Strategies for Success in Collaboration and Team Science

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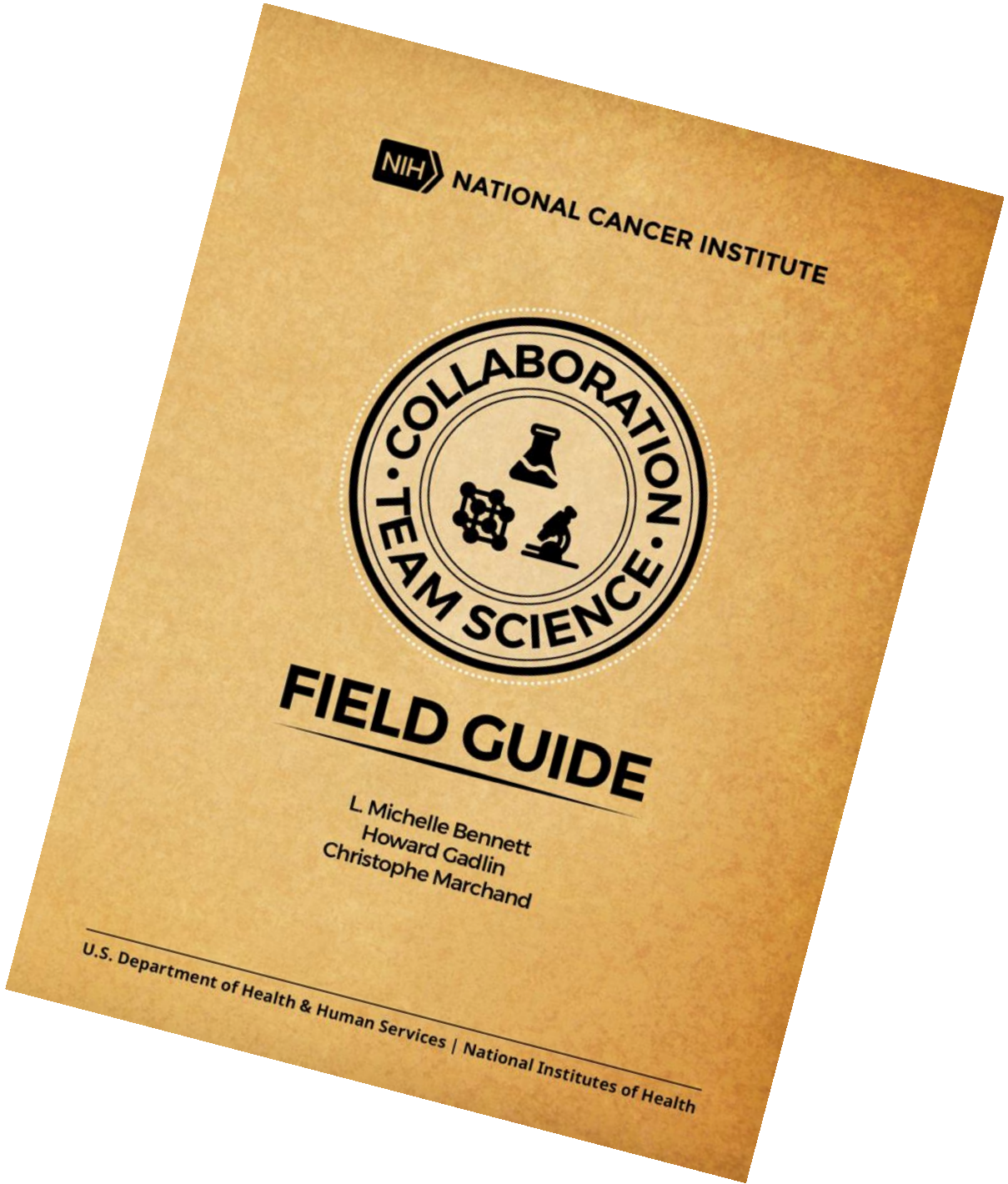
What Characteristics Contribute to Successful Team Functioning?



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Presentation

- Introduction
- Part I
  - Trust
  - Vision
  - Expectations
  - Case study
- Part 2
  - Team Evolution and Dynamics
  - Psychological Safety
  - Diversity
  - Conflict and Disagreement
- Conclusion

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Introduction

- Authorship
- Research Team Definition
- Collaboration/Experience
- Disciplinary Integration
- It’s Not Just About the Science
- Collaboration and Threats
- Effective Listening

Changing Nature of Authorship

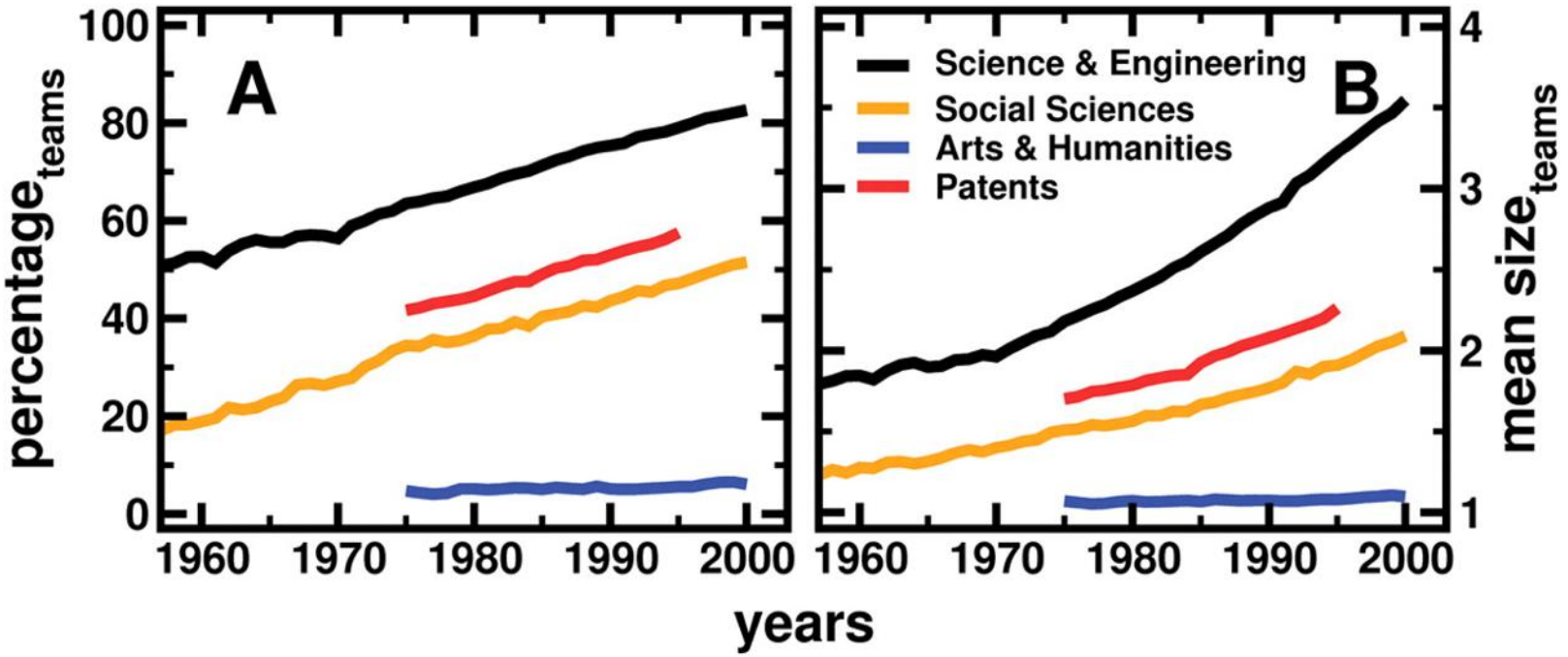


Fig. 1: The growth of teams. These plots present changes over time in the fraction of papers and patents written in teams (**A**) and in mean team size (**B**). Each line represents the arithmetic average taken over all subfields in each year. Note: team is defined by more than one author.

The Increasing Dominance of Teams in Production of Knowledge, Wuchty, Jones, and Uzzi, Science 18 May 2007 316: 1036-1039

Research Team Definition

- PI Team
- Laboratory (multi-PI)
- Branch or Department
- Multi-lab Collaboration (internal or external)
- Trans-institute initiative
- Consortium
- International Partnership

What Motivates Collaboration? Experience Matters

- *Less experienced:* cooperation/coordination
  - focus on sharing information, compatibility of goals, common tasks (such as quickly solving problems)
  - opportunity to be mentored, solve problems (task level), share resources, share ideas
- *More experienced:* collaboration
  - enhanced respect and understanding of collaborators (unity)
  - opportunity to mentor, build networks, to enjoy the stimulation of working with others, and problem solving (complex challenges)

Mallinson, Lotrecchiano, Schwartz, et al. *J Investig Med*,

A continuum of disciplinary integration

Multidisciplinary

Researchers from different disciplines work sequentially, each from their own discipline-specific perspective, with a goal of eventually combining results to address a common problem

Transdisciplinary

Researchers from different disciplines work jointly to develop and use a shared conceptual framework that synthesizes and extends discipline-specific theories, concepts, and methods, to create new approaches to address a common problem

Unidisciplinary

Researchers from a single discipline work together to address a common problem

Interdisciplinary

Researchers from different disciplines work jointly to address a common problem. Some integration of perspectives occurs, but contributions remain anchored in their own disciplines.

Adapted from Rosenfield, 1992

A continuum of disciplinary integration

Multidisciplinary

Transdisciplinary

"Convergence"

(within) Disciplines (across)

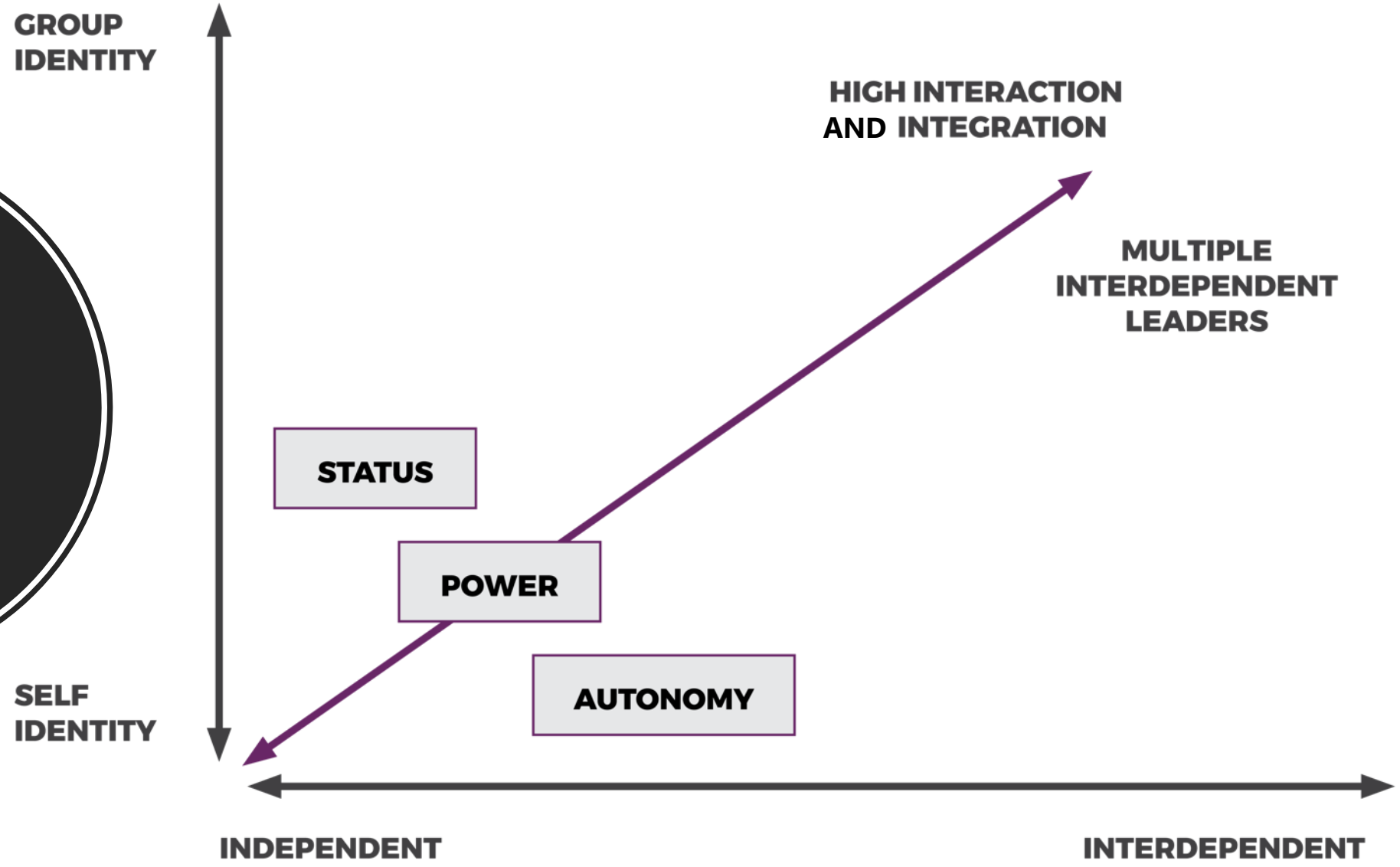
Unidisciplinary

Interdisciplinary

Adapted from Rosenfield, 1992

The science brings teams together…. but success is not just about science

Collaboration Introduces Threats



Have You Ever?

Are You an Effective Listener?

Visibly Tune-In	• Look at the person you are talking to • Wipe all thoughts out of your mind
Active Listening	• Focus on what the person is saying. • Nod, smile, and use use ‘uh-huh’
Accurate Listening	• Paraphrase and/or summarize • ask clarifying questions
Do not Judge or Assume You Know	• Don’t interrupt
Respond Appropriately	• Be open and honest, • demonstrate respect

Just Listen

- Find a partner and some space to talk
- Assign roles: listener and speaker
  - The Listener can only make 1 comments during the allocated time
  - The Listener must somehow get the speaker to keep talking (making only 1 comment)
  - Speaker should choose a topic that is fun for them to discuss (hopefully your science)
- 3 minutes each
- Switch roles and repeat (I'll tell you when)

I’m Listening

- Find a NEW partner and some space to work
- Agree on who will be person A and B
- Each pair will receive two handouts: A and B
  - Do not share handout with partner!
  - A and B take turns being Listener and Speaker
- Two Scenarios:
  - Read Script #1
    - You’ll have 45 seconds to act it out
  - Read Script #2
    - You’ll have 45 seconds to act it out

Debrief

- What did you notice between the two different exercises?
- How did you feel/what did you experience during the first exercise?
- How did you feel/what did you experience during the second exercise?
- What role does non-verbal communication play?
- What was comfortable? Uncomfortable?

What are the principles for good listening?

Part 1

Building and Maintaining Trust

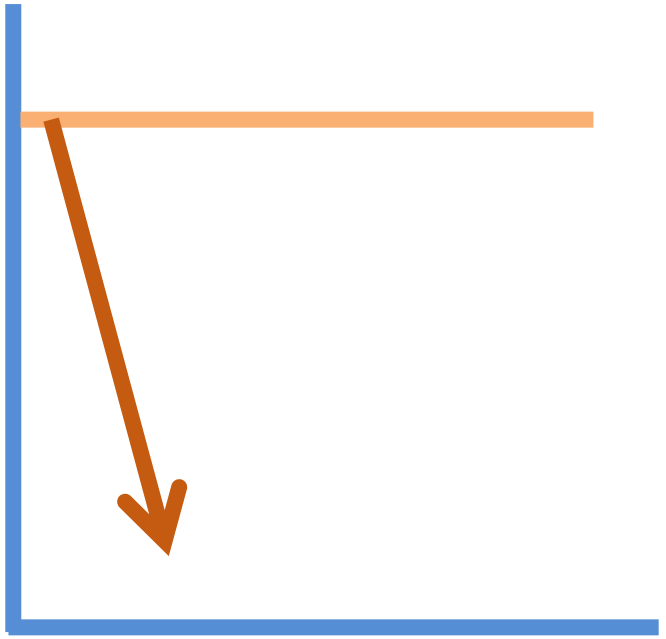
Developing a Shared Vision

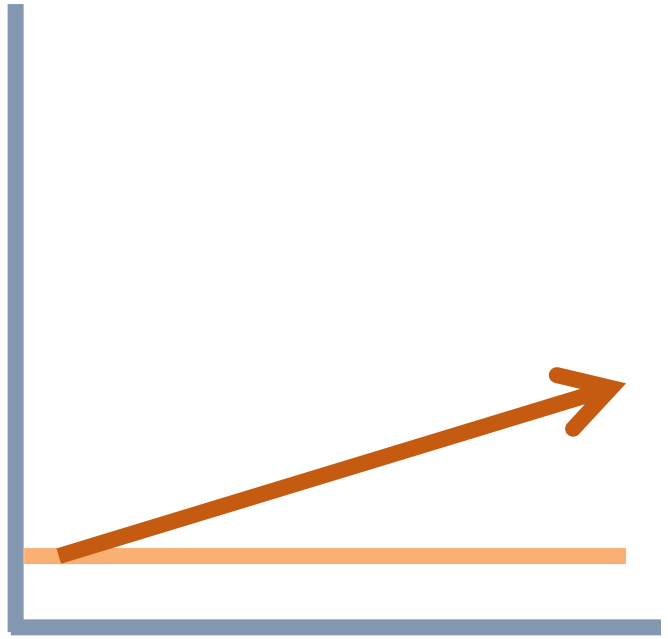
Setting Clear Expectations

Case Study: Drs. Bench & Klinik

Trust

Trust





Types of Trust

Calculus based trust – built on calculations of the relative rewards for trusting or losses for not trusting

Competence based trust – built on the confidence in people's skills and abilities, allowing them to make decisions and train others

Identity based trust – built on an assumption of perceived compatibility of values, common goals, emotional/intellectual connection

Observations from own experiences

- Building – how do you build trust with your colleagues?
- Betraying – how do you handle acts that negatively impact trust in the research setting?

Shared Vision

- Key to successful leadership
- Sets the course for the team members to travel
- Improves group effectiveness
- Should be revisited regularly with the team –
  - Are we on track?
  - What has changed?

Developing a Shared Vision

Everyone can describe the “big picture”

Each team member can state his/her research goal and how it relates to the “bigger picture”

Have the group discuss each members accomplishments and challenges in achieving the goal – and how they relate to the overall mission

Instill ownership of roles and responsibility for attaining goals

Team accepts responsibility and accountability for both accomplishments and failures – without blaming.

Leaders Set Clear Expectations

Scaffold for deeper trust

No secrets or surprises

- Communication
- Regular Meetings with Clear Agendas
- Authorship
- Conduct of Investigation, Research…
- Technical Support
- Career Development
- Evaluation Criteria, etc.

Tools for Setting Expectations

[and creating a scaffold for building trust]

Collaborative Agreement

- Jointly created agreement among collaborators: can be formal or informal in its creation

"Welcome Letter"

- A scaffold for building deeper trust including: what you can expect of me, what I expect of you, what to do if we disagree

Institutional Agreements

- Language about team participation in an offer letter or pre-tenure agreement
- Joint appointment agreements

Consortium Agreements

- Biospecimen collection/use; Publications; Data storage and sharing; etc..

Collaborative Research Agreements: Prenuptials for Scientists

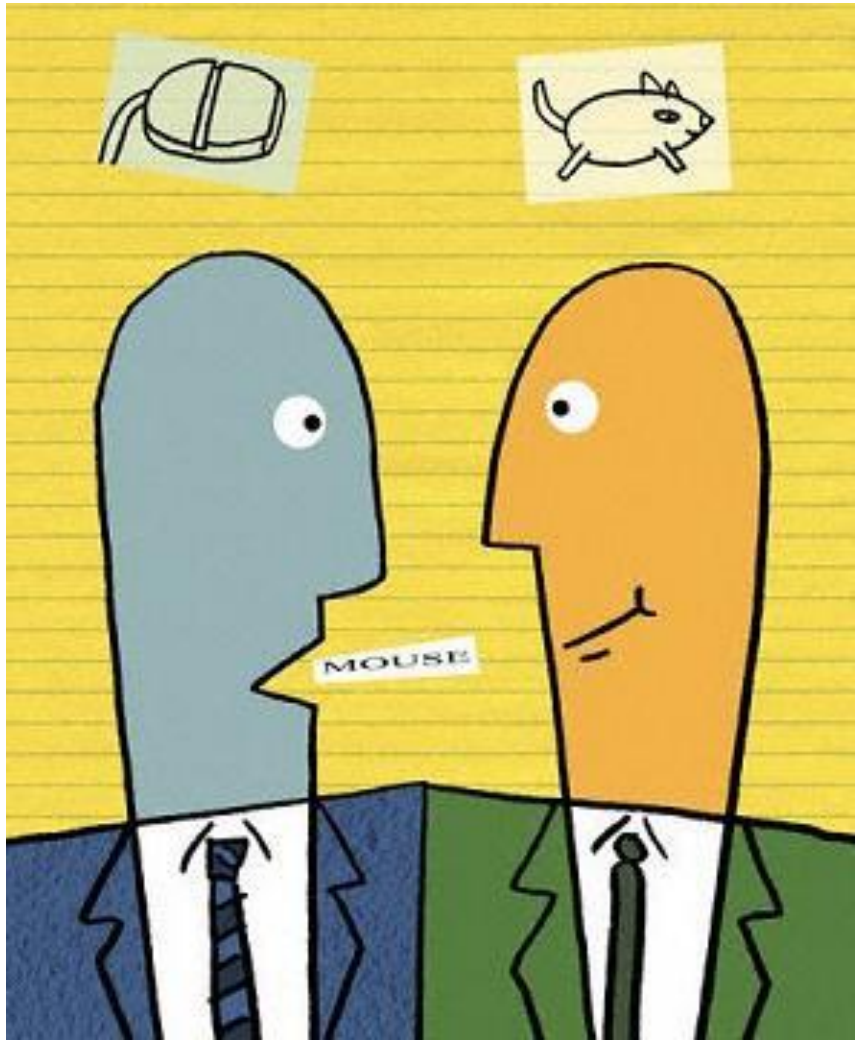
- **Goals and Vision of the Collaboration**
  - *Including…when is the project over?*
- **Who Will Do What?**
  - *Expectations, responsibility and accountability*
- **Authorship, Credit**
  - *Criteria, attribution, public comment, media, IP*
- **Contingencies and Communicating**
  - *What if …? Rules of engagement*
- **Conflict of Interest**
  - *How will you ID conflicts? And resolve them?*

The "Welcome To My Team" Letter

Provides a scaffold for building deeper trust

- What I expect from you
- What you can expect of me
- What to do if we disagree

How do you communicate?



What did you say?

Case Study

Dr. Bench & Dr. Klinik

Discussion

TRUST

VISION

EXPECTATIONS

Part 2

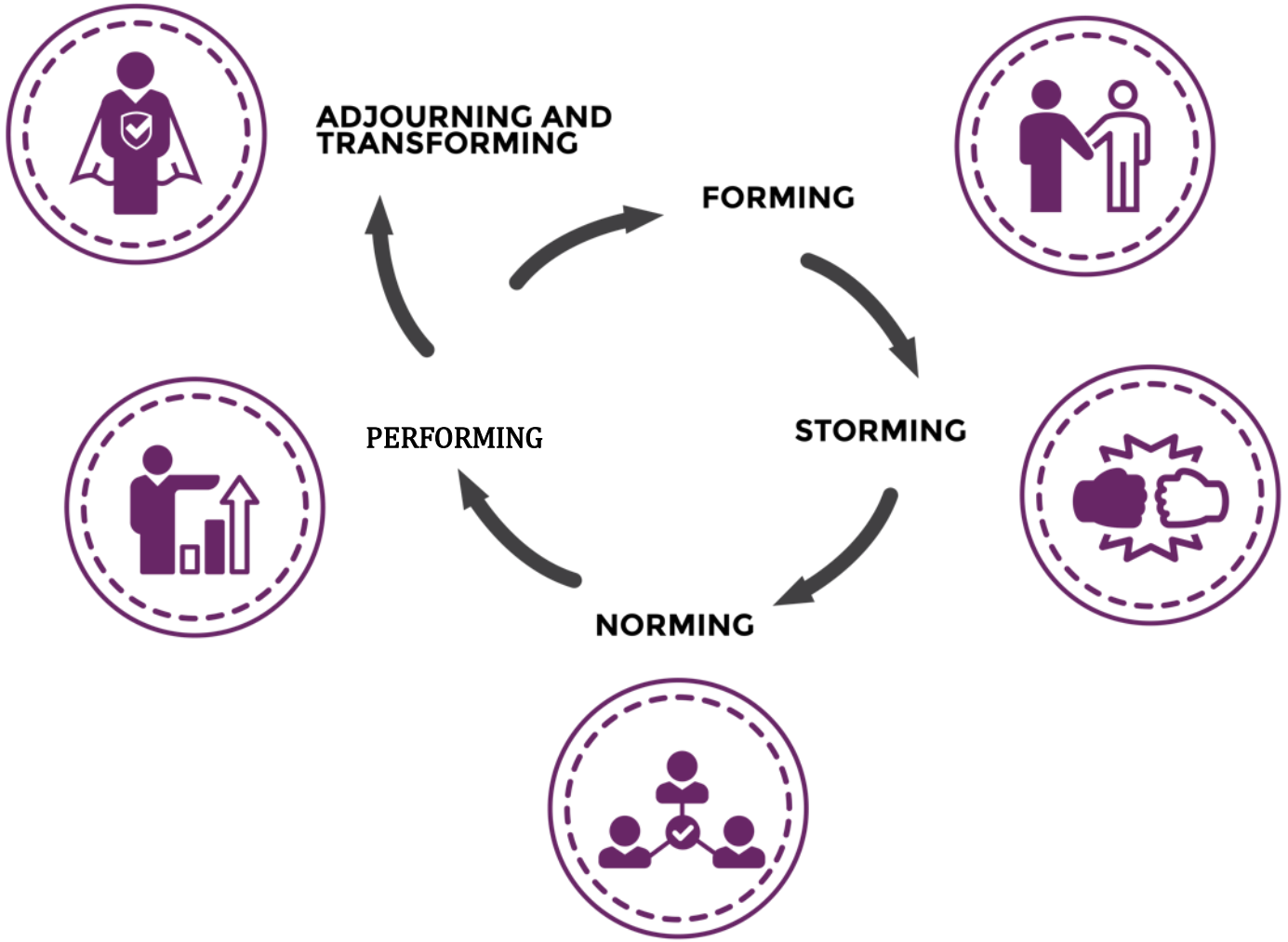
Phases of Team Development

Diversity

Difficult Conversations and Managing Conflict

The Mutual Learning Approach

Model of Team Development



Bruce Tuckman, 1965

Psychological Safety

“Being able to show and employ one’s self without fear of negative consequences of self-image, status, or career”

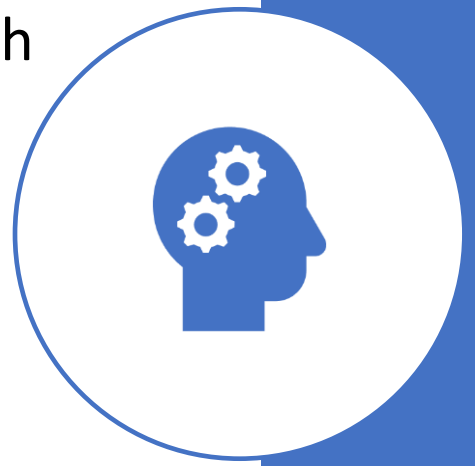
“A shared belief held by members of a team that the team is safe for interpersonal risk-taking”

“It describes a team climate characterized by interpersonal trust and mutual respect in which people are comfortable being themselves”

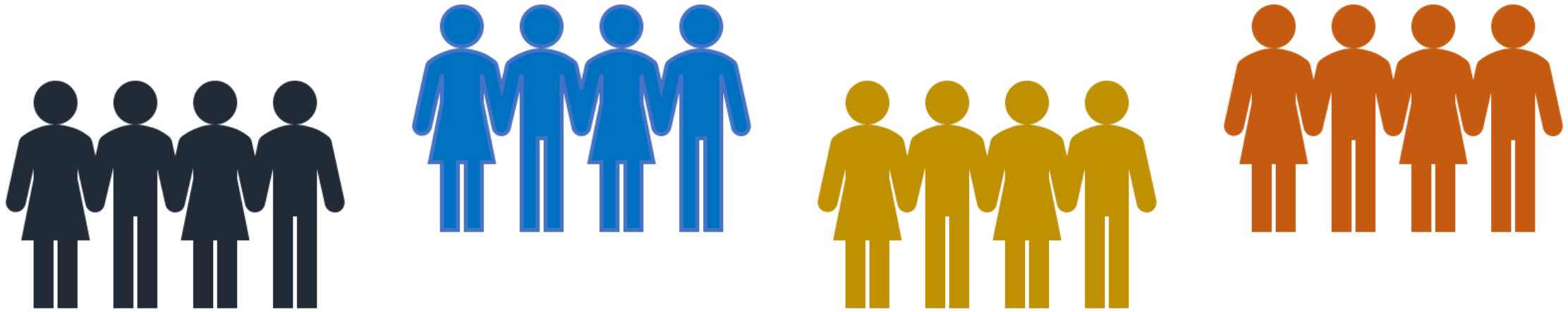
William Kahn, 2017; Edmondson, 1999

Assessing Psychological Safety: At Any Level

- Ask how strongly people agree or disagree with these statements:
  - If you make a mistake, it is often held against you.
  - Members of this group are able to bring up problems and tough issues.
  - People sometimes reject others for being different.
  - It is safe to take a risk in this group.
  - It is difficult to ask other members of this group for help.
  - No one in this group would deliberately act in a way that undermines my efforts.
  - Working with members of this group, my unique skills and talents are valued and utilized.



Adapted from Amy Edmondson, 1999

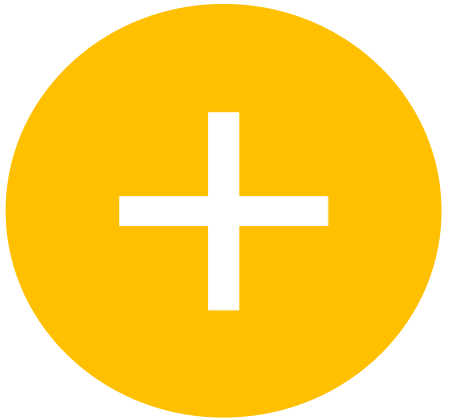


What about diversity?

Team Science is An Exercise in Diversity

DIFFERENT PERSPECTIVES

VARIED EXPERIENCES



RANGE OF EXPERTISE

CHALLENGING METHODOLOGIES/APPROACHES

QUESTIONING INTERPRETATIONS, RESULTS, ETC…

Problem Solving

- A diverse group is more effective at solving problems than a homogenous group
- Random selection of intelligent participants from a diverse group results in teams that can outperform a team of the “best”-performers

- Identity diverse teams are more likely to run into challenges with communication, have more conflict, and take longer to build trust

Hong and Page (2004) PNAS Vol 101: 16385

A Team of Experts

An Expert Team

“The greater the proportion of experts a team had, the more likely it was to disintegrate into nonproductive conflict or stalemate.”

Gratton and Erickson, HBR, November 2007
https://hbr.org/2007/11/eight-ways-to-build-collaborative-teams

“There is little correlation between a group’s collective intelligence and the IQs of its individual members. But if a group includes more women, its collective intelligence rises.”

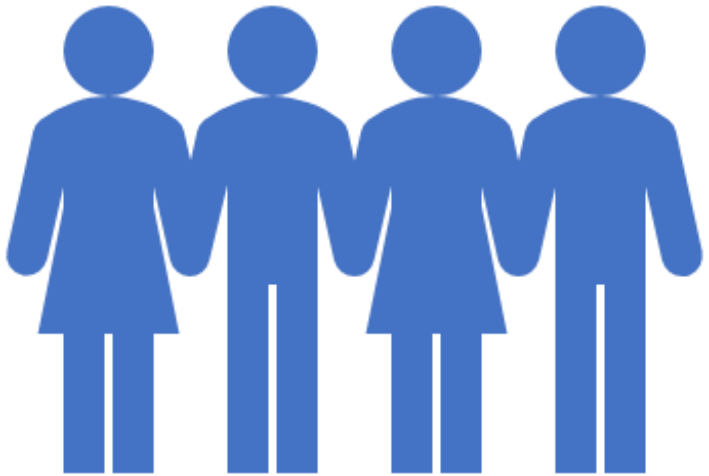
Anita Woolley and Thomas Malone, HBR, June 2011

Mixed Gender Scientific Teams

- Produced research articles considered to be of higher impact than those comprised of a single gender
  - Mixed gender teams received 34% more citations than publications produced by single gender teams
- Promoting diversity:
  - Enhances inclusion and fairness
  - May also lead to increased quality science

Campbell, Mehtani, Dozier, Rinehart (2013) PLoS One

Diversity and a Tech Team



- Diverse perspectives are critical
- If tech teams aren't diverse, innovation is at risk
- Technology development is for everyone
- Diversifying tech teams makes stronger products as well as strategies to recruit diverse techies
- Consider HP's fiasco with regard to its facial recognition software

Who is missing from your team?

Difficult Conversations and Managing Conflict

Two Types of Conflict

What is cognitive conflict?

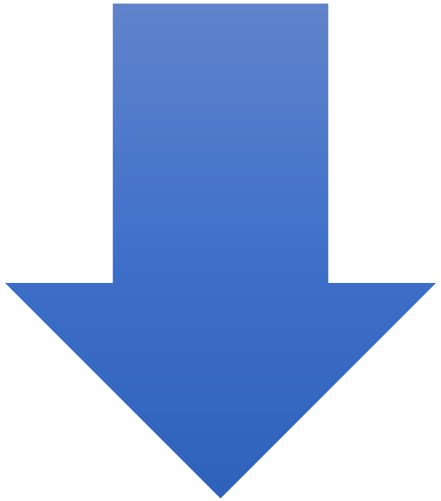
- Disagreement about ideas and approaches
- Issue-focused, not personal
- Characteristic of high performing groups

What is affective conflict?

- Personal antagonism fueled by differences of opinion
- Shifts ideas from the focus to the person
- Fosters defensiveness
- Destructive to group performance and cohesion

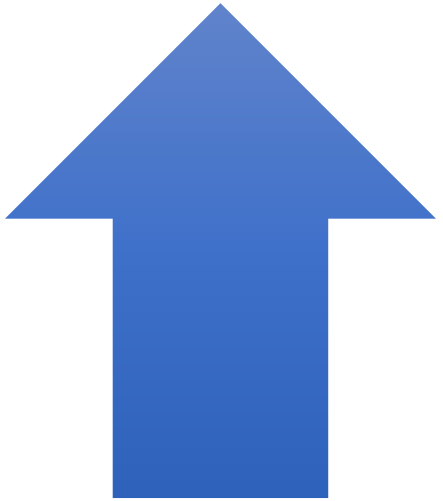
Amason, A.C., Thompson, K.R., Hochwarter, W.A., & Harrison, A.W. (1995, Autumn). "Conflict: An Important Dimension in Successful Management Teams." Organizational Dynamics, 24(2), 22-23.

Productive Collision

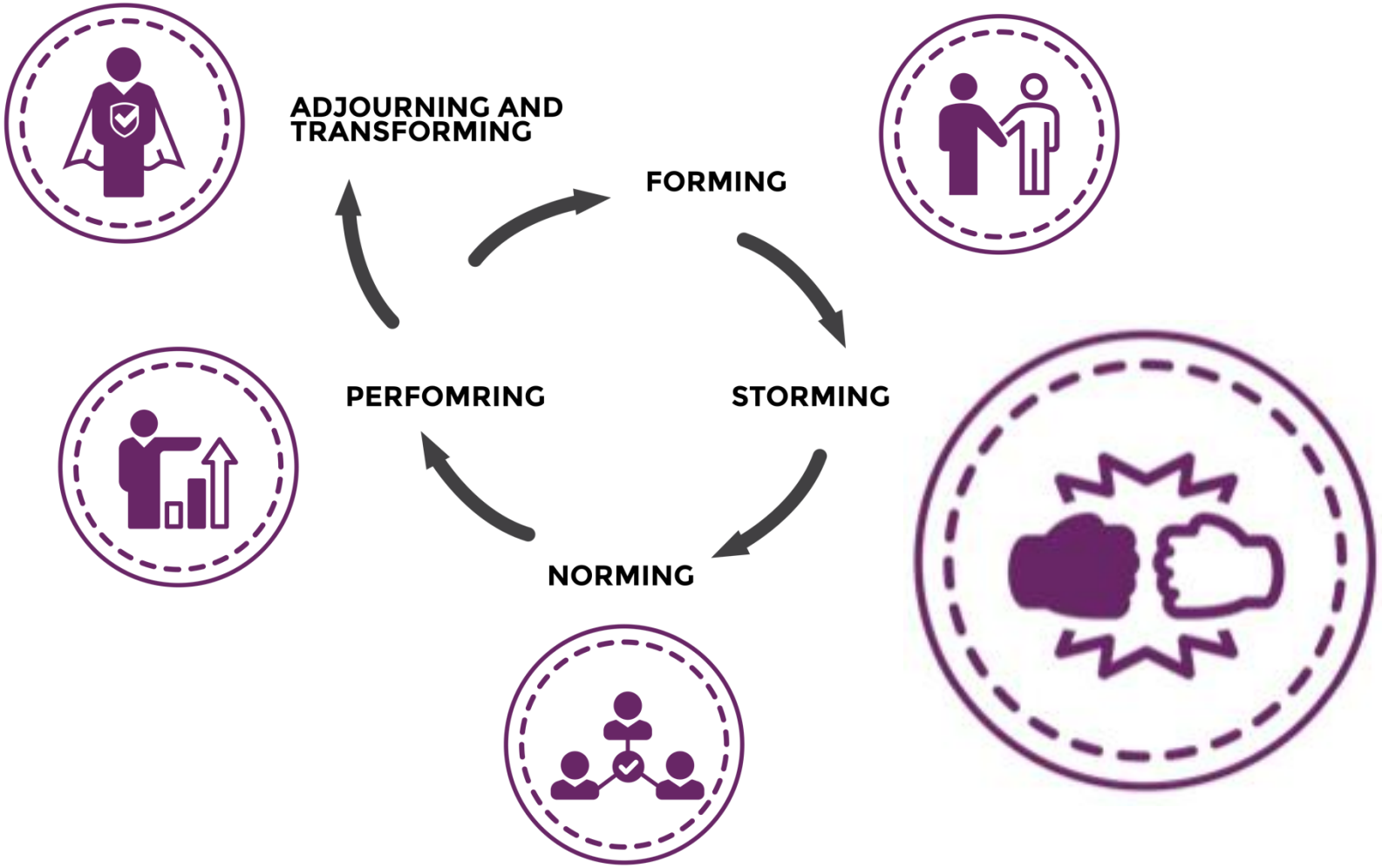


Share Perspectives/ Invite Disagreement

Contain Affective/ Personal Conflict



Threats and Challenges in Team Develop-ment

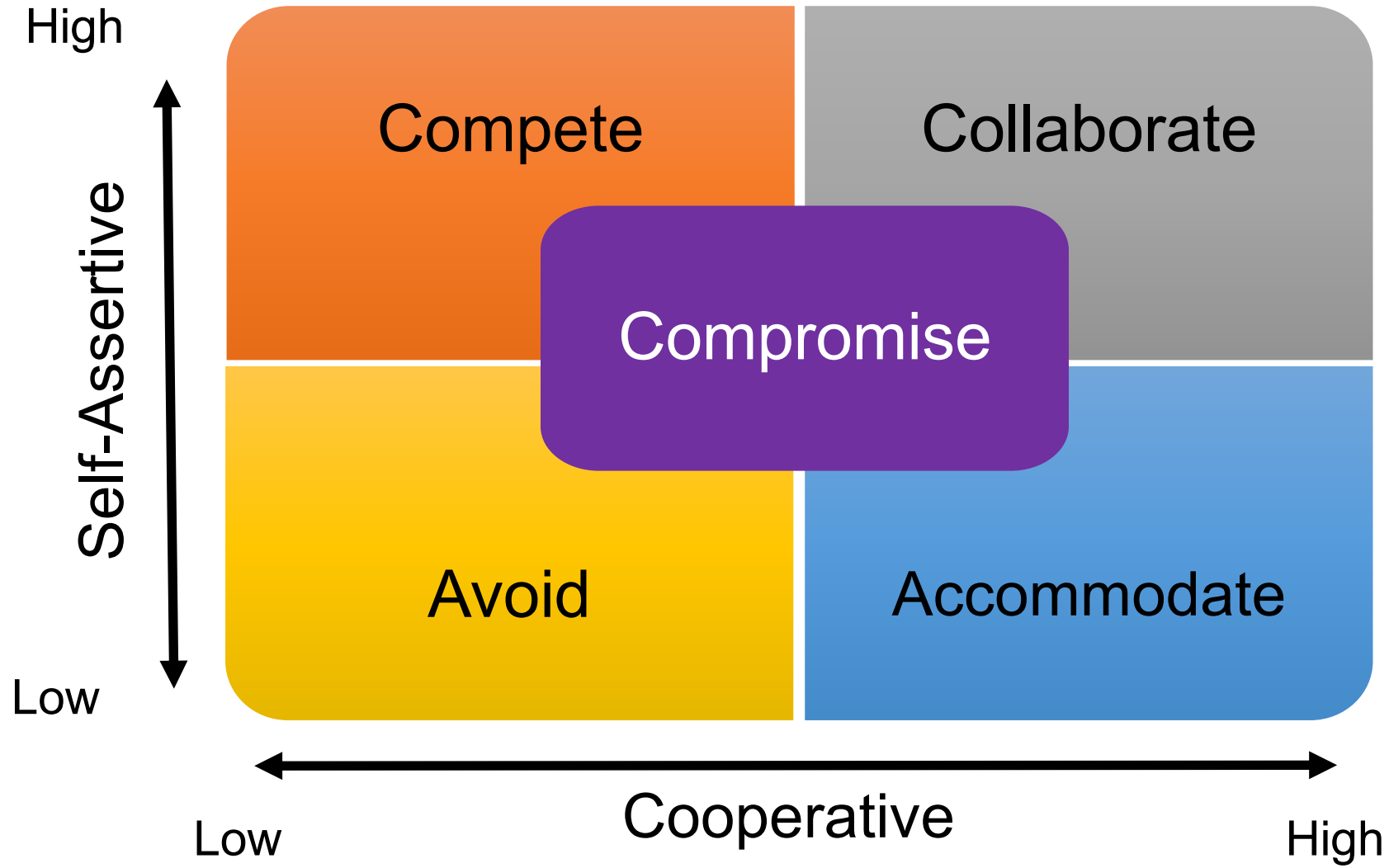


Storming

"We felt we had built up a better understanding by clarifying, justifying and arguing."

Braken and Oughton, Trans Inst Br Geogr, 2006

Conflict Styles



Thomas-Kilmann
Conflict Model

Conflict Styles

- *Competing*: pursues individual concerns at the other person's expense. This is power-oriented mode, in which ones uses whatever power seems appropriate to win one's own position
- *Accommodating*: neglects Individual concerns to satisfy the concerns of the other person
- *Avoiding*: does not immediately pursue individual concerns or those of the other person - does not address the conflict.
- *Collaborating*: an attempt to work with the other person to find some solution which fully satisfies the concerns of both persons.
- *Compromising*: objective is to find some expedient, mutually acceptable solution which partially satisfies both parties. It falls on a middle ground between competing and accommodating.

Plan	Plan the conversation – be clear as to why you are having the discussion
Let	Let the other person know your goal in having the conversation – start with the “third” story
Try	Try to understand how the difference developed
Decide	Decide together how to move forward

Having A Difficult Conversation

Difficult Conversations

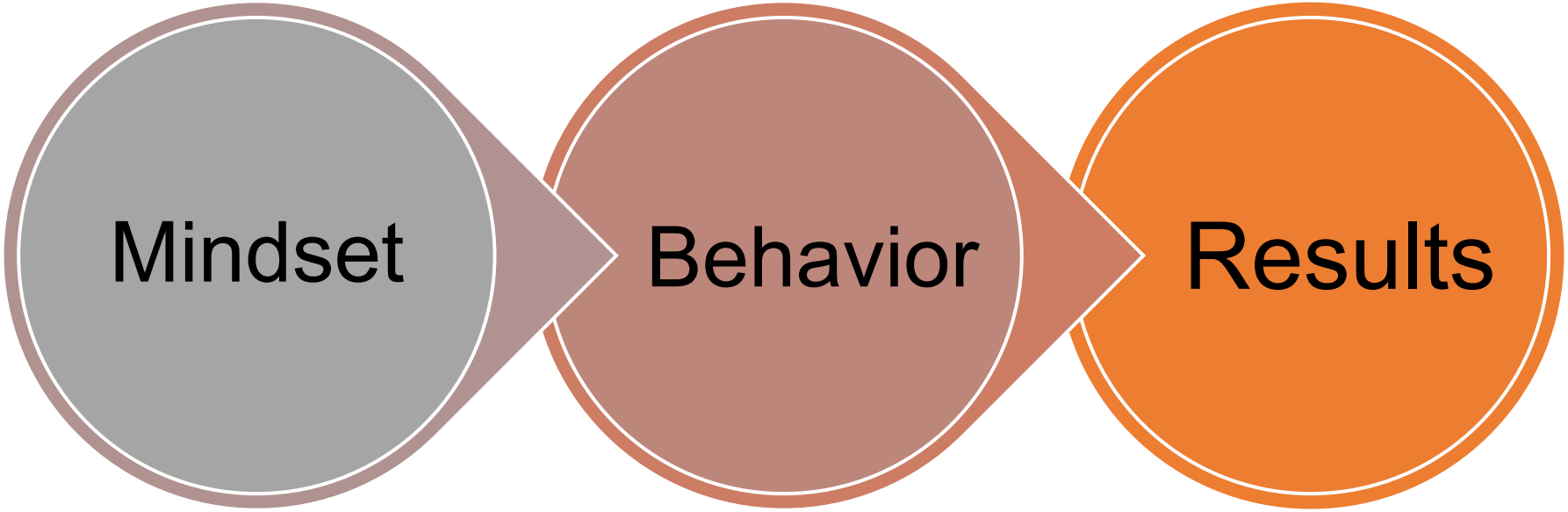
- Will get easier with practice
- Start small … little “wins”
- Develop your personal approach/style and master it
- Start tackling the bigger stuff …

- Practice, practice, practice….

"Unfortunately, many people overestimate the risk of raising an undiscussable issue and underestimate the risk of not raising it. Specifically, they overlook the negative systemic—and often cruel— consequences they create by not raising undiscussable issues in the team."

Eight Behaviors for Smarter Teams
http://www.schwarzassociates.com/resources/articles/

The Mutual Learning Approach



Roger Schwarz and Associates
http://www.schwarzassociates.com/

Unilateral Control Approach

Values

- Win, don’t lose
- Be right
- Minimize expressions of negative feelings
- Act rational

Assumptions

- I understand, those who disagree, don't
- I am right, those who disagree are wrong
- I have pure motives, those who disagree don’t
- My feelings and behavior are justified
- I am not contributing to the problem

Based on the work of Roger Schwarz and Associates

Mutual Learning Approach

Values

- Transparency
- Curiosity
- Informed Choice
- Accountability
- Compassion

Assumptions

- I have information, so do other people
- Each of us sees things others don't
- People may disagree with me & have pure motives
- Differences are opportunities for learning
- I may be contributing to the problem

Based on work by Roger Schwarz and Associates

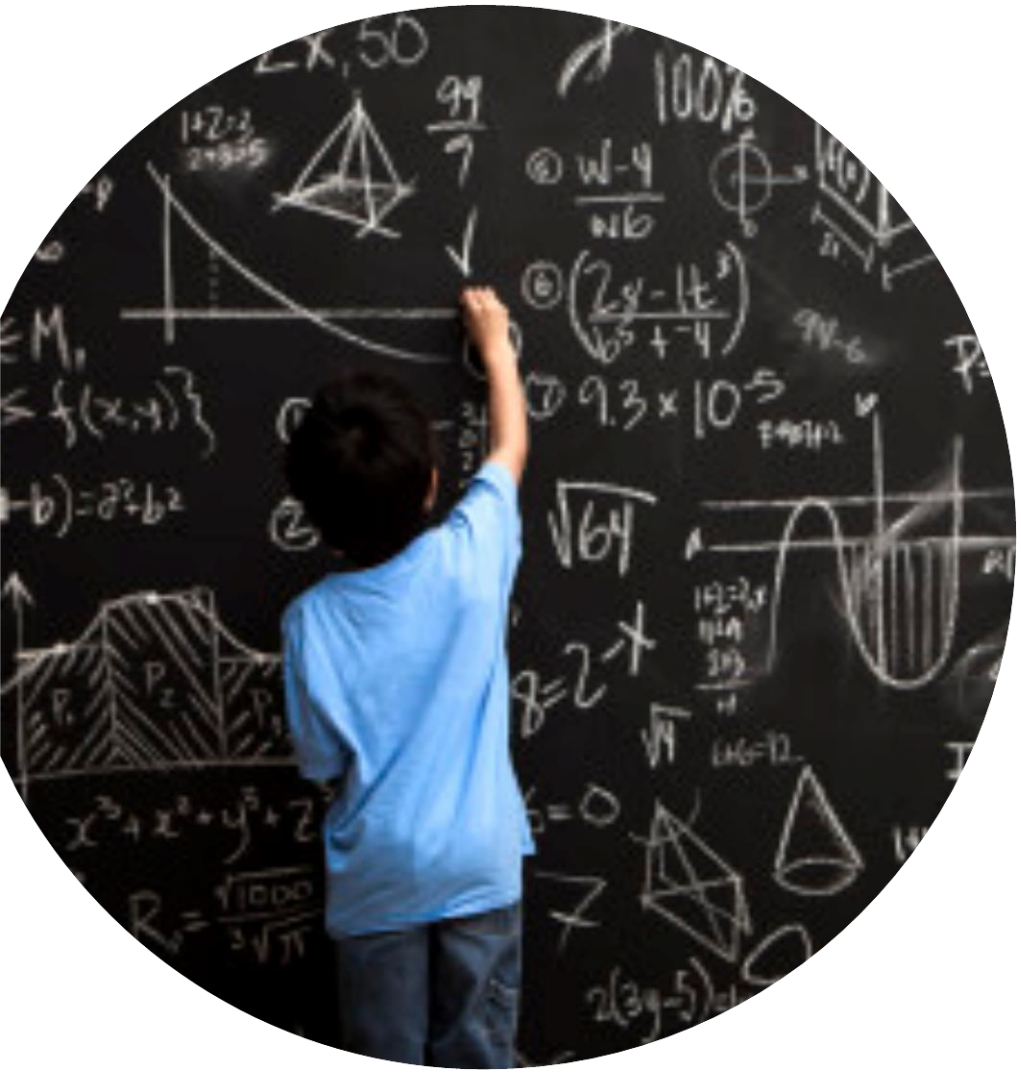
“The most productive, innovative teams were led by people who were both task- and relationship-oriented. What’s more, these leaders changed their style during the project.”

Gratton and Erickson, HBR, November 2007
https://hbr.org/2007/11/eight-ways-to-build-collaborative-teams

Invitation: Over the next couple of weeks….

Notice what works communication, conflict styles you are using

Begin noticing those of others as well



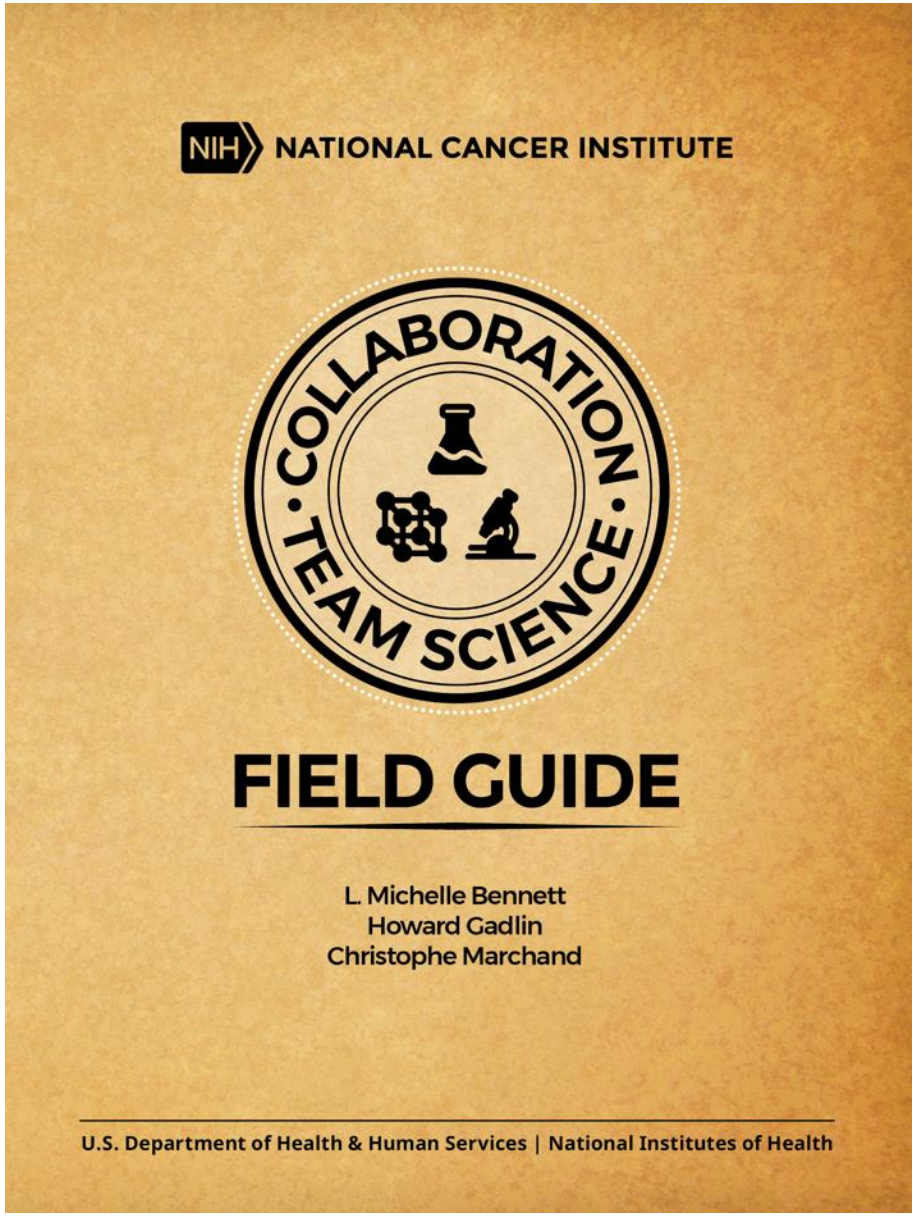
Effective Leadership: There is No Formula

- Awareness and Emotional Intelligence
  - Self-awareness
  - Awareness around you
- Responsibility and Accountability
  - Sharing success
  - Discussing issues and problems
- Creating a safe environment
  - Difficult conversations
  - Speaking up, challenging ideas
- Managing up and across
- Mentoring others
- Giving your best everyday
- Serving as a role model
- Practice, Practice, Practice!

Sharing Credit

- Howard Gadlin
- Samantha Levine-Finley

- Feedback:
- LMBennett@nih.gov
- Marchand@nih.gov



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