Short Communication

Youth Smoking and Vaping Social Norms and Associations with Stress, Anxiety, and Depression Symptoms

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Smoking and vaping are more common among people with poorer mental health but less is known about smoking/vaping norms and mental health. In 2022, 12,820 16- to 19-year-olds were surveyed in England, Canada, US. Logistic regressions assessed associations between four social norms (perceiving that: friends smoke[/vape], peers approve of smoking[/vaping]) and self-reported stress, depression symptoms, anxiety symptoms, and country, adjusting for smoking/vaping/sociodemographics. All smoking and vaping norms were more positive in England than Canada and US (p<.050). Perceiving friends smoke was associated with higher stress (AOR=1.15[1.02-1.30]) and depression (AOR=1.15[1.04-1.28]) symptoms. Perceiving friends vape was associated with higher stress (AOR=1.26[1.12-1.41]), depression (AOR=1.31[1.19-1.45]) symptoms, and anxiety (AOR=1.26[1.14-1.40]) symptoms. Perceiving peers approve of smoking was associated with higher stress (AOR=1.14[1.01-1.29]) and depression (AOR=1.26[1.13-1.40]) symptoms. Perceiving peers approve of vaping was associated with higher depression (AOR=1.20[1.09-1.32]) and anxiety (AOR=1.41[1.28-1.55]) symptoms. Overall, among youth, poorer mental health was associated with positive smoking and vaping norms.

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Introduction

Youth smoking has declined while youth vaping has increased in many countries. Between 2023 and 2024 period, 4% of youth in Canada in grades 7 to 12 (~12-18-years-old) reported smoking cigarettes and 15% reported vaping in the last 30 days[1]. In Great Britain in 2023, 3.6% of 11- to 17-year-olds currently smoked and 7.6% currently vaped[2]. In the United States (US) in 2023, 1.9% of high-school youth currently smoked and 10% currently vaped[3].

Social norms are behaviours or rules that are commonly understood within a group[4]. Norms can be divided into descriptive (e.g., friends smoking) and injunctive (e.g., friends' approval of smoking; [5]). It is important to study norms because they can predict behaviour[6].

Social norms toward vaping and smoking differ across countries[7]. For example, in 2017, youth in England were more likely to perceive that their friends smoke and peers approve of smoking, whereas youth in Canada and the US were more likely to perceive that their peers approve of vaping[7]. It is unclear whether these results generalise to more recent years.

Individuals experiencing poor mental health are more susceptible to nicotine dependence and often face greater health consequences from smoking[8]. Moreover, stopping smoking is associated with reductions in anxiety and depression compared to those continuing to smoke[9]. Vaping is increasingly common among those with mental health conditions. In England, individuals with mental health diagnoses are more likely to vape, smoke and do both than those without such diagnoses[10]. However, little is known about how mental health conditions relate to smoking and vaping norms among youth.

This study therefore examines the associations between mental health and social norms towards smoking and vaping among youth in England, Canada, and the US.

Method

Design

Data were drawn from the August/September 2022 wave of the International Tobacco Control Policy Evaluation Project (ITC) Youth Tobacco & Vaping Survey-a online cross-sectional survey of 12,820 youth aged 16-19 from Canada, England, and the US, recruited via consumer panels. Full methodological details, including incentives, are provided in the Technical Report[11]. Ethical approval was granted by the University of Waterloo Research Ethics Board (ORE#21847/31017), and informed consent was required.

Measures

Social norms (Outcomes)

Friends smoking: “Who, if anyone, smokes cigarettes?” followed by a list of people (“Your friend(s)”, “Your parent(s)/guardian(s)”, “Your sibling(s)”, “None of these people”, “Don’t know”, “Refused”). Respondents who selected “Your friend(s)” were coded as ‘yes’. All other responses were coded as ‘other’.

Friends vaping: “Who, if anyone, uses e-cigarettes/vapes?”, with the same response options and coding as friends smoking.

Peer approval of smoking: “Do people your age approve or disapprove of smoking cigarettes?” a) ‘Strongly approve’, b) ‘Somewhat approve’, c) ‘Neither approve nor approve’, d) ‘Somewhat disapprove’, e) ‘Strongly disapprove’, f) ‘Don’t know’, and g) ‘Refused’. Responses were coded as approve (a-b) vs. other (c-g).

Peer approval of vaping: “Do people your age approve or disapprove of using e-cigarettes/vaping?” with the same options and coding as peer approval of smoking.

Mental health symptoms (Predictors)

Stress: “Thinking about the amount of stress in your life, would you say that most days are...?” Responses were grouped as low (‘Not at all stressful’, ‘Not very stressful’), medium (‘A bit stressful’), high (‘Quite a bit stressful’, ‘Extremely stressful’), or missing (‘Don’t know’, ‘Refused’), consistent with prior work[12].

Depression symptoms: “In the last month, how much have you been bothered by feeling sad, down, or uninterested in life?” Responses ranged from 0 (‘Not at all’) to 9 (‘Severely’), categorized as 0–4 (low), 5–9 (moderate/severe), or don’t know/refused, consistent with prior work[12].

Anxiety symptoms: “In the last month, how much have you been bothered by feeling anxious or nervous?” with the same options and coding as for depression symptoms[12].

Covariates

Covariates included: age group (16-17, 18-19 years), sex at birth (male, female; where sex at birth was missing, this was inferred from responses to gender if ‘man’ or ‘woman’ selected), race/ethnicity (derived from country-specific questions with multiple categories; to allow comparison across countries, categorised as White (/European only), Other/Mixed (other responses), don’t know/refused), perceived family financial situation (not meeting basic expenses, just meeting basic expenses, meeting needs with a little left over, living comfortably, don’t know, refused), past 30-day smoking/vaping status (smoked only, vaped only, both smoked and vaped, neither).

Analysis

All analyses applied cross-sectional post-stratification sample weights (see Technical Report; [11]). First, weighted proportions and percentages were calculated for outcomes and demographics. Second, four adjusted logistic regression models were run (one per outcome) simultaneously including all covariates. Interactions were subsequently examined through adding the following interaction terms in turn to each fully-adjusted model: stress*country, depression symptoms*country, anxiety symptoms*country. Where interactions were significant ($p<.05$), models were re-run stratified by country.

Results

Sample characteristics

Table 1 presents sample demographics per country. Overall, most (77.2%) of the sample had not smoked or vaped in the past 30 days, while 12.2% only vaped, 4.4% only smoked, and 6.1% smoked and vaped (Table 2); however,

smoking and dual use varied substantially between countries (Table 1). Most participants (69.1%) reported medium or high stress, around half (48.9%) reported moderate/severe depression symptoms and just under half (45.6%) moderate/severe anxiety symptoms (Table 2).

	Weighted % (unweighted n)		
	Canada	England	US
	(N=4395)	(N=4283)	(N=4142)
Stress			
Low	29.1%(1167)	33.7%(1244)	25.9%(837)
Medium	40.1%(1750)	36.8%(1644)	41.0%(1727)
High	29.6%(1427)	27.9%(1319)	31.9%(1503)
Don't know/refused	1.2%(51)	1.5%(76)	1.1%(75)
Depression			
Not at all/a little	49.2%(2017)	47.8%(1814)	51.8%(1798)
Moderate/severe	49.4%(2311)	50.5%(2383)	46.8%(2265)
Don't know/refused	1.4%(67)	1.8%(86)	1.4%(79)
Anxiety			
Not at all/a little	52.8%(2104)	54.1%(2079)	52.1%(1851)
Moderate/severe	45.6%(2223)	44.2%(2119)	46.9%(2224)
Don't know/refused	1.6%(68)	1.7%(85)	1.0%(67)
Age group			
16-17 years	48.3%(1893)	50.1%(1619)	50.2%(1696)
18-19 years	51.7%(2502)	49.9%(2664)	49.8%(2446)
Sex			
Male	51.0%(1627)	51.4%(1637)	51.1%(1004)
Female	49.0%(2768)	48.6%(2646)	48.9%(3138)
Ethnicity			
White (only)	52.4%(2459)	75.2%(3188)	72.1%(2209)
Other/Mixed	45.4%(1827)	23.9%(1052)	27.5%(1890)
Don't know/refused	2.2(109)	0.9%(43)	0.4%(43)
Perceived family financial situation			
Not meeting basic expenses	4.0%(203)	4.0%(211)	5.0%(283)
Just meeting basic expenses	21.8%(1022)	27.6%(1251)	29.4%(1272)

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	Weighted % (unweighted n)		
	Canada	**England**	**US**
	(N=4395)	**(N=4283)**	**(N=4142)**
Meeting needs with a little left over	34.6%(1594)	33.3%(1397)	29.5%(1187)
Living comfortably	35.2%(1376)	30.8%(1213)	30.7%(1146)
Don't know	3.3%(152)	3.7%(177)	4.4%(207)
Refused	1.0%(48)	0.7%(34)	1.0%(47)
Past 30-day smoking/vaping status			
Neither	81.0%(3376)	66.8%(2717)	84.0%(3214)
Smoking only	3.0%(156)	9.2%(337)	0.9%(96)
Vaping only	11.4%(602)	12.4%(614)	13.2%(606)
Both	4.6%(261)	11.6%(615)	2.0%(226)

Table 1. Sample characteristics

		Perceive that friends smoke cigarettes (yes vs. other)			Perceive that friends vape e-cigarettes (yes vs. other)			Perceive that peers approve of smoking cigarettes (yes vs. other)			Perceive that peers approve of vaping e-cigarettes (yes vs. other)		
		%	AOR (95%CI)	p	%	AOR (95%CI)	p	%	AOR (95%CI)	p	%	AOR (95%CI)	p
Country													
Canada	34.3% (4395)	28.7	1		57.1	1		23.2	1		47.6	1	
England	33.4% (4283)	45.0	**1.59(1.45-1.75)**	**< .001**	63.0	**1.16(1.06-1.28)**	**0.002**	30.7	**1.48(1.34-1.64)**	**< .001**	51.5	**1.21(1.11-1.33)**	**< .001**
US	32.3% (4142)	21.3	**0.69(0.62-0.76)**	**< .001**	55.4	**0.88(0.80-0.97)**	**0.008**	24.0	**1.12(1.01-1.24)**	**0.034**	47.7	0.99(0.91-1.08)	0 .832
Stress													
Low	29.6% (3248)	31.9	1		50.2	1		22.1	1		41.8	1	
Medium	39.3% (5121)	29.9	0.96(0.87-1.07)	0.471	59.6	**1.17(1.06-1.29)**	**0.001**	25.5	1.03(0.93-1.15)	0.527	50.1	1.09(0.99-1.19)	0.073
High	29.8% (4249)	34.6	**1.15(1.02-1.30)**	**0.023**	66.5	**1.26(1.12-1.41)**	**< .001**	30.5	**1.14(1.01-1.29)**	**0.040**	55.7	1.06(0.95-1.19)	0.276
Don't know/refused	1.3% (202)	21.7	0.75(0.49-1.15)	0.191	36.1	0.77(0.54-1.10)	0.149	25.9	1.26(0.85-1.86)	0.254	17.5	**0.41(0.26-0.63)**	**< .001**
Depression													
Not at all/a little	49.5% (5629)	29.4	1		50.9	1		21.7	1		42.4	1	
Moderate/severe	48.9% (6959)	34.5	**1.15(1.04-1.28)**	**0.009**	67.0	**1.31(1.19-1.45)**	**< .001**	30.5	**1.26(1.13-1.40)**	**< .001**	56.4	**1.20(1.09-1.32)**	**< .001**
Don't know/refused	1.5% (232)	19.4	0.74(0.43-1.26)	0.260	34.0	1.04(0.66-1.64)	0.863	19.9	0.82(0.49-1.38)	0.466	19.8	0.71(0.44-1.15)	0.163
Anxiety													
Not at all/a little	53.0% (6034)	30.6	1		51.8	1		22.6	1		42.1	1	

		Perceive that friends smoke cigarettes (yes vs. other)			Perceive that friends vape e-cigarettes (yes vs. other)			Perceive that peers approve of smoking cigarettes (yes vs. other)			Perceive that peers approve of vaping e-cigarettes (yes vs. other)		
		%	AOR (95%CI)	p	%	AOR (95%CI)	p	%	AOR (95%CI)	p	%	AOR (95%CI)	p
Moderate/severe	45.6% (6566)	33.5	0.96(0.86-1.06)	0.407	67.4	**1.26(1.14-1.40)**	**< .001**	30.1	1.08(0.97-1.21)	0.147	57.9	**1.41(1.28-1.55)**	**< .001**
Don't know/refused	1.4% (220)	19.8	0.77(0.45-1.44)	0.352	28.0	**0.41(0.25-0.66)**	**< .001**	20.3	0.89(0.52-1.51)	0.656	15.9	**0.46(0.28-0.77)**	**0.003**
Age group													
16-17 years	49.5% (5208)	29.7	1		54.0	1		24.2	1		45.9	1	
18-19 years	50.5% (7612)	33.8	**1.17(1.07-1.26)**	**< .001**	63.0	**1.28(1.19-1.38)**	**< .001**	27.8	**1.13(1.04-1.22)**	**0.004**	51.9	**1.17(1.08-1.25)**	**< .001**
Sex													
Male	51.2% (4268)	32.5	1		53.5	1		22.0	1		41.7	1	
Female	48.8% (8552)	31.0	**0.91(0.83-0.99)**	**0.024**	63.8	**1.25(1.16-1.35)**	**< .001**	30.2	**1.40(1.29-1.53)**	**< .001**	56.5	**1.54(1.43-1.66)**	**< .001**
Ethnicity													
White	66.4% (7856)	34.5	1		60.7	1		24.8	1		49.3	1	
Other/Mixed	32.4% (4769)	26.6	**0.80(0.73-0.88)**	**< .001**	54.8	**0.83(0.77-0.90)**	**< .001**	28.4	**1.32(1.21-1.44)**	**< .001**	48.8	1.01(0.93-1.09)	0.824
Don't know/refused	1.2% (195)	20.4	0.66(0.43-1.02)	0.059	39.5	**0.66(0.45-0.95)**	**0.025**	24.5	1.21(0.82-1.80)	0.340	30.5	0.71(0.49-1.04)	0.077
Perceived family financial situation													
Not meeting basic expenses	4.3% (697)	37.1	1		64.7	1		34.2	1		53.3	1	
Just meeting	26.2% (3545)	33.7	0.92(0.75-1.13)	0.421	63.0	1.01(0.82-1.24)	0.941	29.1	**0.80(0.66-0.97)**	**0.022**	51.9	0.95(0.79-1.14)	0.574

		Perceive that friends smoke cigarettes (yes vs. other)			Perceive that friends vape e-cigarettes (yes vs. other)			Perceive that peers approve of smoking cigarettes (yes vs. other)			Perceive that peers approve of vaping e-cigarettes (yes vs. other)		
		%	AOR (95%CI)	p	%	AOR (95%CI)	p	%	AOR (95%CI)	p	%	AOR (95%CI)	p
Meeting needs with a little left over	32.5% (4178)	31.3	0.89(0.73-1.09)	0.256	59.4	0.99(0.81-1.21)	0.902	25.3	**0.71(0.59-0.87)**	**< .001**	50.7	0.96(0.80-1.16)	0.692
Living comfortably	32.3% (3735)	31.0	0.85(0.70-1.04)	0.122	55.3	0.90(0.73-1.09)	0.281	23.4	**0.67(0.55-0.82)**	**< .001**	46.6	0.88(0.74-1.06)	0.189
Don't know	3.8% (536)	23.7	**0.71(0.53-0.95)**	**0.022**	43.8	**0.64(0.48-0.84)**	**0.001**	22.6	**0.61(0.46-0.82)**	**< .001**	28.8	**0.46(0.35-0.60)**	**< .001**
Refused	0.9% (129)	24.6	0.88(0.54-1.43)	0.597	47.4	0.78(0.50-1.22)	0.281	27.2	0.83(0.52-1.32)	0.437	42.6	0.95(0.61-1.46)	0.813
Past 30-day smoking/vaping status													
Neither	77.2% (9307)	25.0	1		52.0	1		24.0	1		47.5		
Smoking only	4.4% (589)	72.9	**6.11(5.02-7.44)**	**< .001**	44.1	**0.72(0.60-0.86)**	**< .001**	31.0	**1.48(1.22-1.80)**	**< .001**	31.9	**0.54(0.44-0.65)**	**< .001**
Vaping only	12.3% (1822)	39.6	**1.83(1.63-2.05)**	**< .001**	90.0	**7.45(6.27-8.84)**	**< .001**	30.6	**1.27(1.13-1.43)**	**< .001**	59.1	**1.38(1.24-1.55)**	**< .001**
Both	6.1% (1102)	72.3	**5.86(4.96-6.94)**	**< .001**	88.2	**5.67(4.52-7.11)**	**< .001**	37.7	**1.62(1.39-1.90)**	**< .001**	58.4	**1.29(1.10-1.50)**	**0.001**

Table 2. Four adjusted logistic regression models assessing associations between social norms (friends smoke, friends vape, peers approve of smoking, and peers approve of vaping) and country, stress, depression, anxiety, age group, sex, ethnicity, perceived family financial situation, and past 30-day smoking/vaping status.

Perceptions that friends smoke

Compared to Canada (28.7%), the odds of perceiving that friends smoke was higher in England (45.0%; p<.001) and lower in the US (21.3%; all p<.001; Table 2). There were also greater odds of perceiving that their friends smoke if they

reported high (vs. low) stress, (p=.023) and moderate/severe (vs. not at all/a little) depression symptoms (p=.009) but there was little evidence of an association with anxiety symptoms (p>.407; Table 2).

There was an interaction between country and stress ($X^2_{(6)}$=16.27, p=.012) such that, when stratifying the analyses by country, there was evidence of an association between high (vs. low) stress and perceiving friends smoking only in Canada (AOR=1.29,1.04-1.59, p=.020; Supplementary Figure 1). There were no significant country*depression symptoms (p=.343) or country*anxiety symptoms (p=.847) interactions for perceiving friends smoking.

Respondents had greater odds of perceiving that their friends smoke if they were aged 18-19, male, white, and smoked, vaped, or did both in past 30 days (all p<.050; Table 2).

Perceptions that friends vape

Compared to Canada (57.1%), the odds of perceiving that friends vape was higher in England (63.0%; p=.002), but lower in the US (55.4%; p=.008; Table 2). Respondents also had greater odds of perceiving that their friends vape if they reported medium or high (vs. low) stress and moderate/severe (vs. not at all/a little) depression or anxiety symptoms (all p≤.001; Table 2).

There was an interaction between country and symptoms of depression ($X^2_{(4)}$=12.41, p=.015) such that, when stratifying by country, there was evidence of an association between moderate/severe symptoms of depression (vs. not at all/a little) and perceiving friends vaping only in Canada (AOR=1.37, 1.16-1.62, p<.001) and the US (AOR=1.32, 1.11-1.57, p=0.002; Supplementary Figure 2). There were no significant country*stress (p=.159) or country*anxiety (p=.085) interactions.

Respondents had greater odds of perceiving that their friends vape if they were aged 18-19, female, white, and vaped only or both vaped and smoked in the past 30 days (all p<.050) and lower odds if they smoked only (p<.001; Table 2).

Perceived peer approval of smoking

Compared to Canada (23.2%), the odds of perceiving that peers approve of smoking was higher among youth from England (30.7%; p<.001) or the US (24.0%; p=.034). Respondents also had greater odds of perceiving that their peers approve of smoking if they reported high stress (vs. low stress, p=.040) and moderate/severe symptoms of depression (vs. not at all/a little, p<.001; Table 2).

There was an interaction between country and stress ($X^2_{(6)}$=19.23, p=.004). When stratifying by country, there was evidence of an association between high (vs. low) stress and perceiving that their peers approve of smoking only in England (AOR=1.45, 1.19-1.77, p<.001; Supplementary Figure 3). There was no significant country*anxiety symptoms interaction (p=.066).

Respondents had greater odds of perceiving that their peers approve of smoking cigarettes if they were aged 18-19, female, other/mixed race/ethnicity, perceived that their household did not meet basic expenses, and smoked, vaped, or did both in the past 30 days (all p<.050; Table 2).

Perceived peer approval of vaping

Respondents had greater odds of perceiving that their peers approve of vaping if they were from England (51.5%) compared to Canada (47.6%; Table 2). Respondents also had greater odds of perceiving that their peers approve of vaping if they reported moderate/severe (vs. not at all/a little) symptoms of depression or anxiety (both p<.001; Table 2) but there was little evidence of an association with medium (p=.073) or high (p>.276) stress (Table 2). There were no significant country*stress (p=.181), country*depression symptoms (p=.984), or country*anxiety symptoms (p=.794) interactions.

Respondents had greater odds of perceiving that their peers approve of vaping if they were aged 18-19, female, and vaped only or both vaped and smoked, and lower odds if they smoked only (p<.001; Table 2).

Discussion

This study investigated the associations between youth mental health symptoms and smoking and vaping norms in England, Canada, and the US. Overall, poorer mental health among youth was associated with perceptions that friends smoke and vape and that peers approve of smoking and vaping.

Consistent with prior literature, findings suggest that smoking and vaping norms are associated with vaping and smoking behaviours among youth[7][6] and these behaviours are more common among people with mental health diagnoses[10]. Potential explanations are that people may use nicotine to alleviate or cope with mental distress[13], and/or that smoking, vaping, and poor mental health cluster within social groups.

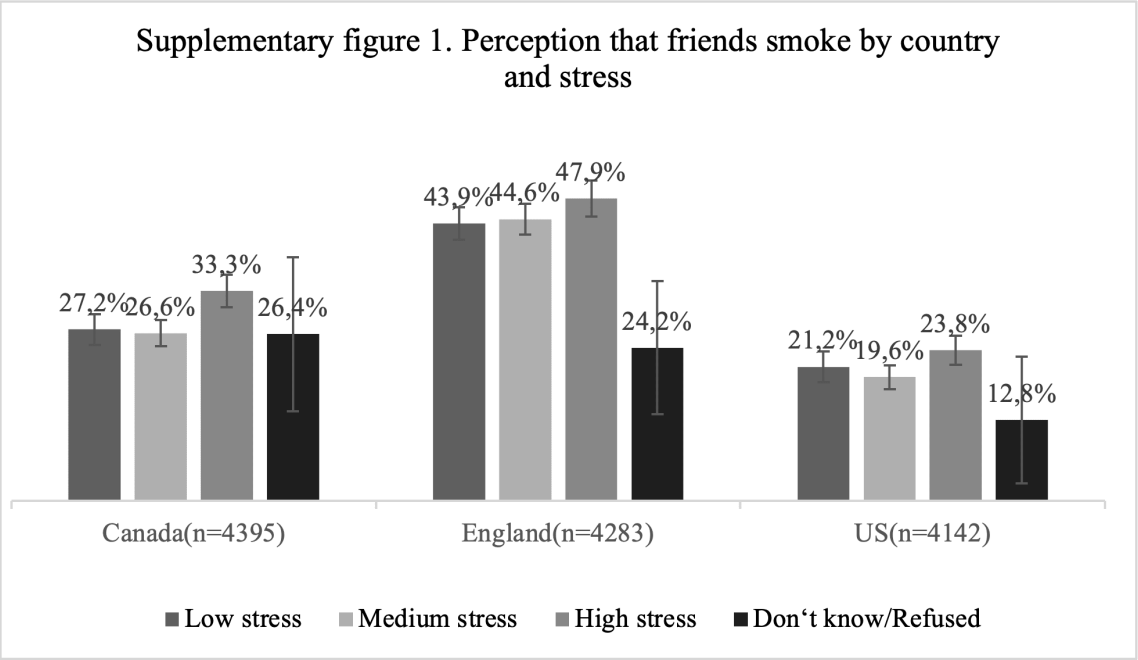
Consistent with our prior work using data from the 2017 ITC Youth survey[7], youth in England had more positive smoking norms than youth in Canada or the US in 2022. However, unlike in 2017, in 2022, youth from England also had more positive vaping norms than the US and Canada. This could be explained by the greater increase in past 30-day vaping prevalence among youth in England than Canada and the US in recent years[1][2][3].

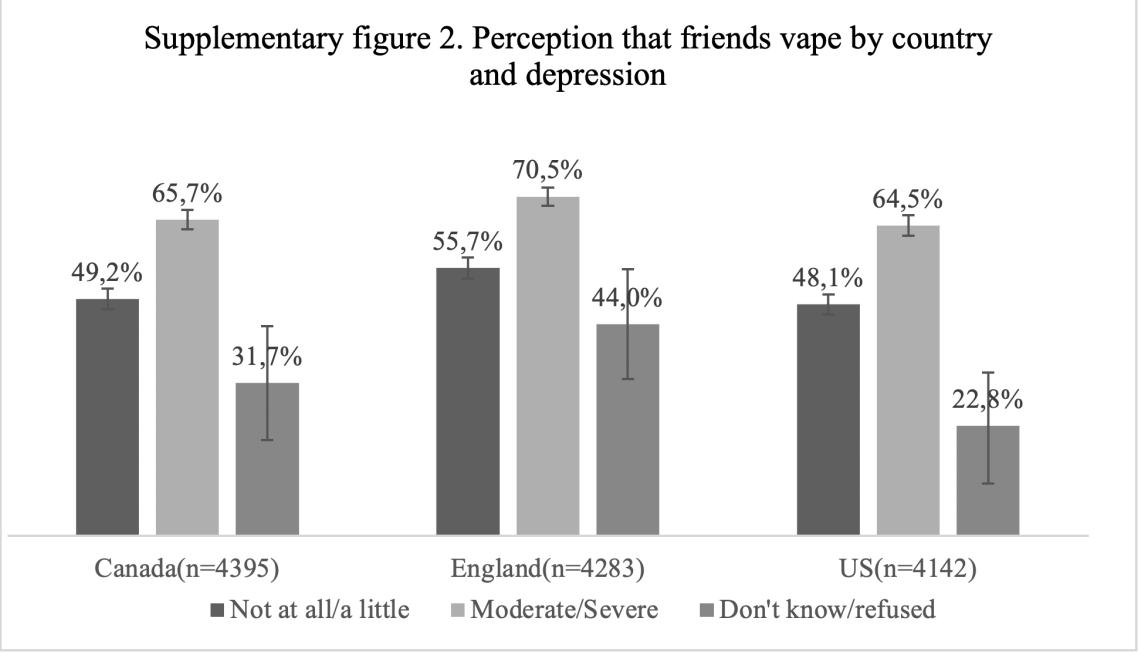
High levels of self-reported mental health symptoms among youth are, consistent with global data[14]. There is an urgent need to improve youth's poor mental health as well as correcting any misperceptions of smoking and vaping norms. Research suggests that early interventions can be effective in improving mental health and changing smoking norms[15] although interventions are wide-ranging and longer-term impacts remain unclear.

This study has limitations. First, single-item measures and dichotomising depression, anxiety, and perceived approval restricted sensitivity and comprehensiveness of these assessments. Second, self-reported mental health symptoms may be biased and lead to overestimation relative to clinical diagnoses. Third the cross-sectional design

limits casual interpretation, and the relationship is likely bidirectional. Strengths include the large sample and use of the same methods across countries allowing for robust cross-national comparison.

Supplementary Material





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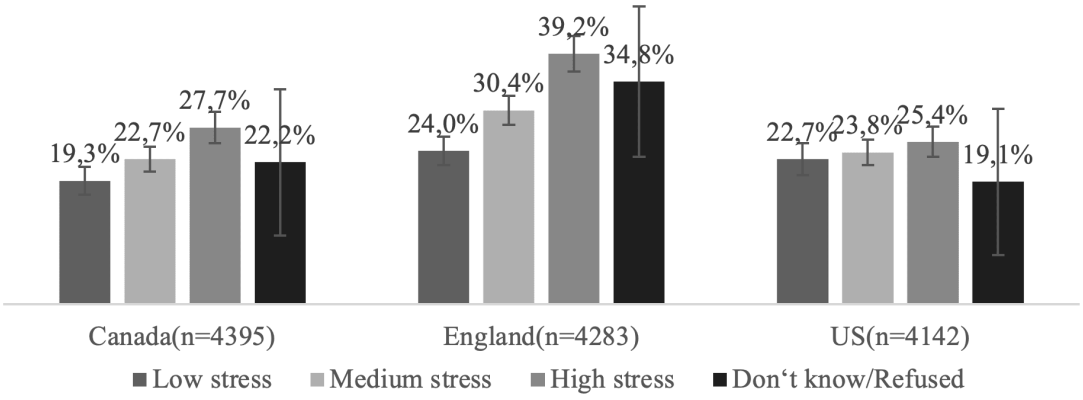
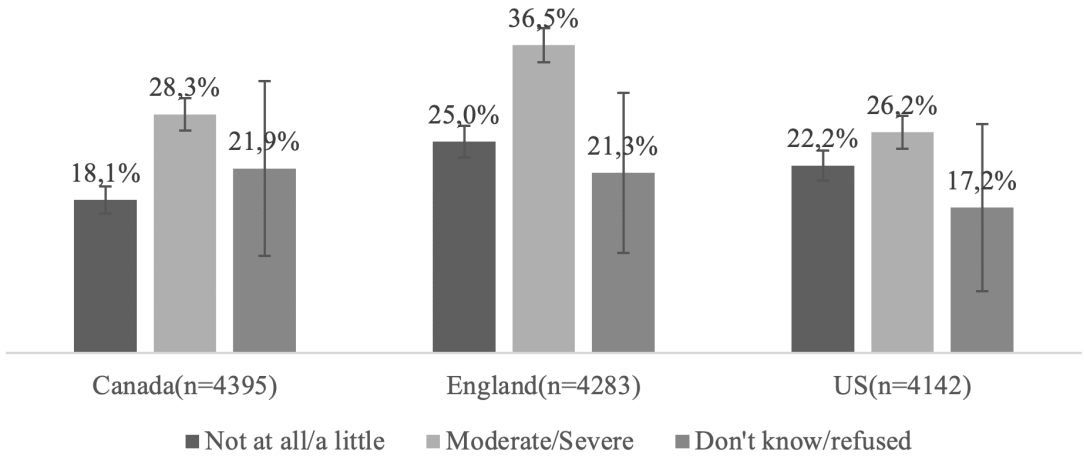
Supplementary figure 3. Perception that peers approve of smoking by country and stress



Supplementary figure 4. Perception that peers approve of smoking by country and depression



	Strongly approve	Somewhat approve	Neither approve nor approve	Somewhat disapprove	Strongly disapprove	Don't know	Refused
Do people your age approve of smoking	4.30%	21.68%	25.24%	27.01%	17.45%	4.20%	0.13%
Do people your age approve of using vaping?	16.22%	32.70%	22.76%	12.00%	9.14%	6.95%	0.24%

Supplementary Table 1. Distribution of responses for the perception that peers approve of smoking/vaping before recoding.

	Stress	Depression	Anxiety
Mean	3.00	4.32	4.68
SD	1.02	2.85	2.94

Supplementary Table 2. Mean and standard deviation (SD) of symptoms of stress, depression, and anxiety before recoding.

References

1. [a], [b]*Health Canada (2025). "Alcohol and Drug Use Among Students in Canada, 2023–24 - Canada.ca." Canada.ca. https://www.canada.ca/en/health-canada/services/canadian-student-tobacco-alcohol-drugs-survey/2023-2024-key-findings.html.*
2. [a], [b]*Action on Smoking and Health (2023). "Headline Results ASH Smokefree GB Adults and Youth Survey Results 2023." Action on Smoking and Health. https://ash.org.uk/uploads/Headline-results-ASH-Smokefree-GB-adults-and-youth-survey-results-2023.pdf?v=1684400380.*
3. [a], [b]*Centers for Disease Control and Prevention (2023). "Youth and Tobacco Use." Centers for Disease Control and Prevention. https://www.cdc.gov/tobacco/data_statistics/fact_sheets/youth_data/tobacco_use/.*
4. [^]*Cialdini RB, Trost MR (1998). "Social Influence: Social Norms, Conformity and Compliance." Psycnet.apa.org. https://psycnet.apa.org/record/1998-07091-021.*
5. [^]*Cialdini RB, Kallgren CA, Reno RR (1991). "A Focus Theory of Normative Conduct: A Theoretical Refinement and Reevaluation of the Role of Norms in Human Behavior." ScienceDirect; Academic Press. https://www.sciencedirect.com/science/article/abs/pii/S0065260108603305.*

6. ^ a b East K, McNeill A, Thrasher JF, et al. (2021). "Social Norms as a Predictor of Smoking Uptake Among Youth: A Systematic Review, Meta-analysis and Meta-regression of Prospective Cohort Studies." Addiction. **116**(11). doi:10.1111/add.15427.
7. ^ a b c d East KA, Hitchman SC, McNeill A, et al. (2019). "Social Norms Towards Smoking and Vaping and Associations With Product Use Among Youth in England, Canada, and the US." Drug Alcohol Depend. **205**:107635. doi:10.1016/j.drugalcdep.2019.107635.
8. ^ Royal College of Physicians (2013). "Smoking and Mental Health." RCP London. https://www.rcplondon.ac.uk/projects/outputs/smoking-and-mental-health.
9. ^ Taylor GM, Lindson N, Farley A, et al. (2021). "Smoking Cessation for Improving Mental Health." Cochrane Database Syst Rev. **2021**(3). doi:10.1002/14651858.cd013522.pub2.
10. ^ a b Taylor EV, Brose LS, McNeill A, et al. (2023). "Associations Between Smoking and Vaping Prevalence, Product Use Characteristics, and Mental Health Diagnoses in Great Britain: A Population Survey." BMC Med. **21**(1). doi:10.1186/s12916-023-02890-y.
11. ^ a b Hammond D, Reid JL, Burkhalter R, et al. (2023). "Trends in Smoking and Vaping Among Young People Findings From the ITC Youth Survey." https://davidhammond.ca/wp-content/uploads/2023/08/2023-ITC-Youth-Report-Final.pdf.
12. ^ a b c Hackworth EE, Vidana D, Reid JL, et al. (2023). "Associations Between Types of Tobacco Use and Self-reported Symptoms of Depression and Anxiety Among Adolescents in Canada, England, and the USA From 2020-2021." Society for Research on Nicotine and Tobacco 2022 Annual Meeting, San Antonio (TX, US).
13. ^ Kang W, Malvaso A (2024). "Understanding the Longitudinal Associations Between E-cigarette Use and General Mental Health, Social Dysfunction and Anhedonia, Depression and Anxiety, and Loss of Confidence in a Sample From the UK: A Linear Mixed Effect Examination." J Affect Disord. **346**:200–205. doi:10.1016/j.jad.2023.11.013.
14. ^ World Health Organization (2021). "Mental Health of Adolescents." World Health Organization. https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health.
15. ^ Hetrick SE, Cox GR, Witt KG, et al. (2016). "Cognitive Behavioural Therapy (CBT), Third-wave CBT and Interpersonal Therapy (IPT) Based Interventions for Preventing Depression in Children and Adolescents." Cochrane Database Syst Rev. **8**(8). doi:10.1002/14651858.cd003380.pub4.

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