Exploring cannabis consumption stigma in Canada with consideration of age and gender differences

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ABSTRACT

Background: Despite cannabis legalization in Canada, stigma towards cannabis consumers remains evident, particularly toward younger cannabis consumers. Our study examined how stigma towards a young cannabis consumer differed by age and gender. Additionally, we explored the impacts of the participants' cannabis consumption, age, and gender identity on their perceptions of stigma.
Methods: Canadian citizens, ages 18 years and older completed an online cross-sectional survey using an experimental vignette design ($N = 1,114$). Participants were randomly assigned to read one of six vignettes depicting a cannabis consumer that varied by age (14, 21, and 28 years) and gender (man, woman). Participants completed the Social Distance Survey as the dependent measure of stigma. Two factorial ANOVAs were conducted to assess the impacts of the vignette character's age and gender, as well as the participant's age and gender identity, on stigma.
Results: Participants ($M_{age} = 48.42$, $SD = 16.64$) displayed more stigmatizing attitudes towards adolescent consumers (14-years-old) compared to 21-years-old or 28-years-old consumers. Additionally, older participants (70 + years) displayed more stigmatizing attitudes than younger participants (18–29 and 30–39 years old). Finally, participants who had not consumed cannabis within the past 6-months displayed more stigmatizing attitudes than those who reported any cannabis use frequency.
Conclusions: Stigma remains a concern, particularly toward younger cannabis consumers. These findings highlight the importance of developing targeted, early interventions, and education strategies aimed at reducing stigma, especially among those who hold more stigmatizing attitudes, such as non-cannabis consumers and older individuals, which could help mitigate negative outcomes like decreased help-seeking behavior and social isolation.
Impact Statement: Stigma toward cannabis consumers was greatest for younger consumers (14-years-old), followed by 21 and 28-year-olds. Specifically, older generations (70 + year old's) endorsed more stigma compared to younger generations. There were no main effects on stigma toward cannabis consumers based on the vignette character's gender or research participants' gender identity.

1. Exploring Stigma towards Cannabis Consumption in Canada with Consideration of Age and Gender Differences

Despite reaching the 6-year mark since the legalization of cannabis for recreational use in Canada, the persistence of stigma surrounding consumption remains evident (Reid, 2020). Decades of cannabis prohibition in Canada have left an impression on public perceptions, as many people continue to view cannabis as an aberrant activity (Skliamis et al., 2020). Social stigma is characterized by an attribute that fundamentally damages an individual's identity (Goffman, 1963). According to Reid (2020), social stigma (i.e., public stigma) works on the meso level, whereby organizations and groups perpetuate cultural messages that inherently disadvantage stigmatized individuals. This sociocultural phenomenon systematically excludes and marginalizes individuals,

preventing them from experiencing full social acceptance since the existing norms characterize them as 'undesirable'.

Cannabis stigma in Canada may be reflective of a complex interplay of historical, societal, and individual factors. For context, the legacy of the American war on drugs, which began in 1971 and framed recreational cannabis use as deviant, particularly in BIPOC communities, has parallels in Canada, where similar stereotypes and negative discourse emerged (Hathaway, 2004; Khenti, 2013). However, Canada's approach diverged, as the nation declared a 'drug abuse epidemic' in 1986 (Jensen & Gerber, 1993). Given the historically conflicting Western influences, misperceptions may still affect cannabis use today. The debate surrounding cannabis use and stigma may be further shaped by a rise in frequent, recreational cannabis use, leading to an elevated risk of developing cannabis use disorder (CUD), which raises global public health concerns, particularly among youth and young adults (Cerdá et al., 2020; Mennis et al., 2023; O'Grady et al., 2022). Indeed, in Canada, past year cannabis use increased from 22% in 2018 to 26% in 2024, with 1 of 6 Canadians consuming cannabis in the past month (Health Canada, 2024). According to Leung et al. (2020), approximately 20% of cannabis consumers develop CUD, with the likelihood increasing when consumers start at a younger age or consume more frequently.

Instances of the heightened prevalence of CUD may be linked to misconceptions, particularly regarding the belief that cannabis is harmless and non-addictive (Mennis et al., 2023). Conversely, it may be related to exponential increases in the diversification of cannabis products and increases in Δ9-THC potency (Arterberry et al., 2019; Budney & Borodovsky, 2017; Hammond et al., 2021; Imtiaz et al., 2023; Russell et al., 2018). For instance, the Δ9-THC potency ranges from an average of 3% in the 1980 s to 30% in regulated strains today; up to 95% in more concentrated products such as edibles, oils, and waxes only further complicate perceptions and potential risks (Arterberry et al., 2019; Berenson, 2019; Budney & Borodovsky, 2017; Health Canada, 2018; Hammond et al., 2021; Prince & Conner, 2019; Russell et al., 2018). These developments may contribute to more frequent and intense use, as high-potency products produce stronger psychoactive effects, which can reinforce habitual use and increase tolerance over time, both of which are associated with a greater risk of developing CUD (Fischer et al., 2022). Thus, given the evolving accessibility and consumption of more potent cannabis products, research suggests that rates of CUD are also expected to increase (Arterberry et al., 2019).

Cannabis stigma in Canada remains underexplored, but existing research highlights a range of factors that may influence attitudes toward legalization and subsequent stigmatization, including but not limited to race, social class, religion, political affiliation, personal cannabis use, region, age, and sex (Felson et al., 2018; Hathaway, 2004; Schwadel & Ellison, 2017; Skliamis et al., 2020). Stigmatization toward individuals' cannabis consumption is equally concerning, as individuals may be subject to marginalization, disapproval, and discrimination (Hammarlund et al., 2018; Lloyd, 2013). In many instances, individuals who are stigmatized self-isolate, respond in anger, and experience shame, guilt, or adverse mental health effects (Ahern et al., 2007; Lloyd, 2013; Reid, 2020). Unfortunately, stigma often acts as a barrier to accessing healthcare services, as individuals seeking help may encounter decreased access to services and discrimination among service providers (Brown, 2015; Hammarlund et al., 2018). This is particularly true for adolescents and young adults, who may fear negative judgment or social repercussions from seeking help or disclosing cannabis use (van der Pol et al., 2013). The desire to avoid stigma may prevent individuals from seeking help or cause delays in accessing care, potentially leading to more severe and prolonged substance use challenges.

Stigmatizing attitudes toward youth is especially concerning as it may be detrimental to their mental health. Previous research has suggested that higher levels of stigma can negatively impact an individual's willingness to seek help or disclose their use (Hammarlund et al., 2018; Yang et al., 2017), which may result in them increasing their cannabis consumption. Cannabis usage behaviors are typically formed during

adolescence and lead to an increase in the frequency of cannabis consumption rather than a decrease or cessation (Zuckermann et al., 2021). Ultimately, these patterns of cannabis consumption can influence adolescents' future trajectories, including lower educational attainment, school motivation, and financial stability, increase in delinquency, criminal behavior, and mental health issues (Epstein et al., 2015). Accordingly, decreasing stigmatizing attitudes toward youth may increase help-seeking behavior before the onset of negative consequences of cannabis consumption or the development of a CUD.

1.1. Social distance as a measure of stigma

Social distance is a construct significantly related to the stigma of mental health disorders and reflects one's willingness to engage or be within close proximity of an individual (Corrigan et al., 2001). Individuals perpetuating stigma toward those experiencing mental health concerns tend to distance themselves socially. There are additional measures used to quantify stigma in the substance use literature, such as perceived dangerousness (Yang et al., 2017). While both measures demonstrate the dimensions of stigma and their impact on individuals, stereotypes toward cannabis consumers are more aligned with being lazy, unintelligent, and irresponsible, as opposed to being a perceived threat (Reid, 2020). For instance, a study of Canadians who are dependent on cannabis reported that these individuals perceived having significantly less social support relative to the general Canadian population (Gulliver & Fowler, 2021). In the medical cannabis literature, negative perceptions of cannabis as a recreational drug lead to consumers being labeled as "potheads" or "stoners," with friends and family questioning the legitimacy of their condition and reasons for use (Bottorff et al., 2013). As a result, many individuals may conceal their consumption or distance themselves from disapproving social circles (Bottorff et al., 2013; Satterlund et al. 2015). Therefore, social distance may be a more naturalistic response, reflecting the experiences of stigmatization toward cannabis consumption.

1.2. Cannabis stigma and age

Despite the normalization of cannabis in Canada, cannabis consumption remains stigmatized, particularly for specific cohorts (Hathaway et al., 2011; Reid, 2020; Skliamis et al., 2020). Cannabis consumption in adolescence can have detrimental impacts on brain development, such as mental health and cognition (Hall et al., 2020; Levine et al., 2017; Rubino and Parolaro, 2008), and the public tends to be aware of these consequences. In a previous study, cannabis consumption by a 14-year-old was perceived as more harmful than cannabis consumption by a 21- or 28-year-old (Harris-Lane et al., 2020, 2023). Additionally, individuals expressed greater disapproval toward cannabis consumption by a 14-year-old compared to a 21- or 28-year-old. While these findings are encouraging in light of the increased risks of harm for adolescents, they create a compelling case to better understand how stigma is situated within the finding of greater disapproval. For instance, others have explored public attitudes toward adolescent substance use and highlighted negative stereotypes and connotations that a young person's behavior is 'immature,' 'lazy,' and 'irresponsible' (Reid, 2020). Further, it is illegal for anyone under the age of 18–21 (depending on provincial regulations) to purchase cannabis, potentially marking underage consumption as deviant or criminal. As such, stigmatizing perceptions may play a role in the disapproval of cannabis consumption.

Additionally, cannabis consumption rates in Canada are remarkably high, with 50% of 20- to 24-year-olds reporting past 12-month use, followed by 37% of 16- to 19-year-olds (Health Canada, 2022a). Ultimately, stigma placed on younger consumers may increase unhealthy coping behaviors (e.g., unsafe substance use, withdrawal, and isolation) and reduce the likelihood of younger individuals seeking help for mental health and co-occurring cannabis use concerns (Ahern et al., 2007; Goffman, 1963; Reid, 2020). Indeed, about 1 in 10 Canadians believe

there is no danger of harming their mental health when using cannabis (Leos-Toro et al., 2020). However, individuals with a mental illness in the past 12 months were significantly more likely to use cannabis regularly or have CUD compared to those without a mental illness in the past 12 months (Lev-Ran et al., 2013). This suggests that misconceptions about cannabis's safety may contribute to its use as a coping mechanism among individuals with mental illness, despite evidence indicating a higher risk of harm and potential for dependence (Lowe et al., 2018). Further, extended wait times for mental health challenges are a national concern that may result in individuals self-medicating with cannabis to alleviate distress (Edbrooke-Childs and Deighton, 2020; Kowalewski et al., 2011; Subotic-Kerry et al., 2024).

Previous research has suggested that stigma toward substance use and substance use disorders varies across generations. Specifically, older generations are more likely to feel less pity, greater fear, and avoidance toward individuals with substance use disorders (Sattler et al., 2017). Adolescents' in turn, may fear being judged or stigmatized by older adults, which could discourage them from seeking help for their cannabis use. However, research on stigma perception differences between age groups is limited. Interestingly, while older adults may elicit greater stigmatization, they also experience stigma as a result of their cannabis consumption (Wanke et al., 2022). Cannabis consumption by older adults is often seen as unexpected (Wanke et al., 2022), and while negative cannabis stereotypes and labels (e.g., stoners) are typically associated with youth and young adults, adult and older adult consumption may be viewed as inappropriate behavior (Newhart and Dolphin, 2019; Reid, 2020). Conversely, older individuals may be more inclined to use cannabis medicinally to manage pain, sleep, and anxiety (Wadsworth et al., 2023). Recreational cannabis legalization was found to influence older adults' (65 + years of age) beliefs about cannabis and helped decrease stigmatizing attitudes toward cannabis consumption for various reasons (e.g., insomnia, appetite, pain; Baumbusch and Yip, 2022). As such, older adults may view cannabis consumption more acceptable in recent years.

1.3. Cannabis stigma and gender

Previous literature has highlighted that gender identity also impacts stigma, as women who consume cannabis often experience more stigma and discrimination compared to men (Hathaway et al., 2016; Mostaghim, 2019) and tend to report shame, greater social isolation, and less social support (Greaves and Hemsing, 2020). This is especially true for women who assume the identity of a cannabis consumer compared to men and women who abstain from cannabis (Mostaghim, 2019). Women who consume cannabis may be perceived as a threat to established social and moral norms, viewed with disapproval (Hathaway et al., 2016), and characterized by stereotypes such as 'rebellious,' 'unconventional,' and 'irresponsible' (Mostaghim, 2019). Historically men have consumed cannabis more compared to women (Hall et al., 2020; Kozak et al., 2021), with research suggesting it was a result of these stigmatizing labels associated with cannabis use for women (Mostaghim, 2019). However, recent data suggests that the gender gap is narrowing (Matheson & Le Foll, 2023), challenging traditional perceptions of cannabis users as predominantly men.

Further, gender and sexual minorities report higher rates of cannabis use compared to cisgender heterosexuals (Dyar, 2022). Research suggests this may be due to unique stressors faced by these populations, including discrimination, internalized stigma, and unmet healthcare needs (Newberger et al., 2022; Vogel et al., 2025). Cannabis is often used as a coping mechanism to alleviate mental health challenges, manage elevated stress, and as a harm reduction strategy (Parent et al., 2021). Additionally, in gender and sexual minority communities, cannabis use can be viewed as normative, and as a result, individuals may consume cannabis for social reasons, to align with group norms (Dyar et al., 2021). However, individuals in high-stigma environments are particularly vulnerable, as stigma not only contributes to increased cannabis

use but also exacerbates associated risks and consequences (Flentje et al., 2024; Jauregui et al., 2024). Despite higher rates of use, treatment-seeking and mental health service utilization remain low, likely due to the compounded stigma related to both their substance use and marginalized identity (Benz et al., 2019). These intersecting factors highlight the need for inclusive and stigma-informed approaches to cannabis-related harm reduction and support services.

1.4. Current study

Understanding stigma towards cannabis consumers, particularly in the context of age and gender identity, can inform researchers, healthcare professionals, and policymakers on target populations that may be susceptible to increased stigma. Our research builds on previous work examining the extent to which perceptions of risk and disapproval toward cannabis consumers differed based on age and sex (Harris-Lane et al., 2020, 2023). Specifically, our study examined how stigma differed by the age and sex of a young cannabis consumer (i.e., 14-years-old, 21-years-old, 28-years-old). Additionally, we explored the impacts of the participants' age and gender on their perceptions of stigma. We hypothesized that: 1) cannabis use by women/girls would be more stigmatized compared to men/boys; 2) cannabis use by adolescents (i.e., 14-year-olds) would be more stigmatized compared to emerging adults (i.e., 21 and 28-year-olds); and 3) participants reporting more frequent cannabis consumption would report less stigma toward the vignette character.

2. Methods

2.1. Procedure

We used an experimental vignette design to explore how stigma differs based on the age and gender of the cannabis consumer. Participants were recruited through a survey market company, Angus Reid, in March of 2023 and received 150 points for redeeming gift cards ($25 is equal to 2500 points). Eligible participants included individuals 18 years of age or older and living in Canada. The survey was delivered through Qualtrics and was available in English and French. Participants provided informed consent before commencing the survey and were informed that the survey included questions to explore their opinions on cannabis.

Participants were randomly assigned to one of six vignette conditions, where the vignette was altered by age (14-years-old, 21-years-old, or 28-years-old) and gender (women/girls or men/boys) of the cannabis consumer. After reviewing the assigned vignette, participants completed the Social Distance Survey (SDS; Link et al., 1987), followed by questions about their personal substance use and demographic information. Upon completion, participants were presented with a debriefing form explaining the study's true purpose. While participants completed additional measures as part of a larger study on cannabis opinions, only measures and data pertaining to the objectives of the current study are reported. This study was approved by [Masked University] Interdisciplinary Committee on Ethics in Human Research (ICEHR; ref #20231336-PH).

2.2. Vignettes

The vignettes in the current study depicted an individual named Jane or John, who varied in age (14, 21, or 28-years-old; see Supplementary S1). A team of researchers, including a clinician, pharmacist, and psychologist, reviewed all vignettes to ensure that only information relevant to the independent variables was captured and that all vignettes were matched in length.

2.3. Measures

2.3.1. Social distance survey

The 7-item SDS measures stigma by assessing the degree of social distance an individual would prefer from another person. This was adapted from Link et al. (1987) and revised for the current study (refer to Supplementary S2). Participants rated each item on a 4-point Likert scale (ranging from "definitely willing" to "definitely unwilling," with scores of 0 to 3, respectively). SDS scores range from 0 to 21, with a higher score indicating greater levels of stigma. In Link et al. (1987) study, Cronbach's alpha was 0.92 (see Table 1).

2.3.2. Data analysis

An a priori power analysis using G*Power (Faul et al., 2007) revealed that a sample size of 897 participants was needed to achieve adequate statistical power and reliably detect a small effect size (power = 0.80, f = 0.12, α = 0.05). Statistical analyses were completed using IBM SPSS Statistics (Version 28; IBM Corp, 2021). Participants who completed the survey in less than three minutes or completed less than 25% of the survey were excluded. Participants were excluded from analyses if they responded to less than five items of the SDS. The participant's mean score on the scale was used to replace up to two missing SDS data points. Notably, the cutoff of two missing SDS data points was selected as only two participants were missing two data points. Descriptive statistics were used to characterize the sample. A series of Chi-Squares and one-way ANOVAs were conducted to assess for group differences in demographic variables.

Two factorial ANOVAs were conducted to assess stigmatizing attitudes towards the vignette character's cannabis consumption. The first ANOVA was conducted with the full sample (N = 1114) and included the age and gender of the consumer in the vignette. The second ANOVA was conducted with a sub-sample of participants and included the age and gender of the consumer in the vignette, as well as the age groups of participants (i.e., 18–29 years, 30–39 years, 40–49 years, 50–59 years, 60–69 years, and 70 + years) and gender identity (man, woman) as predictors of stigma. The sub-sample excluded individuals who chose not to disclose their gender (n = 20), identified as transgender, non-binary, or self-identified their gender identity (n = 22), as including this group resulted in cell observations of 0, which precluded the ability to account for gender identity in this further exploration.

A critical alpha of 0.01 was retained to correct for multiple analyses and significant heterogeneity of variances. Visual inspection of normality confirmed the assumption was not violated. Post-hoc analyses were conducted for dependent variables with a significant interaction. If no interactions were present, post-hoc analyses were conducted for dependent variables with a significant main effect. Finally, a one-way ANOVA was conducted to examine the impacts of participants' frequency of cannabis consumption on stigma toward the cannabis consumer.

3. Results

3.1. Sample Demographics

A total of 1,203 individuals opened the survey. Among eligible

Table 1
McDonald's omega scores for the age/gender vignettes.

Vignettes SDS Scale	Omega
Jane – 28-year-old	0.95
Jane – 21-year-old	0.95
Jane – 14-year-old	0.91
John – 28-year-old	0.95
John – 21-year-old	0.94
John – 14-year-old	0.93

participants, 85 were excluded: 24 declined to participate, 60 completed the survey in under three minutes, and five completed less than 25% of the survey or did not respond to any SDS items. Participants' mean SDS score was used to replace a missing SDS data point for two participants. The final sample included 1,114 participants between the ages of 18–85 years (M = 48.42, SD = 16.64). Chi-squares and one-way ANOVAs revealed no significant group differences between each of the six assigned vignette groups on demographic characteristics (Table 2).

3.2. Stigma based on Vignette Character's age and gender

A 2 x 3 factorial ANOVA, including all participants (n = 1,114), was conducted to assess for differences in stigma based on the age and gender of the vignette consumers. Results indicated a significant main effect for stigma on age of the consumer (p < 0.001), but no main effect on gender of the consumer and no interaction between age of the consumer and gender of the consumer (Table 3). Post hoc analyses revealed that cannabis consumption by a 14-year-old was more stigmatized than consumption by a 21- and 28-year-old. Likewise, cannabis consumption by a 21-year-old was more stigmatized compared to cannabis consumption by a 28-year-old (Table 4).

3.3. Stigma based on Vignette age and gender and Participant age and gender

Among a sub-sample of participants (n = 1072), a 2 x 2 x 3 x 6 Factorial ANOVA was conducted to assess the impact of the age and gender of the consumer, as well as participants' age group and gender identity. Detailed in Table 3, there was a main effect of age of the consumer (p < 0.001) and a main effect of participant age group (p < 0.001). There were no main effects of gender of the consumer or participant's gender. Further, there were no interactions, suggesting that the effects of the consumer's age and/or gender on perceived stigma did not differ at the level of participant age and/or gender. Post hoc analyses on the main effect of the consumer's age highlighted that cannabis consumption by a 14-year-old was more stigmatized than consumption by a 21- and 28-year-old, and cannabis consumption by a 21-year-old was more stigmatized than cannabis consumption by a 28-year-old. Post hoc analyses on the main effect of the participant's age group highlighted that 70 + year old participants perceived cannabis consumption as more stigmatizing than participants between the ages of 18–29 years and 30–39 years (refer to Table 4).

3.4. Stigma based on Participant's history of cannabis use

Finally, a one-way ANOVA, including all participants (n = 1,114), was conducted to assess how perceptions of stigma may differ based on the participant's history of cannabis use (i.e., no use within the last 6 months, less than monthly, 2–4 times per month, 2–3 times per week, or 4 or more times per week). Results indicated a significant main effect of cannabis use frequency (p < 0.001), such that participants who had not consumed cannabis within the last 6 months held more stigmatizing attitudes than individuals who had consumed cannabis, at any frequency, within the last 6 months (Table 5).

4. Discussion

Using an experimental vignette design, the current study assessed stigma based on the age and gender of the vignette character, as well as the age group and gender identity of the participant. Our findings highlighted that: 1) participants displayed greater stigma towards adolescent cannabis consumers (i.e., 14-year-olds) compared to emerging and young adult cannabis consumers (i.e., 21- and 28-year-olds); 2) participants displayed similar levels of stigma towards men/boys and women/girls cannabis consumers; 3) older participants (i.e., 70 + years old) displayed more stigma than younger participants (i.e.,

Table 2
Participants' demographic characteristics (N = 1118).

Baseline Characteristics	Across Six Groups N (%)	Chi-Square Test x²	p
Age Group		20.91	0.697
18–29 years old	143 (12.9)		
30–39 years old	278 (25.1)		
40–49 years old	179 (16.1)		
50–59 years old	160 (14.4)		
60–69 years old	208 (18.8)		
70 + years old	141 (12.7)		
Province		46.73	0.605
Alberta	125 (11.2)		
British Columbia	153 (13.7)		
Manitoba	43 (3.9)		
New Brunswick	20 (1.8)		
Newfoundland and Labrador	15 (1.3)		
Nova Scotia	37 (3.3)		
Ontario	425 (38.2)		
Prince Edward Island	7 (0.6)		
Quebec	259 (23.3)		
Saskatchewan	29 (2.6)		
Yukon	1 (0.1)		
Gender		16.64	0.677
Man	520 (47.2)		
Woman	552 (50.1)		
Nonbinary	12 (1.0)		
Transgender	6 (0.5)		
Self-identified	4 (0.5)		
Race/Ethnicity		40.95	0.429
White/Caucasian	898 (81.0)		
Asian/South-Asian	59 (5.0)		
Black/African Canadian	16 (1.0)		
Middle Eastern	10 (1.0)		
East Indian	15 (1.0)		
Hispanic/Latino	10 (1.0)		
Bi/Multi-Racial	35 (3.0)		
Self-identified	26 (2.0)		
Prefer not to say	22 (2.0)		
Geographical Region		15.63	0.925
Big Urban	624 (56.6)		
Small Urban	127 (12.0)		
Suburban	144 (13.0)		
Rural	174 (16.0)		
Remote/Northern	26 (2.0)		
Prefer not to say	7 (1.0)		
Yearly income		29.74	0.234
Less than $25,000	104 (9.4)		
$25,000 − $49,999	201 (18.2)		
$50,000 − $74,999	245 (22.2)		
$75,000 − $99,999	205 (18.6)		
$100,000+	225 (20.4)		
Prefer not to say	123 (11.2)		
Employment		18.73	0.945
Full-time employment	523 (47.4)		
Part-time employment	79 (7.2)		
Retired	305 (27.6)		
Self-employed	72 (6.5)		
Student	38 (3.4)		
Unemployed	66 (6.0)		
Prefer not to say	21 (1.9)		
Previous cannabis consumption		3.00	0.700
Yes	762 (69.1)		
No	341 (30.9)		
Past 6-Month Cannabis Consumption *(among participants that previously consumed cannabis)*		11.77	0.924
Never	419 (55.0)		
Less than monthly	125 (16.4)		
2–4 times per month	56 (7.3)		
2–3 times per week	50 (6.6)		
4 or more times per week	112 (14.7)		
Baseline Characteristics	Across Six Groups M ± SD	One-Way ANOVAs F	p
Age	48.42 ± 16.64	0.61	0.690
Age of first consumption	19.79 ± 8.50	0.29	0.917
Years of education	16.09 ± 3.61	0.92	0.468

Table 3
Results of Factorial ANOVAs.

2 x 3 Factorial ANOVA (All Participants) Predictor	F	p	Partial η²
Vignette Age	75.98	< 0.001**	0.122
Vignette Gender	1.10	0.296	0.001
Vignette Age x Vignette Gender	0.16	0.854	0.000
2 x 2 x 3 x 6 Factorial ANOVA (Sub-Sample*) Predictor	F	p	Partial η²
Vignette Age	60.45	<.001**	0.108
Vignette Gender	1.02	0.312	0.001
Participant Gender	0.00	0.955	0.000
Participant Age	5.19	<.001**	0.025
Vignette Age x Vignette Gender	0.12	0.885	0.000
Vignette Age x Participant Gender	0.18	0.837	0.000
Vignette Gender x Participant Gender	1.00	0.317	0.001
Vignette Age x Participant Age	0.89	0.542	0.009
Vignette Gender x Participant Age	0.58	0.716	0.003
Participant Gender x Participant Age	0.39	0.853	0.002
Vignette Age x Vignette Gender x Participant Gender	0.65	0.520	0.001
Vignette Age x Vignette Gender x Participant Age	0.83	0.600	0.008
Vignette Age x Participant Gender x Participant Age	1.01	0.431	0.010
Vignette Gender x Participant Gender x Participant Age	2.82	0.015	0.014
Vignette Gender x Vignette Gender x Participant Gender x Participant Age	0.36	0.965	0.004

Note: *Sub-sample of participants excluded individuals who did not identify as a man or woman (*n* = 22) due to cell observations of 0 with inclusion (resulting in an inability to include gender identity as a predictor). *p < 0.01. **p < 0.001. ***p < 0.0001.

Table 4
Results of Post Hoc Analyses.

Post Hoc Analyses – 2 x 3 Factorial ANOVA (All Participants) Predictor	MD	SE	p	d
Age of Consumer				
14-year-old – 21-year-old	3.61	0.42	<.001**	0.64
14-year-old – 28-year-old	4.96	0.42	<.001**	0.87
21-year-old – 28-year-old	1.34	0.42	0.004*	0.24
Post Hoc Analyses – 2 x 2 x 3 x 6 Factorial ANOVA (Sub-Sample) Predictor	MD	SE	p	d
Age of Consumer				
14-year-old – 21-year-old	3.37	0.42	<.001**	0.65
14-year-old – 28-year-old	4.87	0.42	<.001**	0.93
21-year-old – 28-year-old	1.50	0.42	0.003*	0.23
Participant Age				
18–29 years – 30–39 years	0.08	0.60	1.000	0.01
18–29 years – 40–49 years	−0.48	0.65	0.977	0.08
18–29 years – 50–59 years	−0.93	0.66	0.719	0.15
18–29 years – 60–69 years	−1.66	0.63	0.086	0.27
18–29 years – 70 + years	−2.58	0.68	0.002*	0.44
30–39 years – 40–49 years	−0.56	0.55	0.913	0.09
30–39 years – 50–59 years	−1.01	0.56	0.469	0.17
30–39 years – 60–69 years	−1.74	0.52	0.012	0.29
30–39 years – 70 + years	−2.66	0.59	0<.001**	0.46
40–49 years – 50–59 years	−0.45	0.62	0.978	0.08
40–49 years – 60–69 years	−1.18	0.58	0.326	0.20
40–49 years – 70 + years	−2.10	0.64	0.013	0.36
50–59 years – 60–69 years	−0.73	0.59	0.823	0.12
50–59 years – 70 + years	−1.65	0.65	0.114	0.29
60–69 years – 70 + years	−0.92	0.62	0.669	0.16

*p < 0.01. **p < 0.001. ***p < 0.0001.

18–29 and 30–39 years old); 4) participant attitudes did not differ significantly based on their gender identity (man or woman); and 5) participants who had not consumed cannabis in the past 6-months displayed more stigma than those who had consumed within this timeframe. Given the scarcity of research exploring stigma toward cannabis

Table 5
Results of Post Hoc Analyses from One-Way ANOVA.

Post Hoc Analyses – One-Way ANOVA				
Predictor	*MD*	*SE*	*p*	*d*
Participant Frequency of Consumption				
Never – Less than monthly	3.85	0.54	<.001**	0.68
Never – 2–4 times per month	4.08	0.78	<.001**	0.72
Never – 2–3 times per week	3.35	0.82	<.001**	0.59
Never – 4 or more times per week	6.10	0.57	<.001**	1.08
Less than monthly – 2–4 times per month	0.23	0.91	0.999	0.04
Less than monthly – 2–3 times per week	−0.50	0.94	0.984	−0.09
Less than monthly – 4 or more times per week	2.25	0.73	0.019	0.40
2–4 times per month – 2–3 times per week	−0.73	1.10	0.963	−0.13
2–4 times per month – 4 or more times per week	2.02	0.92	0.184	0.36
2–3 times per week – 4 or more times per week	2.75	0.96	0.034	0.49

*p < 0.01. **p < 0.001. ***p < 0.0001.

consumers, particularly in the context of post-legalization, these findings help begin to address this gap. They suggest that stigma toward younger cannabis consumers remains a concern. This stigmatization can exacerbate barriers to help-seeking, isolate individuals further, and perpetuate negative self-perceptions, all of which hinder access to necessary support and care (Ahern et al., 2007; Goffman, 1963; Reid, 2020).

4.1. Stigma based on Vignette age and age group of Participant

Since there were higher levels of stigma associated with younger consumers compared to their older counterparts, these individuals may experience greater social disapproval toward their cannabis use. This finding aligns with previous research, where people tend to express greater disapproval of adolescent substance use compared to emerging adults' substance use (Harris-Lane et al., 2020; Musick et al., 2008). Adolescents may be particularly vulnerable to public stigma, as they are at an increased risk for the adverse effects of cannabis consumption (e.g., negative impact on brain development, poor academic performance, negative health and social outcomes; Hall et al., 2020; Trenz et al., 2015). Additionally, there is an increase in educational campaigns targeting youth substance use as well as health warning messages around cannabis use (Health Canada, 2022b; Howe et al., 2023). Therefore, participants may have been more aware of the negative impact cannabis can have on youth.

While research supports that daily cannabis use among adolescents (e.g., 14-year-olds) may be particularly harmful, it is possible that the observed effects of stigma are confounded by the social, developmental, and legal consequences of underage cannabis use, rather than being solely attributable to the adolescent's age. In other words, harm may partially stem from the fact that cannabis use is illegal for this age group, which may lead to stigmatization, punitive responses, or exclusion from critical developmental opportunities. However, measuring social distance toward this group remains relevant, as participants in our study expressed greater reluctance to engage with 14-year-olds who use cannabis (e.g., less interest in being neighbors with the family, hiring the adolescent, or interacting socially), compared to both other age groups. This heightened social distance may reflect stigmatizing attitudes that reduce the likelihood of offering support to adolescents. Nevertheless, we did not directly assess willingness to help as a component of stigma (Brown, 2015; Corrigan et al., 2003) and future research should further explore participant attitudes on these dimensions.

Our results revealed a generational difference in stigmatizing attitudes toward cannabis consumers, with older individuals (70 years or older) exhibiting more stigmatization compared to younger individuals (i.e., ages 18–39). This is not surprising given that older generations have lived through cannabis prohibition and have instilled negative

perceptions about cannabis (Camberos-Barraza et al., 2023). In light of these findings that suggest younger populations are less likely to hold stigmatizing attitudes toward cannabis use than older adults, an opportunity to enhance public health outcomes emerges. Given the rising cannabis consumption rates among youth and young adults (Health Canada, 2022a, Zuckermann et al., 2021), it is imperative to move beyond abstinence-based approaches and promote informed choices concerning cannabis consumption. For example, media, educators, and policymakers can reinforce these changing attitudes, aiming to integrate harm-reduction initiatives that target misinformation and promote responsible use (Health Canada 2022b, Howe et al., 2023) as opposed to scare tactics that only heighten stigma (McGinty et al., 2015).

4.2. Stigma based on Vignette gender and gender identity of Participant

In our study, there were no main effects on stigma towards cannabis consumers based on the vignette character's gender or gender identity of the participant. These results are inconsistent with previous research on stigma toward cannabis use among women, which suggests that female consumption is more stigmatized compared to their male counterparts, as their consumption challenges the status quo and goes against the social conventions of being a female (Mostaghim, 2019). While misconceptions consisted of viewing female cannabis consumption as more dangerous than males, a large body of literature has highlighted that perceptions of dangerousness are highly correlated with stigmatizing attitudes (e.g., social distance; Corrigan et al., 2001). Recent research has indicated that perceptions of risk toward cannabis consumption among women are changing (Harris-Lane et al., 2020, 2023), and the gender gap is potentially narrowing as cannabis becomes more normalized and social acceptability increases for cannabis consumers. Therefore, perhaps it is not surprising that we did not find a significant difference in stigmatizing attitudes toward the gender of the cannabis consumer or based on the gender of the participant.

4.3. Limitations

While it is true that not all drug users experience stigma, or experience different degrees of stigmatization (Ahern et al., 2007), our findings highlight potential factors that may increase stigma toward cannabis consumers. However, this study is not without its limitations. Although our sample had a strong representation of Canadian provinces, it was comprised of primarily White (81%) individuals who were employed full-time (47%), which limits the generalizability of the findings to other groups. However, vignette research is limited in its ability to generalize. Further, our study utilized Western names (i.e., John and Jane) for the vignettes to control for inherent biases towards ethnic minorities, as these groups are often more stigmatized for their substance use (Reid, 2020). However, this limits our ability to make inferences regarding stigma towards ethnic minorities. We specifically noted that the individuals in these vignettes consumed cannabis daily, which may have heightened stigma because of frequent use. While efforts were made to minimize the impact of age-related stigma, such as revising the SDS to be age-appropriate for the 14-year-old vignette, it is possible that some survey items may be reflective of age-related stigma as opposed to cannabis-related stigma. Additionally, due to the insufficient sample size for gender-diverse populations (e.g., non-binary, transgender), we were unable to examine whether participants gender influenced their stigma towards the vignette character. Consequently, this decision impacts our ability to make inferences on stigma towards cannabis consumers based on diverse gender identities. We recognize the necessity for future research to increase efforts exploring stigma and perceptions around cannabis in diverse populations. Additionally, future studies would benefit from examining how contextual factors such as age, location, gender and the legal status of cannabis use, influence stigma. Specifically, it would be valuable to explore whether stigma towards younger cannabis consumers is driven by the use of the

substance or the legal implications for underage consumers. Further, research could explore how stigma varies across different cannabis consumer identities, considering the intersections of factors like age, gender, legality and consumption patterns.

5. Conclusion

The current study was the first to explore stigmatizing attitudes from the general population that were associated with the age and gender of cannabis consumers. Our findings highlight that stigma surrounding cannabis consumption is prevalent in society. However, certain groups of individuals are at a greater risk of experiencing stigma (i.e., younger populations). This is concerning given that stigmatization during one's younger years can have long-term consequences such as the persistence of mental health issues into adulthood, social isolation, and barriers to help-seeking. Additionally, our results revealed a generational difference in stigmatizing attitudes towards cannabis consumers with older individuals (70 years or older) exhibiting more stigmatization compared to younger individuals (ages 18–39).

These findings have significant implications for service providers and prevention efforts. Since stigma can serve as a barrier to healthcare access and treatment, healthcare professionals should be aware of their own biases and how stigma may discourage young individuals from seeking guidance or support for cannabis-related concerns. Integrating nonjudgmental, evidence-based discussions about cannabis use into healthcare settings can help mitigate the impact of stigma and disclosure (King et al., 2024). Service providers should also consider using motivational interviewing and harm-reduction strategies rather than abstinence-only messaging, which may further isolate individuals and perpetuate stigma (Gallagher & Bremer, 2017; Henwood et al., 2014).

From a prevention standpoint, educational campaigns should aim to provide balanced, research-informed messaging about cannabis use (Clobes et al., 2022). Prevention efforts should move beyond abstinence-only messaging and focus on evidence-based harm-reduction approaches, such as educating youth on lower-risk consumption methods, recognizing signs of problematic use, and promoting informed decision-making (Bishop et al., 2022; Fischer et al., 2022). Targeting stigma-reduction within school-based programs and healthcare settings could improve help-seeking behavior and reduce the long-term consequences of untreated substance use. Public health campaigns should leverage the changing attitudes among younger populations to promote peer-led education programs and digital campaigns that normalize discussions around cannabis use and harm reduction.

Future research should investigate effective strategies to counter stigma, particularly among younger populations. Developing interventions that specifically target age-based stigma could improve mental health outcomes and increase help-seeking behaviors. Furthermore, expanding research to include diverse populations that are often underrepresented in research, such as gender-diverse and sexual minority individuals, various racial and ethnic groups, and individuals with different socioeconomic backgrounds, would provide a more comprehensive understanding of how stigma operates across different social groups.

CRediT authorship contribution statement

Emily C. Rowe: Supervision. **Ashlee R.L. Coles:** Supervision. **Laura M. Harris-Lane:** Writing – review & editing, Formal analysis. **Nick Harris:** Writing – review & editing, Supervision, Methodology, Conceptualization. **Lisa Bishop:** Writing – review & editing, Supervision, Conceptualization. **Rachel Howells:** Writing – review & editing, Investigation, Conceptualization. **Jennifer Donnan:** Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Data curation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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