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# #notforkids: alcohol, vaping, and cannabis marketing by social media influencers popular with children and adolescents on YouTube, Instagram, and TikTok and policy implications

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## Abstract

**Background** Despite the popularity of social media among children and adolescents, there is comparatively little research on social media influencer marketing, particularly in the context of harmful products. The purpose of this study was to examine the frequency of advertisements for alcohol, vaping, and cannabis products/brands promoted by social media influencers popular with Canadian children and adolescents on YouTube, Instagram, and TikTok and analyze the marketing techniques used.

**Methods** The top 9 influencers among Canadian children (10–12 years) and top 8 among Canadian adolescents (13–17 years) were identified from the 2021 International Food Policy Study. A subset of posts on YouTube, Instagram, and TikTok between June 1, 2021, and May 31, 2022, were examined for alcohol, vaping, and cannabis marketing. The frequency of marketing instances for each commodity was determined by age group and platform.

**Results** We found no cannabis or vaping marketing. Influencers popular with children made 25 posts with alcohol marketing on Instagram and YouTube, showcasing 34 products/brands, while influencers popular with adolescents made 9 posts with alcohol marketing, featuring 16 alcohol products/brands. TikTok posts did not feature any alcohol products. Among influencers popular with children, YouTube accounted for most alcohol-related posts (72%), with beer being the most promoted (47%). Among influencers popular with adolescents, posts were mostly on Instagram (78%), with spirits being the most promoted (75%). Most posts across both age groups showed the product. Songs/music and appeals to fun/cool were the most common marketing techniques among influencers popular with children and adolescents, respectively.

**Conclusions** Alcohol marketing that is appealing to children and adolescents is restricted in Canada, though they are likely exposed to such marketing ostensibly directed to adults. Further regulation, monitoring, and compliance assessments are warranted.

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**Keywords** Social media influencers, Alcohol marketing, Vaping marketing, Cannabis marketing, Children, Adolescents

### Text box 1. Contributions to the literature

- This is the first Canadian study to assess alcohol, vaping, and cannabis marketing by social media influencers popular with children and adolescents.
- Children and adolescents are heavy users of social media, yet little is known about how influencer marketing exposes them to harmful products.
- The study highlights how existing regulations for alcohol are weaker than the strict protections already in place for vaping and cannabis, pointing to opportunities for stronger regulation of alcohol marketing on digital media.

### Introduction

Youth consumption of substances such as alcohol, nicotine vapes, and cannabis represents a critical public health concern due to its short- and long-term implications for physical, mental, and social well-being [1, 2]. Each of these substances presents distinct challenges, with unique patterns of use, risk factors, and regulatory landscapes that contribute to their public health impact. Although the legal age for alcohol consumption in Canada is 18 or 19 years (dependent on the province or territory [3]), underage drinking is prevalent. According to data from 2021 to 2022, alcohol consumption is initiated at age 13.1 years on average, and 22% of students in grades 7–9 and 55.7% of students in grades 10–12 report consuming an alcoholic beverage in the last year [4]. Amongst Canadian adolescents (aged 15–19) and young adults (aged 20–24), vaping has surpassed smoking in popularity, prematurely exposing them to nicotine and harmful chemicals during a critical period of brain development [1, 5]. Additionally, Canadian youth and young adults have one of the highest rates of cannabis use globally, with 41% of youth aged 16–19 years and 48% of young adults aged 20–24 years reporting use in the previous year, increasing their risk of challenges with substance use and mental health into adulthood [6, 7]. Overall, the use of alcohol, e-cigarettes, and cannabis among children and youth are associated with a range of adverse health effects [1, 2].

Early substance use is influenced by a wide range of social and environmental factors [8], including exposure to marketing [9]. Digital media is an important source of this marketing among young people. Youth spend significant time online, particularly on social media [10]. In Canada, about 32% of children in grades 7–8 and 48% in grades 9–12 spend 2–4 h per day on social media sites [11]. Evidence concerning the digital marketing of alcohol among youth in the Canadian context is limited [12, 13], however, a study in the United States reported that about 30% of youth aged 13–20 years recalled seeing

alcohol marketing in digital media and were more likely to be exposed to and engage with alcohol posts on social media than adults [9]. Exposure to alcohol marketing has been established as a causal determinant of alcohol use among youth [14]. Canadian vaping research examining self-reported exposure to vaping ads following the legalization of nicotine-containing e-cigarettes in 2018 found that youth reported seeing an increased number of vaping ads, and this was associated with higher rates of youth vaping [15]. Research in the United Kingdom investigating the marketing of vaping products on social media found influencer endorsements of these products, including youth-appealing flavours, to be common [16]. Regarding cannabis, a study on Canadian youth aged 14–18 years found that following recreational legalization in 2018, youth were exposed to cannabis ads in their daily environments, which increased their intentions to use cannabis [17]. Another study found that cannabis advertising exposure was associated with higher rates of cannabis use among youth, further emphasizing the potential influence of advertising on consumption behaviours [18].

The marketing of alcohol, vaping, and cannabis products/brands on social media is worrisome from a public health perspective, as digital marketing messages can be targeted to individuals based on complex data analytics, are highly entertaining and engaging, and difficult for children and adolescents to identify as advertising [9]. The use of social media influencers (e.g., influential celebrities with online presences and a large digital audience following), can also be used to promote products to their audiences [19]. Social media influencers (SMIs) are individuals who have garnered a large following on digital platforms through their engaging content and are highly trusted by children and adolescents [19, 20]. As a result, the power of social media influencers to sway children and adolescents is significant; this includes the ability to influence consumption behaviours and perceptions and preferences of products and brands [19, 20]. To our knowledge, no studies have examined alcohol, vaping, and cannabis by SMIs popular with children and adolescents. However, a study from the Netherlands focusing on top influencers for young adults aged 18–25 years showed that over 60% of influencers examined had posted about alcohol, with the most posts featured/presented alcohol in a positive context [21].

Social media marketing is particularly challenging to regulate and remains a legal grey area [22]. In Canada, alcohol marketing is regulated by a mix of voluntary standards and industry regulations. Spirits Canada, the industry body that represents all Canadian spirit

producers, has a self-regulatory code that applies to all of Canada, stating that any form of marketing that overtly targets children is not permitted [23]. Some Canadian provinces, such as Ontario and British Columbia, have also developed their own regulations, extending beyond broadcast advertising (i.e., TV and radio) to include digital platforms [24, 25]. For example, the Alcohol and Gaming Commission of Ontario (AGCO) restricts alcohol marketing materials and communications from targeting underage individuals (<19 years), using content that appeals to minors, or appearing in media primarily directed at minors on both broadcast and non-broadcast media and specifies that products cannot be portrayed as enhancers to social, personal and professional life [24]. In terms of digital marketing, AGCO regulations specify that participating companies must employ age-gating features before allowing the user to fully engage with company websites [26, 27]. Spirits Canada explicitly states that digital marketing must also be transparent and identified as marketing [23]. Finally, Ad Standards (a national self-regulatory body) has specific guidelines that relate to influencers which states that all advertising must have a disclosure stating any “material connection” between the advertiser (influencer) and the brand [28].

In contrast, Canada’s regulations for cannabis and vaping are much stricter. Both vaping and cannabis are regulated at the national level. The *Tobacco and Vaping Products Act* states that the advertising of vaping products is prohibited if placed in any media that is viewed by youth (including digital media) [29]. At the same time, cannabis is regulated through *The Cannabis Act*, which prohibits promoting, packaging, or selling cannabis and cannabis accessories in ways that could reasonably be seen as appealing to youth [29, 30]. The *Cannabis Act* also restricts celebrity endorsements and any form of testimonial or endorsement that could influence youth, including on social media [31]. Additionally, provincial laws prohibit youth-targeted advertising, such as, *The Cannabis Regulation Act* in Quebec [27].

As previously mentioned, no previous Canadian study has examined the social media posts of SMIs popular with children and adolescents for alcohol, vaping, or cannabis content. Understanding the scope of youth’s exposure to digital marketing of alcohol, vaping, and cannabis products and brands is important, as international research on both children and adolescents has revealed that engagement (e.g., liking, sharing, following) with the digital marketing of unhealthy commodities is positively associated with their consumption and use [32–38]. Moreover, given the risks associated with alcohol, vaping, and cannabis use among youth [1, 2, 5, 7, 39], a comprehensive approach to policymaking necessitates

an exploration of strategies employed on digital media, including through SMIs’ posted content. Investigating digital marketing of unhealthy commodities is critical for informing policies designed to limit youth’s exposure to such marketing and identifying gaps in policy design and implementation. This study aimed to examine the frequency of posts on Instagram, YouTube, and TikTok by SMIs popular with children and adolescents featuring unhealthy commodity products and brands (i.e., alcohol, vapes, and cannabis) and the marketing techniques used to endorse these products/brands on popular social media platforms.

## Methods

### Social media influencer identification

The most popular SMIs amongst children aged 10–12 years and adolescents aged 13–17 were identified using the 2021 International Food Policy Study (IFPS) Youth Survey administered in Canada. The IFPS is an annual survey conducted in multiple countries to assess the impact of national food policies on dietary habits and related behaviours among adults and youth [40]. Participants in the IFPS Youth Survey included 3,499 individuals from Canada, recruited through parents or guardians registered in a commercial survey panel. The survey, available in English and French, collected demographic information, including sex at birth. The top 5 influencers for male and female children and adolescents were identified using the question: “Who are your 3 favourite social media stars, TikTokers, or YouTubers?” [41]. Among the entire sample, 40% of respondents ( $n = 1,364$ ; 743 males and 621 females) identified at least one influencer, and these responses were included in the analysis. A total of 9 influencers popular with children and 8 influencers popular with adolescents, totaling 12 unique influencers (due to overlap between sex and age groups; Table 1) were identified, categorized (i.e., lifestyle influencers, gamers, musicians, and arts/crafts YouTubers) and included in this study.

### Selection of posts and content analysis

Existing posts made by the selected influencers between June 1, 2021, and May 31, 2022, on Instagram, YouTube and TikTok were identified. These platforms were selected as they are the most popular social media platforms amongst children and adolescents [42]. Given the high number of YouTube videos identified and their length, we excluded videos longer than 60 min from the sample and we randomly selected the remaining 50%. On Instagram, we randomly selected 50% of posts for influencers with more than 300 posts within the study timeframe (i.e., Justin Bieber). It should be noted that only permanent posts were collected for analysis, meaning that any

**Table 1** The top 9 influencers popular with children 10–12 years and top 8 influencers popular with adolescents 13–17 years

	CHILDREN <sup>a</sup>	INFLUENCER CATEGORY	# OF FOLLOWERS (INSTAGRAM) <sup>c</sup>	# OF SUBSCRIBERS (YOUTUBE) <sup>c</sup>	ADOLESCENTS <sup>b</sup>	INFLUENCER CATEGORY	# OF FOLLOWERS (INSTAGRAM) <sup>c</sup>	# OF SUBSCRIBERS (YOUTUBE) <sup>c</sup>
1	ADDISON RAE	Lifestyle Influencer	34.3 million	4.24 million	ADDISON RAE	Lifestyle Influencer	34.3 million	4.24 million
2	CHARLI D'AMELIO	Lifestyle Influencer	42.8 million	9.1 million	CHARLI D'AMELIO	Lifestyle Influencer	42.8 million	9.1 million
3	DANTDM	Gamer	3.6 million	29.2 million	JACKSEPTICEYE	Gamer	7.9 million	30.8 million
4	JUSTIN BIEBER	Musician	295 million	74.6 million	JUSTIN BIEBER	Musician	295 million	74.6 million
5	MICHO	Gamer/Lifestyle Influencer	4.8 million	10.2 million	MARKIPLIER	Gamer	12.1 million	37.2 million
6	MORIAH ELIZABETH	Arts/Crafts YouTuber	534,000	10.3 million	MRBEAST	Lifestyle Influencer	63.9 million	340 million
7	MRBEAST	Lifestyle Influencer	63.9 million	340 million	PEWDIEPIE	Gamer	20.7 million	110 million
8	SQUEEZIE	Gamer	8.8 million	19.3 million	SQUEEZIE	Gamer	8.8 million	19.3 million
9	SSSNIPERWOLF	Gamer/Lifestyle Influencer	5.2 million	34.8 million				

<sup>a</sup>Only 9 influencers because MrBeast was among the top 5 influencers for both males and females

<sup>b</sup>Only 8 influencers because MrBeast and Justin Bieber were among the top 5 influencers for both males and females

<sup>c</sup>Number of followers & subscribers was recorded on December 30, 2024

temporary content such as Instagram stories was not included. Screen recordings of each selected social media post were then completed by research assistants (RAs) using internal device screen recording software (including audio) for all social media platforms.

Posts were reviewed by five research assistants trained to identify instances of alcohol, vaping, and cannabis marketing and extract information on marketing techniques and other content using an adapted coding manual previously used in food marketing research (Supplementary Table 1) [43]. Posts displaying a branded product were categorized as “product marketing,” indicating the promotion of a specific product associated with a brand. Posts showing only a brand name or logo, without the product itself, were labelled as “brand marketing”. The analysis examined various marketing techniques, such as the use of licensed characters (e.g., Spiderman), celebrities (e.g., actors, musicians, athletes), appeals to social enhancement (e.g., showing a product being used in a group setting to enhance status) and the use of songs or music (e.g. jingles or sound effects). Instances of child- and adolescent-appealing marketing techniques (e.g., referencing child themes, featuring celebrities) and the presence of responsible drinking messages were also recorded. See Supplementary Table 1 for a description of all marketing techniques examined. Before coding, the research assistants independently coded a sample of posts and an inter-rater reliability of 94.5% was established.

#### Data analysis

Descriptive statistics were calculated for the number of posts on each platform and by each influencer featuring alcohol, vaping and cannabis products/brands. No posts

contained vaping or cannabis products/brands, so subsequent descriptive statistics were only calculated for alcohol products/brands, including the number of alcohol products/brands promoted on each platform and by each influencer, overall and by type of alcohol; and the number of marketing techniques used to market the products/brands, overall and by platform. Frequencies reported throughout for YouTube posts and Justin Bieber’s Instagram account were weighted (i.e. multiplied by 2) to account for the 50% YouTube sample and for the random selection of 50% of posts from Justin Bieber’s Instagram account.

## Results

### Frequency of posts featuring harmful products

The content of 1240 and 1133 posts created by influencers popular with children and adolescents, respectively, was assessed (Table 2). Between June 1, 2021, and May 31, 2022, no posts by influencers popular with children and adolescents on Instagram, YouTube and TikTok contained vaping or cannabis products/brands. Across both Instagram and YouTube, there were 25 posts made by influencers popular with children, that featured 34 alcohol products/brands (30 products and 4 brands), and there were 9 posts made by influencers popular with adolescents that featured 16 alcohol products/brands (14 products and 2 brands) (Table 3). There were no branded alcohol products featured on TikTok. Among SMIs popular with children, most posts featuring alcohol were on YouTube (18 posts; 72%) and 20 unique alcohol products/brands were featured amongst these posts (Table 3). In terms of SMIs popular with adolescents, most posts featuring alcohol were on Instagram (7 posts; 78%) and

**Table 2** The frequency of YouTube and Instagram posts by the influencers most popular among Canadian children and adolescents

Influencer	YouTube		Instagram		TikTok		Total	
	Videos (n)	Videos Analyzed (n)	Posts (n)	Posts Analyzed (n)	Videos (n)	Videos Analyzed (n)	Total Posts (n)	Total Posts Analyzed (n)*
Popular with Children (aged 10–12 years)								
Addison Rae	2	1	115	115	222	222	117	116
Charli D'Amelio	22	11	127	127	425	425	149	138
DanTDM	86	42	12	12	14	14	98	54
Justin Bieber	46	23	840	420	35	35	886	443
Michou	68	33	68	68	98	98	136	101
Moriah Elizabeth	49	25	31	31	84	84	80	56
MrBeast	18	9	27	27	74	74	45	36
Squeezie	63	31	60	60	15	15	123	91
SSSniperWolf	358	179	26	26	23	23	384	205
<b>Total</b>	<b>712</b>	<b>354</b>	<b>1306</b>	<b>886</b>	<b>990</b>	<b>990</b>	<b>990</b>	<b>1240</b>
Popular with Adolescents (aged 13–17 years)								
Addison Rae	2	1	115	115	222	222	117	116
Charli D'Amelio	22	11	127	127	425	425	149	138
Jacksepticeye	160	66	39	39	70	70	199	105
Justin Bieber	46	23	840	420	35	35	886	443
Markiplier	206	91	21	21	23	23	227	112
MrBeast	18	9	27	27	74	74	45	36
PewDiePie	168	81	11	11	0	0	179	92
Squeezie	63	31	60	60	15	15	123	91
<b>Total</b>	<b>685</b>	<b>313</b>	<b>1240</b>	<b>820</b>	<b>864</b>	<b>864</b>	<b>1925</b>	<b>1133</b>

\*Total posts analyzed refers to the total number of posts included in the study sample after 50% samples were taken for all YouTube posts and Justin Bieber's Instagram posts

\*\*Posts collected from June 1, 2021, and May 31, 2022

**Table 3** The weighted frequency of alcohol product/brand appearances in posts made on YouTube and Instagram by the influencers most popular among Canadian children and adolescents

Social Media Platform	Popular with Children (aged 10–12 years)		Popular with Adolescents (aged 13–17 years)	
	Posts featuring alcohol products/brands n (%)	# of unique alcohol products/brands featured n (%)	Posts featuring alcohol products/brands n (%)	# of unique alcohol products/brands featured n (%)
YouTube <sup>a</sup>	18 (72%)	20 (59%)	2 (22%)	2 (13%)
Instagram <sup>a</sup>	7 (28%)	14 (41%)	7 (78%)	14 (88%)
<b>Total</b>	<b>25 (100%)</b>	<b>34 (100%)</b>	<b>9 (100%)</b>	<b>16 (100%)</b>

<sup>a</sup>All YouTube posts weighted and only Justin Bieber's posts were weighted on Instagram (frequencies multiplied by 2 to account for 50% samples)

\*Posts collected from June 1, 2021, and May 31, 2022

14 alcohol products/brands were featured among these posts.

Amongst the nine SMIs popular with children, SSSniperWolf shared the most posts featuring alcohol (16 posts; 64%), followed by Justin Bieber (4 posts; 16%), Charli D'Amelio (2 posts; 8%) and Michou (2 posts; 8%), whereas DanTDM, Moriah Elizabeth, MrBeast, Squeezie had none (Supplementary Table 2). Among the eight SMI most popular with adolescents, Justin Bieber shared the most posts featuring alcohol (4 posts; 44%), followed by Charli D'Amelio (2 posts; 22%), PewDiePie (2 posts; 22%), and Addison Rae (1 post; 11%), whereas Jacksepticeye, Markiplier, MrBeast and Squeezie had none.

#### Frequency of alcohol products/brands by alcohol type

Across all posts among SMIs popular with children, beer was the most frequently featured type of alcohol (47%), followed by spirits (35%). For SMI popular with adolescents, spirits were the most frequently featured (75%), and wine and beer had equivalent frequencies (13%) (Table 4). Among SMIs popular with children on YouTube, most alcohol posts contained beer (70%) and on Instagram, most posts contained spirits (71%). Among SMIs popular with adolescents on YouTube and Instagram, 100% and 71% of alcohol posts contained spirits, respectively. See supplementary Table 5 for the breakdown of products/brand by alcohol type, brand and company featured.

**Table 4** The weighted frequency of alcohol, vaping and cannabis products/brands featured in YouTube and Instagram posts of the 5 influencers most popular among Canadian and adolescents

Product Type	Popular with Children (aged 10–12 years)			Popular with Adolescents (aged 13–17 years)		
	YouTube <sup>a</sup> n (%)	Instagram <sup>a</sup> n (%)	Total n (%)	YouTube <sup>a</sup> n (%)	Instagram <sup>a</sup> n (%)	Total n (%)
Alcohol – Spirits	2 (10%)	10 (71%)	<b>12 (35%)</b>	2 (100%)	10 (71%)	<b>12 (75%)</b>
Alcohol – Wine	4 (20%)	2 (14%)	<b>6 (18%)</b>	0 (0%)	2 (14%)	<b>2 (13%)</b>
Alcohol – Beer	14 (70%)	2 (14%)	<b>16 (47%)</b>	0 (0%)	2 (14%)	<b>2 (13%)</b>
Total	<b>20 (59%)</b>	<b>14 (41%)</b>	<b>34 (100%)</b>	<b>2 (13%)</b>	<b>14 (88%)</b>	<b>16 (100%)</b>

<sup>a</sup>All YouTube posts weighted and only Justin Bieber's posts were weighted on Instagram (frequencies multiplied by 2 to account for 50% samples)

\*Posts collected from June 1, 2021, and May 31, 2022

**Table 5** The weighted frequency of marketing techniques featured in alcohol posts on YouTube and Instagram of the 5 influencers most popular among Canadian children and adolescents

Marketing Techniques	Popular with Children (aged 10–12 years)			Popular with Adolescents (aged 13–17 years)		
	YouTube N=20 n (%)	Instagram N=7 n (%)	Total Posts N=27 n (%)	YouTube N=2 n (%)	Instagram N=7 n (%)	Total Posts N=9 n (%)
Product mentioned**	6 (30%)	2 (29%)	<b>8 (30%)</b>	0 (0%)	2 (29%)	<b>2 (22%)</b>
Product shown**	18 (90%)	5 (71%)	<b>23 (85%)</b>	2 (100%)	5 (71%)	<b>7 (78%)</b>
Sponsorship Disclosure	0 (0%)	0 (0%)	<b>0 (0%)</b>	0 (0%)	0 (0%)	<b>0 (0%)</b>
Presence of teens	2 (10%)	0 (0%)	<b>2 (7%)</b>	0 (0%)	0 (0%)	<b>0 (0%)</b>
Use of athletes	0 (0%)	2 (29%)	<b>2 (7%)</b>	0 (0%)	2 (29%)	<b>2 (22%)</b>
Use of other influencers	0 (0%)	1 (14%)	<b>1 (4%)</b>	0 (0%)	1 (14%)	<b>1 (11%)</b>
Appeals to fun/cool	6 (30%)	3 (43%)	<b>9 (33%)</b>	2 (100%)	3 (43%)	<b>5 (56%)</b>
Appeals to social enhancement	2 (10%)	0 (0%)	<b>2 (7%)</b>	0 (0%)	0 (0%)	<b>0 (0%)</b>
Songs or music	10 (50%)	0 (0%)	<b>10 (37%)</b>	0 (0%)	0 (0%)	<b>0 (0%)</b>
Appealing graphic effects	2 (10%)	0 (0%)	<b>2 (7%)</b>	0 (0%)	0 (0%)	<b>0 (0%)</b>
Limited time/seasonal item	0 (0%)	1 (14%)	<b>1 (4%)</b>	0 (0%)	1 (14%)	<b>1 (11%)</b>
Viral marketing	0 (0%)	2 (29%)	<b>2 (7%)</b>	0 (0%)	2 (29%)	<b>2 (22%)</b>
Responsible consumption message	2 (10%)	0 (0%)	<b>2 (7%)</b>	0 (0%)	0 (0%)	<b>0 (0%)</b>

\*Posts collected from June 1, 2021, and May 31, 2022

\*\*We do not consider product mentioned and product shown as marketing techniques, but rather characteristics of the marketing instance

Amongst SMIs most popular with children, SSSnip-eWolf featured the greatest number of unique alcohol products/brands in her posts (18 products/brands; 53% of unique products/brands in posts), followed by Addison Rae (8 products/brands; 24%) and Justin Bieber (4 products/brands; 12%) (Supplementary Table 3). Among SMIs most popular with adolescents, Addison Rae featured the greatest number of alcohol products/brands in her posts (8 products/brands; 50%), followed by Justin

Bieber (4 products/brands; 25%) and Charli D'Amelio (2 products/brands; 13%).

### Marketing techniques

On both YouTube and Instagram, among SMIs most popular with children, posts typically showed the product (85% of posts) as opposed to just mentioning the product/brand. In 37% of instances, songs or music were used. Only two posts (7%) contained a responsible consumption message (Table 5). Songs/music (50%) and appeals to

fun/cool (30%) were the most used marketing techniques on YouTube, while appeals to fun/cool (43%), viral marketing (22%) and the use of athletes (22%) were most frequently used on Instagram. Across all posts among SMIs most popular with adolescents, most posts showed the product (78%) and appeals to fun/cool (56%) were the most utilized marketing technique, while none of these posts contained a responsible consumption message. By social media platform, appeals to fun/cool (56%) was the only marketing technique used in posts containing alcohol on YouTube, and appeals to fun/cool (43%), viral marketing (29%) and the use of athletes (29%) were used the most on Instagram accounts appealing to adolescents.

## Discussion

### Overall findings

Overall, our results highlight disparities in the marketing of alcohol, vaping, and cannabis products by SMIs popular with children and adolescents. While no instances of vaping or cannabis marketing were identified, alcohol-related posts were present on both Instagram and YouTube. These alcohol-related marketing instances also employed various persuasive marketing techniques, such as appeals to fun, coolness, and music, which may appeal to younger audiences.

### The frequency of alcohol marketing on social media

In terms of alcohol marketing, the findings suggest that youth below the minimum legal age are likely exposed to marketing for alcohol on social media through SMIs. Although the overall frequency of alcohol marketing was relatively low, even limited exposure to such content by children and adolescents is concerning, as it may normalize alcohol use and influence attitudes and behaviours. Surprisingly, we found that SMIs popular with children posted alcohol content slightly more than SMIs popular with adolescents, and spirits and beer were the most marketed types of alcohol among SMIs popular with both age groups. The fact that spirits were the most frequently posted alcohol by SMIs most popular with both children and adolescents is also troubling. Of all alcohol types, spirits generally have the highest percentage of alcohol content by volume, and as a result, they are associated with higher instances of binge drinking among adolescents [44]. These effects can lead to dangerous outcomes, such as memory problems, co-use with illicit substances, high-risk behaviour and changes in brain development [45, 46]. Research also shows that 17.8% of youth (grades 7–12) have mixed energy drinks with spirits further heightening risk of harm [4]. A recent systematic review and meta-analysis found a higher prevalence of hazardous alcohol consumption, driving while intoxicated, and other risk-taking behaviours among university

students aged 18–24 years who consume alcohol and energy drinks concurrently [47].

The frequency of posts with alcohol marketing by social media influencers popular with children appears to be much lower than the frequency of unhealthy food and beverage marketing by these same influencers. In a previous study by Potvin Kent et al. (2024) using the same data and examining the frequency of food marketing by SMIs popular among children aged 10–12-years, a notably high volume of posts promoting unhealthy foods and beverages was reported. Specifically, the study identified 685 posts featuring food and drink products/brands across 3010 posts (a rate of 0.23/post) by SMIs on YouTube, TikTok and Instagram [41]. In the current study, alcohol marketing was seen 34 times across 2018 posts (a rate of 0.02/post) on YouTube and Instagram by SMIs popular with children. In both the current study and the food marketing SMI study by Potvin Kent et al. (2024), SMIs with content on YouTube had the highest rates of food and alcohol marketing compared to SMIs with content on Instagram and TikTok, which is problematic given the popularity of YouTube as a platform with this group [48]. Although alcohol marketing in SMIs posts was less frequent than those with unhealthy food and beverages, it is still concerning from a public health perspective as it may be influencing alcohol use among young people in Canada and as such, be contributing to related harms such as alcohol-related hospitalization, among others. According to the Canadian Institute for Health Information, alcohol is linked to 26% of hospital stays for substance-related harm in youth aged 10–24 [49]. Both children and adolescents are vulnerable to the impacts of marketing, and marketing on digital platforms is more engaging, persuasive and more difficult to identify than traditional forms of marketing [50].

### Marketing techniques used by SMIs in alcohol marketing

A range of marketing techniques were used in posts featuring alcohol. Common tactics among SMI posts included appeals to fun/cool, use of songs and music, use of athletic figures, and use of viral marketing techniques (e.g., trending hashtags, user challenges where people are encouraged to perform a task or activity). Collectively, these elements frame alcohol in a more positive and socially appealing light. The use of SMIs is in and of itself a powerful marketing technique as children and adolescent often view SMIs as relatable, even more so than traditional celebrities, making these influencers' endorsements especially persuasive [19, 20]. This perceived authenticity builds trust with young audiences, who are highly impressionable and more likely to mimic behaviours they see as "cool" or socially accepted [19, 20]. Research on food marketing shows that when SMIs promote unhealthy foods, children tend to consume more of

those products afterward [20, 51]. The same effect can be expected with alcohol, suggesting that exposure to these promotions could normalize drinking behaviours among youth, raising public health concerns. It's important to note that only two posts from influencers popular with children and no posts from influencers popular with adolescents contained a responsible consumption message warning viewers to take caution. Regardless, past research has shown that these messages are not effective, as they are often written in very small font and do not provide any information as to what it means to "drink responsibly" [52].

Broadly speaking, given the frequency of alcohol marketing and the marketing techniques used in these posts, our results support that social media platforms are a powerful commercial determinant of health [53, 54], that prioritize profits, user engagement, and data collection over user health and well-being [53, 55]. These platforms are intentionally designed to maximize attention and keep users online for as long as possible, and given that social media platforms are an integral part of the lives of young people, marketing content on these platforms featuring alcohol is a public health concern [55].

#### Policy and regulatory implications

Regarding the marketing of vaping and cannabis, our results showed that there were no vaping or cannabis products/brands posted on any of the examined platforms, which suggests that government regulation restricting vaping and cannabis marketing to minors may be protecting children on social media platforms. It also suggests that social media platforms such as Instagram, YouTube and TikTok are blocking such marketing content which speaks to the technical feasibility of restricting the marketing of other products that are harmful for children in digital media. As previously mentioned, Canadian federal laws strictly control the advertising of vaping and cannabis products, particularly to minors. The *Tobacco and Vaping Products Act* prohibits the promotion of vaping products that may appeal to young people, including advertising on platforms accessible to youth. Similarly, the *Cannabis Act* restricts cannabis promotion in ways that could reach minors, including digital marketing on social media. This contrasts with the mix of voluntary standards and industry regulations for alcohol, which often lack monitoring and enforcement and leave gaps for youth to be exposed.

Our findings on alcohol marketing suggest that there are possible gaps in current alcohol marketing regulations and/or their implementation in Canada. This may reflect the normalization and acceptance of alcohol in society despite it being a psychoactive substance with addictive properties and a major contributor to the global burden of disease [56–58]. According to the Canadian

Substance Use Costs and Harms project, in 2020, alcohol accounted for 40% (almost 20 billion) of the total cost of substance use in Canada [59]. This same study showed that cannabis use accounted for only 5% (2.4 billion) of the total cost of substance use in Canada [59]. Unlike cannabis and vaping, which face stricter federal regulations due to their potential health risks, alcohol marketing remains poorly regulated despite the substantial harms linked with alcohol use. The lack of clear enforcement, especially in digital and influencer marketing, highlights the significant gaps in protecting youth.

Although alcohol restrictions exist, they are a mix of government-imposed (provincial-level) regulations and self-regulatory codes, like those from Spirits Canada. As previously mentioned, provincial regulations, such as those in Ontario, restrict alcohol marketing to youth but often lack clarity regarding digital platforms and influencer marketing. Spirits Canada's self-regulatory code applies primarily to traditional media and does not fully extend to digital marketing or influencer content, where alcohol is often promoted in ways that appeal to youth. As a result, previous research has shown that ads on social media remain a risk to youth. One study investigating alcohol-related posts made by popular bars on Facebook and Instagram showed that many of the posts were promoting an "excessive" drinking culture and in violation of the Canadian Radio-television and Telecommunications Commission (CRTC) guidelines, and therefore insufficiently protecting youth [12]. Regardless of social norms associated with these harmful products, cannabis and vaping restrictions could serve as a model for alcohol, as they limit youth exposure by restricting advertising placements, rather than relying solely on weak content restrictions or targeting limits. Furthermore, the issue of sponsorship in alcohol-related posts raises concerns about compliance with regulations and platform policies. Our study did not determine whether SMIs were paid to feature alcohol brands or products in their posts. While some appearances may not have been sponsored, the lack of clear disclosure requirements makes it difficult to assess compliance with advertising regulations [60]. For instance, Charlie D'Amelio, who was 18 years during the study period and legally under-age in the U.S. (where the drinking age is 21 years), appeared in alcohol-related content. However, lack of sponsorship disclosures makes it unclear whether these posts were part of paid promotions, highlighting another challenge in enforcing digital marketing regulations and protecting youth from exposure.

To better protect young audiences, Canada should adopt comprehensive marketing restrictions across media and settings, and such regulation should consider cross-border marketing. Several countries have comprehensive policies in place which prohibit alcohol

marketing to children across all media, including digital media [61–63]. For example, in 2015, Finland became the first country in the world to explicitly add social media to their alcohol regulations, with the specific goal of reducing youth exposure [61]. Norway and Sweden have implemented some of the strictest alcohol marketing regulations in Europe, designed to limit exposure for all audiences, not just children. Norway, for example, has maintained a complete ban on alcohol advertising since 1975, covering all media platforms, including all forms of marketing on digital media [62]. These comprehensive policies are intended to reduce overall alcohol consumption and associated harms and result in Nordic countries boasting some of the lowest alcohol consumption levels in the European Union [63–65]. While these types of restrictions could reduce population-level alcohol consumption and benefit both under-age and of-age individuals, countries with child-specific regulations may still face gaps in consistently enforcing these regulations. In particular, the cross-border nature of digital platforms challenges jurisdictional control and may lead to considerable enforcement difficulties. Without strict age verification and restrictions on influencer marketing, children are still at risk of exposure. In response, organizations like the World Health Organization (WHO) have suggested that international collaboration is needed to address these gaps, proposing that countries implement comprehensive age verification systems, clearer labelling, and algorithm-based content monitoring across platforms to further protect youth [66].

Instagram, TikTok and YouTube all have corporate policies restricting branded alcohol promotions to minors. While Instagram only permits branded alcohol marketing to those over 19 years in Canada, at the time of our data collection, TikTok banned all branded alcohol marketing regardless of age [67, 68]. YouTube, for its part, states that alcohol advertising cannot target those under the legal drinking age and can only run in approved locations [69]. Considering all the posts containing alcohol examined in this study were found on Instagram and YouTube, these platform-specific policies are failing. In contrast, the absence of posts containing alcohol on TikTok in our sample may be indicative of policy success. It is worth noting that in mid-2024, this platform began allowing branded alcohol content under restricted conditions, such as age-targeting (25 + years in North America) and partnerships with approved advertisers [70]. Future research should assess whether the introduction of these new policies has led to increased youth exposure to alcohol marketing on TikTok.

Marketing on social media is often described as more difficult to regulate compared to other forms of marketing (e.g., television advertising), and opponents to

the regulation of marketing for unhealthy commodities sometimes even argue that such regulation is impossible given its cross-border nature. However, our data suggest that governments could potentially regulate social media posts by requiring them to use ad or content blocking features by product category to prevent the marketing of unhealthy commodities within their borders. Further research should evaluate whether children and adolescents are being exposed to vaping or cannabis products/brands on other digital media platforms.

### Strengths and limitations

This study is the first, to our knowledge, to investigate the presence of alcohol, vaping, and cannabis marketing by SMIs popular with children and adolescents on Instagram, YouTube and TikTok. Although the most popular influencers for both age groups were selected based on their popularity with Canadian youth, the results of this study can likely be generalized globally, as these influencers are based in other countries, so it is likely that they are popular in other countries as well. Regarding limitations, the reported frequencies reflect children's potential exposure to marketing by SMIs and not their actual exposure. We focused our investigation on regular (i.e., permanent) posts only and did not include any temporary posts (i.e., Instagram stories), which may have resulted in an underestimation of the frequency of marketing instances by SMIs popular with children and adolescents. Another limitation is that the number of followers for the SMIs, included in Table 1, was collected on December 30, 2024—after the original data collection—meaning these numbers may have changed slightly from when the data was initially gathered. Due to feasibility constraints, we also used a 50% random sample of YouTube videos that lasted longer than 60 min and Instagram posts from influencers with greater than 300 posts. All frequencies were then weighted, resulting in estimates of the number of marketing instances throughout. Additionally, the promotion of alcohol products or brands by SMIs in and of itself will likely be perceived as “cool” by young people. As such, we may have underestimated the number of posts that appealed to fun/cool (33% for children and 56% for adolescents). Subsequent studies examining posts of unhealthy commodity by SMIs should explore the effect these promotions have on children and adolescents' purchase intentions, use, and consumption of these products. A final limitation is the variability of the legal status of cannabis across jurisdictions. Most of the SMIs in our study are based in the United States, wherein legality varies by state. This may influence the type of content being shared, meaning that the presence of cannabis-related content across different digital platforms may be impacted. Future research should



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