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ESSENTIAL SCIENCE CONVERSATION: STRENGTHENING TEAM SCIENCE IN A CHANGING RESEARCH LANDSCAPE (MARCH 24, 2026)

DESCRIPTION

As scientific challenges grow more interconnected, interdisciplinary research is rapidly expanding. This growing emphasis on cross-disciplinary research requires scientists to navigate differing methodologies, communication styles, and organizational structures. Join us for a panel discussion with experts from diverse fields to explore how researchers can strengthen team-based work and build productive and resilient scientific teams.

This webinar is part of APA's [Essential Science Conversations](#) -- where panelists and audience members engage in an open dialogue about emerging topics in psychological science.

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UNOFFICIAL TRANSCRIPT

Shandol Hoover: Hello, everyone, and welcome. Thank you for joining us today. I'm Shandol Hoover, Senior Director of APA Science Special Projects and Implementation. Before I get started with today's session, I want to share a few quick announcements. Today's session is being recorded. About two to three weeks after our live session, everyone who registers will receive a link to the recording, a transcript, and related resources.

Any opinions, findings, and conclusions or recommendations expressed by the presenters for APA's Essential Science Conversations do not necessarily reflect the views, policies, or positions of the American Psychological Association. We hope you will visit apa.org/science to explore how you can engage with APA science. Check out Elevating Psych Science to learn all the ways APA helps promote psych scientists and promote science. We also have two free newsletters that we hope you subscribe for, *Science Spotlight*, so you can get opportunities for the latest news and information going on. Then also *Editor's Choice*, a free weekly review of articles directly to your inbox.

We also hope that you will check out the APASI Response Center to navigate recent and proposed policy changes with some additional resources from APA. We have several upcoming webinars coming up. These are all free, so we hope that you will visit apa.org/science and navigate to science training sessions where you can register for upcoming webinars. You can also access on-demand content, more than 30 Essential Science Conversations, and over 30 free science training sessions.

We hope you will take advantage of these resources. Which brings us to today. We're thrilled that you've joined us for our Essential Science Conversation, where panelists and audience members

can engage in open dialogues about emerging topics in psychological science. Thanks to those of you who submitted questions for today's program when you registered.

You can also submit questions for today's program using the Q&A box. Chat will be disabled, so if you experience any technical difficulties, please let us know using the Q&A tool. The session is being recorded, and we'll send a link to the recording to everyone in about two to three weeks. I'm pleased to now turn things over to Dr. Adrienne Stith, Executive Lead Psychologist for Science.

Adrienne Stith, PhD: Wonderful. Thank you so much, Shandol, and welcome everyone to Strengthening Team Science in a Changing Research Landscape. As scientific environments, questions, and methods become more complex, the ability to work effectively across disciplines has really never been more important. Today, we're joined by three exceptional experts who will bring a lot of experience in team dynamics, interdisciplinary collaboration, and human-centered research. I'm going to briefly introduce our discussants in alphabetical order, and you will learn more about them and their work during our conversation today.

I am going to start with Dr. Nancy Cooke, who's a professor in human systems engineering at The Polytechnic School, one of the Ira A. Fulton Schools of Engineering at Arizona State University. She is also senior scientific advisor at Arizona State Center for Human, AI, and Robot Teaming. Dr. Cooke chaired the committee that authored the 2015 National Academy's report on team science.

Next, we have Dr. Nicole Motzer. She is the director of the award-winning Office of Research Development at Montana State University and also former assistant director for interdisciplinary science at the National Socio-Environmental Synthesis Center at the University of Maryland in College Park. She was one of the co-authors of the recently released National Academy's report, the science and practice of team science, and she currently serves as a team science consultant for the Institute of Translational Health Sciences at the University of Washington.

Our third discussant is Dr. Mo Wang, who is the Lanzillotti-McKethan Eminent Scholar Chair and the associate dean for research and strategic initiatives at Warrington College of Business at the University of Florida. His research is in organizational behavior and human research management, and he served as one of the co-chairs for the science and practice of team science committee. Welcome to all three of you. I think that we can have everyone come on camera. Wonderful. There they are. I'm very excited for today's discussion. Welcome, you all. I'm going to start with a question. What is team science? I'll ask who wants to start with that question, and then I'll have others chime in too.

Nancy Cooke, PhD: I'll start.

Adrienne Stith, PhD: Awesome.

Nancy Cooke, PhD: I think it's collaboration, for sure, on something that's scientific. I think what stands out with team science is it's across disciplines, so multiple disciplines collaborating on a science project.

Mo Wang, PhD: From my perspective, I agree with what Nancy just said, and I would emphasize it's also interdependent. Team science relies on multiple researchers, and also beyond the researchers, other stakeholders. The community stakeholders, people who will benefit from the science research, and also the funding agencies that will support and provide resources for the science research. It's a multifaceted and multisource related form of conducting science.

Adrienne Stith, PhD: Thank you. Great. I'm going to start. I think, maybe, Nicole, with you. I'm going to ask, why is strengthening team-based scientific work so important and urgent in today's research landscape?

Nicole Motzer, PhD: That's a great question. I think that that really boils down to that complexity of the problems, the scale of the problems, the interconnectedness of the problems that we're seeking to face or to address in science and research are unprecedented. It's no longer sufficient to tackle a problem or to develop a solution with just one discipline or one type of data. The speed at which society is changing, technology is changing, the scale at which these problems are occurring, it's no longer feasible for a single lab or even a single discipline to be able to address this if acting alone.

As Mo said, the increased demand for use-inspired research or translating fundamental knowledge to real-world solutions has never been greater. We in academia are now needing to bridge outside to other governmental stakeholders, community members, patients, whoever they may be, to make sure that what we're producing is actually feasible and usable in the real world.

Adrienne Stith, PhD: Thank you. Any other thoughts about that question, or maybe I'll move on to the next.

Nancy Cooke, PhD: I think a good example of one of these problems that can't be solved by a single discipline is the whole climate change. This is something that desperately needs to bring together people from multiple disciplines to work in a transdisciplinary way.

Mo Wang, PhD: The research questions are much broader now. When we talk about team science, we're really talking about people with a lot of different expertise and with different, actually, scientific interests working together on a bigger problem, a problem that would actually dictate multidisciplinary and transdisciplinary solutions. That's why. The problem becomes larger, so we need a better team science concept to deal with it.

Adrienne Stith, PhD: Yes, absolutely. About these two, so another question that maybe, Nancy, I'll direct to you first, is what are some of the biggest obstacles that researchers face when they're working across disciplines on these big meaty issues, things like methods, vocabularies, and cultures. Cultures can mean a whole lot of things, lab cultures and other kinds of cultures. What are some of the things that come to mind?

Nancy Cooke, PhD: There are quite a few challenges. I think the one that's the greatest is just being able to communicate across disciplines. One of the nagging problems that happens is that we think we know what the other person is talking about because they're using the word model. I know what a model is. Too often, much time passes, and you are talking over each other because you mean completely different things. It's trying to get on the same page with your vocabulary at first. It is a big challenge, and this whole problem of thinking you know what they're talking about, but not knowing at all. It requires lots of openness and lots of upfront discussion.

Adrienne Stith, PhD: Other obstacles that come to mind for Nicole or for Mo?

Nicole Motzer, PhD: Yes, I agree. Communication is a huge one. I think you also, once you start actually doing the work, too, you need to take a step back and almost not relearn your discipline, but look at it with new eyes in terms of, "What assumptions of my discipline do I just take for granted that others and other disciplines would be like, 'Wait, what? That's what you think? People

are rational?" or something like that. How do you define rigor in your discipline? That might be very different from how other disciplines define rigor or what is valid, what is data.

I've seen teams that haven't had these pre-conversations or these early-stage conversations get down the road and then hit a real obstacle moving forward because they can't agree how the science should actually be done because they have these different assumptions, trainings, or ideas of rigor and validity. Yes, communication. How actually is the work going to get done? How are you going? Because it is interconnected, right?

That's the difference between interdisciplinary team science and something like multidisciplinary team science, where you don't necessarily have to integrate your work to get to these real innovative breakthroughs. I think it's taking the time to sit back, have some epistemic humility. "What are the limitations of my discipline?" Being upfront about that and just not diving straight into the work, assuming that others will agree with you about your disciplinary approach, or even know anything about your disciplinary approach.

Mo Wang, PhD: Yes. I want to add to that. Actually, what Nancy and Nicole just mentioned is actually considered to be both parts as teamwork competencies. The interesting thing is when we are trained as scientists, we're trained on the task work competencies. We learn how to conduct tasks. We learn how to do literature review. We learn how to do research design, how to collect data, analyze data, all those things.

We are never trained, very rarely we are trained, actually, on how to be a good team member and how to carry out teamwork. Actually, communication is a part of those teamwork competencies. Also, taking other people's perspective on your work or on your expertise. That's also another type of teamwork competencies. Actually, in the 2025 report, we actually specified a good number of knowledge, skills, and competencies for successfully carrying out the teamwork.

Nancy Cooke, PhD: I wanted to just add to that. One of the things that we're considering here at ASU, and I know they've done this other places, are team-based dissertations so that students receive exactly that kind of training that Mo was talking about, how to work with others in a team, how to collaborate across disciplines. I think it's a really important consideration where you're going to get these skills if you sit in the office by yourself.

Adrienne Stith, PhD: Yes, absolutely. I'm wondering if, in the work that you all have been involved in, where do you start to try to build these common understandings about things? Literally, how do you do that?

Mo Wang, PhD: Actually, recently, if you look at NIH funding requirements, oftentimes they require a statement about how to implement team science and how to implement collaborative work. I think a lot of it is actually coming from the funders because the funders, they recognize that it is important for the team to carry out the work efficiently. Then, therefore, the PI team need to develop a formal plan about how to conduct a team meeting, what are the rules of engagement so that all those teamwork can be carried out in a very efficient way. That's from the funder's standpoint.

Then, from the educational standpoint, we probably need to consider incorporating this into PhD training or even into research expertise training for different levels of students. I think that could happen as well. I feel like, from my personal experience, if you train people after they get on the team, on all those things, it's almost already too late. We should be taking a more strategic way to do this and incorporate that into science training rather than just the on-the-job kind of thing.

Nicole Motzer, PhD: Yes. I think for a more short-term solution, if, say, the folks on the call are looking to gather a team now, in the report, we talk about best practices. One of the first ones is a team task analysis. That's looking, "Okay, what problem are we interested in? What expertise will we need? What skills will we need? What resources will we need? Who do you need on the team?" Taking a step back from there, it's just identifying, "What problem are you interested in?" Often, I have people come to me, and they think they see some connections between their disciplines or their friends, and they want to work together.

Then when you sit down, and you're like, "Okay, well, what's your research question? What are you going to do together?" It's a little bit harder for them to answer. I think this is one of the ways that it differs from a single PI or traditional model of you don't just have your vision and then go out and find team members to fit your vision. You can start with an idea, but approach it in a way that, "Hey, this is a starting point. This is what I'm interested in, or this seems to really respond to what this funder is looking for. I know that I can't do this on my own. I can aim one, or I can do this part. I need this data, this expertise, or this perspective to be able to address this problem in full."

Then, from there, finding people who might fill that, but then also what are they interested in? What are their priorities? What research capabilities would they like to unlock that they couldn't if they weren't on a team? Then editing and iterating the vision every single time you add someone to the team, so that it's co-created across the team. I think that's a great way to start those conversations because it creates a natural communication channel to talk about priorities, to talk about what the limitations of the project would be, to talk about who else we might need to add to this team to be able to solve the problem, and then get into that team task analysis.

Then from there, once you're identifying people, then you can start getting into those collaboration planning, like Mo was saying, and developing a team vision, working towards a shared mental model. Like, "Okay, we say this is our vision, or this is our research question. Let's make sure we're all thinking about this in the same way." Then that's another point of when you're looking to create a team. Don't just look at someone's CV. Don't just go for the bright, shiny name in your field because you want someone who's actually going to have time and bandwidth to contribute to the teamwork and who can be an active participant on the team.

In the report, we talk about actually have interviews with people and not just for their task competencies, as Mo was saying, but their team orientation. How amenable are they to this taking a little bit longer because it's a team effort, or flexibility in their vision, and just really trying to suss out the team competencies and task competencies? Then doing careful onboarding too of co-creating norms. "This is how we're going to be as a team," rather than just diving straight into the science from there. Hopefully, that was helpful with a couple of pointers for how to get started on all of this.

Adrienne Stith, PhD: Yes, very, very helpful with very concrete actions. Thank you. Relatedly, in terms of how teams function, so maybe, Mo, I'll ask, what are some key strategies that can really improve team performance and outcomes?

Mo Wang, PhD: Oh, yes. Actually, in the 2025 report, we actually defined teamwork into four different stages. Then, for each stage, we actually have some recommendations about the key strategies to improve the team performance and outcome. For example, the first stage we consider is the developmental stage. That's when you put a team together. Really, we recommend the careful team assembly that would reflect the task analysis that Nicole just mentioned.

We would recommend being very careful about the team composition and pay a lot of attention to the orientation of new members and to pay a lot of attention to the existing culture and existing strength of the old team members. Then, also try to develop a shared language. As Nancy earlier mentioned, a shared language, it means a lot for a team to function well. That's in the team development stage.

Then, the next stage is the conceptualization stage, which is people need to consider exactly what the science team going to tackle. What research question? What goal? This is when the team is recommended to develop a team charter to really use the charter to decide how the team members are going to communicate with each other, the rules of engagement. Then, also try to figure out how they're going to design the teamwork to tackle the research question.

Specific attention should be paid to create a shared mental model, which is the team members all agree on what they're doing, and then they understand each other's roles. A lot of the issue comes from when people don't understand or misunderstand other team members' roles. That's the important strategy for the conceptualization stage. Then the third stage is the implementation stage.

That's when, really, the team needs to develop a very systematic project management. It's not going to be just error management. It's actually need to be like active monitoring the progress. Try to do very often frequent debriefing of what is going well and what is going poorly so that the team can continuously improve. Also, the key here is to hold the team members accountable for their teamwork, not just the task work, but also teamwork.

Then the last stage, which is actually new, we incorporated this in the 2025 report, is dissemination of the research. Basically, after we conduct the research, we need to translate the findings to the community members, to the stakeholders. The key here is then you cannot just use your scientists' viewpoint, but also you need to be able to translate this into layperson perspective to take into consideration of different stakeholders' interests. That part we think is really, really important. It especially determines the outcomes of the team science.

Adrienne Stith, PhD: Thank you so very much. As you were talking, Mo, I was thinking about the 2015 report, the part one. I'm curious if you have thoughts or reflections about the developments since that first report was released? Things that still resonate, maybe some things that have changed or evolved?

Nancy Cooke, PhD: I think that the 2025 report does a good job of putting it all together and really crystallizing these strategies to improve teamwork. There was some team science going on in 2015, but I think it's increased quite a bit over these last 10 years. That is one development. The other thing that was a development, not in such a good way, was the pandemic that happened. That created this mode where people were working remotely. I know most of my work now is done remotely, and I think that does a number on our team science.

Adrienne Stith, PhD: What are some of the benefits of the in-person versus, and/or remote, or some combination of them?

Nancy Cooke, PhD: In our study, we had Jeremy Sabloff from the Santa Fe Institute on the committee. He said some really interesting things about being remote and what you miss when you're remote. The two things that he thought catalyzed collaboration. They were serendipity, running into somebody in the hall, water cooler talk, and then sharing food. Sharing food, they would have regular tea times at the Santa Fe Institute.

Often these collaborations come together around these informal settings around food. We don't have that if we're working remotely. I know people tried to have, during the pandemic, remote happy hours, but they were not the same at all. I think these face-to-face interactions are really missed. The other thing about remote collaboration is that often you have to put up with time zones. Sometimes, that's a big deal. You can't get people together very often.

Nicole Motzer, PhD: The National Socio-Environmental Synthesis Center, or SESYNC, was actually designed around the importance of togetherness, being in-person to conduct team science. We would fly out teams from all around the world for these intensive bursts of in-person collaboration at our center for three to five days. I think the major, in addition to the social bonding over meals and dinners, was the lack of interruption.

They were together from 8:00 to 5:00 or even after that, rather than one hour on Zoom or a couple hours on Zoom, and then you just get pulled in many different directions. On to the next meeting or until I've got to pick up my kids, or whatever it is. This sustained deep engagement in collaboration, I think, it's really, really valuable. If at all possible, if you can get a planning grant for in-person teaming or an institutional seed grant for this, I think it's important for building trust, for building social bonds, all of which the research shows leads to better team science outcomes.

There are definitely some benefits of remote participation. It increases accessibility. It maybe brings people into your team who are-- Being in Montana, we think a lot about those who are in the very rural parts of our state who otherwise wouldn't be able to participate in more urban scientific experiences. There are benefits, but I think I worry that the remote option has people glossing over these best practices and the needs of in-person teaming.

As much as you can balance and also know what conversations are most effective virtually versus in-person. If maybe it's just like report outs, "Here's what's happening," that's okay, virtually. If it's, "We've come to this inflection point, and we really need to figure out how to move forward. This is do or die," or, "There's a big conflict, and we need to figure out what this is," or, "We're just feeling stuck, and we need lots of brainstorming," that's probably better for in-person. I think it's also taking that step back and knowing what current challenge or need does your team have and then which mode is best suited to addressing that.

Adrienne Stith, PhD: I wonder, any other thoughts about benefits of remote or in-person? Because I do have another question for you.

Mo Wang, PhD: On that, I want to provide a more balanced view, which is the remote, the virtuality of teamwork, it does open doors or collaboration between scientists who would have been difficult to work together. For example, before, without the Zoom meeting, then it may be a little bit harder for people across the Atlantic Ocean to work on things together or have live meetings. Actually, this morning I was having a panel meeting which has people from all time zones. It was really interesting. Of course, someone had to wake up in the middle of night to do it, but the cool thing is suddenly you have all the minds together in the Zoom meeting room.

I think the technology enables a lot of ways for collaboration. However, of course, technology also brings some barriers. For example, if we just do remote and we don't have the face-to-face component, oftentimes it's hard to build a mutual understanding. Oftentimes, it's hard to build an interpersonal trust. Also, actually, one thing we emphasize a lot is psychological safety. If you only do remote meetings, oftentimes you're going to handle people or handle team members on a more professional or less interpersonal way, in the best personal way, which does not help to build the psychological safety.

I would say the technology has always been evolving, and the technology enables a lot of things, but then we do have to recognize the weakness brought by the technology and try to come up with strategy to compensate that or manage that.

Adrienne Stith, PhD: Thank you. Yes, achieving balance is always ever present. I want to ask a somewhat different question now, and that's about metrics, and maybe what metrics can better capture excellence beyond publication and funding. Maybe, Nancy, I'll start with you with that question.

Nancy Cooke, PhD: Back in 2015, we talked about the use of bibliometrics, and that is about who you publish with, how many different authors are there, from what different disciplines. That doesn't seem satisfactory because we know that the publications happen for many different reasons, and you work on people for many different reasons, and sometimes the collaboration maybe wasn't that great, but you still manage to push out a publication or two. There's a lot of ways in other domains that we measure teams and teamwork.

One of the best ways that I found, and I don't know really how to apply it to science teams, is that the most effective teams are teams that come together and adapt quickly to change. Maybe you can translate that to science teams because nothing ever goes smoothly, and good teamwork will allow you to come together and address it as a team. Maybe the 2025 report had things that were better than bibliometrics.

Nicole Motzer, PhD: I think that was a focus of the report. It's a longstanding challenge for the interdisciplinary team science world, as we keep saying, it's better to do things this way, but it's hard to actually know how it's better and to what degree it's better, because it's really hard to measure this. Every team is different. You would have to change your evaluation approach based on what were the team's goals? What was the constellation of the team? What context were they working in?

What we settled on in the 2025 report was a mixed methods approach, quantitative data such as bibliometrics and outputs, but also qualitative data that measures, tries to get at not only did the team do what it say it was going to do, but then how was the teaming experience? Was it a positive experience? Then that's really challenging, because how do you measure that? There's been some research that Hannah Love at all has looked at turn-taking in teams and trying to measure how frequently do certain teams take turns in their meetings, and showing that increased turn-taking leads to better outcomes and more productivity for teams, for example.

We are getting at things like that, but the latest thing is trying to get at how to measure knowledge integration, because integration is really the key to successful interdisciplinary teaming. Are you creating something together that you couldn't if you were acting alone? Are your disciplines actively influencing one another? That's really challenging. That's the forefront of the field, I would say, is how do you measure integration? I have a collaborator who's a philosopher, and she is now at the University of Michigan Clinical and Translational Science Hub.

We were trying to develop a methodology to actually measure integration in research products. Can we dissect how papers are written to see if we can identify points of integration? It turned out that was ridiculously hard and time-consuming. However, now with the abundance of AI at our fingertips, maybe it's time to revisit that. I think that's the teaming part. Then the third part that we recommend is, the experience for the individuals on the team. How was this a professional development opportunity for them? What was their experience like?

Are they more disposed to be on a team after this? I think that's the ultimate measure of success is like, "Yes, we want to keep working together," or, "I know I want to do this for the rest of my career." If it's like, "Absolutely not, I am done," then you can probably deduce that that was not a positive experience. Quantitative, qualitative, high-level products, team experience, and then individuals on the team. This is very much still an area in development, for sure.

Mo Wang, PhD: I want to add to this. The qualitative approach in the past has not been viewed with-- because if you study scientists and most of them, especially hard scientists, they are used to playing with numbers, so there's some kind of resistance. If you apply a qualitative approach to try to evaluate or understand, you meet some resistance. Actually, after we review all the work, it seems like the programming evaluation approach is really pretty viable for this kind of purpose. It's really hard to quantify, and each team is working in very specific contexts.

Of course, you can use some survey measure. You can use some psychometrics measures to capture, but actually programming evaluation approach sounds pretty good and can give you good diagnostics for whether a team is working well, a team is not working well. Also, I think what Nicole just mentioned, also the team viability, which is whether people who are in the team feel good about the process, and also want to remain on the team, because the turnover is actually costly.

I'm paying attention to not just the author on the publications, on the grants, but also on whether the team member want to remain on the team, want to continue the effort. That's a very important aspect of teamwork.

Adrienne Stith, PhD: There's another question here, which I think that you may have answered, but I'll ask it and then ask if anyone else has anything to add. The question is, what type of research is really needed to strengthen the empirical basis for team science?

Mo Wang, PhD: We have a whole section on the recommendation there. Really, we consider several parts. We know that there's a lot of research on general teams, because all the organizations rely on teams to deliver the work, but then how much those knowledge we gained from general teams can translate into science teams, that's quite unclear. Especially, science teams think about this. Scientists usually are highly specialized. The functional background they're highly different.

How do they work with each other and create the knowledge? Also, think about this: the task is super hard. The task is to create the knowledge that does not exist before. That's the one challenge, and we need a study to understand whether the general team's research knowledge can apply to science teams. Also, we don't have a lot of intervention studies. We are here, talking about, oh, how do we improve team science, but then the thing is, a lot of the studies we see are, as we mentioned, the program evaluations are based on observations.

Is it possible to actually design rigorous clinical trials to understand, "Hey, if you alter certain conditions, you're going to observe the difference in the team science competencies or efficiencies"? That's another one. Then we don't see a lot of funding like a longitudinally tracking science teams' work. When I was the director for National Science Foundation for science organizations, we actually funded a couple, but then it's really difficult to fund those because it's longitudinal. Oftentimes, it's multi-year. How do you keep track of a science team? There's a challenge, so you will require larger funding to do.

Another aspect is we don't really know what institutional policies and practices would reinforce or actually create barriers for team science. We all think, "Oh, universities or funding agencies, they

all have their good faith practices, but are they really helping, or they are just creating extra hurdles?" It's actually difficult to say. There are very few actually systematic research on those. Those are the aspects. One more thing I want to add is the technology. Especially with the AI, the general intelligence agents, I think the whole team science literature will be rewritten.

Before, we would always say, "Hey, we encourage people to team up," but now, if a scientist has the option to just team up with an AI agent, would that person prefer to team with real people? We don't know. That really is a very interesting question. I want to emphasize that. We mentioned that a little bit in 2025 report, but at that time, the AI agent issue is not as hot right now. Right now, if you think about AI agents, I would be like, "Oh, if I can have a 10-day AI agent work for me, do I still need a team of real people?" That's an interesting question.

Adrienne Stith, PhD: It absolutely is.

Nancy Cooke, PhD: We have some interesting data on that, not from science teams, but from other kinds of teams that show that AI can be really good at doing the task work, but it's really terrible at teamwork. It doesn't have the social intelligence that people have or the emotional intelligence to carry it out, and so it can be a really bad teammate. I would discourage people at this point from teaming up with AI.

Adrienne Stith, PhD: Maybe we could do next year and see-

Nancy Cooke, PhD: Yes, see what happens.

Adrienne Stith, PhD: -what's unfolding.

Nancy Cooke, PhD: Another thing, too, I wanted to clear up because I noticed over the years is that people confused the term team science for the science of teams. There is a science of teams and many, many different kinds of teams, and that's not the same as team science, which is what we're talking about here today.

Adrienne Stith, PhD: Thank you, Nancy. Can you say what is the science-- What is the--

Nancy Cooke, PhD: Science of teams?

Adrienne Stith, PhD: Thank you.

Nancy Cooke, PhD: It happens in my discipline, human factors in psychology in general, organizational, industrial psychology, and there are researchers who study teams and teamwork. In my work, it's been mostly in military kind of domains. Now, I think it's an important question, as Mo said, does that translate to science teams, but there's a lot of that work out there, and often it gets confused with science teams.

Adrienne Stith, PhD: Very, very important point. Thank you, actually, for you both for addressing that. There is a question here, and I'll let whoever would like to take it address it. That is, what is some actionable advice that you would give to team members and also team leaders to be more productive? How do they address different communication styles? Give a moment to think.

Nicole Motzer, PhD: Those sound like two different questions to me.

Adrienne Stith, PhD: Yes, they're together but two different, yes.

Nicole Motzer, PhD: I think that's the connotation there. Starting with the productivity question first, I guess, my first question would be productivity in terms of what. I think we can have some broad answers that will apply to different definitions of productivity. Going back to the shared vision or making sure everyone's priorities are met. I feel like myself included, if a team effort is seen as a burden or whenever a meeting shows up on your calendar, and you're like, "Oh, not this again." People aren't going to want to work on this. They're not going to want to do it.

If it's like, "Hey, I really enjoyed my conversation with Mo," or "Nancy really makes me think in a different way. I'm excited to work with them on this." That's where those social bonds really come into play to encourage work because we're not working in these conventional hierarchical structures where if you don't do what you said for the team, you're going to get fired from the lab, or you're not going to get a paycheck, or you're going to lose your scholarship. We don't have that on these teams where there's multi-PI, or we don't have any leverage. We're all at different institutions. We're not reporting to anybody on this besides the funder, I guess. You have to find different incentives.

Knowing what really would drive someone from a research perspective, what are they really passionate about that this team could help realize, and coming at it from that service perspective for everyone on the team, is probably one way to increase productivity. Again, people wanting to work on this, the social bonds. I think another thing that you could try from a leadership perspective is shared leadership. We've seen this work well when a team goes through different objectives or stages of a project that mirror different areas of expertise. It's not just one person being responsible for all the teamwork and task work, because that can get exhausting over the long term.

Now, this objective or this aim is more reflective of your domain or your discipline. We're going to keep consistency in terms of our team norms and all of our communication channels and all that, but we now have the shared leadership model where others can be responsible for managing the teamwork and the task work. Sharing that burden in leadership, incentivizing participation for the team. I think just having really candid conversations about what's going on in your life. I've seen a lot of instances where this person just keeps not doing what they're going to do. They're not showing up to meetings. We keep missing these tasks.

This person is a terrible collaborator, but it turns out that they actually had a family issue or a personal matter that they were really struggling with. That's, again, seeing the people on your team as humans and having these curiosity-driven conversations with them. Like, "Hey, what's going on? Do we need to modify your role? Do we need to have someone else step into this role so that the project doesn't bottleneck?" It's a compassionate approach, but it's also a practical approach. Those are just some initial thoughts. I think the different communication styles, as Mo was saying, that's something that you need to figure out from the beginning.

I've seen teams or recommended to teams, oh, what are they called? It's like a get-to-know-me form, like, "Here's all about me. Here's how I like to receive feedback. Here's how I tend to communicate. Here's how often I check my email." You just really are candid about yourself. You learn about your different teammate styles. Again, you're not going to be upset if they don't respond in 24 hours because you're like, "I know this person takes about three business days to reply." Just making sure all of that is out in the open from the beginning, and then you design the team timeline and all of the tasks in a corresponding way.

Adrienne Stith, PhD: Nancy, I saw you nodding.

Nancy Cooke, PhD: I think those are all important things to do. I really like the idea of understanding your teammates as a human. I guess I was just thinking that that's one thing that AI can't do at all.

Adrienne Stith, PhD: Very true. Let's see. I'm going to pivot a little bit to a question about support for team science, and that is how different stakeholders, your academic departments, maybe journals, just institutions more broadly, funders can support team science. What sorts of things are helpful and good?

Nancy Cooke, PhD: I think from the university perspective, trying to have a culture of collaboration where you don't, with promotion and tenure, have to show that you're completely independent of the rest of the world, where you can value people's collaboration, and they can report their progress in terms of what they did on this project, but knowing full well they did it with other people. I think that's where the training students, too, to work together collaboratively, and that it's okay, and it's really a good thing to collaborate. Teaching them that teamwork is really important to move this ahead.

Mo Wang, PhD: One thing I want to mention is these general science journals, the outlets. Oftentimes, when we see team science research, they are published in more educational outlets of different disciplines. Very few of them, I guess, published into mainstream scientific journals. Actually, if we really care where our knowledge comes from, those researches are quite important. I think we probably need to ask the journal editors to be open-minded about this kind of research. Actually, by publishing this research, it also signifies that we care about how our science is being built, and how are we going to tackle multidisciplinary, interdisciplinary, or transdisciplinary research to advance knowledge.

I think the journal outlets have a certain responsibility for this as well.

Nicole Motzer, PhD: I think another important aspect of all this is the funders themselves. Oftentimes, or recently, if any of you are actively pursuing funding, you'll have seen these insanely short deadlines that are being released, especially for federal funders, of just a couple of weeks. That is not possible to put together. Maybe if you have an existing team, but a new team in a couple of weeks, to really get that vision, to get everyone on board. All the best practices we've been talking about is not practical.

I think recognizing that we need more time. You heard me mention planning grants earlier, and the importance of that, and just giving time for these teams to coalesce. Especially if you're working on a translational team, where you want to bring in community member perspectives, non-academic perspectives. That takes a lot of time to build trust and to have conversations. These aren't unidirectional relationships where it's, "Hey, here's our science." It's, "What problems are you facing? What do you want us to investigate? How can we work on this together?"

I think just we need more lead time. We need more time to plan and team, and we need more flexible budgeting. I don't know how many times we've had to fight funders for budgeting meals into grant applications or travel, getting nicks from the budget because, oh, you can just do this all virtually instead of having that important in-person time. I think funders catching up to what teams need is an important next step.

Adrienne Stith, PhD: I don't know whether you have a sense of this or can comment, but do you think that there's been any shifts, maybe about what's valued in promotion and tenure? Maybe how

editors think about the sorts of content that they want to put? Has there been a shift in that so that it's more friendly to team science?

Nancy Cooke, PhD: I think some places, some journals, yes, but not all.

Nicole Motzer, PhD: We are seeing more institutions take an institutional approach to retention, tenure, and promotion instead of just letting individual departments create their role and scope. They're like, "This is an institutional priority." I think, yes, we are seeing more, but I think a lot more still needs to be done for like, "Oh, sorry, I can't work on this team because one of the target publications wouldn't count towards my tenure package." That's ridiculous. Some progress, but still a lot more needs to be done.

Adrienne Stith, PhD: We have just three minutes left. I'm going to pose this last question, and then we'll wrap up in a couple of minutes. That is, if someone can give an example about how an interdisciplinary team approached a problem, maybe in a different way than-- I'm going to interject a little bit here, maybe than a single researcher may have approached that. What made that team approach productive?

Nicole Motzer, PhD: One example that comes to mind-- I'm a geographer by training, and one example was a team or a group of investigators that was looking at deforestation in sub-Saharan Africa. They were seeing the loss of miombo and all of these trees and habitat. They were just looking at the what of what was going on from the sky, and having all these assumptions about what was causing it or what could be a good solution. Ultimately, fortunately, they started working with social scientists to get more at the why of what this is happening.

The social scientists were able to go on the ground to actually talk to people, to interview them, and understand why this is happening. They're not just mindlessly destroying their environment. There are these real intricate social, political, economic reasons for doing this. Then, understanding the actual drivers of this, they were able to come at a more realistic, feasible solution to stop this. I think that's a really good example of looking at it from different scales. There was the above-ground, the one on the ground. Not just trying to look at observationally what's happening, but trying to get at why it's happening.

Then just taking more of a systems approach to identifying what are all of the intricate feedback loops and drivers and all the various actors of what's going on here. Not simplifying the problem as might have happened if just one methodology, one data, and one perspective was taken to this issue.

Adrienne Stith, PhD: That is a wonderful example. Thank you so much. That was, I think, encapsulation of why team science is so needed and wonderful. Thank you for that. I can't believe the hour has come to a close. Just thank you all so much for your time and for the wonderful discussion today. I also want to thank everyone who joined us today and participated. We hope you enjoyed the conversation. I'll close by saying that you'll also receive a one-minute survey to complete after today's broadcast. We really do value the feedback. Also, we like to hear from people about what they want to hear about, what sorts of conversations and topics are important and needed. You can just email us at science@apa.org.

Folks who register will receive a link and a transcript in a couple of weeks. Just again, a thank you, everyone, for joining us today. We hope to see you at future events. Thank you. Have a wonderful day.