

Authors

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Introduction

This study investigates how gravity affects facial anatomy, specifically eyelid and eyebrow heights.

- **Eyelid height:** Changes in muscle tension and soft tissue.
- **Eyebrow height:** Alterations in muscle tone or vascular structure.
- **Correlations:** Shared mechanisms between eyelid and eyebrow adaptations.

This research uses a dataset from the Jules Stein Eye Institute, comparing values on Earth and in space. We aim to contribute to the growing body of knowledge about human adaptation to the space by our study.

Methods

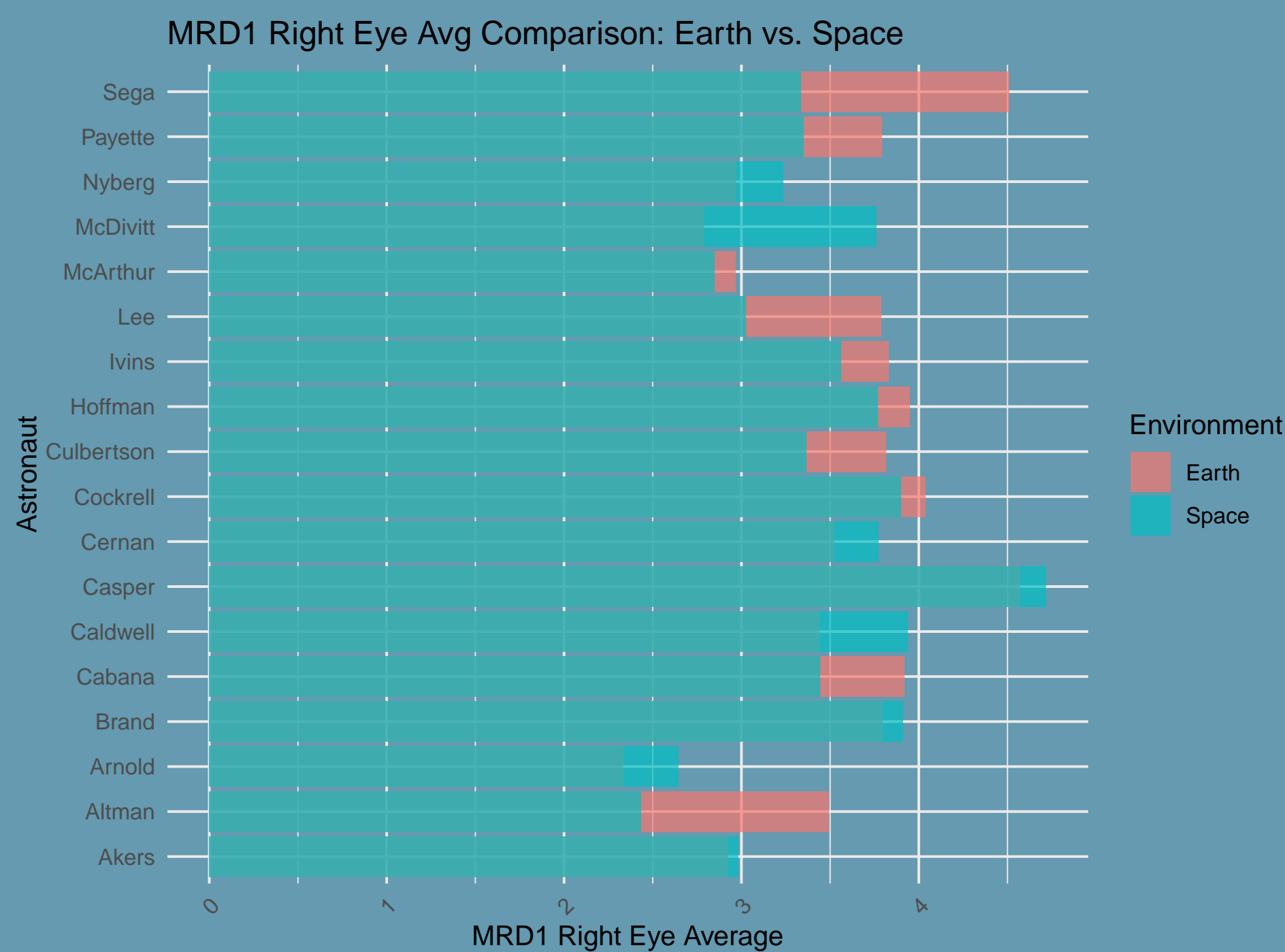
- **Data Preparation:** Used a cleaned dataset with splitted names and dates, and no NA value, ensuring consistency in column names.
- **Analysis:** Used paired t-tests to compare means and calculated correlations between measurements.
- **Visualization:** Box plots, scatter plots, dot plots, and line plots illustrate key differences.

Gravity’s Influence on Astronauts’ Eyelid and Eyebrow Heights

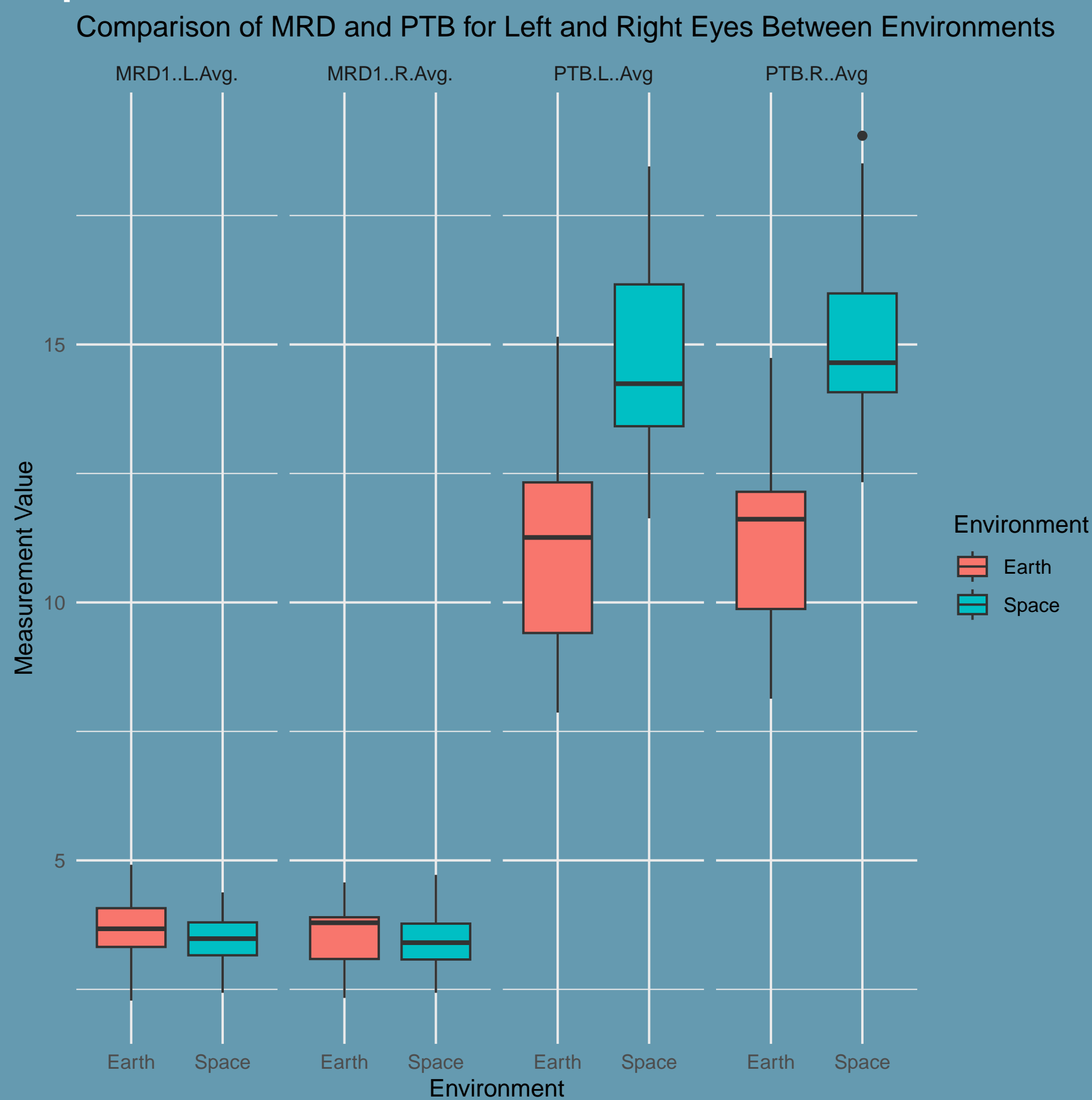
Findings

- **Individual Variability:** Astronauts’ facial features respond differently to microgravity, with varying degrees of change observed.
- **Environmental Influence:** Gravity significantly affects the relationship between eyelid and eyebrow positions, with distinct differences between Earth and space.
- **Microgravity-Induced Changes:** Increased variability in facial measurements in space suggests microgravity impacts astronauts’ facial anatomy over time.

These results have implications for astronaut health during long-term space missions.



- Demonstrates the complexity of individual responses to microgravity.
- Shows that MRD1 measurements vary between Earth and space conditions.



- Shows variations in measurement spread between Earth and space conditions.
- Highlights the potential impact of microgravity on facial measurements.

