

Introduction

- Cannabis use has increased over recent decades while the perceived risks of use are decreasing (Schulenberg et al., 2020)
- Greater quantity and frequency of cannabis use is associated with more cannabis-related problems such as psychological distress, loneliness, detrimental effects on memory, and adverse effects on areas of the brain associated with reward (Volkow et al., 2016; Budney et al., 2019; Battisti et al., 2010; Rhew et al., 2020; Gilman et al., 2016; Dumont et al., 2011)
- Craving is a predictor of cannabis use. Coping with cravings may be critical for reducing use (Enkema et al., 2020; Enkema et al., 2021; Buckner et al., 2016)
- Mindfulness: Maintaining attention on an immediate experience while adopting an accepting and curious perspective
 - Prevent relapse cigarette and alcohol use (Bowen et al., 2014; Witkiewitz et al., 2014)
 - Reduces relationship between craving and use (Enkema et al., 2021; Garrison et al., 2020)
- Distraction: Engage with an alternative activity to direct attention away from the craving experience
 - Mixed results (Enkema et al., 2020; Garland et al., 2016)
 - May outperform mindfulness (Murphy & MacKillop, 2014)
- Craving is time-varying. Digital interventions may push support when craving is high. (Albertella et al., 2019; Enkema et al., 2020; Spears et al., 2019; Witkiewitz et al., 2014)
- **The purpose of this study was to develop a bank of 20 messages consisting of mindfulness and distraction strategies for coping with cannabis cravings to be used in a digital intervention to help young adults cope with cravings as they try to reduce their cannabis use.**

Methods

Participants

- Young adults (19-25 y/o)
- Used cannabis ≥ 10 days/past 30 days

Message Banks

- Developed initial bank of 30 messages with strategies for coping with cannabis cravings
 - 15 mindfulness messages from Witkiewitz et al. (2014) and Spear et al., (2019)
 - 15 distraction messages from Guarino et al. (2018)

Characteristic	n	%
Gender		
Female	9	45
Male	9	45
Nonbinary	2	10
Race		
White	14	70
Black or African American	1	5
Asian	2	10
American Indian or Alaska Native	1	5
Other (not specified)	2	10
Ethnicity		
Hispanic or Latino	3	15
Not Hispanic or Latino	17	85

Surveys

- Initial bank of 30 messages sent to participants for feedback; rated again after messages were revised
 - Each message rated (1 = strongly disagree; 4 = strongly agree)
 - This message is easy to understand
 - This message is useful
 - This message has a good overall tone
 - Free-response comments

Investigators revised messages using quantitative and qualitative feedback

- Any message ≥ 3 participants rated < 3 on any item
- Any message with a comment suggesting an improvement

Selected top 10 messages of each category after second round of feedback

- Calculated average rating for each category across all three domains to rank messages

Analyses | Conducted in SPSS v.26:

- Two-tailed t-tests

Results

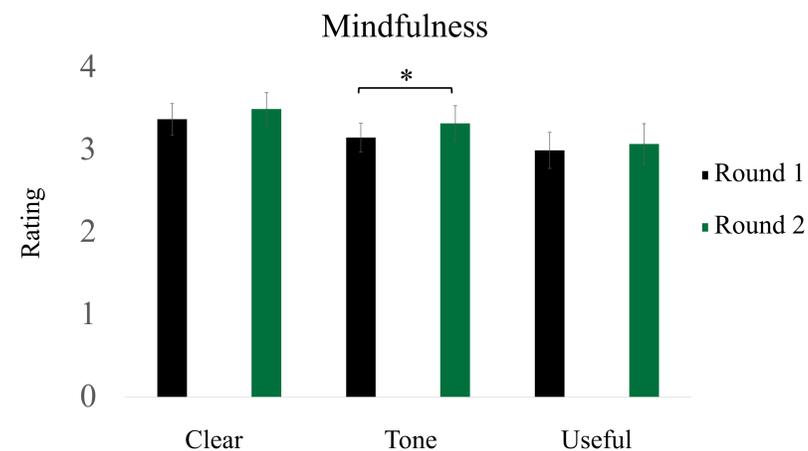


Figure 1. Average ratings on mindfulness messages following round 1 and round 2 of message ratings. Ratings on message tone improved following message revisions ($t(17) = 2.64, p = 0.017$)

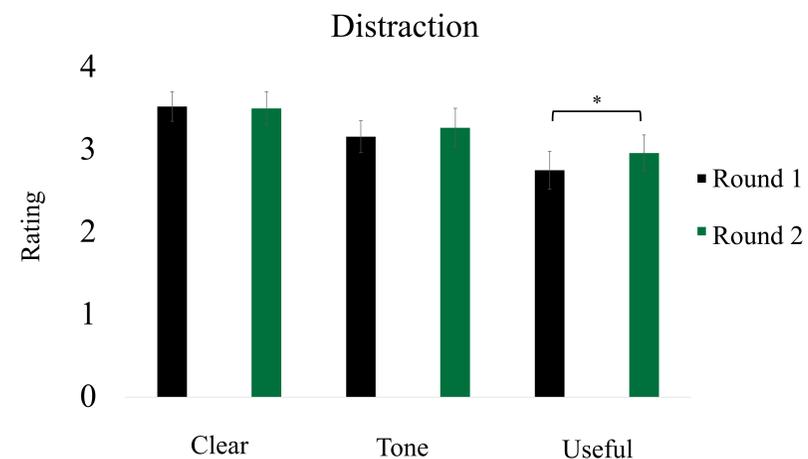


Figure 2. Average ratings on distraction messages following round 1 and round 2 of message ratings. Ratings on message usefulness improved following message revisions ($t(17) = 2.52, p = 0.022$)

Example Revision

Original	Go for a short walk either out in nature or just around your house - wherever you can get to right now. As you walk, pay close attention to your surroundings, what you can see, and what you can hear.
Feedback	What is the purpose of this?
Revised	Go for a short walk either out in nature or just around your house - wherever you can get to right now. As you walk, pay close attention to your surroundings, what you can see, and what you can hear. This can help distract you from thinking about cannabis.

Example Feedback

Feedback Category	Feedback Example
Reward	Last sentence could reverse: "you don't need to act on any urges you may feel to use cannabis"
Clarity	Had to read over a second time to understand the message
Too difficult to implement	This may be true, but it's very hard to implement in real life. Message doesn't provide a good strategy to use this method imo.
Non-judgmental	This perspective feels empathic & helpful
Rationale	But why? What's the benefit
Triggering	As I said before, music tends to be more enjoyable when high. I think it is still effective, but it also may make the person want to use cannabis before zeroing in on his or her favorite song.
Not helpful	Vague and not particularly helpful.

Discussion

- Content of messages significantly improved over the course of this formative process.
- The community identified possible triggers embedded in the messages that may have been counterproductive to our intervention.
 - These triggers would not have been identified without the participants' lived experience and their inclusion in the message development.
 - Triggers included suggestions to listen to music which may be enhanced by use of cannabis, and browsing social media as a distraction which may include cannabis-related imagery
- The findings of this study support the importance and highlight the value of including the target intervention population in the formative process of intervention development.
- Sometimes, open-ended participant feedback comments were somewhat unclear and having the opportunity to have an ongoing discourse could help develop messages further (e.g., through use of live focus groups).
- The final 10 mindfulness and 10 distraction messages developed in this study did not differ significantly from each other in terms of their ratings and were subsequently used in a pilot intervention aiming to provide young adults who use cannabis with support for coping with their cannabis cravings as they attempt to reduce their use.