

# The Minnesota Starvation Experiment

On November 19, 1944, 40 healthy young men entered the Laboratory of Physiological Hygiene at the University of Minnesota (UMN). They were ready to embark on a grueling medical experiment. The men had responded to a brochure that asked: "Will you Starve that They be Better Fed?" World War II was coming to a close and the allied forces needed to know how to deal with starving people in areas of Europe and Asia ruined by the war.

## Basic design

In 1944, the prospect of finding healthy young men to volunteer for such an experiment was dim. Many were overseas serving in the military. However, many conscientious objectors – those who refused to serve in the war for religious or moral reasons – remained in the US doing various types of community service. The government eventually allowed them to volunteer for medical experiments. About 400 men volunteered for the Minnesota research, of whom 10% were eventually selected. The study took place in three discrete stages.

The first, starting in November 1944, was a "standardization" period of three months. So, the participants could be observed under non-stressful conditions and received substantial meals of 3,200 calories of food per day. This was followed by a six-month semi-starvation period, beginning on February 12, 1945, in which they received only 1,800 calories per day. The semi-starvation diet reflected what was available in the war-torn areas of Europe. The final three months were a nutritional rehabilitation period.

Throughout the study, participants were given housekeeping and administrative duties within the laboratory. They were also allowed to participate in the university classes and activities. The participants were expected to walk 35.4 kms per week and to expend 3,009 calories per day.

## The good days

Those selected to participate had completed some college coursework before, and many

decided to take more courses at the UMN during the experiment. Initially, their blue pants, white shirts, and sturdy walking shoes were all that distinguished them from other people on campus. During the standardization period, the men felt well-fed and full of energy. Many initially volunteered for local charities, participated in music and drama productions, or otherwise contributed to community projects in the area.

## Semi-starvation

On the first day of the semi-starvation stage, the men sat down to have a meal that included a small bowl of hot cereal, two slices of toast, a dish of fried potatoes, a dish of Jell-O, a small portion of jam, and a small glass of milk. Each man was now allocated less than half the calories he was used to consuming. The men ate their meals together on the campus. Participants were supposed to lose 2.5 pounds (1.1 kg) per week to reach the desired 25% weight reduction by the end of the semi-starvation period.

As the semi-starvation stage progressed, the men became irritable and intolerant of one another. Many of them kept journals during the experiment, which recorded their feelings and reactions as they happened. One of them, Carlyle Frederick, later remembered "noticing what's wrong with everybody else, even your best friend. Little things that wouldn't bother me before or after would really make me upset." Another, Marshall Sutton, noted, "We were impatient waiting in line if we had to, and we'd get disturbed with each other's eating habits at times. We became, in a sense, more introverted, and we had less energy. "The men reported feeling cold much of the time and asked for extra blankets even in the middle of summer. They experienced dizziness, extreme tiredness, muscle soreness, hair loss, reduced coordination, and ringing in their ears. They felt weak mentally as well as physically; several were forced to quit their university classes because they simply did not have the energy or motivation to attend and concentrate. Food became an obsession, and several of the men

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said they had lost all interest in women and dating.

The men became more noticeable around campus as they began to show visible signs of starvation –sunken faces and bellies, protruding ribs, and swollen legs and ankles. Despite the challenges of starvation, there was a strong determination among the men that somehow kept them committed. When each of the 36 men who completed the experiment was asked if they had ever considered withdrawing, the reply was repeatedly firm and succinct: "No."

### Slow recovery

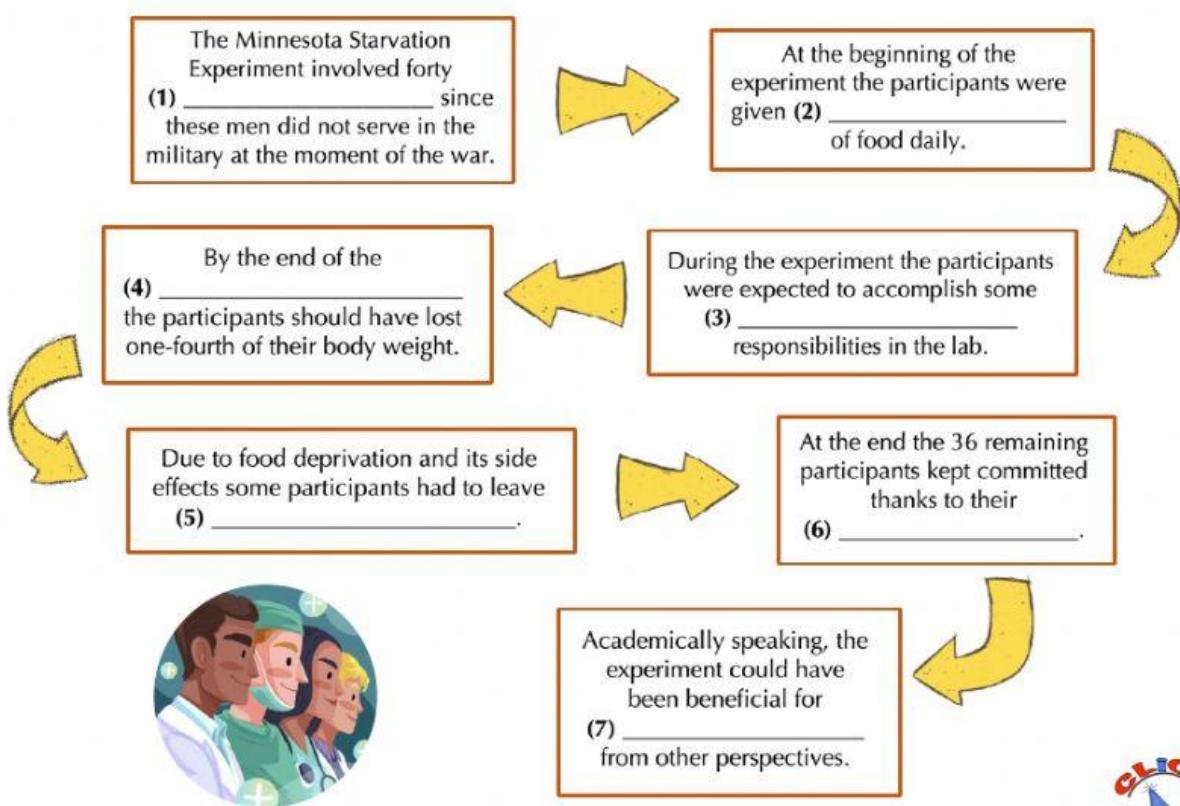
The three-month rehabilitation period began at the end of July 1945 and continued until October 20, 1945. With the end of the war that summer, the results of the experiment were becoming increasingly relevant. How should the recovering populations of Europe and Asia be fed? As the experiment showed, the answer was far

more complex than simply, "Give them food." Many of the men reported that, overall, the rehabilitation period was the hardest of all. Their strength came back only slowly, and many were depressed by this delayed recovery. Their feelings of hunger remained. They continued to be dizzy, confused and irritable.

The research team eventually published these results in academic journals. They also prepared a relief worker's manual that focused on the psychological effects of food deprivation. The experiment helped create a new paradigm for understanding starvation. Previously, starvation was seen as only a physical thing. The experiment showed that it dramatically alters personality, and that nutrition directly and predictably affects the mind.

*Text taken and adapted from: Rubin, B. (2009) Inside Reading 3 – The Academic Word List in Context. Oxford University Press. NY, US. Pp. 79-80*

**Complete the mind map using information from the previous article. USE NO MORE THAN THREE WORDS AND/OR A NUMBER in each gap. (7 points, 1 each)**



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