Introduction:
Past research has shown that the wanting and liking aspects of substance use are derived from separate neurobiological processes (Robinson & Berridge, 1993). However, to date research has yet to examine the relationship between these constructs and the extent to which each differentially predicts future substance use. Thus, the goal of the present study was to simultaneously examine both liking (as reflected in the Theory of Planned Behavior attitude measures) and wanting (as reflected in substance cue-reactivity) aspects of cannabis use and how each of these constructs relates to future cannabis use in a longitudinal study.

Participants
353 undergraduate students from the University of Colorado at Boulder who varied in marijuana use. Participants were recruited based on three different use groups:
- Never Users (never tried cannabis)
- Infrequent Users (smoke <4 times per month)
- Frequent Users (smoke >5 times per week)

Design
Measures were assessed at baseline and again at a 12-month follow-up session. Cue Reactivity was assessed at baseline.

Conclusions:
Follow-up session. Cue Reactivity was assessed at baseline.

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Measures
Theory of Planned Behavior (TPB):
- Attitudes:
  - e.g., For me, smoking marijuana regularly in the next 12 months would be... (bath good).
- Norms (Peers & Expectations):
  - e.g., Most people my age have tried marijuana.
- Refusal Self-Efficacy (RSE):
  - e.g., How sure are you that you could resist using marijuana when someone offers marijuana to you?

Cannabis Cue Reactivity
Consistent with past research, results from the ERP P300 analysis indicate that cannabis use significantly predicts cannabis cue reactivity. Specifically, cannabis images elicited larger P300 amplitudes for both Frequent and Infrequent users compared to Never Users.

### Table 1. Mean ERP Amplitudes for the Cue Reactivity Task as a Function of Smoking Group and Picture Type

<table>
<thead>
<tr>
<th>Smoking Group</th>
<th>Neutral</th>
<th>Infrequent</th>
<th>Frequent</th>
<th>Grand Mean</th>
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</thead>
<tbody>
<tr>
<td>Never Users</td>
<td>3.02</td>
<td>0.37</td>
<td>2.25</td>
<td>1.37</td>
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<tr>
<td>Infrequent</td>
<td>9.30 (46)</td>
<td>9.47 (38)</td>
<td>10.43 (53)</td>
<td>9.73</td>
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<td>Frequent Users</td>
<td>10.24 (52)</td>
<td>11.58 (44)</td>
<td>12.74 (60)</td>
<td>11.52</td>
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</table>

Note: Cue reactivity was assessed by comparing the ERP amplitudes of cannabis and neutral images for each smoking group. The ERP data were subjected to a repeated measures ANOVA with Smoking Group (Never Users, Infrequent Users, Frequent Users) and Picture Type (Cannabis, Neutral) as factors. Results indicated a significant main effect of Smoking Group, F(2, 348) = 10.15, p < .01, η² = .03, and a significant Smoking Group x Picture Type interaction, F(2, 348) = 3.28, p = .04, η² = .03.

### Table 3. Correlations between Cue Reactivity, Cannabis Use, and Addiction Constructs

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<td>.10</td>
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### Figure 1. Stimulus-locked ERP waves as a function of Picture Type and Cannabis Use Group

#### Figure 2. Path analysis integrating ‘wanting’ and ‘liking’ aspects of cannabis use

As predicted, cannabis use, problems associated with cannabis, and craving were associated with Cannabis Cue Reactivity, such that greater cannabis cue reactivity was associated with more cannabis use, problems, and craving. Of note, cannabis cue reactivity was not related to cannabis dependence symptoms.

Cannabis Cue Reactivity and TPB Constructs
Analysis confirmed hypotheses that greater cue reactivity was associated with more positive cannabis attitudes, perceptions of more positive norms, and greater intentions to use cannabis. Interestingly, cannabis cue reactivity was not related to refusal self-efficacy.

Conclusions:
In sum, this research demonstrates that individual differences in cannabis use result in the enhanced processing of cannabis cues and this enhanced processing is related to self-reported craving, cannabis use intentions, and the use of cannabis. Conclusions drawn from this study indicate that cannabis cue reactivity is related to cannabis use, problems, and craving.

### References
- B nearest neighbor analysis. A nearest neighbor analysis for the number of false alarms (FA) at 0.356 was conducted (where r = 1.25, p < .05, η² = .03).
- In sum, this research demonstrates that individual differences in cannabis use result in the enhanced processing of cannabis cues and this enhanced processing is related to self-reported craving, cannabis use intentions, and the use of cannabis. Conclusions drawn from this study indicate that cannabis cue reactivity is related to cannabis use, problems, and craving.

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