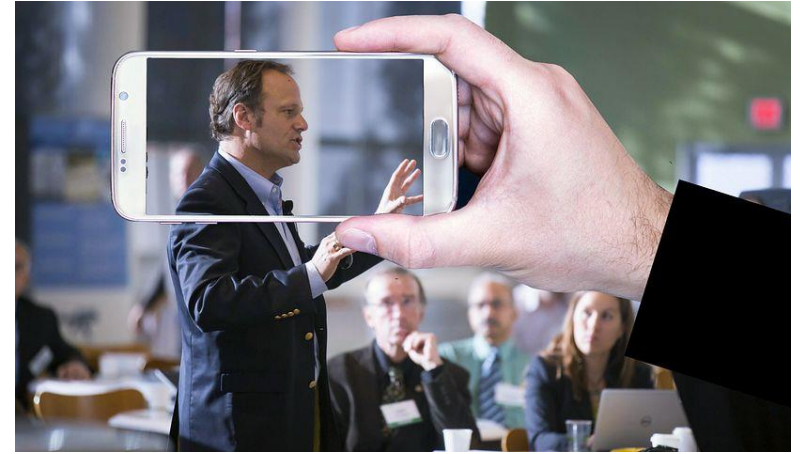




The Leadership Laboratory: Using Observational Study to Develop Leadership Skills for Statisticians

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Vulnerability and Trust A Simple Observation

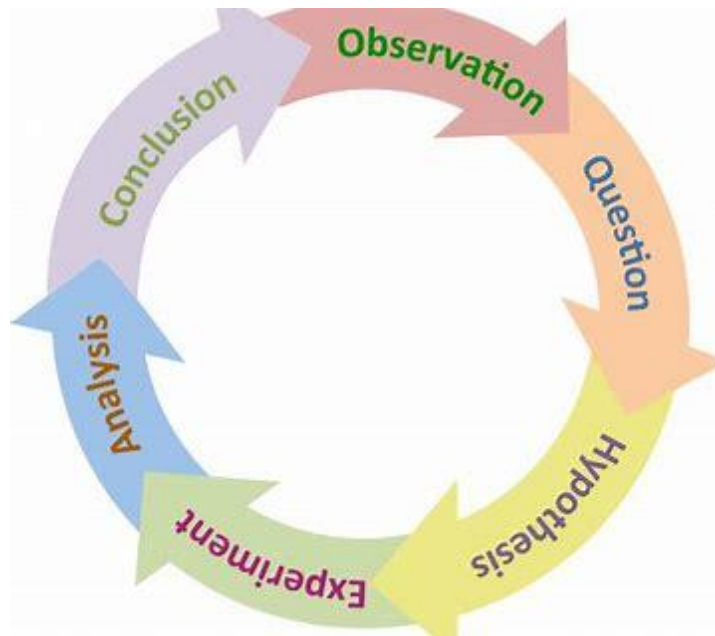
Today's Topics

- The Leadership Laboratory
- Lessons in trust and teamwork
- What is skillful communication?
- Influencing and creating change
- Observations of statistical leaders
- Call-to-action



What is a Laboratory?

A place providing opportunity for experimentation, observation, or practice in a field of study



What is Leadership?

- The ability to consistently deliver value by persuading others to act on your ideas.
- The ability to consistently deliver value by inspiring others to take a specific direction when they truly have the freedom or choice to do otherwise.



You are sitting in a leadership laboratory

- Leaders – both good and bad – are all around you!
- Observe, reflect, and experiment as appropriate
- Leadership development takes time ... start now!
- Many of the reflections that follow were well after the fact

“I wish that I knew what I know now, when I was younger ...”

- Rod Stewart (*Ooh La La*)

A Common Experience for Pharmaceutical Statisticians

- Crisis with marketed product
- Large cross-functional team formed
- Many priority discussions, meetings and studies
- Several subgroups and problem-solving initiatives



My observations at the time

- Capsule-Crosslinking: Perplexing scientific problem
- Lots of applications for statistics
- Good collaborators and teamwork
- More exciting & interesting than stressful



What was right about the Crosslinking Team?

- Environment was safe and productive
- Very few egos and little grandstanding
- The team delivered
- Mistakes were part of the process
- Many experienced personal growth



We had great leadership!

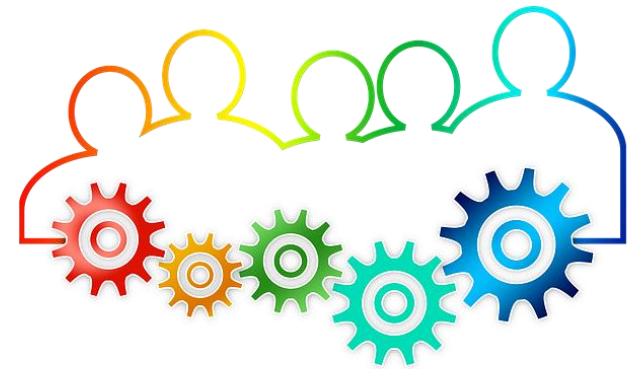
How to create a productive team environment?

- Build trust
 - The 3 C's: Competence, Care, Character
- Encourage and foster relationships
- Create a sense of urgency in a state of calm

References:

The Five Dysfunctions of a Team – Patrick Lencioni

The Speed of Trust – Steven M. R. Covey



What makes a skillful communicator?

- Engaging
- Intelligent
- Confident
- Inspiring



Richard DiMarchi

Great Speaker = Great Communicator?



The Gift of Listening At a Crossroad

We need to re-think communication

- Speaking is important ... Listening is extremely underrated!
- “Effective communication provokes the desired reaction.”
– *H. Fred Garcia*
- Every communication is an opportunity to advance an idea.

If you can't communicate skillfully, you can't lead!

What can you do?

- “Listen for facts, feeling and commitment.” – *Perch Ducote*
- For any communication: Who’s your audience and how will you move them?
- Get comfortable speaking up

References:

The Power of Communication – H. Fred Garcia

The Soul of Communication – Perch Ducote

Resonate – Nancy Duarte

WSJ

Eli Lilly Loses Years of Patent Protection In Battle Over Its Prozac Antidepressant



Influential Communication Life after Prozac

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News Opinion

Business

Prozac p
shares d

Bloomberg Businessweek

July 22, 2001, 11:00 PM EST

Eli Lilly: Life after Prozac

- As the drug goes off-patent, all-out R&D is paying off

Thanks to Prozac, Sidney Taurel has had it pretty easy. No, he doesn't take it himself. But until recently, the chief executive of Eli Lilly & Co. (LLY) could depend on the antidepressant to give a steady lift to his

Eli Lilly's CEO Taurel cuts '02 salary to \$1 for 'Prozac' recovery

 **WSJ** 

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Eli Lilly's Chairman Took A Salary of Just \$1 in 2002



Sidney Taurel

How did Sidney Taurel convince a nervous workforce to re-invest in their company?

- He was trusted
- He was prepared
- He communicated quickly
- He won the hearts of the employees
- He set expectations and met them



What lessons are there for statisticians and influence?

- Trust is business currency
- The first-mover advantage is real
- There are 3 modes of persuasion ... use them all!
- Reinforce communication with action

Reference:

Metamorphosis – John McConnell



Creating change is not easy

- Leadership ... “persuading others to act on your ideas”
- Altering behavior of others
- Examples of creating change with statistics in Pharma
 - Statistical experimental design
 - Bayesian approaches
 - Adaptive designs



Changing the mindset of Medicinal Chemists

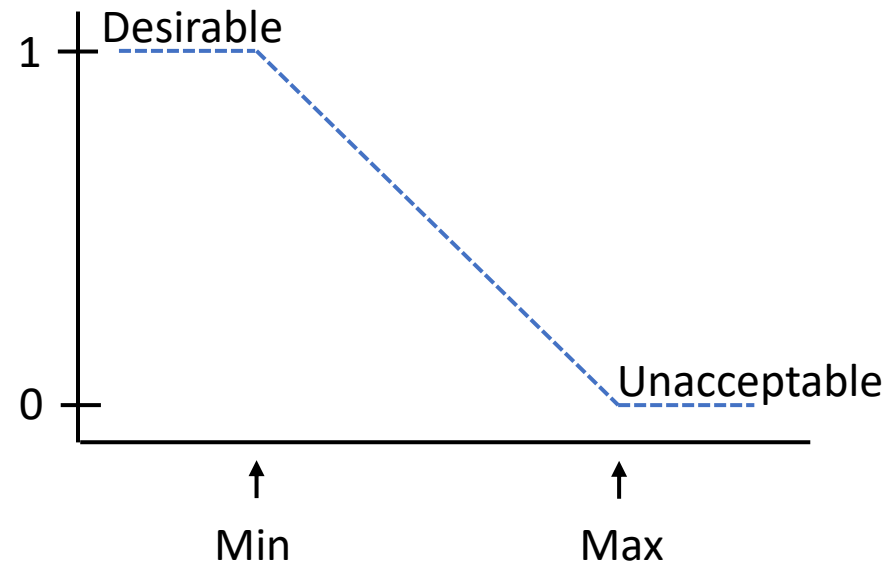
Identifying the best molecule

- Create and evaluate molecules against disease targets
- Measure multiple physical and biochemical properties
- Use ad hoc methods to pick the “best” molecule ... for example:
 - Binary criteria for each measure based on a cutoff
 - For each measure of each molecule: 1 if yes, 0 if no
 - Sum for each molecule ... higher the better
- Problem: Most of the criteria are not absolute

Desirability Analysis is a better approach

- Example: Physical Properties
- Define Utility Functions
- For each measure ...
 - What is desirable (1)
 - What is unacceptable (0)
 - Define the function
- Calculate ...
 - Individual mappings
 - Geometric mean

	Min	Max	Preferred
cLogP	-0.4	6.4	<0.5
PSA	50	150	<90
MW	300	700	<500



Medicinal Chemists were not persuaded

Why? What were they missing?

Better question: What were we missing?

- Culture:
 - Chemistry disciplines differ
- Focus on Logos
 - “It is not enough to be right.”
 - Consider emotions (Pathos) and credibility (Ethos)
- Operations/Processes:
 - Other stakeholders ... and some controlled software

What are the lessons for statisticians trying to influence and create change?

- Understand the culture
- Identify influencers and other stakeholders
- What's in it for them ... risk and reward?
- How will it happen operationally?



Observations of statisticians as leaders

What do the best do well?

- Technically strong
- Know what they don't know
- Meet collaborators where they are
- Communicate skillfully and present well
- Curiosity about the science and the business
- Look for opportunities and capitalize on them



Invest in your leadership – now!



Danny Meyer

- Leaders are all around you – study them!
- Leadership is a journey ... never too early or too late
- Don't know where to start?
Try communication

Interested in leadership training?

- *Preparing Statisticians for Leadership: Influencing Projects and People*
JSM Virtual Training – August 15, 18, 22, 25 (Tentative)
- *Leadership for Statisticians: The Bridge from Innovation to Practice*
Regulatory Industry Statistics Workshop – September 22 or 23
- *The Effective Statistician Leadership Program*
On-line leadership course: Re-launch in September/October
www.TheEffectiveStatistician.com
- Training/coaching available upon request:
 - Gary.R.Sullivan55@gmail.com

Backup/Extras

Desirability analysis is a better alternative

- A tool for multi-response optimization
- Each response is mapped to a $[0,1]$ interval based on a utility function
- Utility functions are determined by the expert
- Functions reflect responses that need to be maximized, minimized, or targets
- Responses for a single experiment are combined via a geometric mean
- The MR problem is reduced to a single response maximization question