

BEHAVIOR CHANGE TECHNIQUE ANALYSIS OF DIGITAL INTERVENTIONS FOR RECREATIONAL CANNABIS USE AMONG YOUNG ADULTS

Gabrielle Chicoine^{1,2}, José Côté²⁻⁴, Billy Vinette^{2,3}, Patricia Auger^{2,4}, Geneviève Rouleau^{2,5}, Guillaume Fontaine⁶⁻⁹ & Didier Jutras-Aswad^{2,10}

¹Knowledge Translation Program, Li Ka Shing Knowledge Institute, St. Michael's Hospital, Toronto, ON, Canada ²Research Chair in Innovative Nursing Practices, Montreal, QC, Canada ³Faculty of Nursing, Université de Montréal, Montreal, QC, Canada ⁴Research Centre of the Centre Hospitalier de l'Université de Montréal, Montreal, QC, Canada ⁵Department of Nursing, Université du Québec en Outaouais, Saint-Jérôme, QC, Canada ⁶Ingram School of Nursing, McGill University, Montreal, QC, Canada ⁷Centre for Clinical Epidemiology, Lady Davis Institute for Medical Research, Montreal, QC, Canada ⁸Centre for Nursing Research, Jewish General Hospital, Montreal, QC, Canada ⁹Centre for Implementation Research, Ottawa Hospital Research Institute, Ottawa, ON, Canada ¹⁰Department of Psychiatry and Addictology, Université de Montréal, Montreal, QC, Canada



RESEARCH CHAIR IN
INNOVATIVE NURSING PRACTICES

Contact: JOSE.COTE@UMONTREAL.CA



0000-0002-0617-2861



BACKGROUND

- High prevalence of cannabis use among young adults¹⁻³
- Cannabis use is associated with acute and long-term health and psychosocial risks^{4,5}
- Digital interventions to promote lower-risk cannabis use are promising⁶⁻⁸ but have shown mixed results⁹⁻¹²
- It is unclear what active ingredients are in digital interventions for cannabis use and which component behavior change techniques (BCTs) contribute to their effectiveness¹²
- BCT analysis helps identify explicit behavior change mechanisms reported in interventions and can provide insights to establish key active ingredients for developing and implementing effective digital interventions for cannabis use

OBJECTIVE

Identify and describe the BCTs employed in digital interventions designed to promote lower-risk cannabis use among young adults.

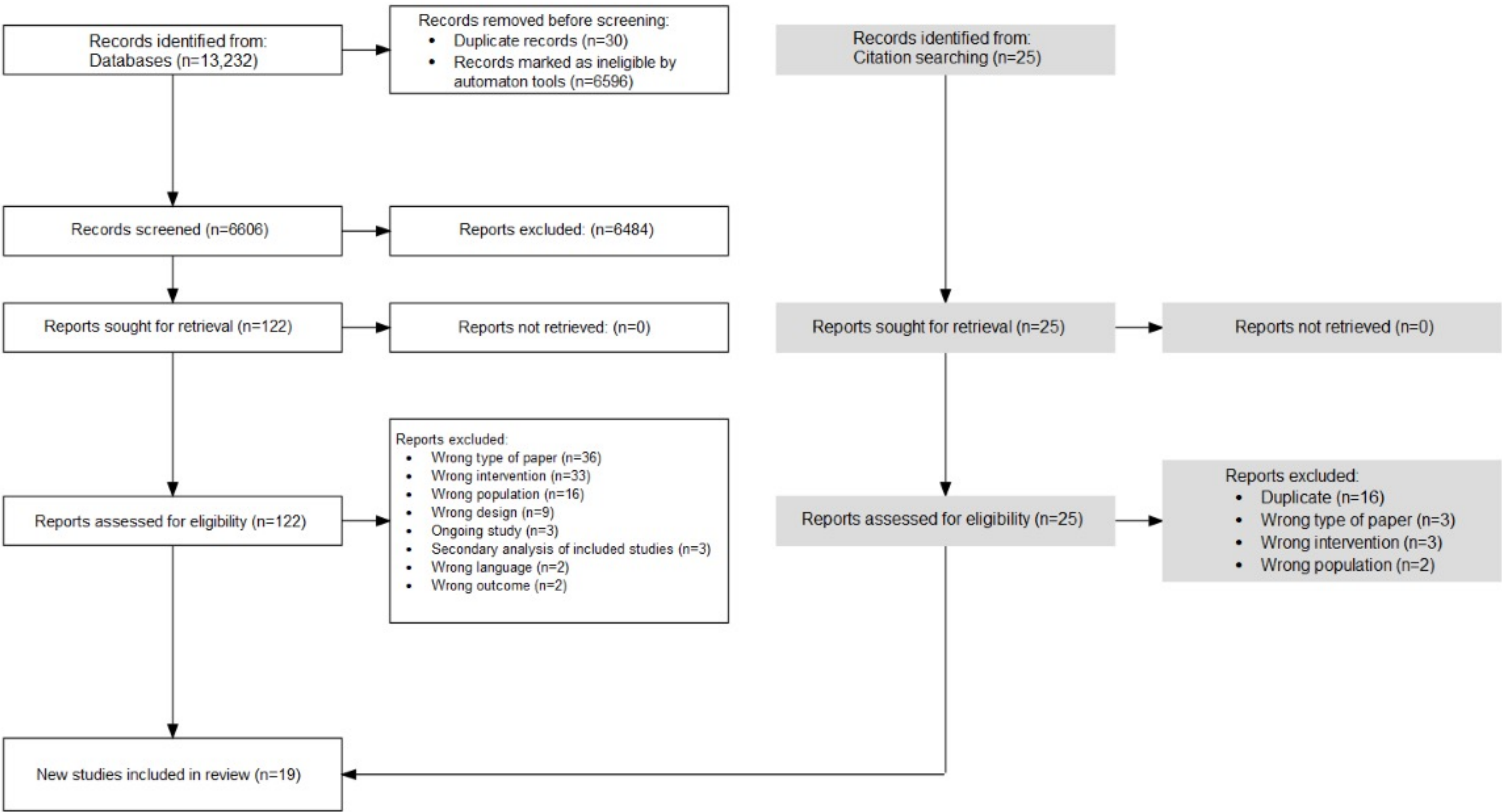


FIGURE 1. PRISMA STUDY FLOW DIAGRAM

A BCT is ‘an observable, replicable, and irreducible component of an intervention designed to alter or redirect causal processes that regulate behavior.’^{14,15}

METHODS

OVERVIEW:

- **Study design:** Secondary analysis of a systematic review and meta-analysis using the Cochrane guidelines¹³
- **Protocol registration:** PROSPERO CRD42020196959
- **Search strategy:** Free-text keywords and Medical Subject Headings revolving around 3 concepts: cannabis use, digital interventions, and young adults
- **Information sources:** 7 electronic databases of published literature (CINAHL, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, Embase, MEDLINE, PubMed, and PsychINFO)

ELIGIBILITY CRITERIA:

- **Type of publication:** Original research articles published in peer-reviewed journals
- **Study design:** Experimental study designs
- **Population:** Young adults (aged 16-35 years)
- **Intervention:** Digital interventions aimed at preventing, reducing or ceasing cannabis use
- **Comparison:** Control group, wait-list, delayed-treatment or assessment only
- **Outcomes:** Cannabis use, by frequency or quantity

BCT CODING PROCEDURES:

- Double-coding process using the **BCT Taxonomy v1 tool**^{14,15}
- Performed independently by two reviewers who completed the **web-based training** on how to use the BCT Taxonomy v1 tool^{14,15}
- **Calibration exercise** with a sample of the articles (20%) to minimize variations between reviewers’ coding and ensure inter-rater reliability
- Disagreements resolved through discussion or independently, by a third author

RESULTS

SEARCH RESULTS:

- 19 research articles presenting the results of 19 original studies were included (see Figure 1)

STUDY CHARACTERISTICS (N=19):

- Published between 2010 and 2023
- **53%** ($n=10/19$) conducted in the **United States** (other countries included Canada, Australia, Germany, Switzerland, and Sweden)
- **79%** ($n=15/19$) were **randomized controlled trials** and 21% ($n=4/19$) were pilot randomized controlled trials
- **Interventions:** Mainly web-based (asynchronous) interventions using a self-guided approach (68%, $n=13/19$) and based on motivational interviewing and cognitive behavioral therapy (47%, $n=9/19$)

DESCRIPTIVE SUMMARY OF BCTs USED IN INTERVENTIONS:

- Total of **184 individual BCTs** targeting cannabis use in young adults identified across all studies
- Range 5-19 BCTs/study; mean 9.68
- Covered **38%** ($n=35/93$ BCTs) of all BCTs listed in the BCT Taxonomy v1^{14,15}
- At least 1 BCT fell into **13** of the 16 possible BCT clusters
- **Most frequently coded BCTs:**
 - 2.2 *Feedback on behavior* ($n=17/19$ studies)
 - 3.1 *Social support (unspecified)* ($n=15/19$)
 - 9.2 *Pros and cons* ($n=14/19$)
 - 6.2 *Social comparison* ($n=12/19$)
 - 5.3 *Information about social and environmental consequences* ($n=11/19$)
 - 2.1 *Problem solving* ($n=10/19$)
 - 5.1 *Information about health consequences* ($n=10/19$)
- **Most frequent BCT clusters:**
 - 2. *Feedback and monitoring* ($n=32/184$ BCTs)
 - 1. *Goals and planning* ($n=30/184$)
 - 5. *Natural consequences* ($n=28/184$)
 - 9. *Comparison of outcomes* ($n=22/184$)

CONCLUSION

- **Feedback on behavior** appears to be a core component in behavior change interventions for cannabis use
- Selecting BCTs that match the **targeted determinants** is crucial when planning and designing behavior change interventions¹⁶
- Considering the **needs and characteristics** of the targeted population is essential to tailor intervention strategies for successful behavior change
- **Future research:** develop new methods to assess the dosage of individual BCTs in digital health interventions and characterize the quality of their implementation to assess their effectiveness

SCAN TO READ OUR PAPER



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