# Assessment of impaired control over cannabis consumption: Psychometric properties of the Impaired Control Scale-Cannabis (ICS-C)

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## Introduction

- Impaired control refers to the inability to control substance use despite the desire to limit consumption, which has been shown to predict problematic drinking and negative alcohol outcomes in young adults.[1]
- Compared to the alcohol literature, there is less research on impaired control over cannabis which can be partly attributed to the lack of comprehensive and validated measures.
- The ICS-C is a newly developed measure that assesses impaired control over cannabis that was directly adapted from the Impaired Control Scale (ICS), a measure of impaired control over alcohol consumption.[2]

**Aims:**

To examine the factor structure, internal consistency, convergent, discriminant, and concurrent validity of ICS-C

**Hypotheses:**

1. Convergent validity: strong and positive correlation between scores in ICS-C and Impaired Control subscale from Marijuana Consequences Questionnaire (MACQ-IC), a measure of impaired control over cannabis, was expected
2. Discriminant validity: weak and positive correlation between scores in ICS-C and ICS, a measure of impaired control over alcohol, and SUPPS-P, a measure of the different facets of impulsivity, were expected
3. Concurrent validity: moderate to strong and positive correlation between scores in ICS-C and frequency and amount of marijuana use, as well as the Negative and Positive Urgency subscales in SUPPS-P, were expected. We also expected a negative and significant correlation between scores in ICS-C and SSRQ, a measure of self-regulation.

## Methods

**Participants**: n = 362 undergraduate students (*n* = 227(63%) women; mean age = 19.91 (*SD* = 3.5)) from York University and University of Manitoba who reported cannabis use in past month (with an average cannabis use of 9.34 days)

# The Impaired Control Scale-Cannabis (ICS-C) is a promising tool that can be used to assess impaired control over cannabis in young adults.

**Table 1. Factor loadings of the final solution**

| Item | Attempted Control | Failed Control |
|---|---|---|
| 1. I have tried to limit the amount of cannabis I used. | **0.86** | 0.00 |
| 2. I have tried to resist the opportunity to start using cannabis. | **0.89** | -0.04 |
| 3. I have tried to slow down my cannabis use. | **0.94** | 0.03 |
| 4. I have tried to cut down on my cannabis use (i.e., use less). | **0.95** | 0.04 |
| 5. I have tried to stop using cannabis for a period of time. | **0.86** | -0.04 |
| 6. I have found it difficult to limit the amount of cannabis I used. | 0.19 | **0.71** |
| 7. I have started using cannabis even after deciding not to. | 0.16 | **0.62** |
| 8. Even when I intended to use only a small amount of cannabis in a given day, I ended up using much more. | 0.04 | **0.75** |
| 9. I have used cannabis at times when I knew it would cause me problems (e.g., problems at work/school, with family/friends, or with the police, etc.). | 0.01 | **0.69** |
| 10. I have had an irresistible urge to continue using cannabis once I started (i.e., after a small amount, I want more). | 0.01 | **0.69** |
| 11. I have found it difficult to resist using cannabis, even for a single day. | -0.04 | **0.79** |

*Note:* Factor loadings above .30 have been bolded. All reverse coded items were removed and all items assessing failed and perceived control loaded onto one factor. Because the failed and perceived control items were redundant, only the failed control items were retained in the final solution. The final solution consisted of two factors: Attempted Control (which measured the frequency of past attempts to control cannabis use) and Failed Control (which measured the frequency of failed attempts to limit cannabis consumption).

**Table 2. Internal consistency and correlation coefficients of ICS-C Attempted Control and Failed Control with measures of related constructs**

| Variable | α | n | Attempted Control | Failed Control |
|---|---|---|---|---|
| MACQ-IC | 0.81 | 348 | **0.42*****| **0.70***** |
| Full MACQ | 0.92 | 348 | **0.43***** | **0.65***** |
| ICS | | | | |
| Attempted Control | 0.92 | 336 | **0.36***** | |
| Failed Control | 0.80 | 336 | | **0.34***** |
| SSRQ | 0.91 | 245 | **-0.19**** | **-0.27***** |
| SUPPS-P | | | | |
| Negative Urgency | 0.85 | 240 | 0.11 | **0.25***** |
| Lack of Perseverance | 0.76 | 240 | 0.13 | 0.10 |
| Lack of Premeditation | 0.81 | 240 | 0.03 | **0.16*** |
| Sensation Seeking | 0.70 | 240 | -0.08 | -0.08 |
| Positive Urgency | 0.89 | 240 | 0.11 | **0.16*** |
| Marijuana Use Measures | | | | |
| Frequency of use (days) | | 380 | **0.18***** | **0.47***** |
| Total marijuana use in a typical week (grams) | | 336 | **0.21***** | **0.44***** |
| ICS-C | | | | |
| Attempted Control | 0.96 | 362 | | |
| Failed Control | 0.89 | 362 | | |

*Note:* All correlations represent Spearman's rank correlation coefficient. MACQ-IC = Marijuana Consequences Questionnaire-Impaired Control subscale; Full MACQ = Marijuana Consequences Questionnaire without the Impaired Control subscale; ICS = Impaired Control Scale; SSRQ = Short Self-Regulation Questionnaire; SUPPS-P = Short Negative Urgency, Premeditation (lack of), Perseverance (lack of), Sensation Seeking, Positive Urgency Impulsive Behavior Scale; ICS-C = Impaired Control Scale-Cannabis
*p<.05, **p<.01, ***p<.001

## Methods, continuation

**Data Analyses:**

1. Exploratory factor analysis using polychoric correlation matrix to examine factor structure
2. Cronbach's alpha (α) to estimate internal consistency
3. Correlational analyses for validity tests

## Results

- We found a 2-factor solution after removing all the negatively worded items that loaded onto a separate factor based on the 3-factor model (see Table 1).
- The ICS-C has good internal consistency (Attempted Control: α = 0.96; Failed Control: α = 0.89).
- There is evidence for convergent (see hypothesis 1), discriminant (hypothesis 2), and concurrent (hypothesis 3) validity (see Table 2).
- Overall, we found weak to moderate correlations between scores in ICS-C and related variables including the amount and frequency of marijuana use, impulsivity, and self-regulation.
- The correlations were also generally higher for Failed Control than Attempted Control.

## Conclusions

- The ICS-C can be used to assess impaired control over cannabis in young adults.
- This scale can be used to screen for impaired control over cannabis in young adults, which contributes to the early intervention and prevention efforts to reduce cannabis-related problems.

## References

1. Leeman, R. F., Fenton, M., & Volpicelli, J. R. (2007). Impaired control and undergraduate problem drinking. *Alcohol & Alcoholism, 42*(1), 42-48.
2. Heather, N., Tebbutt, J. S., Mattick, R. P., & Zamir, R. (1993). Development of a scale for measuring impaired control over alcohol consumption: A preliminary report. *Journal of Studies on Alcohol, 54*(6), 700-709.