

Effectiveness of Traditional vs. Billboard-Style Poster Formats in Undergraduate Research Communication

2024 ConnectUR Annual Conference

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Intended Outcomes

Through engaging in this session, participants will:

- Compare the effectiveness of traditional vs. billboard-style poster formats.
 - Information retention
 - Content clarity
 - Visual appeal and design
 - Perceived engagement
- Learn practical insights for designing posters based on study findings.

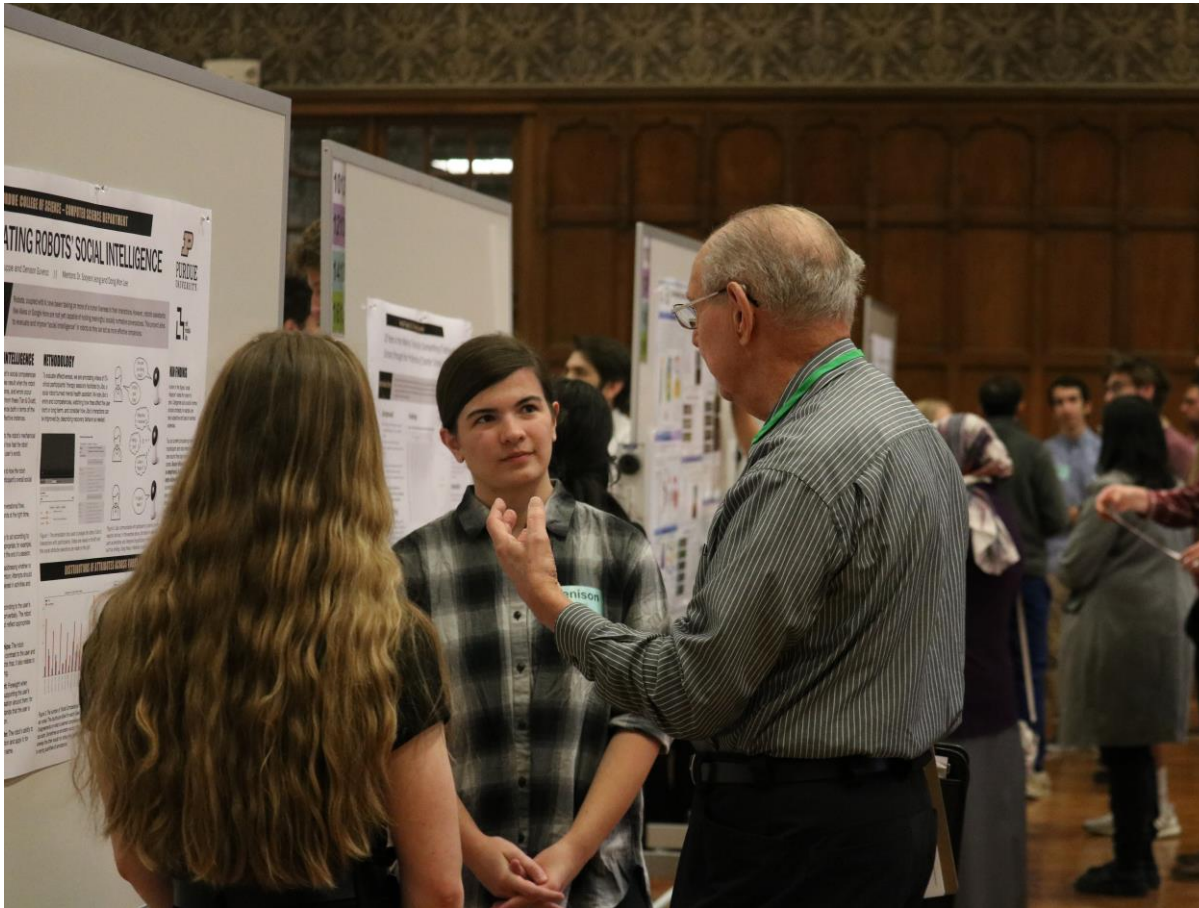


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Most undergraduate researchers showcase their work through poster presentations



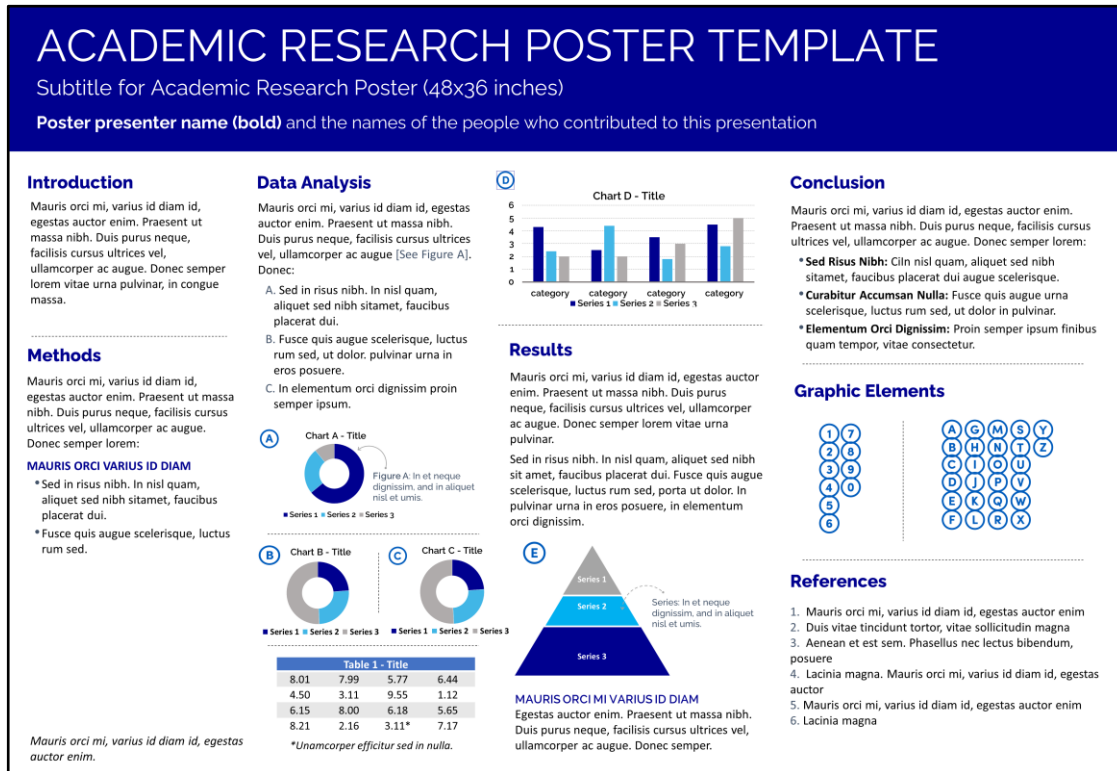
Effectiveness of Posters

- Benefits of effective posters:
 - Sharing valuable research insights
 - Displaying communication skills
 - Getting awards
 - **Networking**
- Communicating dense and complex information in one poster is difficult.

Can poster layout improve effectiveness?

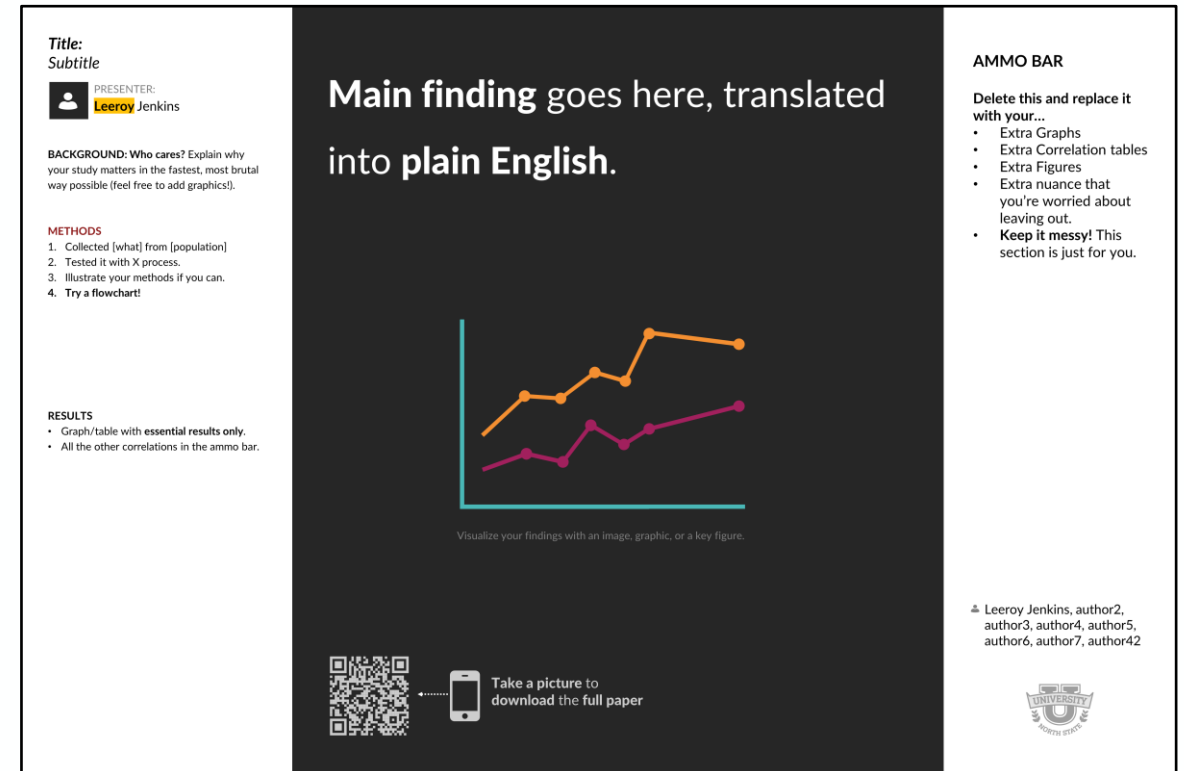
Layout styles

Traditional



UMass Chan Medical School, 2022

Billboard (#betterposter)



Mike Morrison

Is Billboard style poster more effective than the traditional style poster?

Information retention

- Remembering poster content
- Ease of understanding content

User experience

- Visual appeal and design
- Perceived engagement

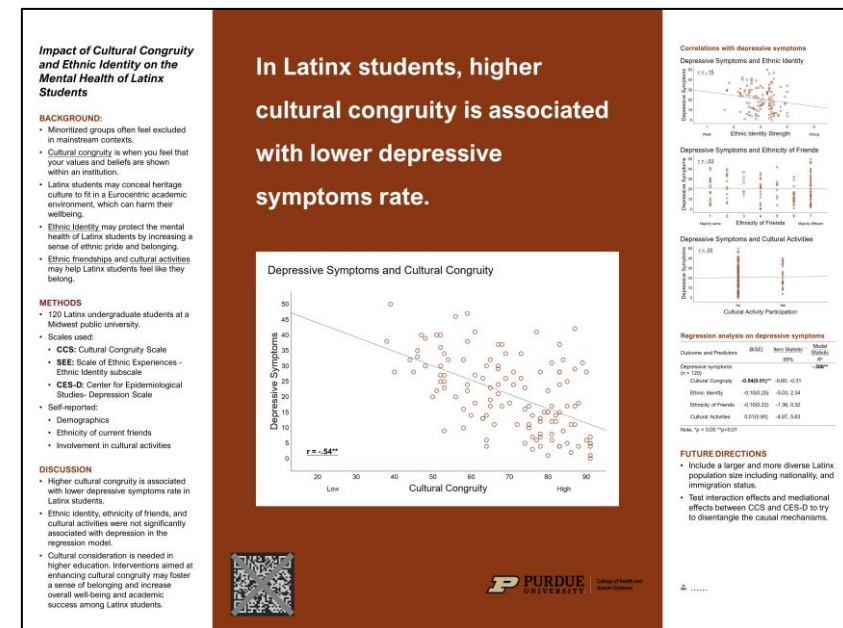
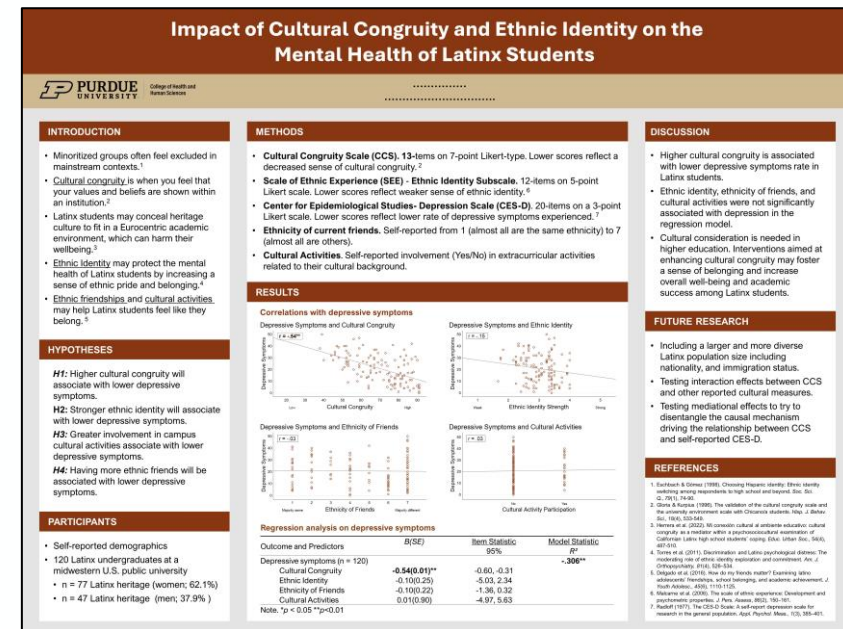
Methods

Participants:

- Purdue-affiliated faculty, staff, and students

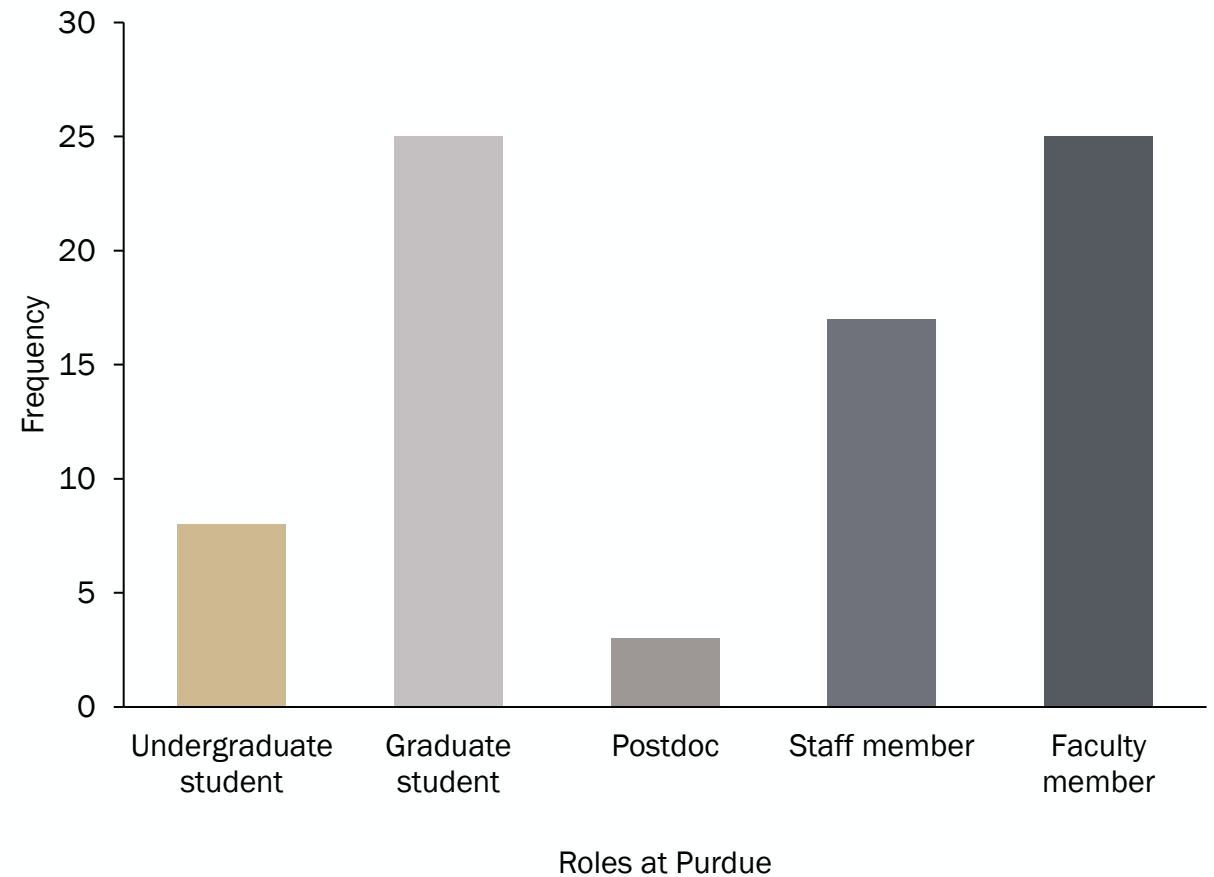
Qualtrics Surveys:

- Time 1:
 - Participant information
 - Randomly assigned poster viewing (Traditional vs. Billboard)
 - Questions about information in the poster
 - Poster rating and perception questions
- Time 2:
 - Same information questions as Time 1
 - View both posters simultaneously for the first time
 - Compare poster preferences on user experience questions



Participant Characteristics

- 10.3% of participants are undergraduate students.
 - Only presented posters or attended conferences.
- 89.7% of participants are not undergraduates.
 - 76.8% Judged poster presentations
 - 66.7% Mentored undergraduate poster presentations.
- 73.9% of participants are in the STEM field.



Information Acquisition & Retention

8 questions about the information in the poster.

How does higher cultural congruity relate to Latinx students' depression?

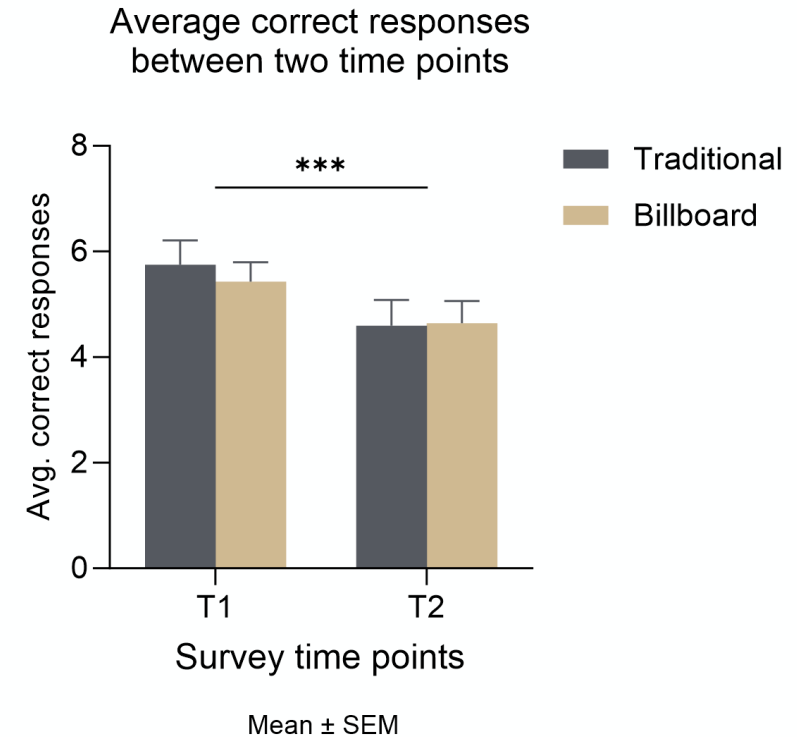
- ☐ Greater depression rates.
- ☐ Lower depression rates.
- ☐ Not significantly associated with depression.
- ☐ I don't know.

Information Acquisition & Retention

8 questions about the information in the poster.

N = 48 complete responses.

- Overall, participants had remembered information from the poster less a week later, $p < .001$.
 - T1: 5.56 on average.
 - T2: 4.63 on average.
- Correct answers were not different between Traditional and Billboard posters, $p = .803$.

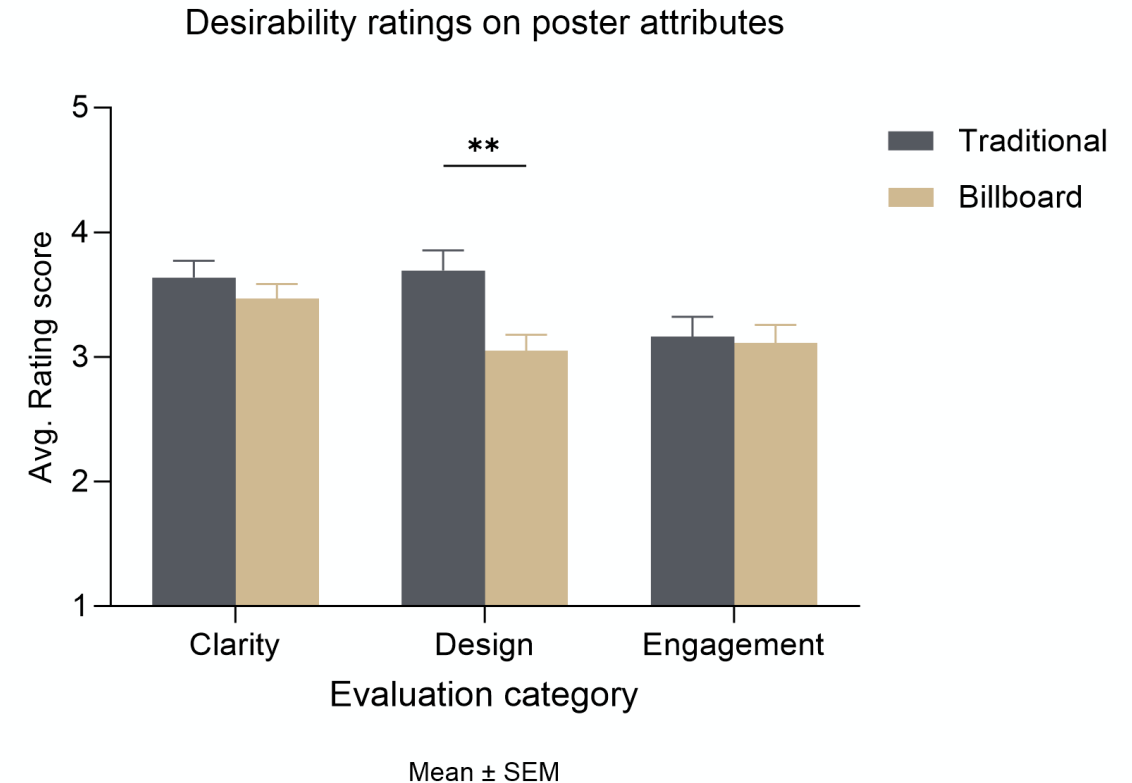


Poster Evaluations

Desirability ratings on Clarity, Design, and Engagement attributes

N = 78 responses from T1.

- Attributes were rated on 5-point agreement scale: Strongly Disagree (1) – Strongly Agree (5)
 - Clarity: 7 questions ($\alpha = .845$)
 - Design: 8 questions ($\alpha = .898$)
 - Engagement: 4 questions ($\alpha = .789$)
- Traditional poster viewers rated the poster's design attributes higher than the Billboard poster viewers, $p = .003$.
- Clarity ($p = .353$) and engagement ($p = .808$) ratings did not differ between the groups.



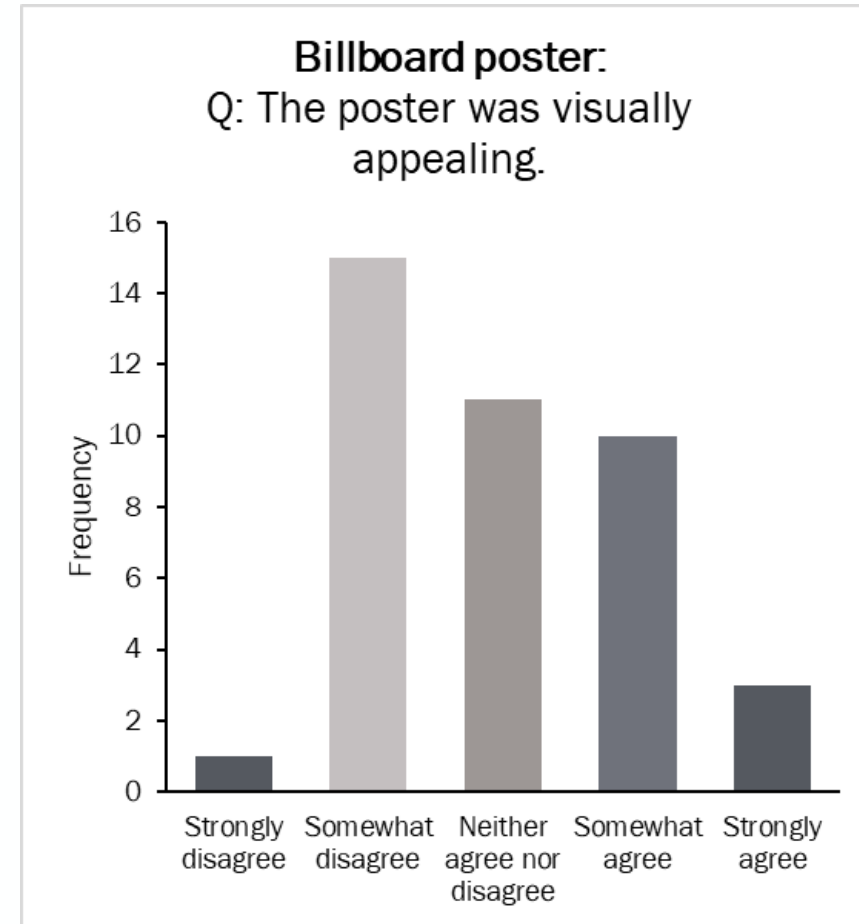
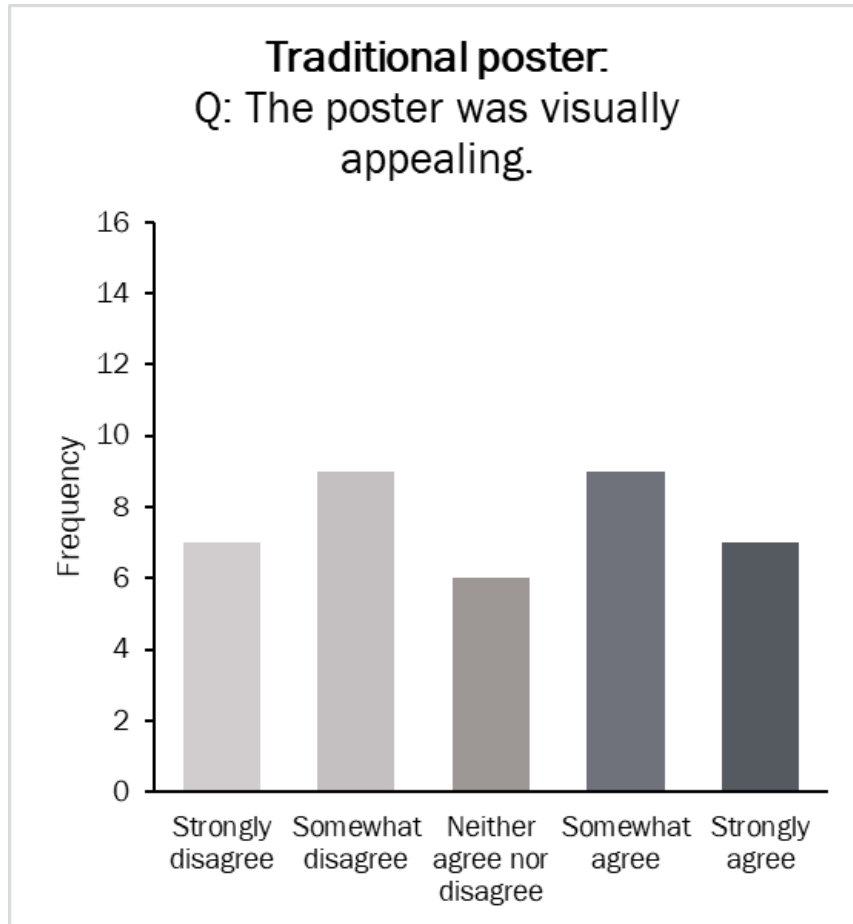
Both poster types were similar on content clarity and engagement attributes.

Sample items:

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
The main conclusion was easy to understand.	☐	☐	☐	☐	☐
The poster maintained my interest in the content during poster viewing.	☐	☐	☐	☐	☐

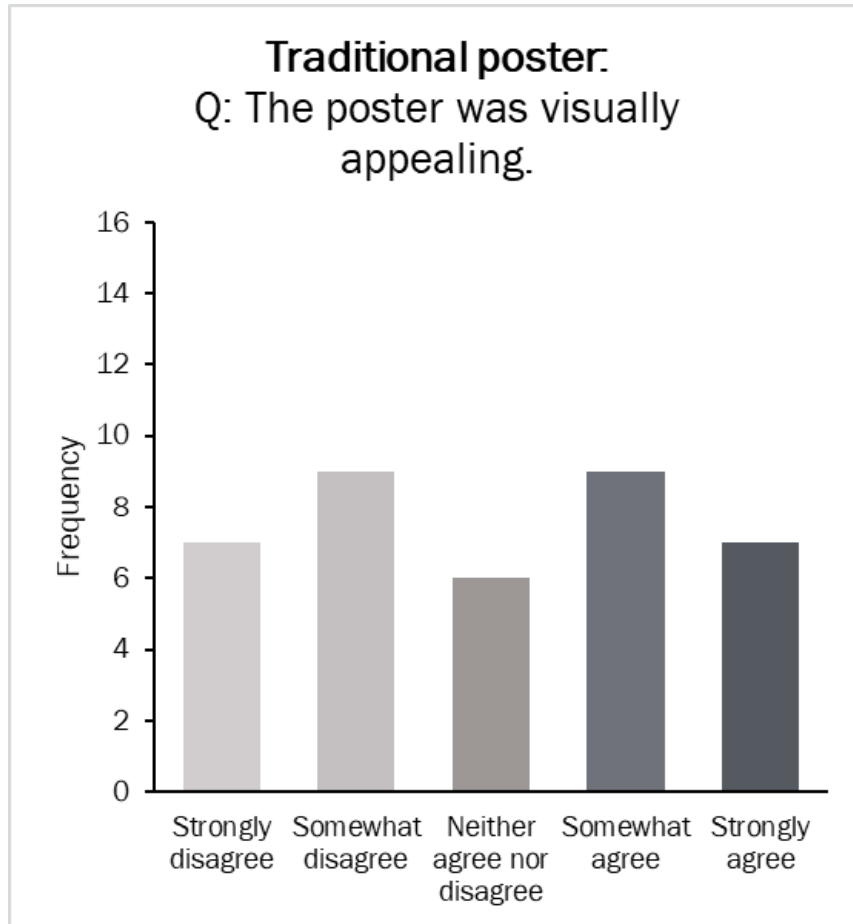
Both posters had moderate visual appeal.

Sample Design attribute item:



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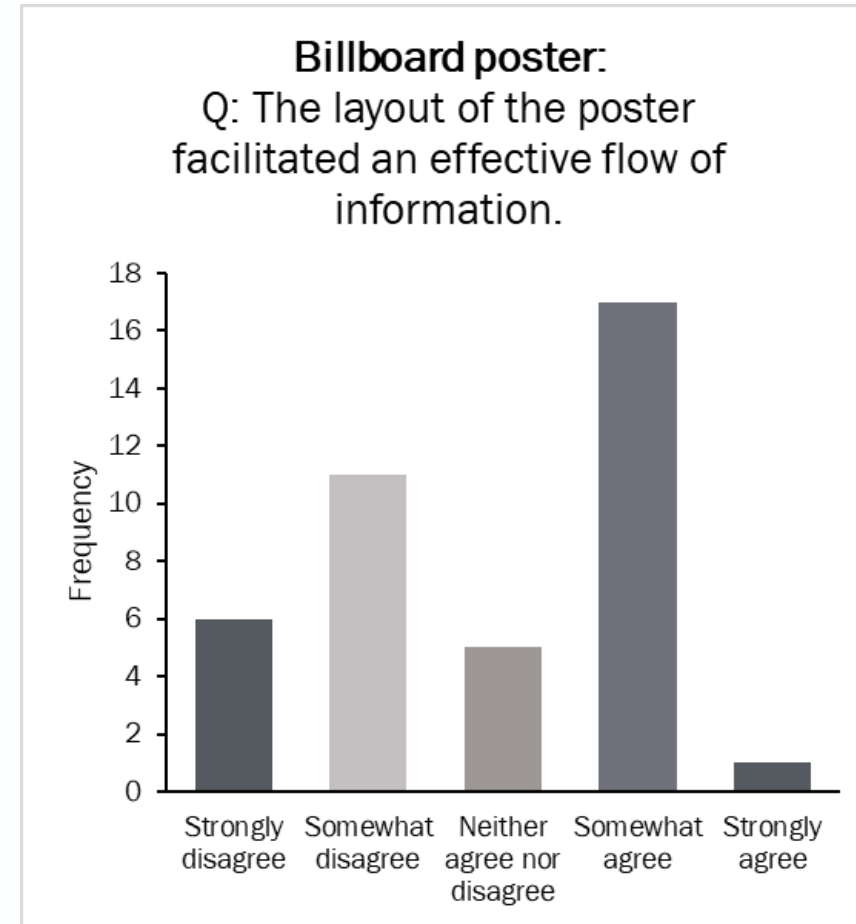
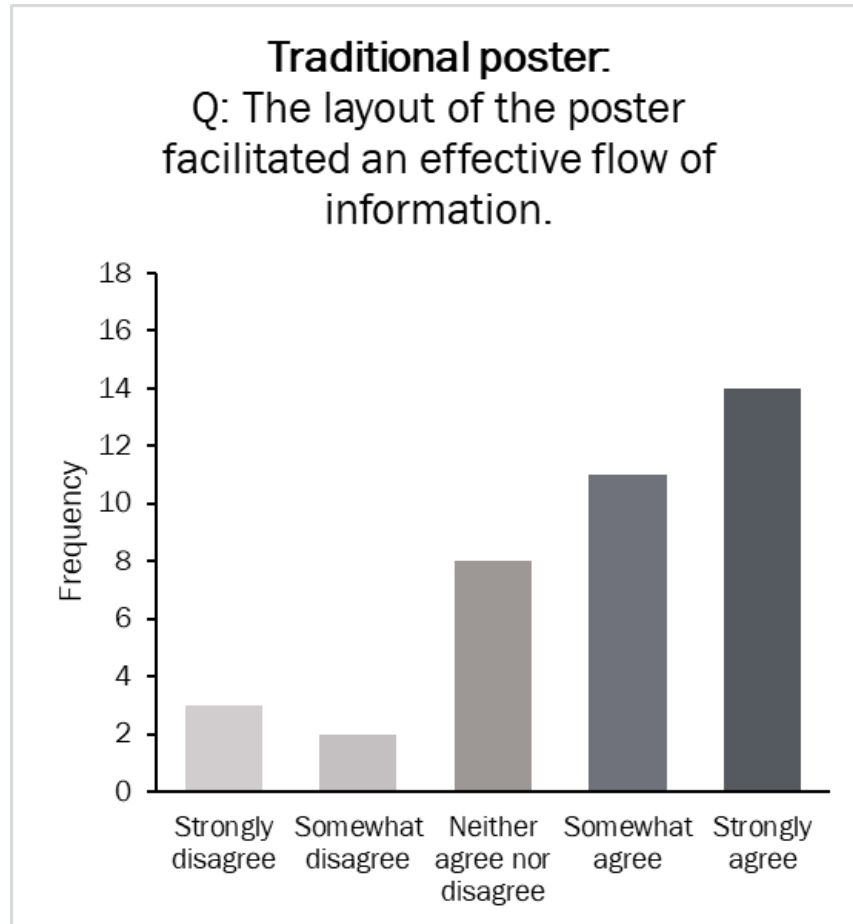
Sample Design attribute item:



“...The visual layout of this presentation [Traditional] is cluttered...”

Billboard posters' design was had lower for information flow.

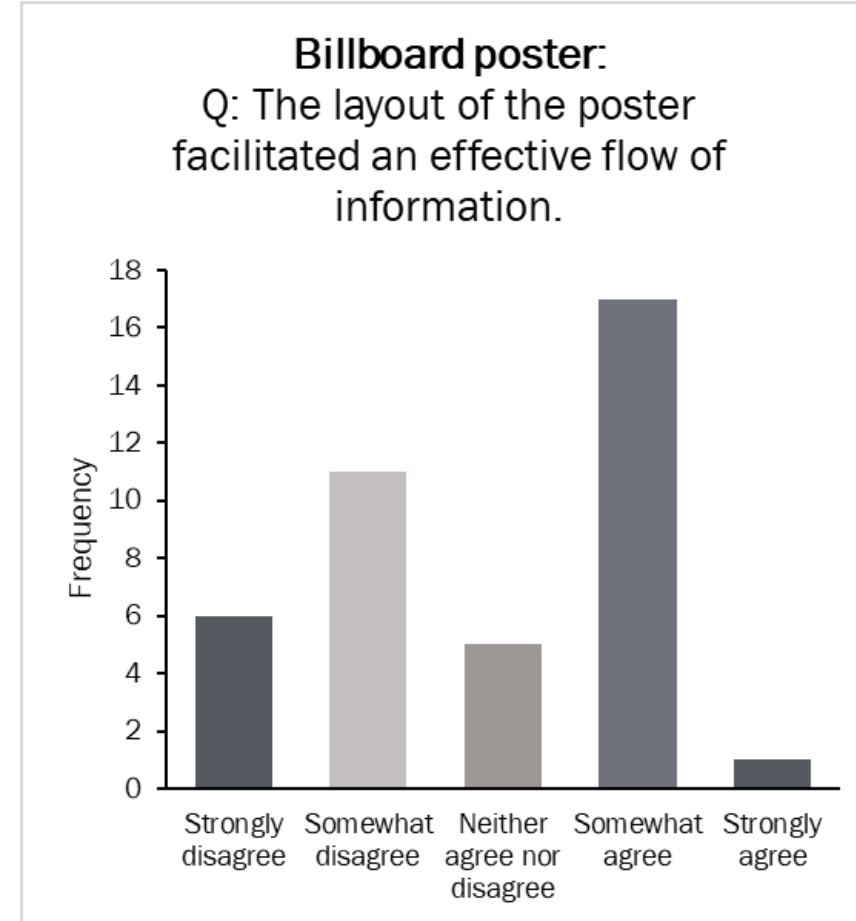
Sample Design attribute item:



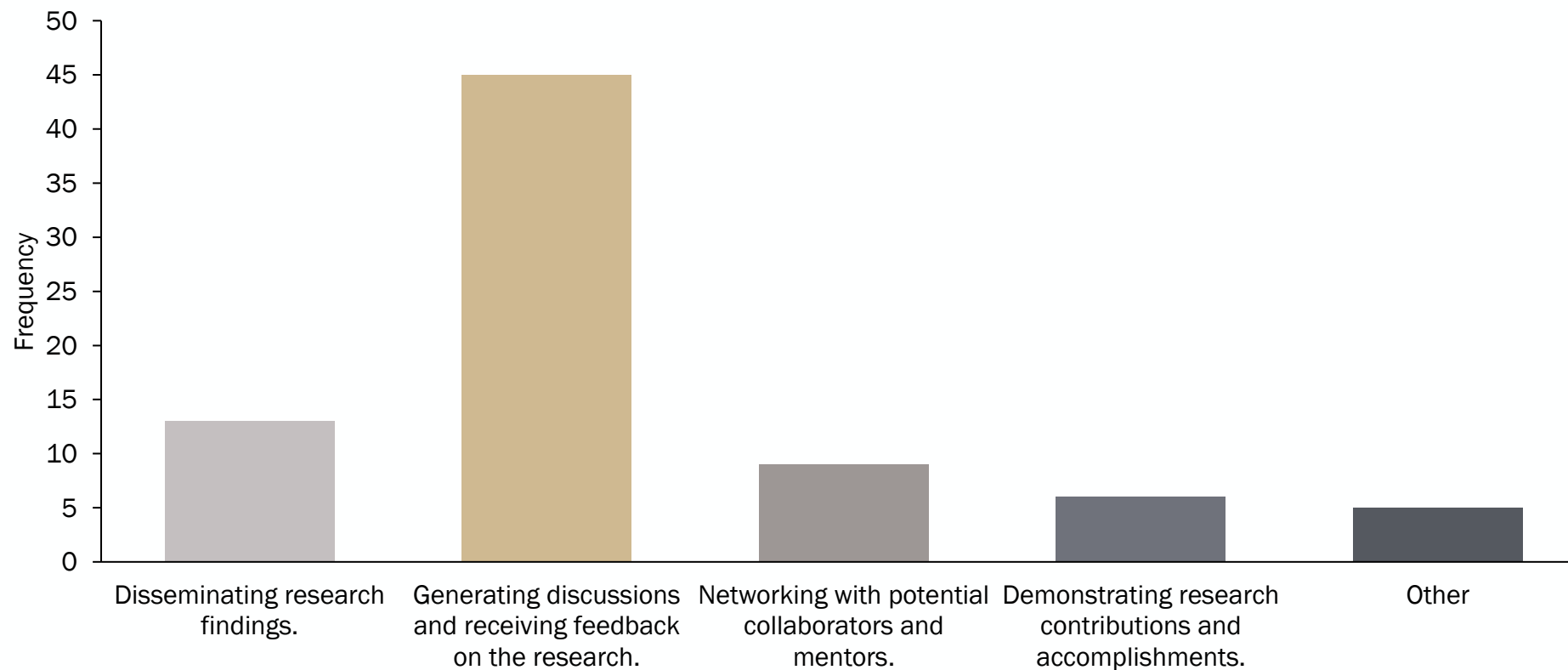
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Sample Design attribute item:

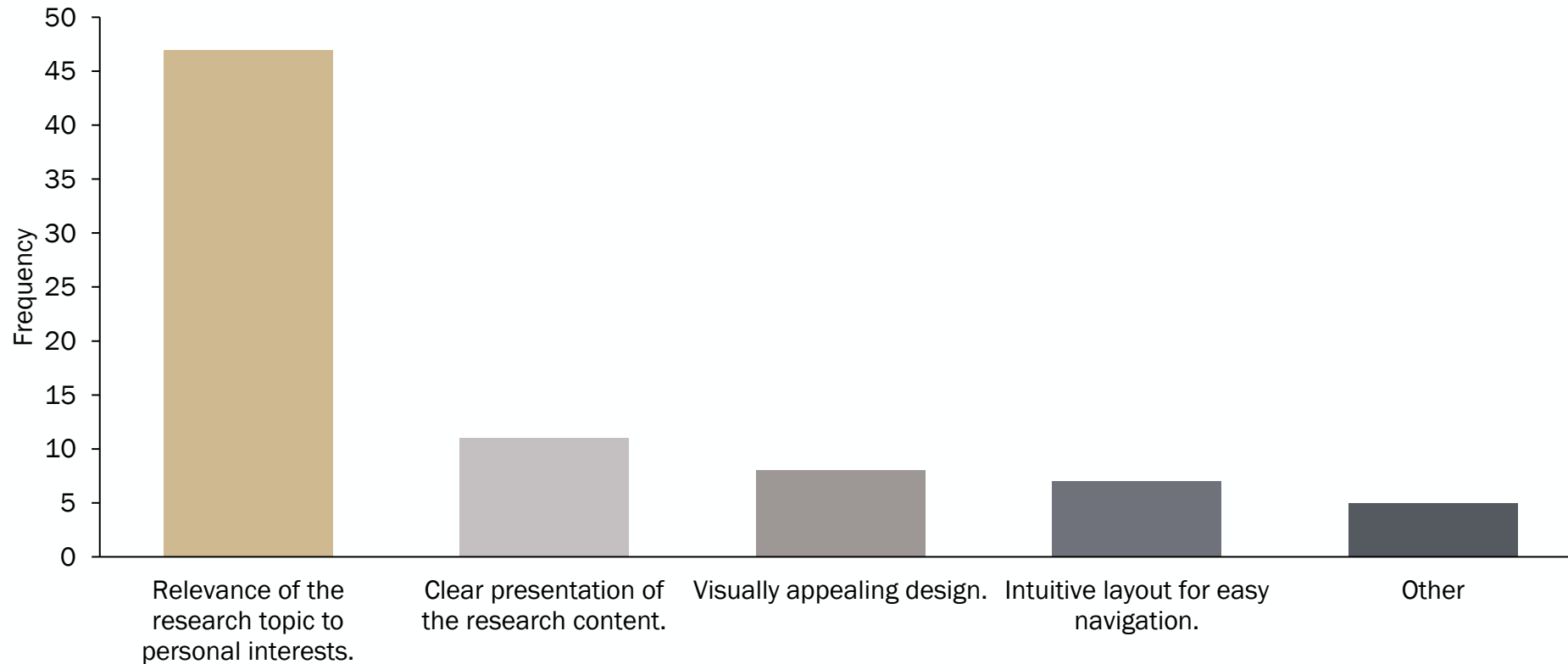
“...[Billboard poster] jumped back and forth a bit and made it difficult to follow the information in a natural progression...”



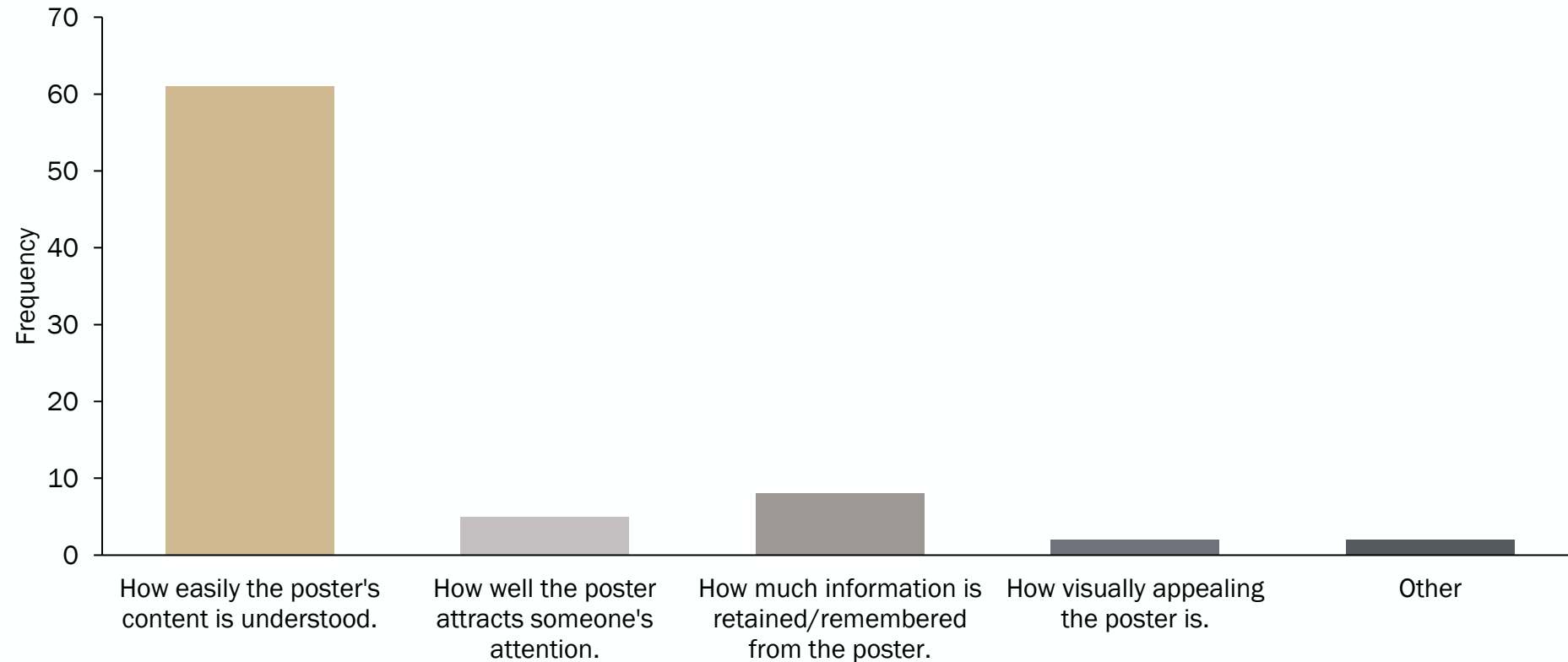
What is the most important purpose of poster presentations?



What determines your decision to engage with a poster the most?



What visual aspect determines the effectiveness of a posters the most?



Take Aways & Recommendations

Take Away	Recommendation
Both posters are similar in information retention, content clarity, and engagement.	Combination of both poster's elements would make posters more effective.
Traditional poster's organization facilitated the flow of information better than Billboard poster.	Clear headings in a logical order helps with the flow of information. But less wordy, the better!
Making research easy to understand is the most important determinant of the effectiveness.	Instructions and mentorship for undergraduate poster presentations should focus on simplifying complex research.

Notes:

- The findings are mostly from URE mentor's and judges' perspective.
- Replications with posters from different field would strengthen these findings.

What are your questions...



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Thank You!



Key References

Billboard poster templates: Morrison, M. A. (2019, May 8). #betterposter. Retrieved from osf.io/ef53g

Pedwell, R. K., Hardy, J. A., & Rowland, S. L. (2017). Effective visual design and communication practices for research posters: Exemplars based on the theory and practice of multimedia learning and rhetoric. *Biochemistry and Molecular Biology Education*, 45(3), 249–261. <https://doi.org/10.1002/bmb.21034>

Oronje, B., Morrison, M., Suharlim, C., Folkman, K., Glaude-Hosh, A., & Jeisy-Scott, V. (2022). A step in the right direction: Billboard-style posters preferred overall at two conferences, but should include more methods and limitations. *Qeios*. <https://doi.org/10.32388/P7N5B0> (Preprint)