

# Emotional Immune Response in Enclosed Habitat, Krakow, Poland

Hasret Balcioglu<sup>1\*</sup>

<sup>1</sup>Expert in Microbiology and Immunology, Lunar Analog Astronaut.

Received date: 06 June 2024; Accepted date: 17 June 2024; Published date: 24 June 2024

Corresponding author: Hasret Balcioglu, Expert in Microbiology and Immunology, Lunar Analog Astronaut. [kateleyasirin@gmail.com](mailto:kateleyasirin@gmail.com)

Citation: Hasret Balcioglu, Emotional Immune Response in Enclosed Habitat, Krakow, Poland. Journal of Medical and Clinical Case Reports 1(4). <https://doi.org/10.61615/JMCCR/2024/JUNE027140624>

Copyright: © 2024 Hasret Balcioglu. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium provided the original author and source are credited.

## Abstract

Emotional Immunity requires special attention in enclosed habitats such as Analog Astronaut Mission Centers. Stress is observed to be a significant factor in these locations. Because stress has a significant impact on the body's immune system, several factors should be considered, including proper habitat cleaning, module organization, and AI automation. In this article, a mood ring is used to demonstrate various emotions through color in enclosed habitat, in Poland. Interview questions are designed to supplement the mood ring for expressing emotions and gathering suggestions for improving the environment for better-enclosed spaces on Earth and other exoplanets in the future.

**Key Words:** Emotions; Immune System; Enclosed Mission Centers; AI Automation.

## Introduction

Emotional Immunity refers to a person's mental preparedness to face life with a positive attitude. According to recent research [5,7], negative emotions like anger and sadness can have an impact on physical health in the same way that stress does.

Bad moods, in particular, have the potential to disrupt immune system function by increasing inflammation throughout the body. The most obvious signs of emotional arousal are changes in the activity of the visceral motor (autonomic) system. Increases or decreases in heart rate, cutaneous blood flow (blushing or turning pale), piloerection, sweating, and gastrointestinal motility can all be associated with different emotions. The immune system and mental health are not only extremely important to maintain during this time, but they are also more closely linked than previously thought.

A variety of stressors, including prolonged confinement in a small, hermetically sealed space, can have an impact on the human body. Stress affects all bodily systems, including the cardiovascular, musculoskeletal, respiratory, endocrine, nervous, gastrointestinal, and reproductive systems [6,2]. These systems can handle stress in small doses, but when it becomes chronic, it can have serious consequences for us. Stress and uncontrolled reactions to stress can cause kidney damage. The kidneys, as the body's blood filtering units, are susceptible to problems with blood circulation and blood vessels. High blood pressure and blood sugar can put additional strain or burden on the kidneys.

Fear activates the amygdala. It alerts the nervous system, triggering the body's fear response. Stress hormones such as cortisol and adrenaline are released. The blood pressure and heart rate rise. Sadness affects the lungs, liver, and heart, potentially interfering with their functional relationships. Sadness and grief cause blood deficiency in the heart and/or liver and may also impair uterine function. Anger is associated with choleric humor and can cause resentment and irritability. It is thought that this emotion is stored in the liver and gallbladder, both of which contain bile.

Emotions such as rage, fury, or aggravation can indicate an excess of this energy, and if these emotions are experienced on a regular basis, the liver may be damaged. Anger can cause headaches and hypertension, which can then affect the stomach and spleen. Worry is an emotion associated with the spleen, stomach, and pancreas network. Too much pensiveness, worrying, and insecurity can impair digestion--it simply knots up energy. Anxiety makes it difficult to digest [1].

Passion is a specific positive emotion that analog astronauts experience in their enclosed habitats. According to Merriam-Webster, "passion" is a strong sense of enthusiasm or excitement for something or about doing something. Passions are often activities that you wish to pursue on a continuous basis. Passion directs an area of interest, which may be related to the dopamine system, which is involved in attention, learning, goal-directed behavior, and rewards. Passion may provide the necessary focus to achieve long-term goals. Each analog astronaut is, on the other hand, genuinely proud. Authentic pride is a positive emotion that arises following a specific accomplishment. Authentic pride produces accurate feelings of self-worth and a boost in self-esteem.

Authentic pride is defined as "genuine pride" and is what we feel when we accomplish something [4]. It is associated with qualities such as friendliness, responsibility, broad-mindedness, understanding, foresight, and personability.

Pride activates brain regions associated with positive emotions, including the ventral striatum and amygdala [3].

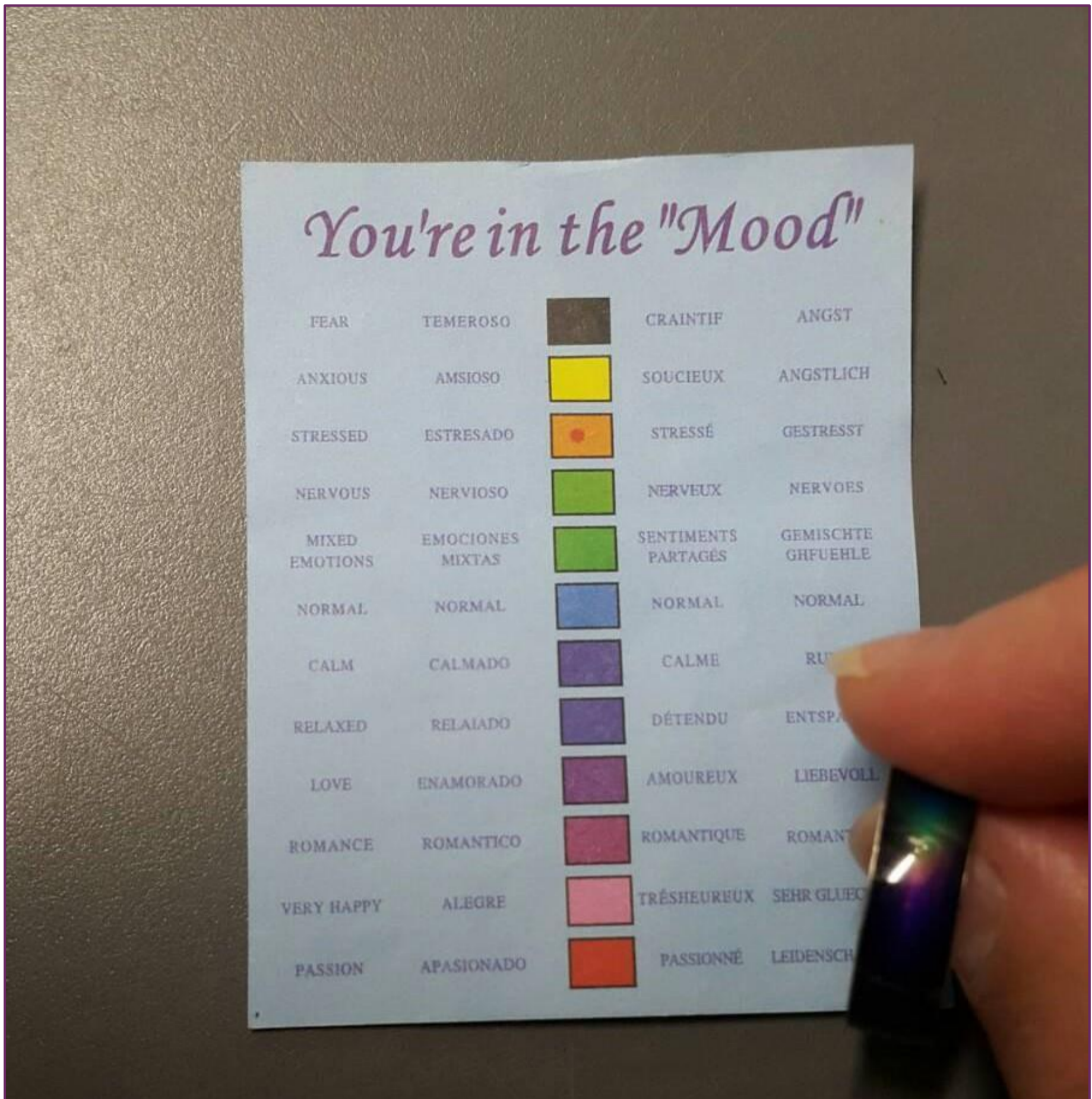
This paper describes a short-term study in an enclosed habitat involving three crew members. It's divided into five sections. The first section is an introduction to the detailed emotions and their effects on the immune system. The second section depicts the materials and methods, while the third explains the findings and discussions. The conclusion and recommendations section, along with the literature review section, will come after the third.

## Materials and Methods

Each crew member in the mission center receives a MOOD RING. The

participants use the ring in conjunction with the mood card to determine which colors represent their feelings over time and in the moment (Image).

Image: MOOD RING and the Mood Card



The mood card has 12 colors: black for fear, yellow for anxiety, stressed for light orange, nervous for light green, mixed emotions for green, blue for normal, purple for calm, dark purple for relaxation, love for dark pink, romance for pink, light pink for extremely happy, and orange for passion.

Furthermore, analog astronaut trainees' emotional immune responses fuel the search for solutions to negative emotions, as well as the need for better living conditions. It could serve as a guide for future enclosed habitat formations on Earth or elsewhere. The crew answers the questions below:

1. List your emotions in the mission center.
2. Determine the percentage of emotions experienced during 16 hours of daily work based on the ring's color.
3. What do you notice when you become emotional? List a few of the signs.

4. How do you deal with the emotional consequences?

5. What advice do you have for mission environment trainers and designers to ensure stable living conditions?

## Results and Discussions

According to the mood ring and interview questions, stress and anxiety are the most common emotions in the habitat. It is understood that stress and anxiety account for 65% of all emotions. Passion and pride account for 25 percent. 10% is devoted to the motionless factor. Emotions associated with stress and anxiety include mostly sleepiness, difficulty breathing, fatigue, heart palpitation, and shaking chills. To cope with these emotional issues, the majority of crew members prefer to take their time and relax by cleaning, exercising, and conversing.

Stress and anxiety have long-term effects on all of the body's systems,

including the cardiovascular, musculoskeletal, respiratory, endocrine, nervous, gastrointestinal, and reproductive systems. Furthermore, stress and uncontrolled reactions to stress can cause kidney damage. Stress hormones such as cortisol and adrenaline can cause an increase in blood pressure and heart rate.

### Conclusions and Recommendations

In conclusion, it has been observed that the majority of crew members experience stress, which is not sustainable over time. In an enclosed space, the crew's interpersonal dynamics become the most important factor. Interpersonal friction can result in inefficiencies and the redesign of a better system.

The requirements for becoming an astronaut should be changed from superhuman automaton to capable team player with long-term positive emotions in order to maintain a healthy immune system. Sensors, databases, and machine learning technologies could calculate crew health and pass it on digitally to intelligent systems, relieving the crew of unnecessary responsibilities.

Crew members should be assigned tasks based on their health, science objectives, and equipment status to better balance what each person can do with the mission's stated goals. Automated tasks save crew time on repetitive tasks and can be programmed using the best science available.

It is recommended to grow plants and vegetables in enclosed mission habitats. It boosts morale and provides adequate nutrition and fresh air. It is

also recommended to keep the mission centers clean and to begin each mission in a clean, controlled environment.

### References

1. Dobbs, K. (2022). Anxiety and Immunity: Affecting the Body and the Mind. Theses/Capstones/Creative Projects. 171.
2. Guo. (2020). Moderate-to-Severe Depression Adversely Affects Lung Function in Chinese College Students, *Front Psychol.* 11:652.
3. Lilian, R. (2014). Brain Activation Associated with Pride and Shame, *Neuropsychobiology.* 69(2):95-106.
4. Maarten, W. (2012). Is pride a prosocial emotion? Interpersonal effects of authentic and hubristic pride, *Cognition and Emotion.* 26(6):1084-1097.
5. Renna, M. (2021). A review and novel theoretical model of how negative emotions influence inflammation: The critical role of emotion regulation, *Brain, Behavior, & Immunity – Health.* 18: 100397.
6. Segerstorm, S. C, and Gregory E. M. (2004). Psychological Stress and the Human Immune System: A Meta-Analytic Study of 30 Years of Inquiry, *Psychol Bull.* 130(4):601-630.
7. Thomas, L. (2022). How do Your Emotions Affect Your Physical Health at the website of [medical-news.net](https://www.medical-news.net).