

Groupthink Not a Problem in Simulated Mars Mission

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Getting along with your fellow astronauts can be dangerous. Too much consensus — what some psychologists call “groupthink” — can keep crews from being creative in a crisis. But a new study found that six “cosmonauts” on a simulated Mars mission emerged from 105 days in a replica spacecraft with their quirks intact.

The study was the first to directly tackle the possible downside of harmony, rather than antagonism, in a space mission.

“Earlier, we had been focusing on how tension increases over time,” said social psychologist [Gro Sandal](#) of the University of Bergen in Norway, lead author of a paper to be published in [Acta Astronautica](#). “This paper has more or less the opposite focus: whether people start to think more and more similar while they are isolated.”

[Groupthink](#) is still a controversial concept: Not all social psychologists think it exists. But those who believe in it think it tends to happen when people isolated in an extreme situation — a war zone, for instance, or a ship in the Arctic — start thinking in lockstep and avoiding outward disagreement. Groupthinkers also often feel like they’re united against a common enemy — on a space mission, this could be Mission Control.

“The worst case scenario is ... there may be a microculture within the crew that evolves, and the crew starts having values that deviate to a large extent from values on Earth,” Sandal said.

Sandal and colleagues monitored [six pretend cosmonauts](#) in a pilot study for the [Mars500 project](#), an ongoing simulated space mission being held at the [Institute of Biomedical Problems](#) in Moscow. From

March 31 to July 14, 2009, two Russian cosmonauts, a Russian medical doctor and sports physiologist, a mechanical engineer in the German army, and a French airline pilot lived and worked as if they were on a real space station.

The crew spent their days in a hamster-cage-like simulation chamber designed to reflect the dimensions and layout of the International Space Station. The chamber also mimicked the humidity, temperature, pressure and gas composition of the ISS, bringing the crew as close to space as they could get while still feeling Earth's gravity.

Each crew member had his own tiny sleeping quarters, plus a shared living room, kitchen and workplaces with medical equipment. The cosmonauts were kept to a strict schedule of eating, exercising and performing or participating in scientific experiments.

"We tried to keep the work procedures and the schedule of the days quite similar to the schedule and work accomplished during real flights," Sandal said.

To see how similar the cosmonauts' thought processes were, the researchers gave them a questionnaire before, after and at specific intervals during the 105 days of confinement. The questionnaire asked each cosmonaut to rank his personal values according to a [scale developed by psychologist Shalom Schwartz](#) in the 1990s.

"It's a good scale, and quite widely used," said psychologist [Peter Suedfeld](#) of the University of British Columbia, who is well known for studying the psychology of isolated groups, but was not involved in the new study. "We use it, too."

The scale splits human values up into 10 categories, including "hedonism" (people who value pleasure and enjoying themselves), "benevolence" (people who value preserving harmony in the in-group) and "tradition" (maintaining the status quo). Sandal and colleagues measured how similar the cosmonauts were to each other in each of these values, and how much that similarity changed over time.

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They found that, rather than values converging and harmony reigning as the crew got used to each other, the cosmonauts grew more tense, especially in the last 35 days of the mission when they were allowed more autonomy.

"We did not find any indications of groupthink," Sandal said. "We saw that interpersonal differences within the crew became more salient as a source of tension."

One source of tension was the food. Two of the astronauts were unhappy with the meal choices and lost 20 pounds in the first 45 days of the mission. They thought the food included too many nutrition bars and cookies, Sandal said.

"I was hungry all the time. And angry," wrote one of these crew members. After Mission Control changed the meal plans for those two astronauts, "other crew members looked at us with hungry eyes."

Another point of contention was how closely to follow instructions from Earth.

“It was in some situations when Earth gave us some instructions, and Russians made their own way to how it was correct,” one (presumably Russian) crew member wrote. “But Europeans followed the instructions of Earth like blind.”

It’s not clear what to conclude from this experiment, Sandal admits. Maybe if we choose groups of astronauts who begin with different values, we’ll end up with tenses but safer crews.

Suedfeld notes that the paper only tracks how the group’s average values changed as a whole, not how individual astronauts’ values changed over time. He also pointed out that six astronauts isn’t a sufficient sample for serious statistical analysis, and that it’s hard to convince people they’re actually in space when they know they’re still on the ground.

“Whether a larger sample size or a longer duration together or being actually up in space – rather than an experiment on the ground — would come up with different results ... who knows?” he said. “I would consider it more a pilot study than one to draw strong conclusions from. But it can point the way for future studies.”

Image: European Space Agency