

Collaboration Beats Smarts In Group Problem Solving

by JOE PALCA

September 30, 2010

text size **A A A**

Everywhere you look, from business to science to government, teams of people are set to work solving problems. You might think the trick to getting the smartest team would be to get the smartest people together, but a new study says that might not always be right.

Researchers at Carnegie Mellon University found that collaborative groups who conversed easily with equal participation were more efficient at completing sets of given tasks — and produced better results — than groups dominated by individuals.

Anita Woolley, an assistant professor of organizational behavior and theory, has been studying what it means to say a group is "intelligent." So she created teams of two to five people, drawn from 700 volunteers, and asked the teams to solve various kinds of problems.

"We had some brainstorming tasks, where the idea is to get as many ideas and as creative ideas as possible," she said. The teams performed other tasks where there was only one right answer, and still others where the teams had to come up with innovative solutions to a problem.

Here's an excerpt from one group's conversation:

Participant 1 (male): The problem is that we have to decide whether this star basketball player should be kept on the team despite cheating on the exam, right?

Participant 2 (female): Yeah, I think they're trying to see how we'll punish him.

Participant 3 (female): It looks like keeping a player like that would mean violating school policies.

Participant 1: Yeah, I would keep him out of the next game, unless it's a playoff. At the very minimum.

Participant 2: Yeah, I think that's the best option. He deserves at least that.

The participants in this group took turns discussing the problem, coming up with various angles and issues.

Another group attacked the same problem differently:

Participant 1 (male): I say he should not be allowed to play.

Participant 2 (female): He should not be allowed to play for the semester, at least.

Participant 3 (female): Well ...

Participant 1: I think he should not be allowed to play for his college career at all. It looks like it may just be a status thing. He just cheated on an exam. He should at least have been creative and tried to cheat effectively or something. I hate people who are treated nicely for athletics. They're just stupid.

No one else in the second group got a word in, and there were no alternatives to what the one noisy participant was proposing.

Woolley says this was an example of a moral reasoning task. She says that to do well, a group

needed to consider multiple perspectives.

"In groups where the conversation was more evenly distributed, where you had better participation — and more equal participation among all of the group members — the groups were more collectively intelligent," Woolley says.

Not only was it annoying, but groups where one person dominated tended not to come up with as balanced and thoughtful a result — it wasn't as intelligent as the first group's effort. When Woolley looked for the qualities that made successful groups successful, she found that the individual intelligence of group members was unrelated to the outcome.

"A few things that were related however, were surprising," Woolley says. "One was the proportion of females in the group."

Related NPR Stories

The Intelligence Of
Crowds In 'The Perfect
Swarm'
Sep. 10, 2010

An Homage To Humans'
Problem-Solving Skills
March 7, 2005

As she reports in the journal *Science*, the more females, the higher the group intelligence, although Woolley thinks it's not so much gender as a quality of social sensitivity that women on average have more of than men.

Thomas Malone, one of Woolley's collaborators and head of the Center for Collective Intelligence at MIT, hopes this research will lead to great things.

"Imagine you could go to a top management team in a company and give them a collective intelligence test that would then predict how well that team would respond to a very wide range of challenges they might face," Malone says. That could be something a board of directors might be very interested to learn.

But Steve Kozlowski, a psychologist at Michigan State University, says such a test is a ways off. He says that Woolley's study only looked at a small set of tasks.

"And it's really very, very difficult to generalize from the small set of tasks that were examined in these studies, using college students, ad hoc teams and very short periods of measurement," he says.

He's also not convinced that Woolley and her colleagues are measuring intelligence. He says they're just measuring how well groups do on a limited number of problems.

"Likening it to intelligence — I wouldn't call it controversial, I just don't see any evidence to support it," Kozlowski says.

Still, he says there may well be such a thing as collective intelligence, but he thinks it will take a lot more work to define it.

comments

Please note that all comments must adhere to the NPR.org **discussion rules** and **terms of use**. See also the **Community FAQ**.

You must be logged in to leave a comment. [Login / Register](#)

Post this comment to Facebook, too? submit

NPR reserves the right to read on the air and/or publish on its Web site or in any medium now known or unknown the e-mails and letters that we receive. We may edit them for clarity or brevity and identify authors by name and location. For additional information, please consult our **Terms of Use**.

Recent First ▾



Norm Samuelson (plasticmodeler) wrote:

I worked on race cars (sports cars) for about 20 years. I did everything, from being a gopher to crew chief to shop manager. The most important lesson I learned in that time was the value of teamwork. A funtional and competent team will beat the smartest/fastest/most expensive individuals if the individuals and their egos cannot work together, everytime. Better ideas will be found, work will be completed better and in less time, and problems can be solved faster with people who communicate and work together.

October 1, 2010 12:01:27 PM PDT

[Recommend \(0\)](#)

[Report abuse](#)



VC Ponsardin (vcponsardin1) wrote:

Adam Smith (Plebus) wrote:

It is true that groups that communicate easily are often, on average, smarter than the smartest individual in the group; however, real life also abounds with dysfunctional groups who seem to be on average less intelligent than the least intelligent person in the group.

Sadly, I believe that there are many community and government groups that are just so dysfunctional.

Yes. A dictatorship would be vastly superior, wouldn't it...

October 1, 2010 12:08:16 AM PDT

[Recommend \(0\)](#)

[Report abuse](#)



Adam Smith (Plebus) wrote:

It is true that groups that communicate easily are often, on average, smarter than the smartest individual in the group; however, real life also abounds with dysfunctional groups who seem to be on average less intelligent than the least intelligent person in the group.

Sadly, I believe that there are many community and government groups that are just so

dysfunctional.

September 30, 2010 11:51:13 PM PDT

[Recommend \(2\)](#)

[Report abuse](#)



VC Ponsardin (vcponsardin1) wrote:

Crick and Watson? Wozniak and Jobs? NASA and the moon landing. Allied command in WWII. Some pretty impressive examples of teamwork abound.

September 30, 2010 10:40:38 PM PDT

[Recommend \(1\)](#)

[Report abuse](#)



Joseph Murphy (JosephMurphy) wrote:

This radio essay presents us with a group of young people that plays well together, and concludes that the athlete who cheats on a test should be suspended max one game, but if its a playoff just pretend it didn't happen. The second group is dominated by an intransigent boor, and concludes he should be suspended an entire semester, or for his college career. However, the piece provides no criteria for distinguishing a good, from a bad, moral decision, so we are left with the circular argument that people who play well together have better "group intelligence".

Whether this is a fault of Prof. Woolley's research, or NPR's presentation, will have to wait the arrival of my next copy of Science. I hope to god it is the latter.

September 30, 2010 10:34:12 PM PDT

[Recommend \(1\)](#)

[Report abuse](#)



Haddie Nuff (Its_Hopeless) wrote:

The Research also demonstrates the misuse of the word innovation. The second group at least came up with the same answer. The player violated the academic standard and should be punished. The first group seems to be ambiguous regarding should academic prevail or should there be an exception for the athlete? Perhaps this university is preparing the next generation of politicians to allow Wall Street investors to distort the principles of free markets creating moral hazards.

September 30, 2010 10:06:15 PM PDT

[Recommend \(4\)](#)

[Report abuse](#)



Mark Pachankis (KarlPopperFan) wrote:

what about group think? What if a bunch of like-minded people only consider a narrow field of options?

September 30, 2010 9:38:39 PM PDT

[Recommend \(1\)](#)

[Report abuse](#)



thomas pareso (letxequalx) wrote:

Have everyone exploring the same avenue and falling into the same hole -together? I think you want to have everyone on a different track and then have them rejoin when something looks to be workable.

September 30, 2010 8:52:10 PM PDT

[Recommend \(1\)](#)

[Report abuse](#)



VC Ponsardin (vcponsardin1) wrote:

[I hate typos.]

Shakespeare? Sorry. Shakespeare was a member of a major acting company and wrote (or



more often adapted) his plays and characters with specific actors in mind. We don't have any of Shakespeare's originals so no one knows what he actually wrote. The editions of Shakespeare we have today were first published seven years after he died when two of his colleagues sat down with a London printer and recreated what they thought were Shakespeare's words--in a collaborative manner. Furthermore, if Willy worked like most playwrights have worked over the last 2500 years, he produced a workable draft that was then read, commented on, rewritten and reworked by everyone involved in the production. Shakespeare (the adapter) is a very poor example in this case...

September 30, 2010 8:40:17 PM PDT

[Recommend \(0\)](#)

[Report abuse](#)



VC Ponsardin (vcponsardin1) wrote:

Helen Highwater (HiH2O) wrote:

Shakespeare? Sorry. Shakespeare was a member of a major acting company and wrote (or more often adapted) his plays and characters with specific actors in mind. We don't have any of Shakespeare's originals so no one knows what he actually wrote. The editions of Shakespeare we have today were first published seven years after he died when two of his colleagues sat down with a printer and recreated what they thought were Shakespeare--in a collaborative manner. Furthermore, if Willy worked like most playwrights have worked over the last 2500 years, he produced a workable draft that was read, commented on, rewritten and reworked by everyone involved in the production. Shakespeare (the adapter) is a very poor example in this case...

September 30, 2010 8:33:33 PM PDT

[Recommend \(0\)](#)

[Report abuse](#)

[View all comments \(18\)»](#)