New study explores how personalities affect communication, teamwork
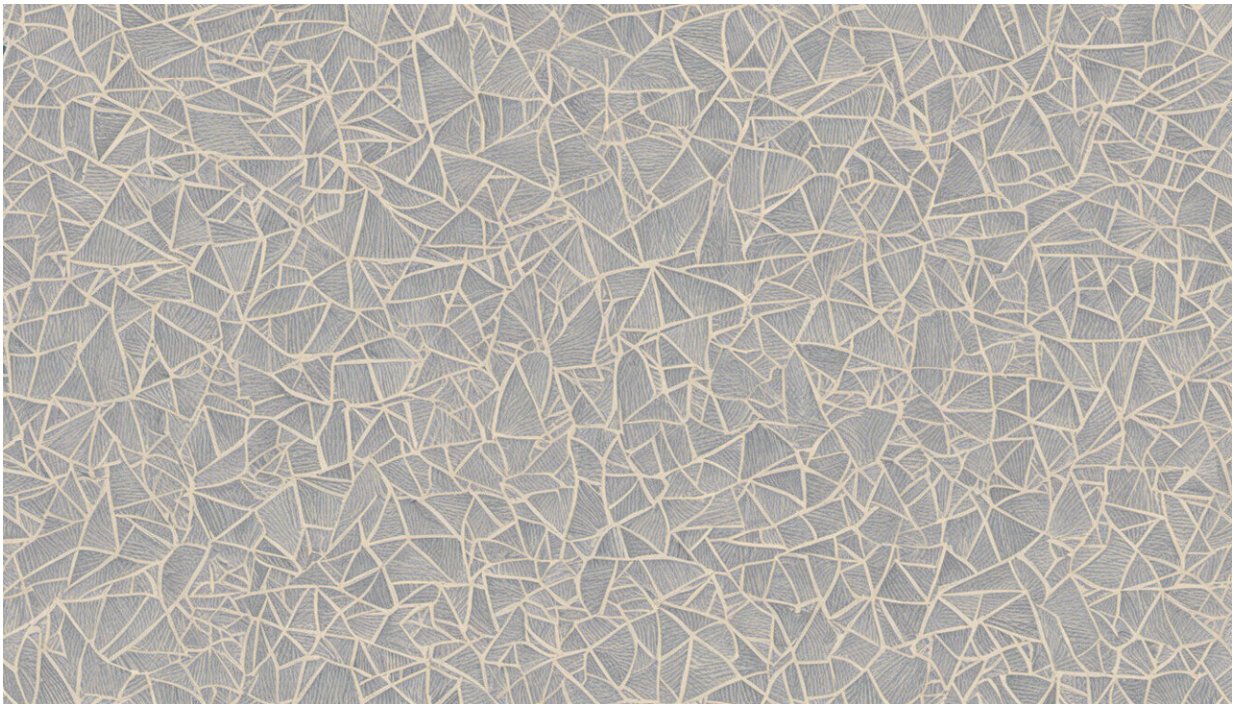
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The personality-based communication styles of team members can often determine the success or failure of a team, according to a recent study by Penn State researchers.

"This new research shows that understanding the communication styles

of team members can help us account for differences in [personality](#) and the impact those differences have on team performance," said Gretchen Macht, a postdoctoral scholar in architectural engineering.

Macht and David Nembhard, associate professor in the Harold and Inge Marcus Department of Industrial and Manufacturing Engineering, published their findings in a recent issue of the *International Journal of Industrial Ergonomics*.

Past studies on teamwork have focused exclusively on team members' personalities and the impact those personalities have on team performance. Past literature disagrees on whether personality affects team performance and if it does, if it affects it in a positive or negative way, said Nembhard.

This study, however, examines how personality affects communication among team members, and results show that the performance of a team can be determined by the communication, or lack there of, between team members.

Macht and Nembhard's research builds on a paper they published in 2014 with Jung Hyup Kim, assistant professor of industrial engineering at the University of Missouri, and Ling Rothrock, associate professor of [industrial engineering](#) at Penn State.

While linking personality with communication to measure team performance, the researchers used the Five Factor Model (FFM) as the guiding measure of personality. The FFM, which is the leading industry model of personality, consists of five elements: openness to experience, conscientiousness, extraversion, agreeableness and neuroticism.

"There are many ways to measure communication," said Macht. "We wanted to look at the most basic level first—quantity—to see if that

influenced the link between personality and [team performance](link). Now that we know that quantity does have influence, we can look at measuring other factors, such as quality, distractions, keywords and the like."

Macht worked with a sample size of 24 male engineering students who were asked to complete a questionnaire that focused on their perception of themselves in a variety of situations. Each item on questionnaire began with the phrase "I see myself as someone who…" and students specified their level of agreement or disagreement on a scale of one-to-five. Thus, the range captured the intensity of their feelings for a given item.

Some of the statements posed in the questionnaire include: …is talkative; …tends to find fault with others; …does a thorough job; is relaxed, handles stress well; …generates a lot of enthusiasm; …is inventive; …has an assertive personality; …remains calm in tense situations; and …likes to cooperate with others.

Upon analyzing the results of the questionnaires, the researchers divided the students into six teams based on their personality characteristics.

Each team entered a simulation lab and was tasked with locating and identifying an aircraft that appeared in a simulated radar game. The six teams went through four different scenarios in the game.

"The overall process for each team took three days—one day of psychometric testing, one day of training and one day of testing in the simulation—over the course of a few weeks in order to ensure the teams were set up for success," said Macht.

Macht and Nembhard looked at a total of 20 different models of personality, their effects on the communication of [team members](link), and the success of the teams.

"Ultimately, this study provided quantifiable relationships between how people communicate and how they behave—and perform," said Macht. "The results of this research can help people in management positions assemble a team that will be successful, especially when there is a detailed, decision-based task to complete."

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