

Gray Matter

Science and society.

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Credit: Olimpia Zagnoli

Endless meetings that do little but waste everyone's time. Dysfunctional committees that take two steps back for every one forward. Project teams that engage in wishful groupthinking rather than honest analysis. Everyone who is part of an organization — a company, a nonprofit, a condo board — has experienced these and other pathologies that can occur when human beings try to work together in groups.

But does teamwork have to be a lost cause? Psychologists have been working on the problem for a long time. And for good reason: Nowadays, though we may still idolize the charismatic leader or creative genius, almost every decision of consequence is made by a group. When Facebook's board of directors establishes a privacy policy, when the C.I.A.'s operatives strike a suspected terrorist hide-out or when a jury decides whether to convict a defendant, what matters is not just the intelligence and wisdom of the individual actors involved. Groups of smart people can make horrible decisions — or great ones.

Psychologists have known for a century that individuals vary in their cognitive ability. But are some groups, like some people, reliably smarter than others?

Working with several colleagues and students, we set out to answer that question. In our first two [studies](#), which we published with Alex Pentland and Nada Hashmi of M.I.T. in 2010 in the journal *Science*, we grouped 697 volunteer participants into teams of two to five members. Each team worked together to complete a series of short tasks, which were selected to represent the varied kinds of problems that groups are called upon to solve in the real world. One task involved logical analysis, another brainstorming; others emphasized coordination, planning and moral reasoning.

Individual intelligence, as psychologists measure it, is defined by its generality: People with good vocabularies, for instance, also tend to have good math skills, even though we often think of those abilities as distinct. The results of our studies showed that this same kind of general intelligence also exists for teams. On average, the groups that did well on one task did well on the others, too. In other words, some teams were simply smarter than others.

We next tried to define what characteristics distinguished the smarter teams from the rest, and we were a bit surprised by the answers we got. We gave each volunteer an individual I.Q. test, but teams with higher average I.Q.s didn't score much higher on our collective intelligence tasks than did teams with lower average I.Q.s. Nor did teams with more extroverted people, or teams whose members reported feeling more motivated to contribute to their group's success.

Instead, the smartest teams were distinguished by three characteristics.

First, their members contributed more equally to the team's discussions, rather than letting one or two people dominate the group.

Second, their members scored higher on a test called Reading the Mind in the Eyes, which measures how well people can read complex emotional states from images of faces with only the eyes visible.

Finally, teams with more women outperformed teams with more men. Indeed, it appeared that it was not “diversity” (having equal numbers of men and women) that mattered for a team’s intelligence, but simply having more women. This last effect, however, was partly explained by the fact that women, on average, were better at “mindreading” than men.

In a new [study](#) that we published with David Engel and Lisa X. Jing of M.I.T. last month in PLoS One, we replicated these earlier findings, but with a twist. We randomly assigned each of 68 teams to complete our collective intelligence test in one of two conditions. Half of the teams worked face to face, like the teams in our earlier studies. The other half worked online, with no ability to see any of their teammates. Online collaboration is on the rise, with tools like Skype, Google Drive and old-fashioned email enabling groups that never meet to execute complex projects. We wanted to see whether groups that worked online would still demonstrate collective intelligence, and whether social ability would matter as much when people communicated purely by typing messages into a browser.

And they did. Online and off, some teams consistently worked smarter than others. More surprisingly, the most important ingredients for a smart team remained constant regardless of its mode of interaction: members who communicated a lot, participated equally and possessed good emotion-reading skills.

This last finding was another surprise. Emotion-reading mattered just as much for the online teams whose members could not see one another as for the teams that worked face to face. What makes teams smart must be not just the ability to read facial expressions, but a more general ability, known as “Theory of Mind,” to consider and keep track of what other people feel, know and believe.

A new science of effective teamwork is vital not only because teams do so many important things in society, but also because so many teams operate over long periods of time, confronting an ever-widening array of tasks and problems that may be much different from the ones they were initially convened to solve. General intelligence, whether in individuals or teams, is especially crucial for explaining who will do best in novel situations or ones that require learning and adaptation to changing circumstances. We hope that understanding what makes groups smart will help organizations and leaders in all fields create and manage teams more effectively.

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