Made to Stick

Delivering scientific presentations and posters for impact

Steve Lee, PhD
Assistant Director
Northwestern University
Fall 2012
Deliver your presentations for **impact**

**But why?**

Because reviewers are considering impact

**NIH criteria**

**Overall Impact:** Reviewers will provide an overall impact/priority score to reflect their assessment of the likelihood for the project *to exert a sustained, powerful influence* on the research fields involved

**NSF criteria**

- Intellectual Merit
- Broader Impact
Let’s start with 2 activities

In these activities, what helps and what makes it difficult to remember?

1. Memorize as many letters as possible

2. Remember as much of the text as possible
What are some **challenges** in scientific presentations and posters?
What are some strategic advantages in scientific presentations?
We will address:

1. Principles of Effective Communication
   - challenges in communication
   - ideas that “stick”
   - speaking in different communication styles

2. Some Practical Suggestions
   - tips for creating slides
   - good and poor examples
   - sample video
What’s a “sticky” idea?

A sticky idea is understood and remembered, and has lasting impact to change people’s opinions or behavior.

Similar to the NIH definition for impact

The project must exert a sustained, powerful influence.
Why is it so hard to communicate effectively? Because of The Curse of Knowledge

● Research at Stanford with tappers and listeners
  ○ tapper was given a popular song
  ○ listener had to guess the song
  ○ beforehand, tapper was asked to predict the % of songs that would be guessed correctly
  ○ tappers predicted: ~50%
  ○ actual: 3% (!)

● The Curse: those with knowledge (tappers) are cursed with not understanding the audience’s (listeners) perspective
telling ≠ effective communication

Instead, transform your ideas to **stick**
Transform your ideas to **stick**

Use as many of these 6 key principles as possible:

- **S**imple: find and share the core message
- **U**nexpected: get their attention – surprise or twist
- **C**oncrete: help people understand – be specific
- **C**redible: help people believe – give evidence
- **E**motional: help people to care – inspire
- **S**tories: share ideas to simulate and inspire
Speak to a broad audience using the Myers-Briggs types

How do you prefer:

● to relate to people?  ○ Extroverts  ○ Introverts

● to gather information?  ○ Sensors  ○ INtuitors

● to make decisions?  ○ Thinkers  ○ Feelers

● to relate to the outside world?  ○ Judgers  ○ Perceivers
Apply a mix of communication styles

**S-types**

**Communication strengths**
- visual and audio info
- concrete information
- details; real experiences
- realistic; grounded
- inspirational
- stories; visionaries
- big picture & patterns
- significance; analogies

**N-types**

**Potential problems**
- dry or flat
- random details
- lack meaning
- vague
- ambiguous
- not concrete

Communicate to **inform** and **inspire** your audience!
Part 2: Some Practical Suggestions

How do you start?

- What core messages need to “stick”?
  - prioritize your messages

- Don’t just try to compress a longer talk
- Don’t just “get through the material”
Craft a scientific story

• the classic elements of a story are:
  ○ thesis – intro characters, context, significance
  ○ antithesis – problem or question
  ○ synthesis – wrap up and conclusions

• set your story with clear rhetorical markers
  ○ context and significance
  ○ complication
  ○ question or problem
  ○ hypothesis or proposal
One challenge is to go broad and deep

**speak to broad audiences:** use analogies and illustrations

**speak to experts:** use 1 or 2 examples in depth
Creating Slides

• Plan to spend 1-2 minutes per slide
  ○ 10 min talk: 6-9 slides
  ○ 30 min talk: 15-20 slides
  ○ etc

• Maximize the “info to ink ratio”

  info
  ———
  ink
Use “message” titles

“Topic” titles only give the topic of the slide.

“Message” titles deliver your whole message.
Studies show more people remember content in message titles.
Or use “question” titles

What about sensation?

- We can output movements from brain activity, but what about inputting information, like about sensation?

- Without sensory capabilities, even the most sophisticated motor control system cannot reach its full potential.

  How do you shake a friend’s hand without feedback about pressure exertion?

  How do you lift a glass if you don’t know how tight your grip on it is?

  A prosthetic hand that can move but cannot feel may easily bring harm to 1) objects, 2) the user, 3) others, 4) itself

Also, good use of outline
Convert bullet lists into word tables (if possible)

**bullet lists**

**word tables**

---

**#1: How do you prefer to relate to people?**

- **Extroverts:**
  - gain energy by interacting with many other people
  - are sociable and outgoing
  - generally have multiple friendships
  - talk easily about themselves; are expressive
  - think out loud
  - generally prefer to initiate

- **When working with an extrovert:**
  - be social and respond to their expressiveness
  - give them feedback – verbal and nonverbal
  - allow them to think out loud; be a sounding board
  - talk with them in person

- **Under stress, extroverts:**
  - react with increased activity
  - can be impatient during lengthy, solitary activities

---

**#1: How do you prefer to relate to people?**

- **Extroverts:**
  - gain energy by interacting with many other people
  - are sociable and outgoing
  - generally have multiple friendships
  - talk easily about themselves; are expressive
  - think out loud
  - generally prefer to initiate

- **When working with an extrovert:**
  - be social and respond to their expressiveness
  - give them feedback – verbal and nonverbal
  - allow them to think out loud; be a sounding board
  - talk with them in person

- **Under stress, extroverts:**
  - react with increased activity
  - can be impatient during lengthy, solitary activities

---

better use of space
with larger fonts
Here's a good example of word tables

main intro slide

subsequent slides
Only use sans serif fonts

**Serif Font**
- Serifs
- Thick and thin strokes

**Sans Serif Font**
- Plain
- Strokes have even width

Times New Roman

Arial

easier to read
Avoid using color gradients

What you see on your monitor is not what the audience sees on the screen.
Additional tips for creating slides

● Organize experiments for clear communication
  ○ trials done in lab
    – trial A; trial B; trial C; trial D – last trial works
  ○ during a presentation
    – chronological order: A, B, C, D
    – better order: D and then A, B, C (briefly)
  ○ don’t drag the audience through useless information

● To minimize slides, place extra content on slides or handouts for afterwards.
Suggestions for delivering your talk

• If you get nervous, try memorizing your introduction. (more tips on handout)

• Eye contact helps to relate with your audience.

• Connect your spoken words with the slides.

• Your physical posture …
  ○ affects the audience's perception of you
  ○ and your performance as well

• Practice and get feedback – early and often
Make your poster “skimmable”

Analysis of Parenchymal Texture Properties in Breast Tomosynthesis Images
Despina Kontos, Predrag R. Bakic and Andrew D.A. Maidment
Department of Radiology, University of Pennsylvania, 3400 Spruce St., Philadelphia, PA 19104

Purpose
We are studying parenchymal texture in Digital Breast Tomosynthesis (DBT) as a measure of Cancer Risk. We compare to standard Mammography.

Long-term goal: Test the hypothesis that DBT can provide more accurate measures of Cancer Risk.

Digital Breast Tomosynthesis (DBT)
A novel 3D x-ray imaging technique in which 3D tomographic images of the breast are reconstructed from multiple 2D x-ray source projection images.

DBT advantage over projection Mammography:
- Superior normal tissue and lesion visualization
- Superimposition of non-adjacent tissue is avoided

Methods: Texture Analysis
We computed the skewness $S$ of the gray-level histogram for 256x256 retrolucent ROIs in the Source Projection images acquired from 9 women.

Results: DBT comparison to Mammograms
We compared skewness from DBT Central Source Projections (CSP) and corresponding Mammograms.

DBT ROI
Mammogram ROI

Skewness values from DBT and Mammograms are correlated ($p=0.74$).

DBT ROIs appear to be less skewed ($p=0.09$).

DBT skewness follows similar trends as in Mammograms when plotted versus the Gail breast cancer risk values for the contralateral breasts.

Results: Effect of Scatter in DBT
At acute angles, our DBT geometry is such that the x-ray collimator is visualized. We selected an ROI near the collimator and translated its position over 512 pixels.

The skewness is greater for DBT images near the collimated region due to the spatial dependence of the scatter near the boundary of the x-ray field.

Conclusions
Texture in DBT differs from Mammograms. This can be attributed to differences in image acquisition:
- Scatter effect
- Less compression force
- Lower radiation dose

We are investigating the potential of DBT to provide Cancer Risk biomarkers for tailoring individual treatment and forming preventive strategies.

Acknowledgement
This work was funded by the Agfa/RISNA Research Fellowship in Basic Radiologic Sciences FBR80961.

References

Contact Info: Despina.Kontos@uphs.upenn.edu
Avoid lazy conversions of papers or slides into a poster, or a “data dump”
More tips for posters

● Engage your listener
  ○ Ask about their research and interests

● Viewers won’t read paragraphs of text
  ○ Summarize in word tables or bullet lists

● Annotate data with your main message
  ○ Explain the significance of the data

● Take advantage of your medium
  ● Give the big, “skimmable” picture
Resources

- Chip and Dan Heath’s *Made to Stick*

- *Making Oral Presentations: Dealing with Nervousness* (handout)

- Amy Cuddy’s Poptech talk
  - Power Poses
Transform your ideas to stick