

# Astro Palate

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# Background

The experience of flight is inherently stressful, and individual's moods and stress levels are not just nuisance factors that affect their quality of life. Moods and stress also have a significant impact on physical health. Because of this, it is important to take every opportunity to reduce the stress associated with space travel.

Stress is commonly measured using methods such as heart rate, blood pressure, salivary cortisol, and responses to a variety of questionnaire measures of subjective feelings. Moods and emotions are commonly measured by simply asking people to rate their feelings at a specific moment.

Eating and mood/emotions are connected. Eating is associated with positive moods. Moods generally (but not always) become more positive after eating, and people generally (but not always) eat more when they are in a positive mood.

## Objectives

- To determine whether the eating situation itself influences the stress or negative moods that astronauts might normally experience in flight.
- To examine how moods and stress relate to food consumption and meal satisfaction on the ISS.

# Experiment Design Overview

<b>Preflight</b>	<b>Inflight</b>
<p>Participants will answer questionnaires about specific aspects of their personality that may relate to their food choices and will tell us about specific foods they may want to eat on the International Space Station.</p>	<p>Crew members will be asked to measure heart rate and blood pressure, to collect saliva samples, and to answer questions about the specific foods they ate, their opinions of those foods and their moods before and after several eating occasions.</p>

# Test/Session Descriptions

## *Pre-flight (2 sessions)*

- Participants will be given a short overview of the experiment and a demonstration of proper use of the HRF saliva collection hardware
- Participants will complete questionnaires:
  - Maximizer vs. Satisficer Scale – a series of questions about the extent to which one prefers to select the single best option vs. an option that meets specific criteria.
  - Perceived Stress Scale – a series of questions about how stressful life is.
  - Personal Need for Structure – a series of questions about preferences for order vs. ambiguity.
  - Restraint Scale – a series of questions about dieting behaviors.
  - Food preferences
  - Disliked tasks
  - Special meals

# Test/Session Descriptions

## *In-flight activities*

### Menu Choice: (4 in-flight sessions)

- Participants will choose items from the ISS pantry to be eaten during this portion of the study.
- Participants will complete questionnaires about specific moods and responses to foods regarding mood, consumption and meal satisfaction.
- Participants will collect saliva samples using the HRF saliva collection hardware
  - Collected before and after 4 meals (8 saliva samples total).
- Participants will measure blood pressure and heart rate using the on-orbit blood pressure unit and cuff.
  - Completed before and after 4 meals (8 measurements total).

# Test/Session Descriptions

## *In-flight activities*

### Prepackaged Meals: (6 in-flight sessions)

- Participants will eat prepackaged meals selected pre-flight alone or with others.
- Participants will complete questionnaires about mood and responses to foods regarding liking, consumption and meal satisfaction.

### Snack Foods: (5 in-flight sessions)

- Participants will eat food items in conjunction with performing specific tasks.
- Participants will complete questionnaires about moods and responses to foods regarding liking, consumption and satisfaction.

# Earth Benefits

- ▶ A better understanding of the relations between eating specific foods, socialization during eating, and changes in stress, emotions and moods will allow recommendations for healthy dining behaviors that maximize positive moods and minimize stress.