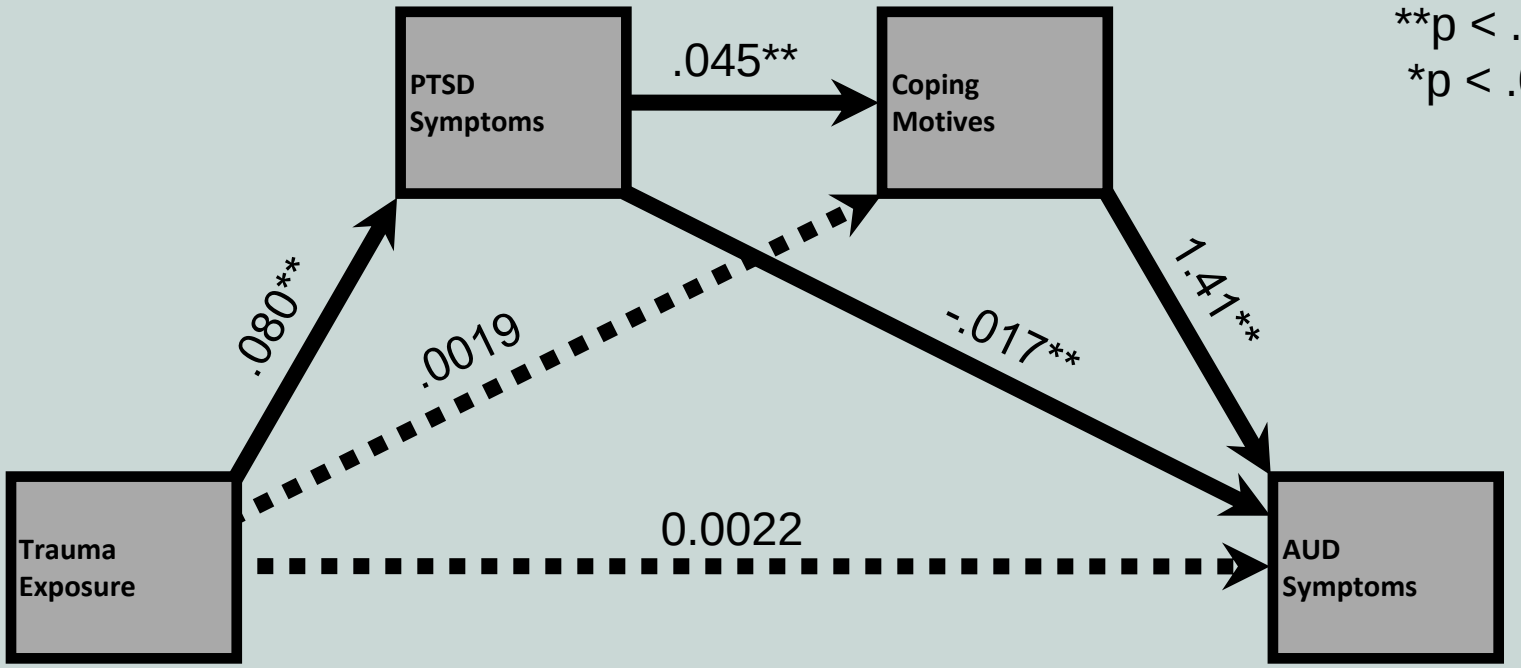
Trauma Exposure
- Traumatic Life Events Questionnaire (LEC-5 total exposure): *17-items*

PTSD Symptoms
- Posttraumatic Stress Disorder Checklist - 5 (PCL-5): *20-items*

Coping Motives
- Drinking Motives Measure: *3-items*

Alcohol Use Disorders Symptoms
- Alcohol Use Disorders Identification Test (AUDIT): *10-items*

Covariates
- Age
- Sex



**p < .001
*p < .01

Total effect = 0.0086**
1. Indirect effect from Trauma → PTSD Sx → AUD Sx = -0.0013 (sig)
2. Indirect effect from Trauma → Coping → AUD Sx = 0.0026 (sig)
3. Indirect effect from Trauma → PTSD Sx → Coping → AUD Sx = 0.0051 (sig)

2 > 1 (sig); 3 > 1 (sig); 3 > 2 (marginal)

Chained Mediational Model Linking Workplace Stressors to AUD Symptoms

Stressor Exposure

- Public Safety Officer Stressors: *40-items*

Distress Symptoms

- PHQ-9 + GAD-7 (depression and anxiety combined): *16-items*

Coping Motives

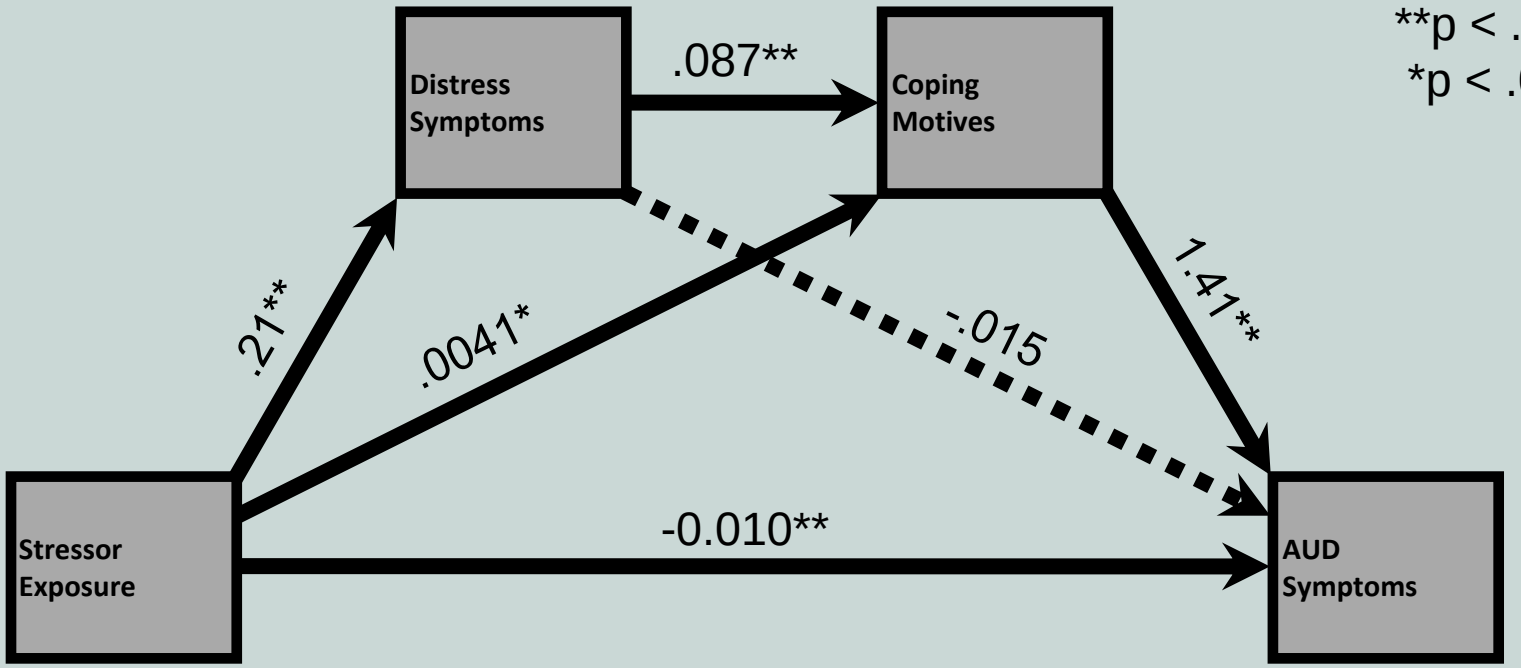
- Drinking Motives Measure: *3-items*

Alcohol Use Disorder Symptoms

- Alcohol Use Disorders Identification Test (AUDIT): *10-items*

Covariates

- Age
- Sex



**p < .001
*p < .01

Total effect = 0.018**
1. Indirect effect from Trauma → Distress → AUD = -0.0031 (n.s.)
2. Indirect effect from Trauma → Coping → AUD = 0.0059 (sig)
3. Indirect effect from Trauma → Distress → Coping → AUD = 0.026 (sig)
2 > 1 (sig); 3 > 1 (sig); 3 > 2 (sig)

Epidemiologic Findings: Summary & Implications

PSP vs. Norms

- Rates of both risky and hazardous drinking elevated in PSP relative to Canadian general population;
- Rates of any harmful use in PSP similar to levels seen in Canadian military veterans
- Using same instrument (AUDIT) and same cutoffs

Demographics & PSP Type

- Firefighters at highest risk and RCMP at lowest risk; Why?: subcultural drinking norms, demographics, job requirements
- All 6 PSP types at elevated risk compared to Canadian general population
- Male > female, but even female PSP at elevated risk; surprising age effect: possible reasons

Implications

- All PSPs could benefit from AUD prevention and treatment services
- In limited resources context, target interventions toward firefighters
- Younger male PSPs most in need of intervention services: prevention for 18-29, treatment for 30-39

Mechanistic Findings: Summary & Implications

Emotional Disorder Correlates

- AUD related to all emotional disorders in total sample of PSP
- Suggests emotional disorders and alcohol problems often come hand-in-hand for at-risk PSP; cause vs. consequence?
- AUD most consistently related to depression, general anxiety, and PTSD and least consistently related to social anxiety

Chained Mediation

- Chained mediational model supported for pathways to AUD from both trauma (via PTSD symptoms) and workplace stressors (via distress)
- Chained mediational pathway strongest indirect effect in both models
- Coping motivated drinking is necessary to move from emotional disorder symptoms to alcohol problems

Implications

- Theoretically, importance of coping drinking as proximal predictor of alcohol problems
- Clinically, target PTSD symptoms in trauma exposed PSP and emotional distress symptoms in workplace stressor exposed PSP; targeting coping drinking crucial
- Train PSP in managing workplace stressors (on top of current training in managing trauma exposure) for AUD prevention

Limitations & Future Directions

Limitations

- Self-report measures vs. clinical interviews
- Possibility of under-reporting
- Cautions re: direct comparisons with norms
- Response rate & sample bias unknown
- Cross-sectional

Future Directions

- Interactions of non-traumatic workplace stressors and trauma exposure on AUD symptoms (Liberman et al., 2002)
- Roles of stress/trauma/coping in combination with sub-cultural drinking norms (Lindsay et al., 2009; Davey et al., 2001)
- Longitudinal research; directionality?
- Intervention research (ongoing RCMP study)

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