The aims of the larger study are to:

- **Aim 1:** Investigate pervasive and affective computing technologies as an adjunct with pharmacological therapy for OUD patients
- **Aim 2:** Develop iPAL system that connects a wearable device to monitor physiological signals, a smartphone app, a CBT module and a model for determining biofeedback interventions
- **Aim 3:** Integrate iPAL with AR/MR/VR AI-enhanced CBT delivery
  - Provide CBT coping skills for managing cravings
- **Aim 4:** Evaluation and deployment with OUD care and management

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**Interview Questions**

<table>
<thead>
<tr>
<th>Cravings</th>
<th>Experience with interventions</th>
<th>Smartphone usage</th>
<th>Apparatus</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Define what a craving means to you?</td>
<td>5. Have you ever been in therapy? If so, what was that experience like?</td>
<td>10. How often do you use your smart phone in one day (how many times)?</td>
<td>13. How would you feel about wearing a wearable device which could be either something on your glasses or something on your body, as in a watch, that tracks your heart rate?</td>
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<tr>
<td>2. What tends to trigger a craving for you?</td>
<td>6. Have you ever tried cognitive behavioral therapy (CBT)? If so, what was that experience like?</td>
<td>11. On a normal day, what are some of the apps you use most often?</td>
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<tr>
<td>3. How difficult is it for you to manage your cravings?</td>
<td>7. Have you ever tried breathing exercises? Is so, were they helpful?</td>
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<tr>
<td>4. How do you manage your cravings?</td>
<td>8. Have you ever tried meditation? If so, was that helpful?</td>
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<tr>
<td>9. Do you think connecting with others who are having similar experiences would help or hinder your path to recovery?</td>
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</table>

**Methodology**

- In order to study the potential utility of this technology-based intervention, as reported by the participants, we conducted qualitative in-depth interviews on 9 patients receiving medication treatment for OUD in an outpatient clinic and 3 peer recovery coaches.
- This study also explored how these patients described and managed cravings. The data collected through this study will inform the utility and interest in this intervention. The study will also inform the various components of the intervention, including survey questions on the app that will help match the app user to the right intervention (e.g., CBT videos, biofeedback).

Exploring How Individuals Diagnosed with Opioid Use Disorder Define Cravings and their Views on the Utility of a Technology-Based Intervention to Manage Cravings

Haley Stockton; Angelica Perez-Sitwin, PhD
University of South Carolina School of Medicine Greenville; Addiction Research Center

**Preliminary Survey Responses**

- While all the interviews have not been content analyzed, the preliminary results suggest that cravings are described using several experiences: (1) an uncontrollable urge to use; (2) physiological sensations (e.g., withdrawal symptoms); and (3) persistent ruminations on the drugs that are cravings (e.g., “Can’t get it off my mind.”)
- The participants also described the triggers that lead to cravings. These include feeling negative emotions (e.g., anxiety, depression); (2) a bad interaction with a loved one; and (3) a stressful live event (e.g., death of a friend or family).
- Furthermore, the participants reported managing cravings through distractions, cognitive strategies, and seeking social support. However, cravings management was reported to be much easier with medication-assisted treatment.
- Regarding the utility of this technology-based intervention, preliminary content analysis suggests that, while the participants are open to trying this technology, the respondents are generally not technology adapters. Their use of smartphone apps appears to be limited by the lack of access to smartphones and lack of experience with wearables.

**iPAL**

- Use mobile and wearable technology to collect real-time physiological data to provide a personalized, evidence-based OUD intervention using immersive technology formats
- Deliver adaptive CBT interventions based on patient’s in-app cravings and trigger questionnaire, verbal responses and physiological data to deliver personal mental health support in real time
- Generate a collection of several short videos to highlight effective CBT strategies for OUD patients to address cravings

**References**


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