

# IMPACT OF WORKING MEMORY LOAD AND EMOTIONAL VALENCE ON STATE IMPULSIVITY AND EMOTION REGULATION IN CANNABIS USERS: AN EXPERIMENTAL STUDY



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## INTRODUCTION

- Empirical evidence indicates that working memory (WM), emotions, emotion dysregulation, cannabis use, and impulsivity are interrelated.
- Impaired working memory function and capacity due to overload, and emotion states may increase sensitivity to rewards and sensation seeking and thereby increasing impulsivity and emotion dysregulation.<sup>4, 7, 8, 9</sup>
- Chronic cannabis use has been associated with decreased inhibitory control and increased impulsivity.<sup>3</sup>
- Well controlled research is lacking on the relations among these variables within a single study and research on emotions and impulsivity in cannabis users vs. non-users is mostly correlational.<sup>4</sup>

## QUESTIONS

- Will state impulsivity be greater in the high working memory load condition among cannabis users vs. non-users?
- Will difficulties in emotion regulation be greater in cannabis users vs. non-users?
- Will state impulsivity and difficulties in emotion regulation be greater in the negative emotion condition among cannabis users vs. non-users?
- Will there be an interaction effect between working memory load and emotion condition on state impulsivity and difficulties in emotion regulation across cannabis users vs. non-users?

## METHOD

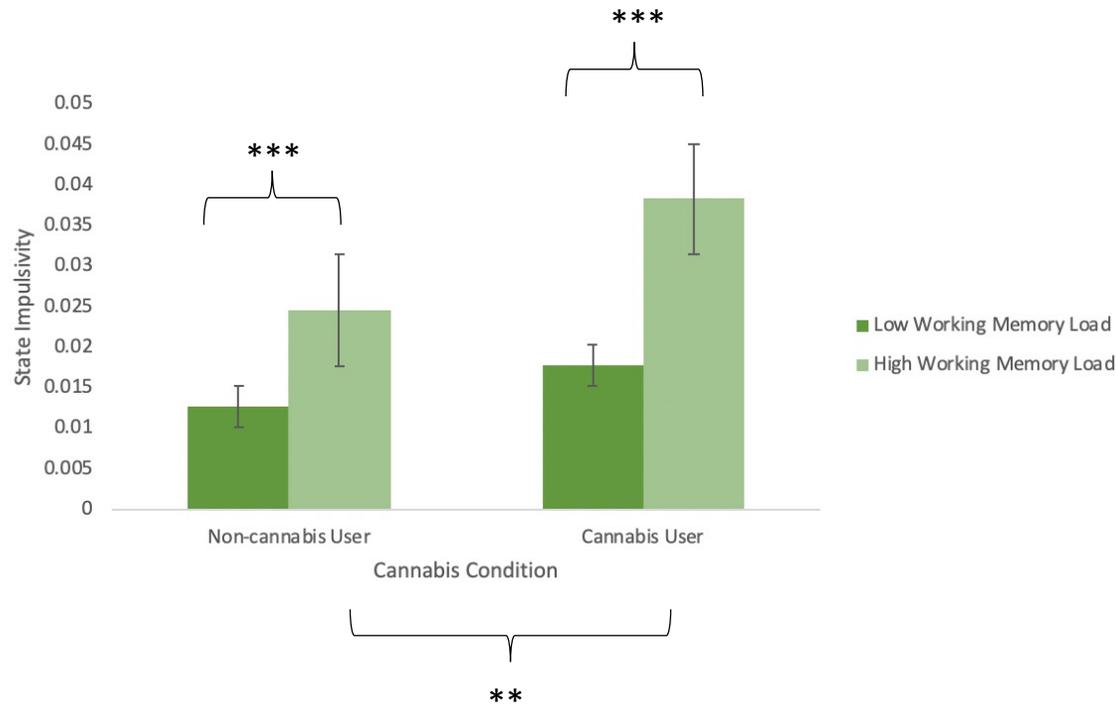
- 2 (WM load) x 3 (emotion) Mixed Model
- WM Loads (within-subjects factor): High and low
- Emotions (between-subjects factor): Positive, neutral, negative
- Sample of 233 community participants (52 % female; 78% White/Caucasian;  $M_{\text{age}} = 35.16$ ,  $SD = 11.17$ )
- Experiment administered online via Prolific
- Non-systematic responding on DDPT removed

## TASKS AND MEASURES

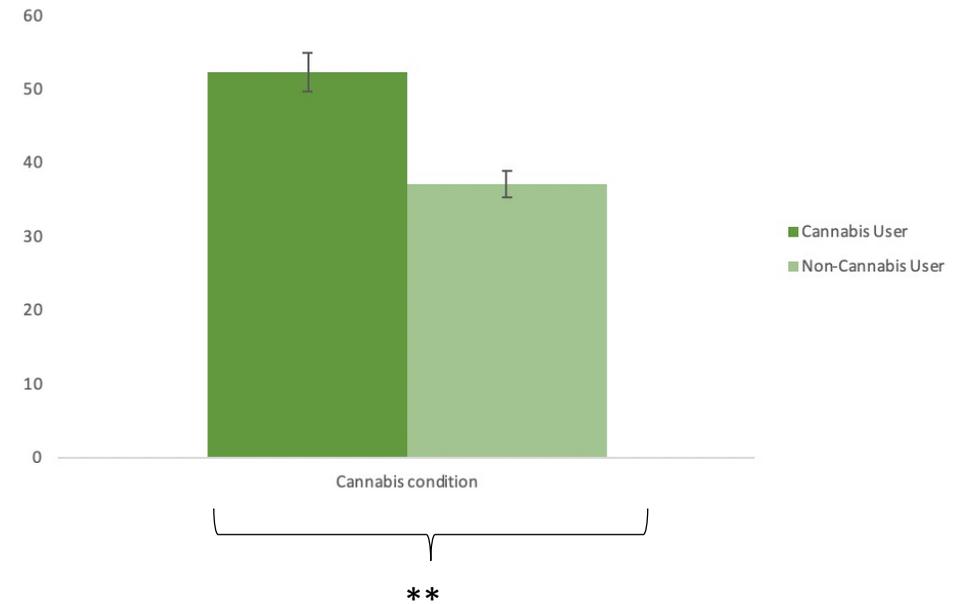
- **WM: N-Back Task**<sup>10</sup> (Kirchner, 1958)
  - *International Affective Picture System (IAPS)*<sup>2</sup> as emotional stimuli
- **State impulsivity: Delay Discounting Probability Task (DDPT)**<sup>11</sup>
- *Positive and Negative Affect Schedule (PANAS)*<sup>12</sup>
- *Cannabis Use Disorders Identification Test-Revised (CUDIT-R)*<sup>1</sup>
- *Difficulties in Emotion Regulation Scale (DERS)*<sup>6</sup>

# RESULTS

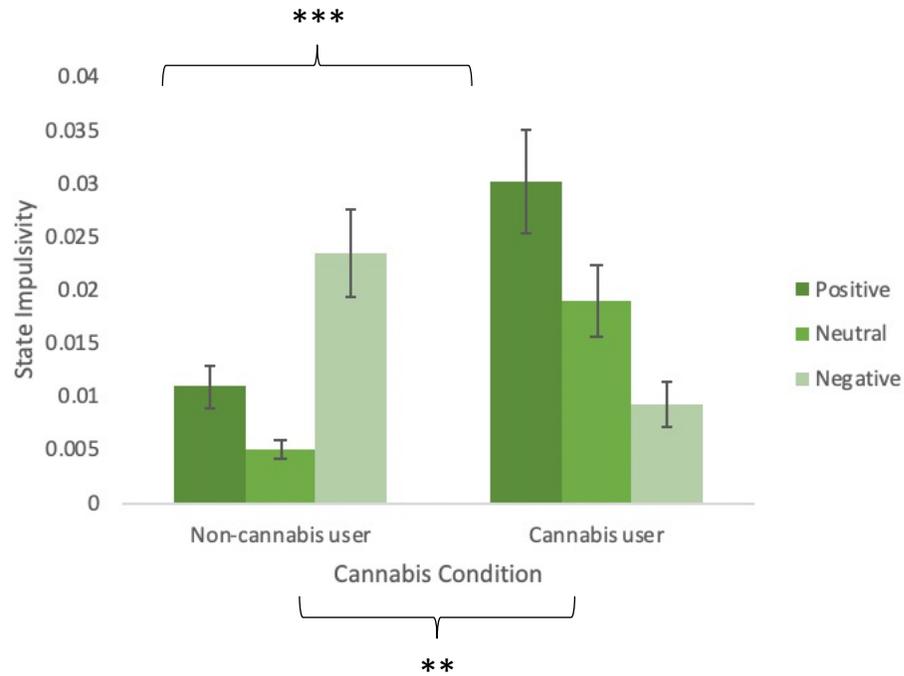
## State Impulsivity Differences Across Cannabis Conditions and Working Memory Conditions



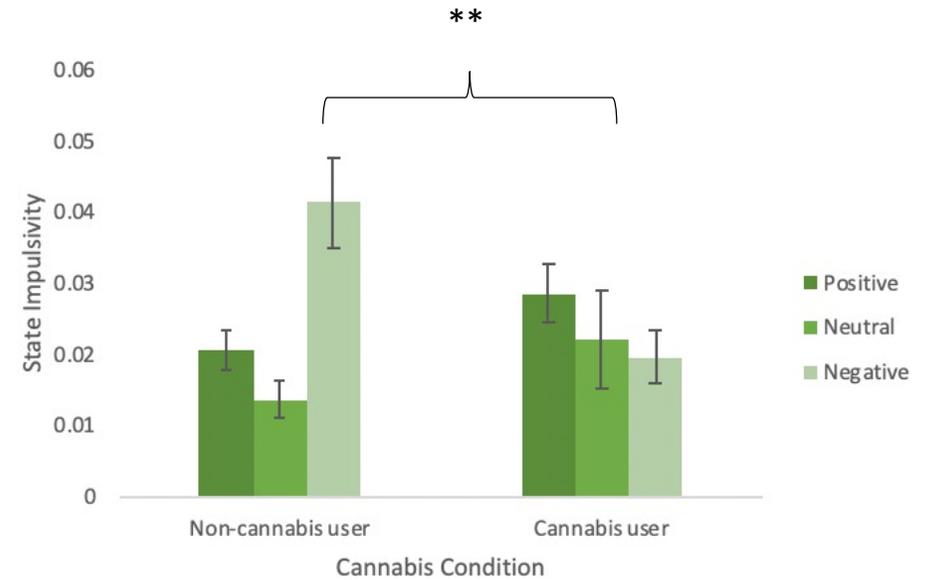
## Emotion Dysregulation Differences Across Cannabis Conditions



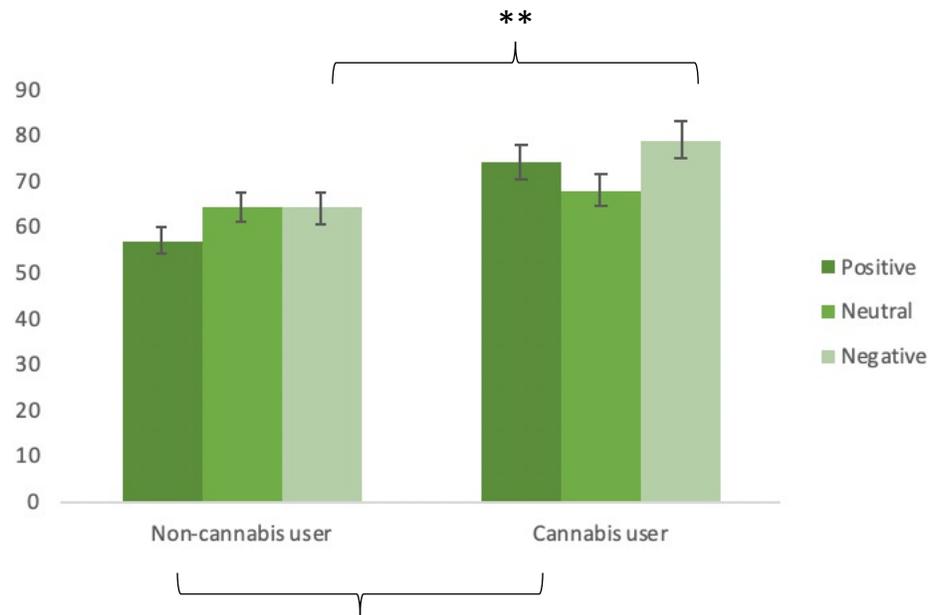
### State Impulsivity Differences Post Low WM Condition Across Cannabis Conditions and Emotion Conditions



### State Impulsivity Differences Post High WM Condition Across Cannabis Conditions and Emotion Conditions



## Emotion Dysregulation Differences Across Cannabis Conditions and Emotion Conditions



## CONCLUSIONS

- Complex relations → chronic cannabis use may be associated with both compensatory and deleterious effects on working memory and self-regulatory systems.
- WM load causes greater impulsivity in both cannabis users and non-users, but significantly more for cannabis users.

- Cannabis users reported more difficulty in emotion regulation as compared to non-cannabis users.
- Under positive and neutral emotion and low WM load cannabis users demonstrated higher impulsivity as compared to non-users.
- Under negative emotion and high WM load, non-cannabis users demonstrated higher impulsivity than cannabis users.
- No interaction effect between WM load and emotion on state impulsivity.
- Under negative and positive emotion, non-cannabis users demonstrated less difficulty in emotion regulation as compared to cannabis users.

## FUTURE DIRECTIONS

- Need for replications controlling for random responding.
- Need for consensus measures of state impulsivity.
- Need for longitudinal studies.

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