

Collision Risk, Comparative Optimism and Normative Influence:

Perceptions Among People Who Drive After Cannabis Use



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Background

- Driving under the influence of cannabis (DUIC) is becoming increasingly relevant to public health.
- Legalisation of cannabis for medical and nonmedical use is expanding worldwide.
- Tendency to contrast DUIC with driving under the influence of alcohol (DUIA)
- There are significant differences between cannabis and alcohol:
 - Pharmacological effects
 - Usage patterns
 - Relative risk of collision from cannabis use versus alcohol
 - Few studies have generated mixed results: similar impact of the two substances or impact of alcohol is larger than that of cannabis
 - Current consensus seems to be that road safety risks of cannabis < alcohol

Background

- Despite these differences, what we have learned about DUIA could still inform our understanding of DUIC.
- The battle against DUIA has included assessment of cognitive factors:
 - Driver attitudes
 - Perceived risks
 - Normative influence



DUIA: Risk Perception, Normative Influence

- In early DUIA research, broader population did not view DUIA as high-risk.
 - When asked to judge an alcohol-impaired driver for a roadway collision, participants were highly sensitive to situational context and rarely prescribed sanctions in absence of adverse consequences.
(eg, DeJoy, 1989; Pliner & Cappell, 1977)
- More recent studies have shown that those who believe DUIA increases collision risk are less likely to engage in the behaviour.
(eg, Greenfield & Rogers, 1999; Harbeck et al., 2017)
 - Consistent with theories of health behaviour change



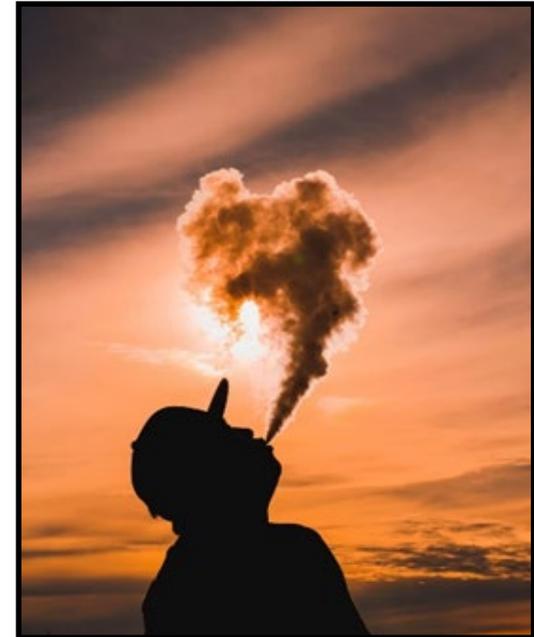
DUIA: Comparative Optimism

- Comparative Optimism Bias: tendency to estimate our own risk of a negative event as being lower than that of someone else
- Demonstrated in reference to DUIA:
 - Drink-drivers tend to perceive themselves as less likely than the average driver to be involved in a collision when DUIA.
(Albery & Guppy, 1996)
- These drivers use this bias to self-justify their engagement in DUIA.



DUIC: Cognitive Factors

- Cross-sectional studies worldwide have found that substance users typically perceive DUIC to have minimal effects on and to be less likely to impair driving than DUIA (eg, Albery et al., 2000; Davis et al., 2016)
- Recent studies demonstrate that normative beliefs and perceiving collision risk from DUIC influence likelihood of engaging in the behaviour (Aston et al., 2016)



Current Study

- Rationale:
 - There has been little study of the relevance of social cognition to DUIC.
 - There has been comparatively little research conducted on DUIC using qualitative methods.
- Purpose:
 - To qualitatively explore cognitive factors that may affect collision risk associated with DUIC by seeking the perspectives of those who engage in the behaviour.



Method

- Why Qualitative Interviews?
 - Qualitative interviews allow for nuanced exploration of a topic area and are, therefore, especially useful when working in an emerging area.



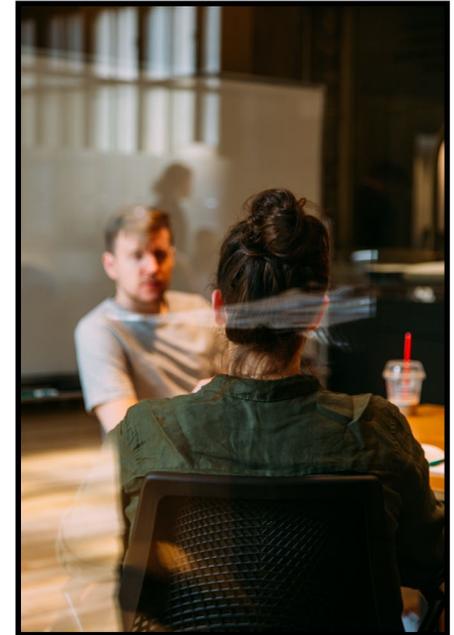
Method: Participants

- Recruited from Toronto site of Back on Track (BOT)
 - Ontario's remedial measures program for convicted impaired drivers or those with 2+ administrative driving suspensions
 - Completion of BOT is required to fully reinstate their driver's licence.
- Interviewer attended BOT before lunch break to provide study info.
- Inclusion Criteria:
 - Enrolled in BOT
 - At least 18 years of age
 - Have driven a motor vehicle within an hour of using cannabis in the last year



Method: Participants

- Eligible clients could be interviewed:
 - Onsite during the break, or
 - After the program session had finished for the day, or
 - By telephone or in-person at another time
- Recruitment continued until thematic saturation had been reached ($n=20$)
- All participants received a \$20 honorarium for their time.



Method: Interview Questions

- Close-ended questions about:
 - Gender
 - Age
 - Length of time with a driver's licence,
 - Past-year frequency of substance use
 - Past-year frequency of impaired driving
 - Past-year frequency of collision involvement
- Used a semi-structured interview guide with scripted questions and prompts to elicit open-ended answers.
- Unscripted follow-up questions allowed participants to elaborate or clarify their responses.



Method: Interview Questions

Thematic Area	Question
Perceptions of how cannabis use may or may not influence collision risk.	Do you think that using cannabis increases, decreases or does not affect the risk of being involved in a motor vehicle collision?
Relevant driving skills that may be affected by cannabis use.	What, if any, driving skills do you think are most affected by cannabis use and why?
Knowledge of others' perceptions of cannabis use and collision risk.	Do you know if your friends or relatives think that driving after using cannabis increases the risk of being involved in a motor vehicle collision?
Perceptions of how other types of drug use may or may not influence collision risk.	Do you think that using drugs other than cannabis and alcohol increases, decreases or does not affect the risk of being involved in a motor vehicle collision? Can you please specify what kinds of drug(s) you are talking about?



Method: Coding & Analysis

- Thematic analysis, with data coded by CW and TMW.
- Followed standardized coding process as outlined in qualitative research guides.
 - Began by coding independently, looking for emergent themes and sub-themes without any preconceived hypotheses.
- BUT CW recognized applicability of concepts from social cognition.
- We agreed to move away from grounded theory approach and to consider these concepts in the review of emergent themes.
- Thus, we coded independently based on the narrower themes.
- Then met to discuss outstanding discrepancies and how to present findings.

Results: Sample Characteristics

- Gender: 18 males, 2 females
- Age: ranged from 21 to 53 years, mean = 32 years
- Length of time with a driver's licence: ranged from 5 to 31 years
- All participants indicated that alcohol-related offence brought them to BOT, but one reported being charged with both alcohol and cannabis use.
- 55% reported being a daily user of cannabis.
- 20% reported driving within an hour of using cannabis daily, 25% weekly, 15% monthly.
- Only 15% reported having been involved in a collision after using cannabis, but one of these cases also involved alcohol.





Perceived Effects of Cannabis Use on Collision Risk and Driving Skill

- Participants expressed mixed views regarding the potential effects of cannabis use on driving.
- Some believed that cannabis use increases collision risk.
- But this acknowledgment was often qualified by statements regarding the amount consumed or level of personal experience.

'I feel like it's not a good idea for people who haven't smoked weed [...] it would endanger others because I feel like if you're doing it first, like for your first couple of times, it'll boost your anxiety up, then probably create a car crash on the road' (Participant 12).

Perceived Effects of Cannabis Use on Collision Risk and Driving Skill

- Participants identified a variety of driving-related skills that could be negatively affected by cannabis use:
 - Judgement (eg, misjudging speed or the distance between vehicles)
 - Reaction time
 - Peripheral vision
 - Paranoia
 - Anxiety or panic
 - Attention (distracted concentration, tunnel vision or hyper-focusing, decreased alertness or being too 'relaxed')



Perceived Effects of Cannabis Use on Collision Risk and Driving Skill

- Some participants acknowledged driving skills that could be negatively impacted by cannabis use, but did not believe that collision risk was increased.
- Some who reported effects of cannabis felt these had a positive impact on their driving.

I'm driving very, like, cautiously [...] I'm checking, I'm aware. I'm like, in fact, I'm extremely alert. So there's really nothing that's going to happen that I'm going to do on the road' (Participant 13).



Comparative Optimism Bias

- Many participants believed that while cannabis use did not affect or no longer affected their own driving, it likely could or does affect the driving of someone else, especially for to novice or less frequent cannabis users.

‘For myself, I don’t feel like there’s any effect. I don’t feel like there’s any impairment. I don’t feel like I’m hallucinating or I’m somewhere else. I know what I’m doing, exactly what I’m doing, but [...] for the general population I can see that [...] it can impair somebody, and impair their judgement and reaction time’ (Participant 1).

- Several participants compared their DUIC to DUIA, citing DUIA as far riskier.

‘Honestly, I think it’s [DUIC] better than drinking [...] when you drink, like, you don’t even remember the things that you do the next day, but when you smoke you actually, like, you focus’ (Participant 7).

Normative Influences

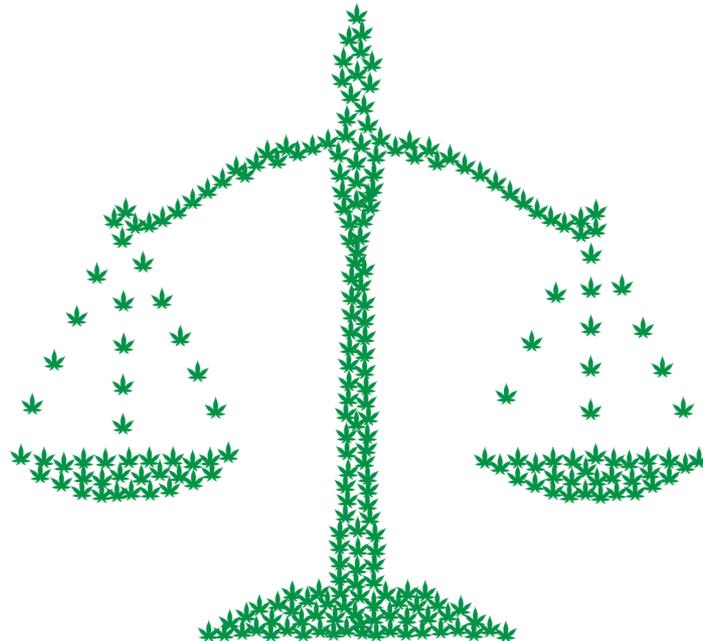
- Many recalled having conversations with friends or family regarding the effects of cannabis use on collision risk.
- Friends were seen as more accepting of DUIC relative to family.
- But this appeared to be due to participants deeming opinions of fellow cannabis users as more credible than opinions of non-users.

‘Family’s a different story [...] I have a sister, she never smokes and my parents never smoked. So their idea of it is almost from maybe a book or some warning on TV [...] they actually know that I’ve been behind the wheel high and they don’t like it’ (Participant 9).



Normative Influences

- Some participants expressed a sense that DUIIC is socially accepted.
 - Some connected this sense to viewing cannabis use and DUIIC as commonplace and relatively benign.
- Some cited impending legalisation as confirmation that cannabis use poses minimal health and safety risk.





Perceived Collision Risk Associated with *Other* Drug-Driving

- Participants perceived DUIC as less dangerous than driving under the influence of other drugs (DUID).
 - Concern about hallucinogens: effects on perception, awareness of reality and vision
 - Concern about stimulants (eg, MDMA, cocaine)
 - Some believed that stimulant use might improve driving ability, increasing awareness and attention.
- Clear that many participants were speculating about DUID rather than basing their comments on personal experience.
- Pharmaceutical drugs or medications were mentioned less frequently.
 - When asked, participants usually suggested that such drugs could increase collision risk.

Discussion

PERCEIVED IMPACT OF CANNABIS ON DRIVING

- Some participants identified driving skills perceived to be affected by cannabis use.
- Many of these skills are the focus of previous and ongoing experimental studies, including some being conducted at CAMH
(eg, Anderson et al., 2010; Brands et al., under review)
- More investigation of these identified effects of cannabis on driving would enhance road safety initiatives.





Discussion

COMPARATIVE OPTIMISM BIAS

- Many participants perceived themselves as less likely than others to be involved in a collision when DUIC.
- Many participants also spontaneously identified DUIC as less risky than DUIA.
- Both comparisons are used to rationalize involvement in the behaviour and to minimize any discomfort arising from social disapproval or cognitive dissonance (mental discomfort resulting from a mismatch between attitudes and behaviour)
- Education and prevention programs may be enhanced by highlighting and reducing these cognitive biases.

Discussion

NORMATIVE INFLUENCE

- Findings support existing knowledge that peer influence can predict drug use and impaired driving.
- Altering peer norms and social disapproval has been a primary strategy to reduce DUIA.
- These data suggest that this strategy could prevent DUIC as well.



Discussion

PERCEIVED IMPACT OF OTHER DRUGS ON DRIVING

- Participants perceived cannabis use as less of a collision risk factor than other drug use (eg, hallucinogen and stimulant use).
- However, many noted that their opinions were speculative.
- Differential beliefs about the effects of various drugs on driving and collision risk are dependent on one actual experience with drug-driving.

(Albery et al., 2000)

- Further exploration of risk perceptions associated with different substances may yield valuable info on role of experience and cognitive mechanisms underlying these beliefs that could motivate attitude or behaviour change.



Limitations

- Interviews general retrospective self-reported data: recall challenges, social desirability bias
- Participants were assured that participation was confidential and would not impact their BOT program status.
- Sampled known at-risk drivers: findings may not generalise to broader population
- Sample consisted predominantly of male participants: findings may not generalise to female drivers



Implications

- The wide spectrum of beliefs about dangerousness of DUIC poses a significant challenge to delivery of effective prevention messaging to a diverse driving public.
- Recommendations for development of new road safety campaigns:
 - Consistently base messaging on up-to-date evidence of the impairing effects of cannabis use on driving.
 - Provide information on the limited utility of personal efforts to compensate for cannabis-related impairment while driving (eg, driving more slowly, increasing headway) (Brands et al., under review; Young et al., 2007)
 - Aim for wide audience in an effort to decrease perceived acceptability of DUIC.
- If drivers who DUIC are more influenced by fellow cannabis users, it may be important that public campaigns are endorsed or delivered by those with relevant lived experience.

Related Publications

- Wickens, C. M., Watson, T. M., Mann, R. E., & Brands, B. (2019). Exploring perceptions among people who drive after cannabis use: Collision risk, comparative optimism, and normative influence. *Drug and Alcohol Review, 38*, 443-451.
- Watson, T. M., Mann, R. E., Wickens, C. M., & Brands, B. (in press). Deterring driving under the influence of cannabis: Knowledge and beliefs of drivers in a remedial program. *Canadian Journal of Criminology and Criminal Justice*.
- Watson, T. M., Mann, R. E., Wickens, C. M., & Brands, B. (in press). “Just a habit”: Driving under the influence of cannabis as ordinary, convenient, and controllable experiences according to drivers in a remedial program. *Journal of Drug Issues*.

Thank
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