

Infographics as a Communication Tool in Pharmacy and Pharmaceutical Sciences

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INTRODUCTION

- Infographics, also known as graphical abstracts, are visual representations of information and use a combination of text, image, colour, and design elements (Smiciklas, 2012).
- Text-based abstracts have traditionally been the primary method for introducing readers to scientific research, which can often be “confusing, uninteresting and discouraging” (Comello et al., 2017) and may not be an effective communication method.
- Using well-designed infographics may expand target audiences beyond the traditional scholarly circles.

AIMS

This study aims to compare the effectiveness, both perceived and actual, as well as viewer experience of infographics with text-based abstracts as communication tools for research within the field of pharmacy and pharmaceutical sciences.

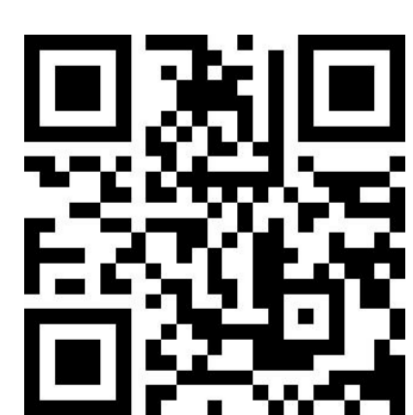
METHODS

- A posttest-only, between-participants experiment was conducted via Qualtrics (Qualtrics; Provo, Utah).
- A survey was circulated within the researchers’ networks primarily at schools of pharmacy at UNC-Chapel Hill, Monash University and UCL from 30 Apr 2024 to 27 Jun 2024.
- Participants were randomized to view either three infographics or three text-based abstracts for the same research articles.
- Survey items assessed understanding, recall, effectiveness, cognition (cognitive load), and attention.
- Target enrollment was 834 participants to reach 80% power to detect a 0.25 effect size.³
- Data was analyzed in SPSS V28. Chi-square tests were used to analyze categorical data. Unpaired t-tests were used to analyze continuous data. Internal reliabilities (Cronbach’s alpha) were calculated for each Likert item that was combined into a Likert scale. Alpha scores of 0.70 or above were considered acceptable.
- Exclusion criteria included participants who took less than 300 seconds and participants who did not complete all questions (excluding recall questions) for at least one article type.

Research Article 1



Research Article 2



Research Article 3



RESULTS

- 46 responses were included in the final analysis, 44 responses were 100% complete.
- 30 participants viewing infographics were included in analysis; 16 respondents viewing abstracts were included.
- The majority of participants were white, female students (18-24 years) from the United States without any reported learning disabilities.
- Most items displayed good internal reliability ($\alpha=0.48-0.93$) with the exception of the cognitive question for research article two.

REFERENCES

1. Smiciklas M. *The Power of Infographics Using Pictures to Communicate and Connect with Your Audiences*. Pearson Education; 2012.
2. Comello MLG, Qian X, Deal AM, Ribisl KM, Linnan LA, Tate DF. Acknowledgment correction of: impact of game-inspired infographics on user engagement and information processing in an ehealth program. *J Med Internet Res*. 2017;19(1):e12. doi:10.2196/jmir.7104
3. G*Power (latest ver. 3.1.9.7; Heinrich-Heine-Universität Düsseldorf, Düsseldorf, Germany).

RESULTS (CONT)

Variable	Infographic Mean (SD) n=30	Abstract Mean (SD) n=16	P value (Equal variance not assumed, 2-sided p)	Confidence Interval
Overall Understanding	0.88 (0.19)	0.87 (0.19)	0.87	-0.10, 0.13
Overall Recall	0.66 (0.30)	0.69 (0.29)	0.72	-0.23, 0.16
Overall Effectiveness	3.29 (0.70)	3.23 (0.80)	0.8	-0.42, 0.54
Overall Cognition	2.43 (0.28)	2.11 (0.67)	0.08	-0.05, 0.69
Overall Attention	3.53 (0.62)	2.96 (1.09)	0.07	-0.04, 1.19

Table 1 Mean overall scores for assessment items comparing infographics vs abstracts. Understanding and recall items were scored either correct (1) or incorrect (0). Effectiveness, cognition, and attention items were Likert items with values ranging from 1 to 5. P-values were calculated using t-tests.

Figure 1: Attention Mean Value Comparison

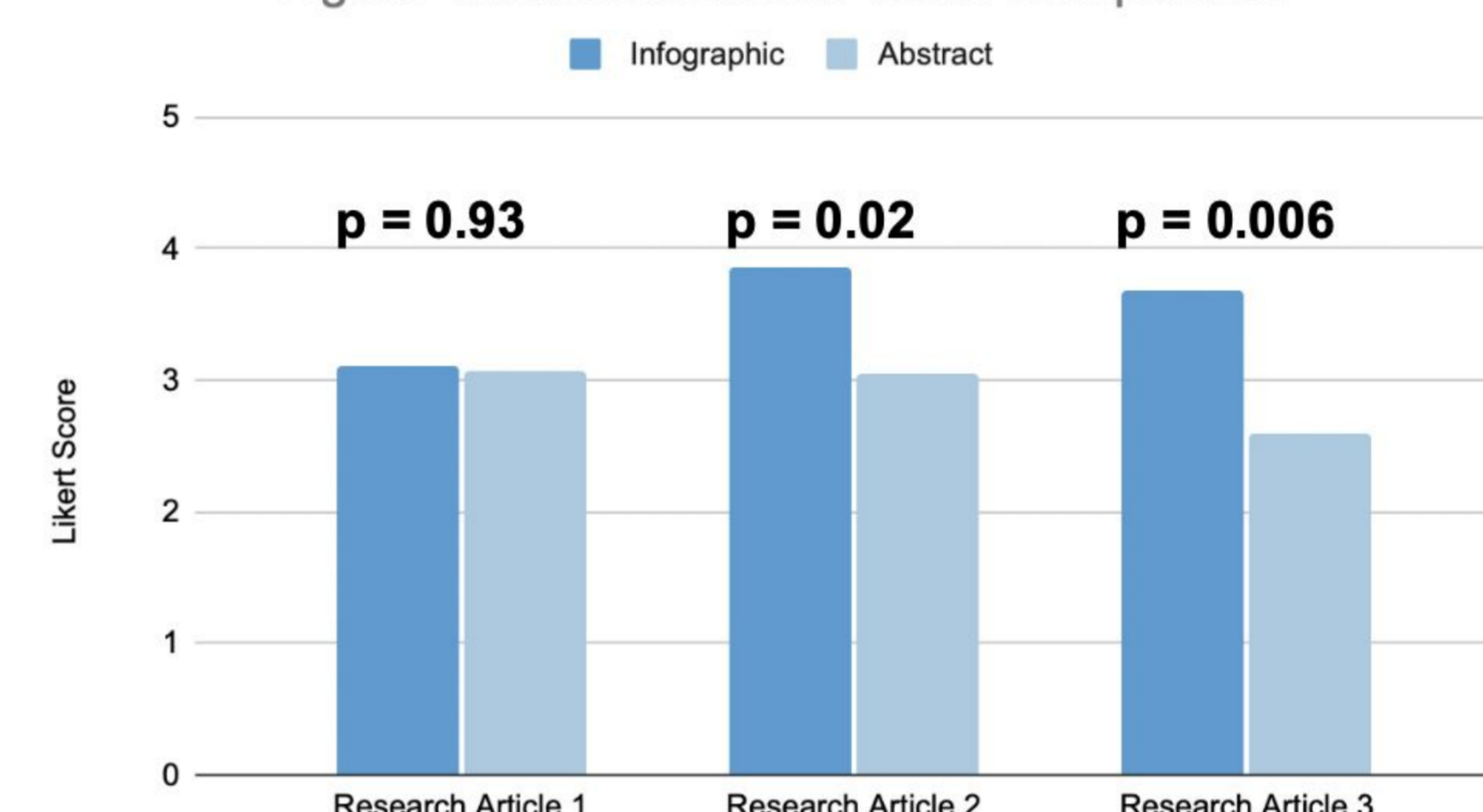


Figure 1. Attention mean value comparison of infographics and abstracts for individual research articles. Attention was assessed with one Likert item: “This [infographic/abstract] captured my attention.” Answer options ranged from 1 = strongly disagree to 5 = strongly agree.

Figure 2: Effectiveness Mean Value Comparison

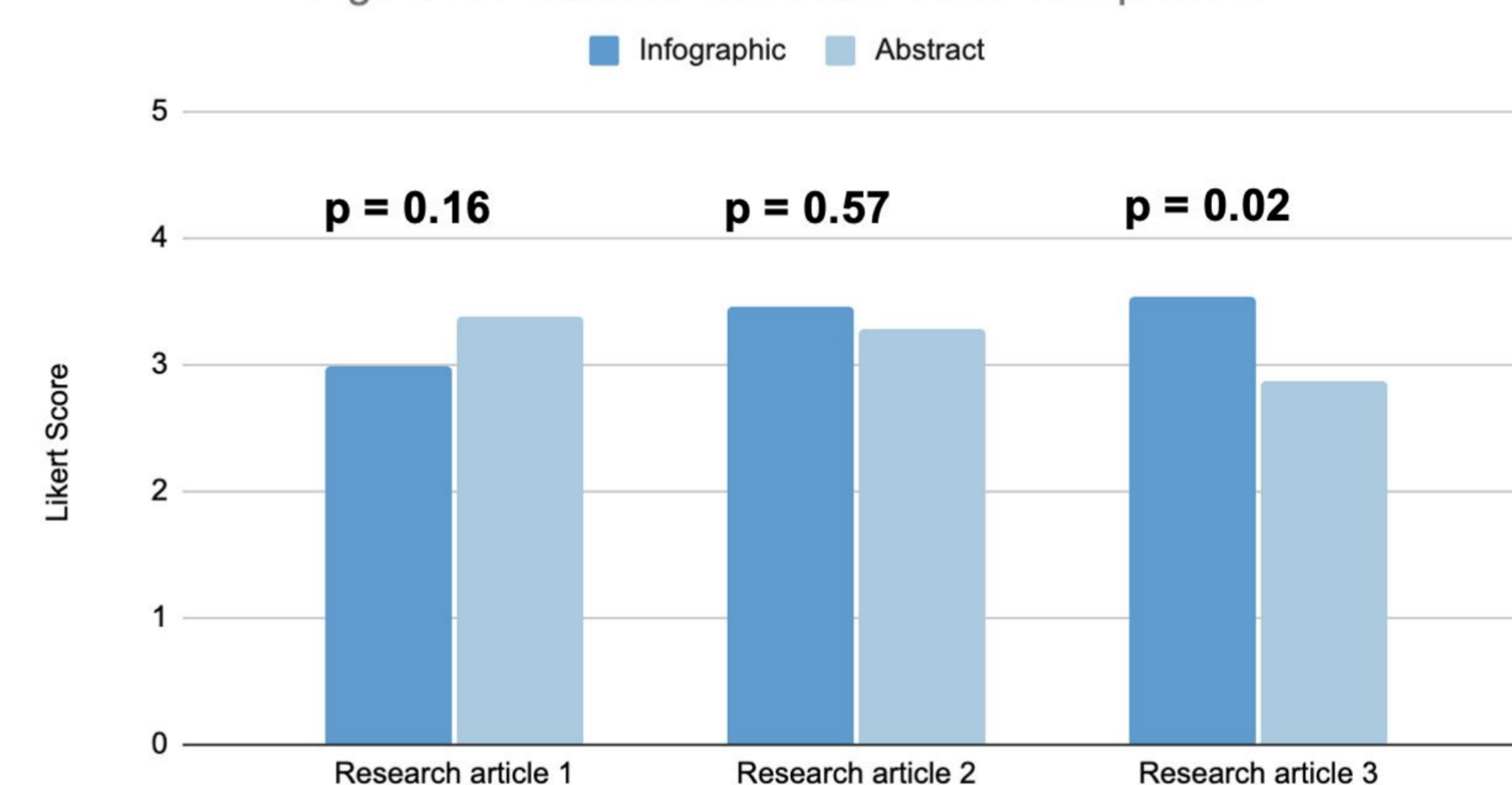


Figure 2. Effectiveness mean value comparison of infographics and abstracts for individual research articles. Effectiveness was assessed with three Likert items: “This [infographic/abstract] was an effective way to provide information,” “This [infographic/abstract] is valuable to readers, and “This [infographic/abstract] is motivating.” Answer options ranged from 1 = not at all to 5 = a great deal.

DISCUSSION

- This study was underpowered; this may explain lack of observed effects.
- Infographics may be perceived more positively on measures of attention and effectiveness as compared to abstracts.
- Design elements may play a role in effectiveness and attention when conveying messages.
- Noticeably smaller completion rates among those who viewed abstracts vs infographics (35% vs 65%) may suggest that infographics are more attention grabbing.

CONCLUSION

- This research is worthy of repetition with expanded recruitment and participation.
- Future studies should explore these variables among different populations who may be less familiar, and thus more open, to visual (rather than text-based scientific abstracts). Additional populations may include non-experts in content areas, individuals whose first language is not English and those who identify as neurodivergent.