Is Your Team Too Big? Too Small? What's the Right Number?

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When it comes to athletics, sports teams have a specific number of team players: A basketball team needs five, baseball nine, and soccer 11. But when it comes to the workplace, where teamwork is increasingly widespread throughout complex and expanding organizations, there is no hard-and-fast rule to determine the optimal number to have on each team.

Should the most productive team have 4.6 team members, as suggested in a recent article on "How to Build a Great Team" in *Fortune* magazine? What about naming five or six individuals to each team, which is the number of MBA students chosen each year by Wharton for its 144 separate learning teams? Is it true that larger teams simply break down, reflecting a tendency towards "social loafing" and loss of coordination? Or is there simply no magic team number, a recognition of the fact that the best number of people is driven by the team's task and by the roles each person plays?

"The size question has been asked since the dawn of social psychology," says Wharton management professor Jennifer S. Mueller, recalling the early work of Maximilian Ringelmann, a French agricultural engineer born in 1861 who discovered that the more people who pulled on a rope, the less effort each individual contributed. Today, "teams are prolific in organizations. From a managerial perspective, there is this rising recognition that teams can function to monitor individuals more effectively than managers can control them. The teams function as a social unit; you don't need to hand-hold as much. And I think tasks are becoming more complex and global, which contributes to the need for perspective that teams provide."

Each Person Counts

While the study of team size is one of her areas of concentration, Mueller and other Wharton management experts acknowledge that size is not necessarily the first consideration when putting together an effective team.

"First, it's important to ask what type of task the team will engage in," Mueller says. Answering that question "will define whom you want to hire, what type of skills you are looking for. A sub-category to this is the degree of coordination required. If it's a sales team, the only real coordination comes at the end. It's all individual, and people are not interdependent. The interdependence matters, because it is one of the mechanisms that you use to determine if people are getting along."

Second, she says, "what is the team composition? What are the skills of the people needed to be translated into action? That would include everything from work style to personal style to knowledge base and making sure that they are appropriate to the task."

And third, "you want to consider size." The study of optimal team size seems to fascinate a lot of businesses and academics, primarily due to the fact that "in the past decade, research on team effectiveness has burgeoned as teams have become increasingly common in organizations of all kinds," writes Wharton management professor Katherine J. Klein, in a paper titled, "Team Mental Models and

Team Performance." The paper, co-authored with Beng-Chong Lim, a professor at Nanyang Business School, Nanyang Technological University, Singapore, was published in January 2006 in the *Journal of Organizational Behavior.*

In an interview, Klein acknowledges that when it comes to team size, each person counts. "When you have two people, is that a team or a dyad? With three, you suddenly have the opportunity to have power battles, two to one. There is some notion that three is dramatically different from two, and there is some sense that even numbers may be different from odd numbers, for the same reason. My intuition is that by the time you are over eight or nine people, it is cumbersome and you will have a team that breaks down into sub-teams. Depending on the group's task, that could be a good thing or that could not be right. There is a sense that as a team gets larger, there is a tendency for social loafing, where someone gets to slide, to hide."

Ringelmann's famous study on pulling a rope -- often called the Ringelmann effect -- analyzed people alone and in groups as they pulled on a rope. Ringelmann then measured the pull force. As he added more and more people to the rope, Ringelmann discovered that the total force generated by the group rose, but the average force exerted by each group member declined, thereby discrediting the theory that a group team effort results in increased effort. Ringelmann attributed this to what was then called "social loafing" -- a condition where a group or team tends to "hide" the lack of individual effort.

"After about five people, there are diminishing returns on how much people will pull," says Mueller. "But people, unless they are not motivated or the task is arbitrary, will not want to show social loafing. If the task is boring and mundane, they are more likely to loaf. If you tell executives this, they say, 'One of the things I'm worried about is loafing and free riding.' Whereas social loafing is decreased effort in a group context relative to individual context, free riding is rational and self-interested. If a person is not going to be rewarded, they say, 'I'm going to free ride' and they don't participate as much. The two concepts are hard to distinguish, but they are just different ways to measure similar outcomes."

The Number Six

Evan Wittenberg, director of the Wharton Graduate Leadership Program, notes that team size is "not necessarily an issue people think about immediately, but it is important." According to Wittenberg, while the research on optimal team numbers is "not conclusive, it does tend to fall into the five to 12 range, though some say five to nine is best, and the number six has come up a few times."

But having a good team depends on more than optimal size, Wittenberg adds. For instance, when Wharton assigns five to six MBA students to individual teams, "we don't just assign those teams. We make sure they can be effective. We have a 'learning team retreat' where we take all 800 students out to a camp in the woods in upstate New York and spend two days doing team building and trust building exercises. I think this is what people forget to do when they create a team in a business -- spend a lot of time upfront to structure how they will work together. We get to know each other and share individual core values so we can come up with team values. But most importantly, we have the students work on their team goals, their team norms and their operating principles. Essentially, what are we going to do and how are we going to do it?"

In the work world, says Wittenberg, it has been "reinforced that five or six is the right number (on a team). At least for us, it gives everyone a real work out. But frankly, I think it depends on the task."

Recent research by Mueller would seem to support Wittenberg's notion that preparation for team success is vital. In a recent paper, "Why Individuals in Larger Teams Perform Worse," Mueller channeled Ringelmann's theories on large group efforts and tried to explain why the title of her paper is true. For decades, researchers have noted that mere changes in team size can change work-group processes and resulting performance. By studying 238 workers within 26 teams, ranging from three to 20 members in size, Mueller's research replicates the general assertion that individuals in larger teams do perform worse,

but she also offers an explanation for this conclusion.

"Understanding the reasons why individuals in larger teams in real work settings perform worse may be one key to implementing successful team management tactics in organizations, since research shows that managers tend to bias their team size toward overstaffing," she writes. In addition, "individual performance losses are less about coordination activities and more about individuals on project teams developing quality relationships with one another as a means of increasing individual performance. Because research on teams in organizations has not examined team social support as an important intra-team process, future research should examine how team social support fits in with classic models of job design to buffer teams from negative influences and difficulties caused by larger team size."

But is there an optimal team size? Mueller has concluded, again, that it depends on the task. "If you have a group of janitors cleaning a stadium, there is no limit to that team; 30 will clean faster than five." But, says Mueller, if companies are dealing with coordination tasks and motivational issues, and you ask, 'What is your team size and what is optimal?' that correlates to a team of six. "Above and beyond five, and you begin to see diminishing motivation," says Mueller. "After the fifth person, you look for cliques. And the number of people who speak at any one time? That's harder to manage in a group of five or more."

Diversity: Bad for Cohesion?

Klein's recent research has looked at another confusing area when it comes to teams -- the value of diversity. Various theories suggest that diversity represented by gender, race and age leads to conflict and poor social integration -- while various other studies suggest just the opposite. "The general assumption is that people like people who are similar to themselves, so there is a theory to suggest that a lot of diversity is bad for cohesion," says Klein. "But there is also a theory that says diversity is great, that it creates more ideas, more perspectives and more creativity for better solutions."

In their own research, Klein and Lim find a distinct value in having some similarity between team members. The authors describe how "team mental models -- defined as team members' shared, organized understanding and mental representation of knowledge about key elements of the team's relevant environment -- may enhance coordination and effectiveness in performing tasks that are complex, unpredictable, urgent, and/or novel. Team members who share similar mental models can, theorists suggest, anticipate each other's responses and coordinate effectively when time is of the essence and opportunities for overt communication and debate are limited. Our findings suggest that team mental models do matter. Numerous questions remain, but the current findings advance understanding of shared cognition in teams, and suggest that continuing research on team mental models is likely to yield new theoretical insights as well as practical interventions to enhance team performance," the researchers write.

Wharton management professor Nancy P. Rothbard has a similar theory on what she calls "numerical minorities" -- including gender, race, age and ethnic groups. "Often times, a numerical minority can appear to be less threatening because it's not unexpected that someone who is different from you has different viewpoints. But if they are more similar to you and they disagree with you, some groups find that more upsetting. It can raise the level of conflict on a team. That's not necessarily a bad thing, if the conflict doesn't get in the way of being able to think through a problem and do what needs to be done."

Klein has also looked into what factors determine who becomes important to a team. The single most powerful predictor? Emotional stability. "And the flip side is neuroticism. If someone is neurotic, easily agitated, worries a lot, has a strong temper -- that is bad for the team."

Within a company, individual teams often begin to compete against each other, which Wittenberg finds can be troublesome. "One of the problems is the in-group, out-group problem," he says. "Depending on how we identify ourselves, we can be part of a group or separate from a group. At many companies, the engineering group and the marketing group are very much at odds. But at the same time, if you talked about that company vs. another company, the teams are together, they are more alike than the people at

the other company. Teams are sometimes more siloed within a company and they think they are competing with each other instead of being incentivized to work together."

When it comes to creating a successful team, "teams that rely solely on electronic communication are less successful than those that understand why communication in person is important," says Wittenberg. "Email is a terrible medium... . It doesn't relate sarcasm or emotion very well, and misunderstandings can arise. There is something very important and very different about talking to someone face-to-face."

While teams are hard to create, they are also hard to fix when they don't function properly. So how does one mend a broken team? "You go back to your basics," says Mueller. "Does the team have a clear goal? Are the right members assigned to the right task? Is the team task focused? We had a class on the 'no-no's of team building, and having vague, not clearly defined goals is a very, very clear no-no. Another no-no would be a leader who has difficulty taking the reins and structuring the process. Leadership in a group is very important. And third? The team goals cannot be arbitrary. The task has to be meaningful in order for people to feel good about doing it, to commit to the task."