

Substance Use Patterns Among Gay, Bisexual and Other Men Who Have Sex with Men in Toronto, Vancouver and Montreal: Results from the Engage Study

Syed W. Noor¹, Shayna Skakoon-Sparling¹, Mark Gasper², Herak Apelian³, Daniel Grace², Joseph Cox³, Gilles Lambert⁴, Nathan J. Lachowsky⁵, Jody Jollimore⁶, Jordan Sang⁵, Allan Lal⁷, Marc Messier-Peet³, Abbie Parlette¹, David Moore⁷, Trevor A. Hart^{1,2}

1. Ryerson University, Toronto, ON, Canada, 2. University of Toronto, Toronto, ON, Canada, 3. McGill University, Montreal, QC, Canada, 4. Direction régionale de santé publique-Montréal, Montreal, QC, Canada, 5. University of Victoria, Victoria, BC, Canada, 6. CBRC, Vancouver, BC, Canada, 7. BC Centre for Excellence, Vancouver, BC, Canada

Conflict of Interest Disclosure: None to Declare;

Contact: snoor@psych.ryerson.ca;

Background

- ▶ Gay, bisexual and other men who have sex with men (GBM) continue to be at higher risk of HIV/sexually transmitted infections compared with other populations (Public Health Agency of Canada, 2019), and the risk may differ by the substance(s) they use, as substance(s) can differentially influence sexual risk behavior (i.e., condomless anal sex: CAS) (e.g., Race et al., 2017; Mustanski et al., 2007; Newcomb, 2013; Friedman et al., 2008).
- ▶ For example, downers like alcohol or heroin are linked to decreased sexual performance (Maisto and Simons, 2016; Vosburgh et al., 2012); whereas party drugs (e.g., cocaine, speed, or crystal meth) may enhance sexual experience and are significantly associated with increased CAS (e.g., Party and Play: Frederick and Perrone, 2014; Grov et al., 2014a; Grov et al., 2014b).
- ▶ Knowing what substance, or class of substances, GBM use could inform sexual risk reduction interventions.
- ▶ We investigated substance use patterns among GBM living in Montreal, Toronto, and Vancouver using Latent Class Analysis.

Methods

- ▶ The *Engage* Cohort Study, at baseline (February 2017–August 2019) recruited 2449 sexually active 16+ years GBM in Montreal ($n=1179$), Toronto ($n=517$), and Vancouver ($n=753$) using respondent-driven sampling (RDS).
- ▶ Participants completed computer-assisted questionnaires in French or English and nurse-assisted testing for HIV and STIs.
- ▶ For each city, we estimated 2-, 3-, 4- and 5-class latent models based on self-reported substance use (24 substances: no/yes in last 6 months using ASSIST: WHO ASSIST Working Group, 2002).
- ▶ We used the Bayesian Information Criterion and the Lo-Mendel-Rubin Likelihood Ratio test (Lo, Mendell, & Rubin, 2001) to identify how many profiles best fit the data (Magidson & Vermunt, 2004; Nylund, Asparouhov, & Muthén, 2007).
- ▶ After identifying best fit models, we fit RDS-adjusted multinomial regression models identifying demographic, psychosocial, and behavioral correlates of class membership.

Results

Figure. Latent substance use classes in Toronto, Vancouver and Montreal, The Engage Study (N=2449)

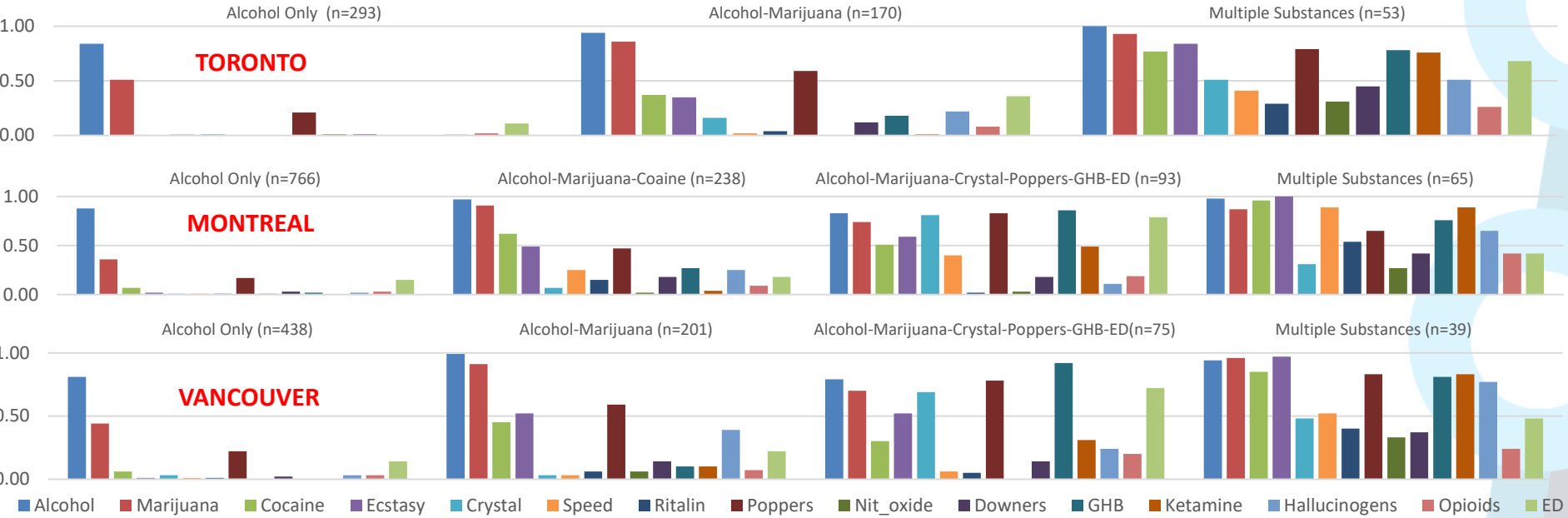


Table. RDS-adjusted proportions of latent substance use classes in Toronto, Vancouver and Montreal, The Engage Study

Latent Classes	Toronto (n=516; 3-Class)			Vancouver (n=753; 4-Class)			Montreal (n=1179; 4-Class)		
	Crude %	RDS-Adjusted %	95% CI	Crude %	RDS-Adjusted %	95% CI	Crude %	RDS-Adjusted %	95% CI
Alcohol Use class	56	75	68 – 80	58	70	64 – 76	66	71	66 – 76
Alcohol-Marijuana class	33	21	16 – 28	27	17	13 – 22	21	20	16 – 25
Alcohol-Marijuana-Crystal-Poppers-GHB-Viagra class				10	8	4 – 13	8	4	3 – 6
Multiple use class	10	4	3 – 6	5	5	3 – 9	6	4	3 – 6

Note. RDS: Respondent-Driven Sampling; CI: Confidence Interval

Conclusion

- ▶ Results suggested a 3-class model in Toronto and 4-class models in Vancouver and Montreal.
 - ▶ An *Alcohol-only* class (RDS-adjusted %: Toronto- 75; Vancouver- 70; Montreal- 71)
 - ▶ *Multiple-Substances Use* class (Toronto- 4; Vancouver- 5; Montreal- 4) in each city.
 - ▶ An *Alcohol-Marijuana* class in Toronto (21%) and Vancouver (17%),
 - ▶ A combined *Alcohol-Marijuana-Cocaine* class in Montreal (20%),
 - ▶ And a fourth *Crystal-Poppers-ED* class in Vancouver (8%) and in Montreal (4%).
- ▶ Multivariable regression analyses identified different correlates of class membership in each city.
 - ▶ E.g., compared to *Alcohol-Only* class, GBM in *Multiple Substances Use* class were significantly more likely to report condomless anal sex in Toronto (aRR=9.96, $p<.01$), in Vancouver (aRR=29.99, $p<.01$), but not in Montreal (aRR=1.46, $p=.53$).
 - ▶ HIV-positive GBM were more likely to be in *Multiple Substances Use* class in Vancouver (aRR=12.17, $p<.001$), but not in Toronto (aRR=2.10, $p=.17$) or in Montreal (aRR=1.19, $p=.82$)
- ▶ Observed similarities and dissimilarities across cities highlight that GBM are a heterogeneous group in terms of substance use. Treating GBM as a homogeneous group can lead to an under-appreciation of the diversity of prevention needs and treatment of substance using GBM.