CREATING YOUR RESEARCH POSTER

How to create a poster and write an abstract

Dr. Lauren Clark, Director of Undergraduate Research

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South Carolina

PRESENTATION OVERVIEW

- What is a poster session?
- Tips for developing your poster
- Presenting your poster
- Abstract writing
- Activity: abstract writing

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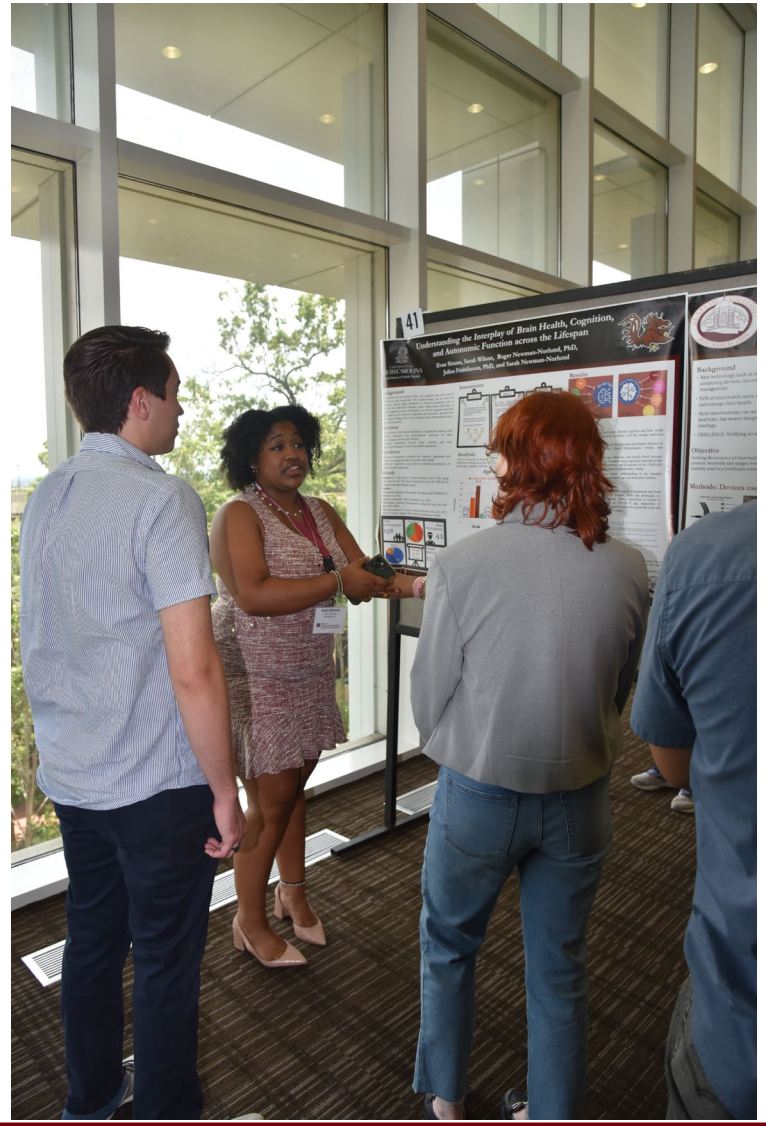
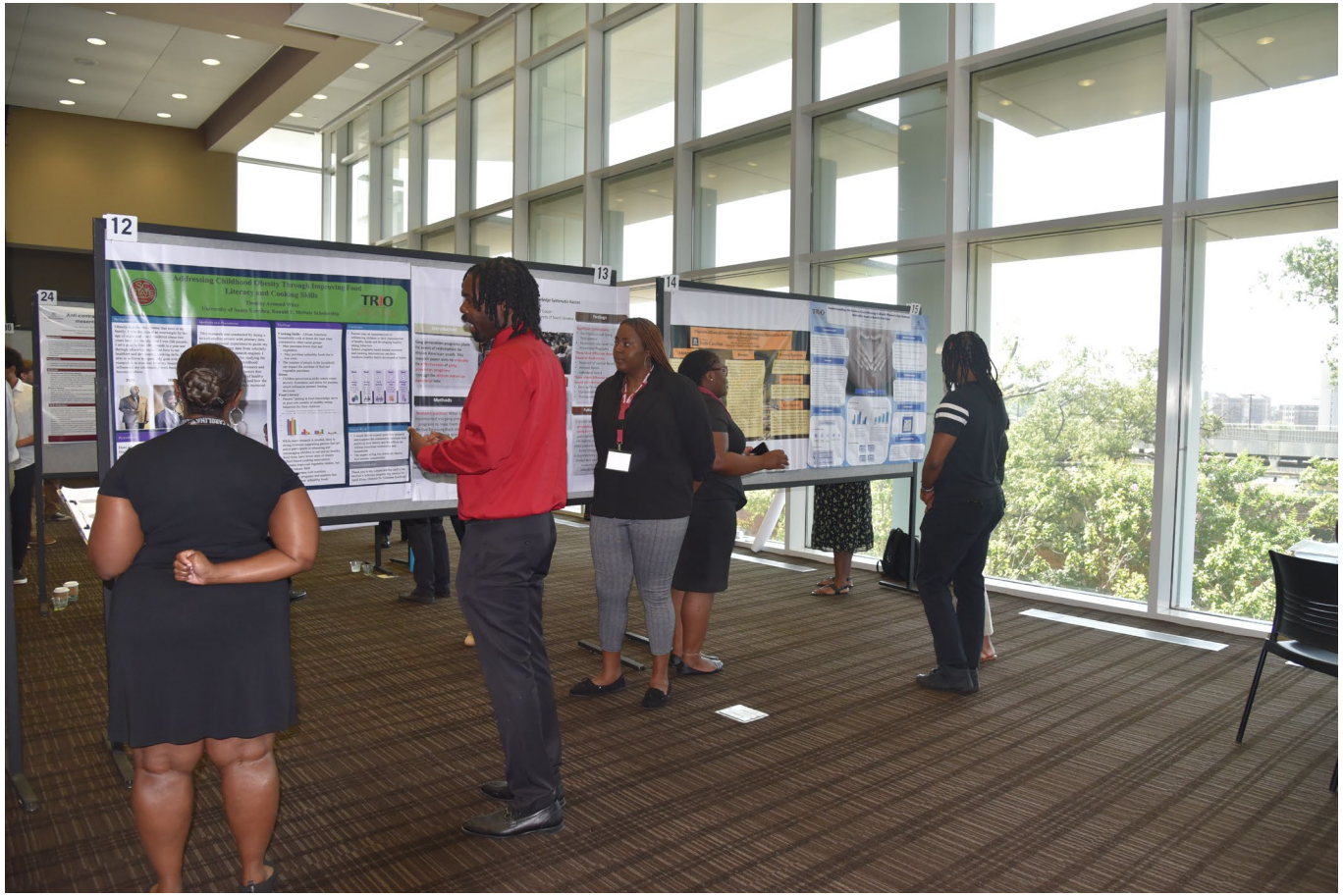
WHAT IS A POSTER SESSION?





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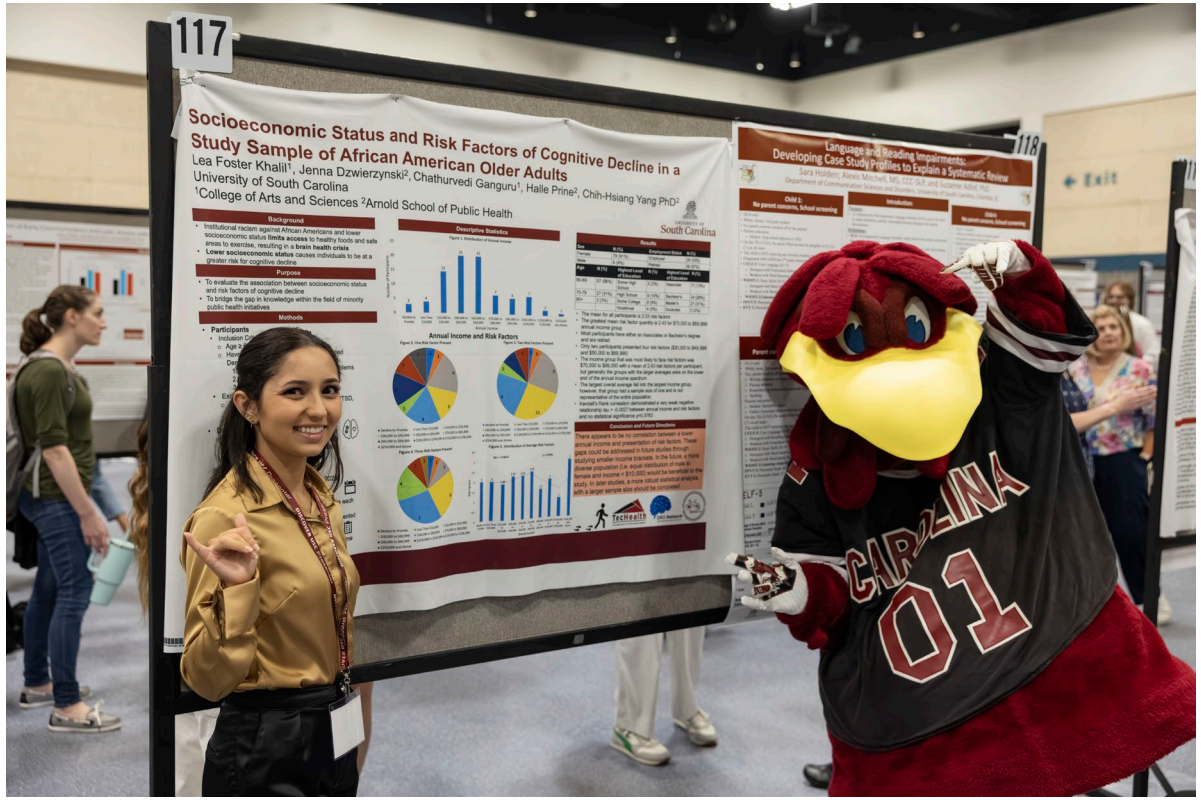

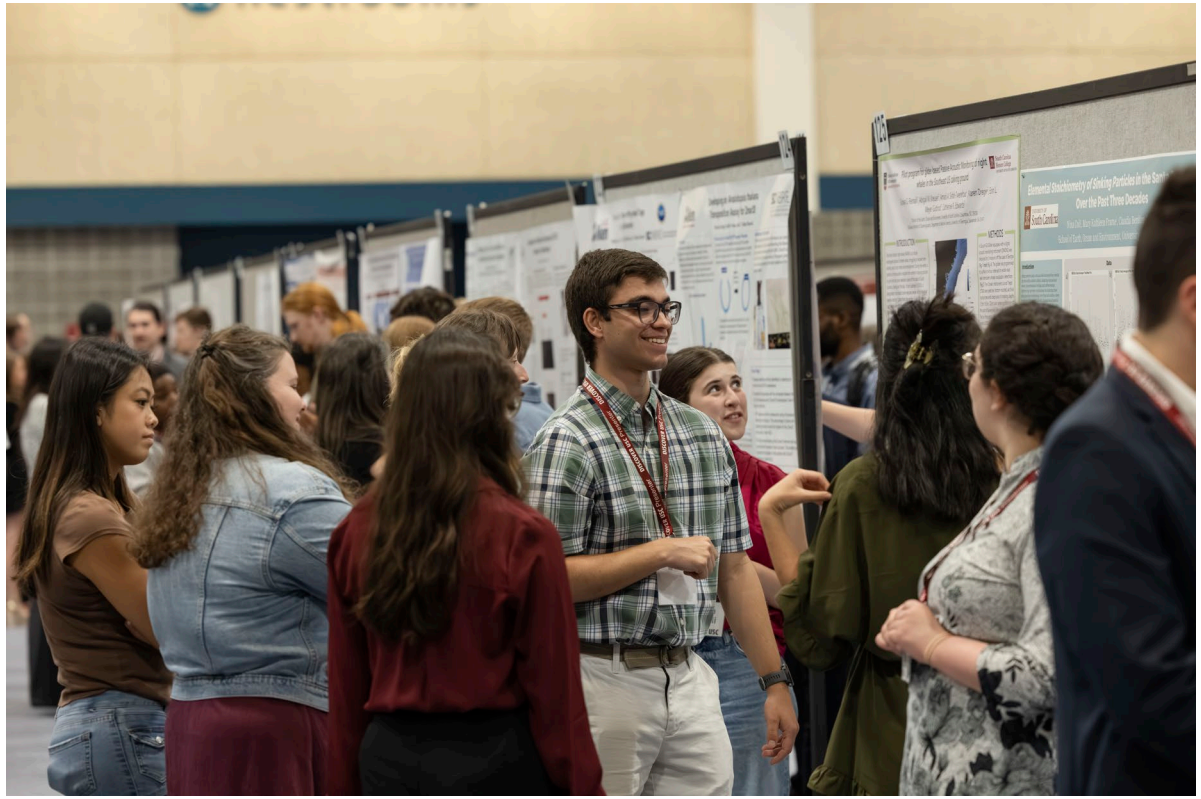

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GENERAL DETAILS

- Nametags at registration table
- 2 posters per side of the display board
- Poster dimensions – no larger than 48 in x 48 in
  - 36 in high by 48 in wide
  - 48 in high x 42 in wide
- 4 t-pins provided to hang poster
  - Angle t-pins down (not straight through)

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2 POSTERS PER SIDE OF DISPLAY BOARD

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SUCCESSFUL POSTERS

- Convey a clear message
- Include high-impact visual information
- Use minimal text

GREAT POSTERS ARE …

- **Readable** – clear language and correct grammar
- **Legible** – text is readable from 5 feet away
- **Well-organized** – information grouped logically and in a visually appealing way
- **Succinct** – you have 10 seconds to grab the attention of attendees!

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CONTENT – WHAT TO INCLUDE?

- **Abstract** (ask your mentor if this should be included)
- **Introduction / Background** (what is the context for your work)
- **Hypothesis / Research Question**
- **Methods** (What did you do)
- **Results** (What did you find)
- **Discussion** (what do your results mean – interpret the data)
- **Conclusions** (What you learned)
- **Future plans or next steps**
- **References** (Works cited)
- **Acknowledgements** (funding source)

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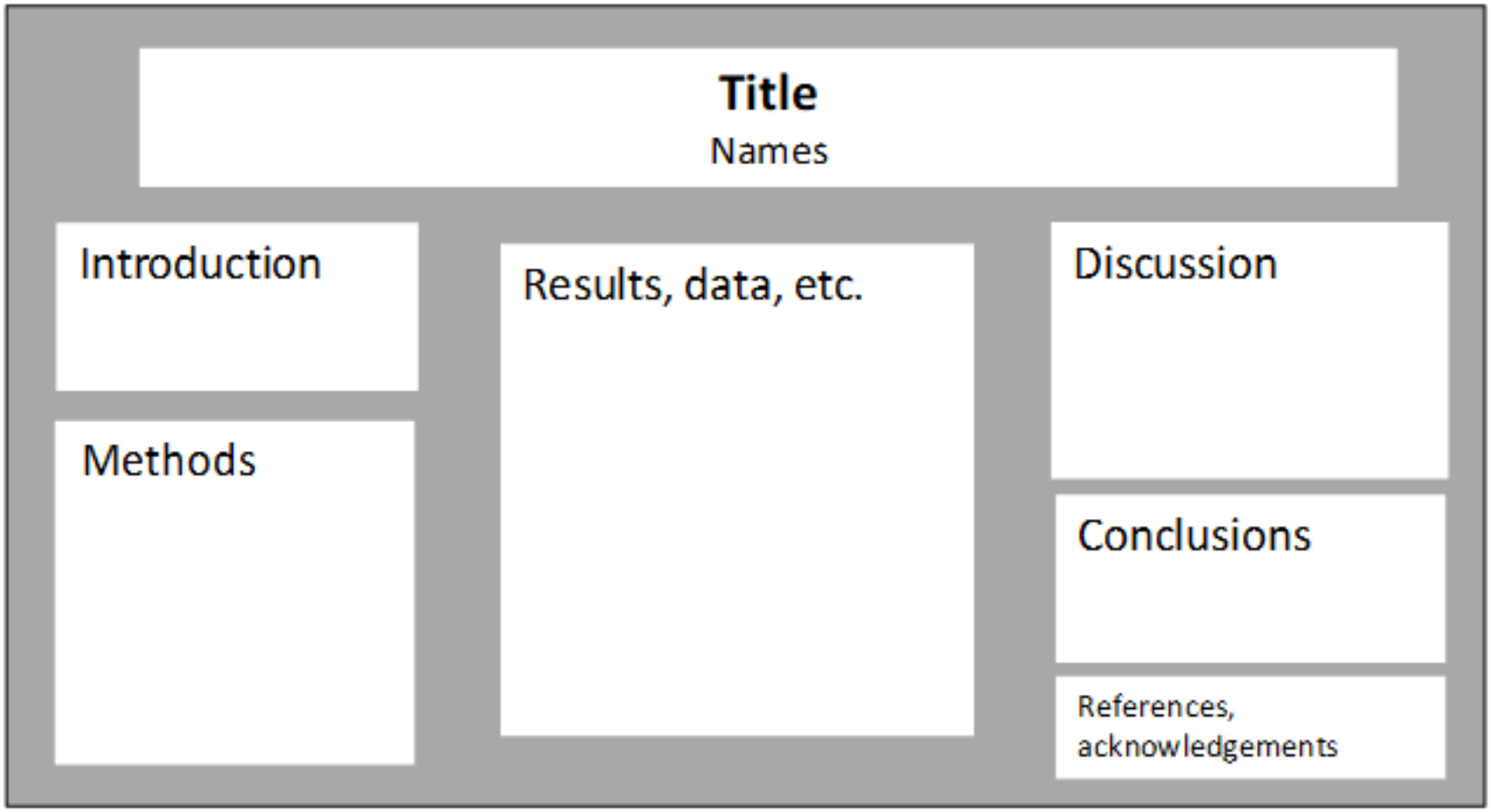
HORIZONTAL LAYOUT



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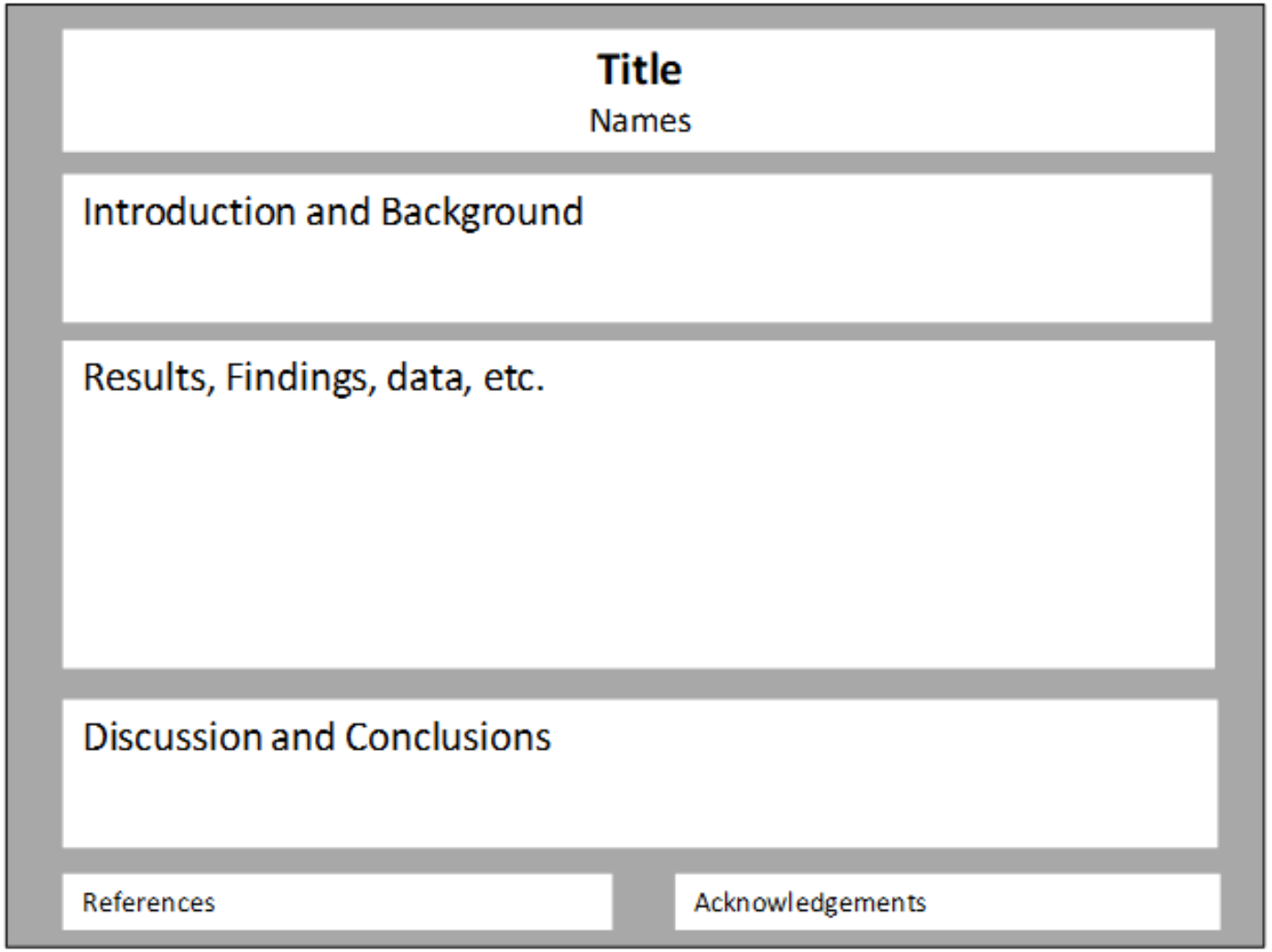
VERTICAL LAYOUT



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UNIVERSITY POSTER TEMPLATES

- Available on USC Communications and Marketing website
- Brand Toolbox
  -Resources
    -Templates
      -Research Posters

- https://sc.edu/about/offices_and_divisions/communications/toolbox/resources/templates/research_posters/index.php

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Research Poster: Title of Presentation

Authors and Co-authors

University of South Carolina, affiliations for other authors

How to Use this Template

- Choose the template that best accommodates your communications objectives. There are three and four column templates.
- Copy text box to other locations on poster as needed

Highlighted box

- This box can be used to highlight a particularly important element or conclusion.
- Use only one highlighted box per layout.

Your Poster Content and Presentation

- Poster dimensions are 36” tall by 48” wide
- You can copy and paste from an existing presentation to the poster template or enter the information directly onto the template
- Try for an even balance on your posters
- Use graphs and bar charts to represent data when possible
- **Accent Colors:** When possible, use these secondary colors when you create your charts and graphs (Brand Toolbox)

Type Size and Section Headers

- Type text inside the text boxes
- Increase and decrease your view sizes as needed to see all or individual sections of poster.
- Do not use a font smaller than 24 except than for captions under pictures
- Make sure to keep your relevant text under the proper section headers

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YOU CAN GET STARTED NOW

- Look around at examples of posters (hallways, labs, etc.)
- Ask if your research program or groups uses a specific template
- Once you have a template, start filling in background information, methods, etc.
- Work on the poster as you go through the project, rather than starting it during the last week

THE "BETTER POSTER" FORMAT

We Don't Have to Pick a Side: The Middle Is A Fine Place to Be

Appalachian State University

Andrew R. Smith
Appalachian State University

INTRODUCTION

Mike Morrison created a template for a "Better Scientific Poster" (BSP) (https://osf.io/ef53g/)

The BSP format has been praised by many, yet disparaged by others.

The current project had 2 goals:

1. Create a template that I think could be useful.
2. Point out that we don't need to either love or hate the new format—the middle is just fine.

METHOD

To create a new template, I identified strengths of the BSP template and the traditional format.

BSP strengths: clear take-away message, minimal text, QR code

Traditional format strengths: room for figures, reasonable text size on sides, large title to make finding posters in poster session easy, web link and email for people who don't like QR codes

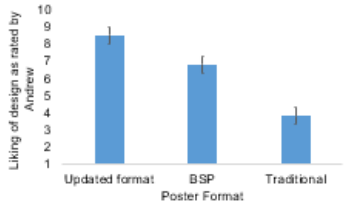
Why must we pick sides? The new poster format is a revolution, or the new poster format is garbage!

Take the **good parts** of the new format, keep the **useful aspects** of the traditional format, add in your own ideas, and **create something better**.

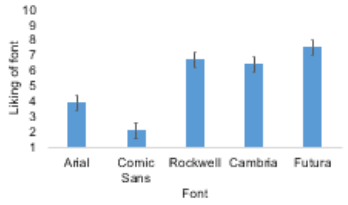
Poster template: https://osf.io/ayjzg/
smithar3@appstate.edu

RESULTS

Preregistered analysis: 78% increase in liking compared to traditional format and 24% increase compared to the BSP format.



Exploratory analysis: room for improvement in this template (Arial font, seriously?!?!).



DISCUSSION

Sometimes it makes sense to pick a side; this is not one of those times.

Praise what you like, make suggestions for improvement, and **then make something better**.

Take Mike's ideas, incorporate some of mine, **be creative**, and let's make posters more useful.

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PLANNING YOUR POSTER

- Discuss with your mentor
- Get approval for template
- Identify your message – what is the takeaway?
- What information is critical to understanding this message?
- Outline your message and supporting information (abstract is a good starting point)
- Map your outline on paper

INFORMATION OUTLINE

- Clarify your message – what question are you answering?
- What results support message?
- What information is needed to understand the results and how you got those results?
- Are there figures that can help explain or support the message
- Discuss/interpret the results – what does it mean?
- Are there any future research areas or next steps?

POSTER TIPS

- Do not duplicate full text of a paper onto your poster
- Hit the high points
- You can make the poster available to attendees by using a QR code
- Avoid background pictures

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POSTER TEXT

- Use an easy-to-read font for all text at a minimum size of 24pt.
- Avoid ALL-CAPS for extended blocks of text, as they are HARD TO READ IN LARGE BLOCKS OF TEXT.
- Use blocks of text sparingly
- Use section headers
- Use lists/bullets
- Use “standard” fonts so that you do not have printing issues
- If using symbols, save poster as a PDF before printing

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POSTER IMAGES

- Check image quality before printing
- Do not use copyrighted images

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PRESENTING YOUR POSTER

- Prepare a 30 sec, 2 min, and 5 min overview of your project
- Explain the context of your research question and why it is relevant/important (background)
- Explain your objective and what you did (methods).
- What were your results (explain figures and tables)?
- What do the results mean – what is the significance of your research project?
    - **Questions you MUST be able to answer:**
        - **So what? Why should I care?**

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PRESENTING YOUR POSTER

- Consider your audience!
- Be prepared to talk with experts and non-experts
- Know definitions of every word on poster and be able to define acronyms
- Critically review your poster for potential questions – anticipate questions people might ask
- Don’t be scared of “I don’t know,” “I hadn’t thought of that,” and “Great idea!”
- Don’t assume knowledge!

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PRESENTING YOUR POSTER

- Engage the viewer
- Invite the viewer to ask questions or offer to “walk them through it”
- Use the poster as a visual aid to emphasize points and share information (point to things, use your poster to help your discussion)
- Don’t stand directly in front of your poster
- Be friendly and welcoming!

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PRESENTING YOUR POSTER

- **Dress professionally**
- Business casual (suits not required)
- Comfortable shoes (remember you will be standing in one place for over an hour!

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Students Ability to Relate to Scientists: Impacts of Geoscientist Spotlights

Peyton Smalls[1]; Katherine Ryker, PhD

University of South Carolina

INTRODUCTION

Geosciences struggle with a significant diversity problem and have the lowest participation rates of historically marginalized individuals in science and engineering occupations (URGE, 2022; AGI, 2020). Majors frequently "discover" the geosciences through introductory courses (Houlton, 2010), and yet the scientists featured in these courses most often reflect historical stereotypes of people who "do science" (e.g. white, straight, cisgender male) (Simpson et al., 2021; Phillips & Hausbeck, 2000). This is one of many potential factors limiting students from seeing themselves as the types of people who "do" science. As one way of addressing this, we have developed Geoscientist Spotlights for introductory courses (Smalls et al 2022). These are weekly assignments that teach traditional content while featuring a scientist who works in that space. My previous research identified that students that reflect enhances the use of non-stereotypical descriptors of geoscientists among GEOL 101 students. I am now asking the follow-up question, "Do elements of the Geoscientist Spotlights enhance the perceived relatability of geoscientists, which would in turn help students see themselves in the field?" This would imply that students understand that geoscientists can be anyone, including themselves.

RESEARCH QUESTION

How does a student's relatability to scientists change from before the semester once exposed to diverse geoscientists?

CONTACT

Email: peyton.smalls2002@gmail.com

MATERIALS AND METHODS

- Geoscientist Spotlights made in Fall 2021 that feature diverse, non-stereotypical geoscientists.
- Survey given to students at the beginning and end of Spring 2022 as part of a homework assignment.
- 12 assignments featuring 10 geoscientists and two surveys worth 10% of their overall grade.
- Responses to survey about the relatability students had with scientists using a Likert scale.

  1= Strongly Disagree
  2= Disagree
  3= Agree
  4= Strongly Agree
- Responses not assigned to a group or responded with "I don't know" were deleted for this specific research question.
- Statistical analyses included ANOVA and t-tests to examine differences in means between groups. Cohen's d was used to estimate the effect size of significant differences.
- Four groups
  - Group 1: Personal and Reflection
  - Group 2: Personal and No Reflection
  - Group 3: Non-Personal and Reflection
  - Group 4: Non-Personal and No Reflection

Figure 1. Sample geoscientist spotlight. The blue portion leads to personal information while the green portion is a reflection portion. Groups were randomly assigned and given different combinations of personal and/or reflection.

RESULTS

There is a statistically significant difference in relatability from pre- to post-semester for the whole class. The relatability increased from 1.7474 to 2.0773 ($p < 0.05$; d = 0.22). This means that scientists became more relatable to students from before to after the semester, though the effect size was small (Figure 2). No significant differences in pre- to – post relatability changes were identified based on group assignment ($p > 0.05$).

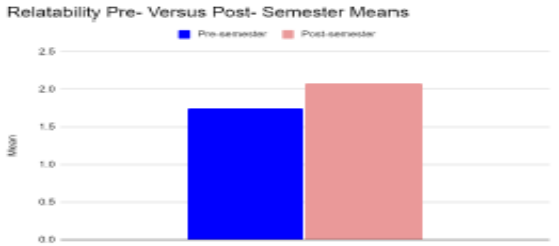

Figure 2. Overall means of pre- and post-semester relatability data on a bar chart.

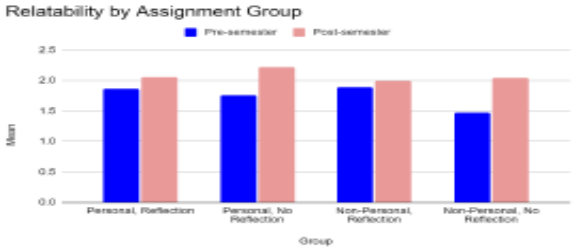

Figure 3. Pre- and post- semester means of relatability for each group on a bar chart.

CONCLUSIONS AND FUTURE STUDY

Overall, from pre- to post- semester, scientists were found to be more relatable, though the effect size was small ($p < 0.05$; d = 0.22). It is unclear whether this difference is related to participation in the class in general, or the presence of Geoscience Spotlights in particular. Further testing is needed to assess "baseline" changes in the relatability of scientists over a semester of introductory geology.

Each treatment group saw a similar increase in mean relatability from pre- to post-semester. No significant differences were found between groups, indicating that the treatment did not influence the change in relatability over the semester. This funding is counter my hypothesis that students in group one with personal information and reflection would see scientists as more relatable. Future steps are to look at if there are other variables that are affecting relatability amongst students. Ongoing work is testing whether certain demographic groups of students experienced greater changes in relatability over the semester.

ACKNOWLEDGEMENTS

Thank you to my advisor Dr. Katherine Ryker and the University of South Carolina Office of Undergraduate Research for funding this project.

REFERENCES

1. Dilemmi, M. (2010). Undergraduate biology students' representations of science and the scientist. *College Student Journal*, 44(2), 570-586.
2. Mead, M., & Metraux, R. (1957). Image of the scientist among high-school students: A pilot study. *Science*, 126(3270), 384-390.
3. Schinske, J., Cardenas, M., & Kaliangara, J. (2015). Uncovering scientist stereotypes and their relationships with student race and student success in a diverse, community college setting. *CBE—Life Sciences Education*, 14(3), ar35.
4. Schinske, J. N., Perkins, H., Snyder, A., & Wyer, M. (2016). Scientist spotlight homework assignments shift students' stereotypes of scientists and enhance science identity in a diverse introductory science class. *CBE—Life Sciences Education*, 15(3), ar47.

INTRO TO WRITING AN ABSTRACT

WHAT IS AN ABSTRACT?

The abstract is a **brief overview** of your selected type of work.

It is typically a condensed version of longer piece of writing that **highlights the major points** covered, while concisely **describing the content and scope of the work.**

Abstracts are basically an outline of your project in sentences.

WHAT DO ABSTRACTS CONVEY TO READER?

- What you did
- Why you did it
- How you did it
- What you found
- What it means

WHAT IF...

My project/research is still in progress so my results aren't ready to be shared - what do I do?

No problem! Do you have anticipated results? Share those. If not, focus on the other sections of abstract such as background, why and how. You can also explain the methods and any issues with the methods.

ABSTRACT STYLE

- Be concise – use the least number of words to convey the information
- Use active verbs
- If submitting an abstract to a conference, there are often abstract word limits – pay close attention to that
- Do not use abbreviations without defining them
- Avoid jargon

MAKE THE ABSTRACT READABLE

- Do not use abbreviations without defining them
- Avoid jargon
- Write in third person singular
- Use complete sentences

TIME TO WRITE

- Next slides have questions about your project
- Write down as much as you can about your project
- The amount of time per slide will be timed

INTRODUCTION – 2 MINUTES

- What is your project about?
- Why is this project interesting and/or important?
- What is the scope of the project?
- What is your hypothesis or research question?
- How does this topic fill a gap in the current knowledge in your research area?

METHODS – 2 MINUTES

- How are you collecting samples or data?
- What are you testing?
- What methods are you using?

RESULTS – 2 MINUTES

- If your project is not complete, what do you think you will find?
- What did you find when you performed your experiment or survey?
- How will you present your data? Tables, figures, images?

DISCUSSION AND CONCLUSIONS – 3 MINUTES

- Are your results consistent with your initial hypothesis? Why or why not?
- What is your interpretation of what these results mean?
- Why should others be interested in your findings?
- What are the implications for future research?

REVIEW AND REVISE

- Read the abstract aloud: How does it sound? How does it flow?
- Revise to improve transitions.
- Eliminate any unnecessary information.
- Strive for unity, coherence and emphasis.
- Always have someone else review, including your faculty mentor.

ALWAYS ASK FOR HELP

- Others in your research group can review your title and abstract
- Faculty mentor should be final approver

THANKS!

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