Making visually-appealing presentations

Laura DeNardo
June 22, 2022
Outline

1. Designing your slides
   - Creating a visual theme with fonts and colors
   - Titles and Outlines
   - Visual framing and sizing
   - Simplify Your Slides
   - Beautify your figures

2. What to say when

3. Real-life examples
# Create a visual theme: Choosing Fonts

<table>
<thead>
<tr>
<th>Good</th>
<th>Meh</th>
<th>Forbidden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helvetica Neue</td>
<td>Calibri</td>
<td>Comic Sans</td>
</tr>
<tr>
<td>Helvetica</td>
<td>Times</td>
<td>Brush Script</td>
</tr>
<tr>
<td>Arial</td>
<td>Times new roman</td>
<td>Noteworthy</td>
</tr>
</tbody>
</table>
Create a visual theme: Choosing Fonts

Basic Font

**Emphasis**

*Emphasis*

Emphasis

HARDER TO READ ON A SLIDE

Harder to read on a slide
Create a visual theme: Color Theory
Create a visual theme: Color Theory

Hues
- Pure colors

Tints
- Hue + White

Tones
- Hue + Grey

Shades
- Hue + Black
Create a visual theme: Choosing Your Palette

https://color.adobe.com/create/color-wheel
Create a visual theme: Visual Accessibility

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Create a visual theme: Visual Accessibility

https://color.adobe.com/create/color-wheel
Create a visual theme: Choosing Your Palette

https://colorbrewer2.org
Create a visual theme: Using Color for Emphasis

Before

After

Before

After

We hypothesized that exposure to ethylene would increase the total number of fruit per tree.

We hypothesized that exposure to ethylene would *increase* the total number of fruit per tree.

https://threadreaderapp.com/thread/1532531980398641164.html
Create a visual theme: Using Color to Define Groups
Create a visual theme: Standard Slide Format (82pt)

Subtitle (60pt)

Subtitle (60pt)
Every Slide Needs a Title

Background
Infants with more experiences of stroking or cuddling:
- Cry less often
- Vocalize more
- Smile more

Infants benefit from positive touch
Infants with more experiences of stroking or cuddling:
- Cry less often
- Vocalize more
- Smile more

https://threadreaderapp.com/thread/1532531980398641164.html
Background: Avoid pre-made themes

DO NOT USE ME EVER
Background: White is generally a good idea
Background: Use black for immunofluorescence

WT

KO
Balance: Channel Renaissance not Baroque
Balance: Channel Renaissance not Baroque

stability + symmetry  

upward diagonals + chaos
Framing: Think about the negative space

https://threadreaderapp.com/thread/1532531980398641164.html
Framing: Imagine Grids

Transducing cells with electroporation

- Cells and DNA placed in chamber
- Brief electric pulse opens pores in cell
- DNA remains in cell

In utero electroporation

https://threadreaderapp.com/thread/1532531980398641164.html
Sizing: Bigger is Better

Before

Beach Cleanup Status

Since 2008, our volunteer program has maintained a clean beach with two site visits per week. Visitors report much less litter and debris.

After

A Cleaner Beach

https://threadreaderapp.com/thread/1532531980398641164.html
Simplify: Reduce the amount of info per slide

Before

After

https://threadreaderapp.com/thread/1532531980398641164.html
Simplify: Pictures speak louder than words

Before

Hunting and Eating

• Lions prey on large mammals
• Lions hunt in coordinated groups
• Cooperative hunting increases the likelihood of a successful hunt
• Teamwork also enables lions to defend their kills more easily against other predators

After

Lions hunt and eat in groups

https://threadreaderapp.com/thread/1532531980398641164.html
DSGC trans-synaptically labelled from superficial V1. double-infected dLGN cells DSGCs to L4.

Experimental Design

Graphical abstract/model/summary

Cruz-Martin A Nature 2014

Cheadle L Neuron 2020
Beautify: Take advantage of existing resources

https://scidraw.io
Relationships between DLC tracking errors and freezing classifier performance

<table>
<thead>
<tr>
<th>Model</th>
<th>RMSE</th>
<th>Precision</th>
<th>( R^2 )</th>
<th>( P )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td></td>
<td></td>
<td>0.26</td>
<td>&lt;0.0001</td>
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<tr>
<td>Model 2</td>
<td></td>
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<td>0.94</td>
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<td>0.14</td>
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<td></td>
</tr>
<tr>
<td>Model 10</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Never use excel

Make fonts legible
Outline

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   • Simplify Your Slides
   • Beautify your figures

2. What to say when

3. Real-life examples
Teach your talk

“Assume your audience has zero knowledge but infinite intelligence.”

-Max Delbruck
State the significance and outstanding Qs

Why is your topic important?

- Is the phenomenon you study important for survival?
- Is it relevant to human health?

What are the major unanswered questions in the field?

What hurdles have impeded progress?

What approaches will you use to address major gaps in knowledge?
Background

1. Give your audience the tools they need to understand your work
   • What key pieces of information are necessary to understand what you will tell them?
   • What motivated your work?

2. Scholarship
   • Give credit where credit is due

3. Background may come at different points in the talk
Rules for Outlines and Summaries

<15 min
- no outline needed
- 1 summary slide at the end

20–30 min
- outline slide at the beginning of the talk
- summary slides mid-stream and at the end

>45 min
- outline slide at the beginning of the talk
- 2–3 summary slides, including 1 at the end
Explain each slide completely

1. “to determine how XYZ, we…”
2. “the green is X, the purple is X”

3. “here we plotted…”
4. “this showed that…” (state or write conclusion)
Wrapping up

1. Take home message: clearly and succinctly state the main findings

2. Future directions

3. Acknowledgements: people + funding sources

4. Final slide: graphical abstract that you leave up during questions

5. Hidden slides: have a list of slides that you can show in case questions come up (e.g. control experiments, tangentially related findings, etc)

6. Practice your talk! Practice at least 3x (once per day for preceding 3 days)
Circuit dynamics of the adolescent medial prefrontal cortex during avoidance behavior & impacts of early life adversity

DeNardo lab Meeting
5/19/22
Circuit dynamics of the adolescent medial prefrontal cortex during avoidance behavior & Impacts of early life adversity

Caitlin Goodpaster

DeNardo lab Meeting
5/19/22
Medial prefrontal cortex (mPFC)

Huang et al., 2020; Franklin et al., 2017; Eusten et al., 2012; Sule et al., 2012; Klune et al., 2021; Grunfield et al., 2018; Morriss et al., 2019
Medial prefrontal cortex (mPFC)

Huang et al., 2020; Franklin et al., 2017; Eusten et al., 2012; Sule et al., 2012; Klune et al., 2021; Grunfield et al., 2018; Morriss et al., 2019

https://www.noldus.com/
Evans et al., 2018; Vander Weele et al., 2019
mPFC is densely connected with distant brain regions
mPFC–Amygdala connection controls emotional learning and threat responding

Roszeske et al., 2015; Diehl et al., 2020
The mPFC undergoes prolonged maturation

Sensitive Period

Onset of major mental illness

Depression
Schizophrenia
Substance Abuse
Eating Disorders
Anxiety

Lockhart & Niwa, 2018
mPFC has a prolonged development

Sensitive period

Onset of major mental illness

Birth

Adolescence

Adulthood

Depression

Schizophrenia

Substance Abuse

Eating Disorders

Anxiety

Lockhart & Niwa, 2018
mPFC has a prolonged development

Sensitive period

Onset of major mental illness

Depression
Schizophrenia
Substance Abuse
Eating Disorders
Anxiety

Myelination
Mesocortical dopaminergic projection
Glutamergic synapse density
Interneuron maturation

Birth
Adolescence
Adulthood

Lockhart & Niwa, 2018
Early life adversity (ELA) associated with mental illness

Putman et al., 2015; Meyer & Lee, 2019
Early life adversity (ELA) associated with mental illness

**Median Age at Onset of Psychiatric Disorders Across Development**

- Anxiety Disorders
- ADHD/Conduct
- Schizophrenia
- Substance Abuse
- Mood Disorders

**Cumulative ACEs and Mental Health**

- Mood Disorders
- Anxiety Disorders
- Substance Abuse
- Impulse Control Disorders

Putman et al., 2015; Meyer & Lee, 2019
Aside: How to put high resolution images in your slides

Zoomed in as much as possible (fill your computer screen)
mPFC projections bidirectionally control avoidance behavior

Diehl et al., 2020, Bravo-Rivera et al., 2014; Bravo-Rivera et al., 2015; Martinez- Rivera et al., 2019
mPFC projections bidirectionally control avoidance behavior

Diehl et al., 2020, Bravo-Rivera et al., 2014; Bravo-Rivera et al., 2015; Martinez-Rivera et al., 2019

Avoidance

mPFC → NAc stimulation

Avoidance

Diehl et al., 2020, Bravo-Rivera et al., 2014; Bravo-Rivera et al., 2015; Martinez-Rivera et al., 2019
mPFC projections bidirectionally control avoidance behavior

Diehl et al., 2020, Bravo-Rivera et al., 2014; Bravo-Rivera et al., 2015; Martinez- Rivera et al., 2019
Adapted Platform Mediated Avoidance (PMA) task

- 30s Pure Tone
- Training: 3, 9, 24 Hr, 6
Platform Mediated Avoidance (PMA)

30s Pure Tone

Training
3
9
24 Hr

Retrieval
6
PMA behavior in adolescent and adult mice

Training

Retrieval

Avoidance?
Adolescent mice have low levels of threat avoidance

![Graphs showing training and retrieval data for P35 and P60+ groups.](Image)

Cassandra Klune
You can use the dropper tool to maintain color scheme consistency.
Optogenetic inhibition of mPFC → NAc projections in adolescents

Training

Retrieval

Fraction of Successful Avoids

Fraction of Time on Platform

Average Entries per Tone

Duration on Platform (s)
Optogenetic inhibition of mPFC–NAc projections in adolescent mice
Inhibiting mPFC–NAc projections increases avoidance in adolescents

**Training**

- Fraction of Successful Avoids
- Tone
- tdTom
- JAWS

**Retrieval**

- Fraction of Time on Platform
- Average Entries per Tone
- Duration on platform (s)
- tdTom
- JAWS
- 0.1058

* indicates statistical significance.
Summary

1. Develop a visual theme that includes color, font, and formatting

2. Simplify your slides: less is more, bigger is better, pictures>words

3. Beautify your slides: use resources like SciDraw, make axes legible

4. Teach your talk: make it as easy to understand as possible
Acknowledgements

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Nico Jones
Bryan Le
Lilit Ohanian
Jack Reilly
Patrick Seong
Questions?

Hunting and Eating

- Lions prey on large mammals
- Lions hunt in coordinated groups
- Cooperative hunting increases the likelihood of a successful hunt
- Teamwork also enables lions to defend their kills more easily against other predators

Lions hunt and eat in groups