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Editorial: The creation and impact of visual narratives for science and health communication

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Editorial on the Research Topic
The creation and impact of visual narratives for science and health communication

Visual narratives have the potential to engage public audiences and thus influence research and social impact in areas such as Science and Health. These include broader audiences, such as those reached by generalistic media, or niche audiences, such as patients in healthcare settings, in ways that improve understanding, retention, confidence, and behavioral intentions.

Humanized and story-driven visuals have emerged as a leading format used by science and health communicators and other influencers online (Weitkamp et al., 2021). Another powerful application is the use of visual narratives in data storytelling in (science) journalism to create compelling stories. These, combined with design techniques, such as "scrollytelling" are playing a role by enhancing the audience's browsing and learning experience in a chronological manner (Tjärnhage et al., 2023). Moreover, visual narratives in various multimedia formats have also gained traction as tools for science and health communication, such as in graphic medicine and comics for patient populations.

Collaboration has become a key aspect to foster a balance between the quality of the scientific content whilst maintaining excellent design and communication criteria. Examples have been explored in the onset of research projects, for example in the field of biological and agricultural sciences (Khoury et al., 2019) or osteoarthritis (Taylor et al., 2021). A higher level of collaboration in also on its onset, with the implementation of co-creation and participatory methodologies in science communication strategies and products with and for multistakeholder target audiences (academics, citizens, industry, and policymakers) including underserved communities. This is particularly relevant for bridging the gap between communities, enhancing the effectiveness of science/health communication and literacy, and delivering key messages that can support, for example, science informed decision making (Achiam et al., 2022; Magalhães et al., 2022).

However, we still have much to learn about the impact of visual narratives for different attitudinal and behavioral outcomes among different audiences, as well as how audience-relevant visual narratives are best created with audience involvement.

The aim of this Research Topic is to present and discuss new advances in research and practice (including formats, methodologies, interdisciplinary collaboration) on visual narratives in science and health communication, their effectiveness and impact on targeted audiences.

The scope of the cohort of the 8 articles on this Research Topic can be divided on three main axes, the impact of visual science communication in educational contexts and public engagement, health and social media/data journalism visualizations, and visual formats in academia and higher education. The different contributions cover specific case studies/campaigns in South Africa, Denmark, Spain and globally, showing the potential of visual narratives, formats and communication/participatory methods as vehicles to support: plastic pollution sustainability (Neef et al.), embodied narratives in science outreach (Bento et al.), patient empowerment and women's health (Stanek et al.), patient-informed decision making (Bierer and Kassis), the widespread delivery of complex information communication in times of crisis (Wiles et al.), positive attitudes toward data-driven news (Sánchez-Holgado et al.), better understanding of video' persuasive effects in informal settings (Schorn) and finally, the exploration of new opportunities in posters design for increased dissemination and publication (Faulkes).

Visual science communication in educational and public engagement contexts

Neef et al. address South Africa's plastic bag pollution, proposing strategies derived from an online workshop with a diverse audience. Recommendations include economic incentives, structural changes, and behavioral interventions to reduce plastic bag use. Stakeholders advocate for comprehensive approaches, emphasizing community engagement over conventional measures like increased levies or complete bans. They stress the importance of education, social norms, and creative communication tools like videos for promoting sustainable practices. Their findings can inform policymakers, businesses, educators, and individuals in tackling plastic pollution sustainably.

Bento et al. explore the Native Scientists science engagement program activity to promote scientific literacy and multilingualism through small-group workshops conducted in heritage languages, facilitating interactions between scientists and students from migrant communities. A qualitative analysis reveals scientists' motivations, predominantly societal and personal, aligning with their expectations and outcomes, including transferable skills, networking, and personal fulfillment. The in-person workshops and shared characteristics between scientists and students emerge as influential engagement factors, suggesting the importance of embodied narratives in science outreach.

Health and social media/data journalism visualizations

Stanek et al. evaluate the impact of the #1in10 visual social media health campaign, co-created by the Danish Endometriosis Patient Association and women with endometriosis. Seven themes emerged from interviews, indicating meaningful participation and increased awareness. Social media metrics revealed substantial engagement, reaching various stakeholders. The campaign empowered participants, fostered community support, and garnered societal attention, highlighting its effectiveness on individual, communal, and societal levels in raising awareness and recognition of endometriosis, an underdiagnosed disease often surrounded by taboo.

Wiles et al. bring us insights on their experience spurred from the "*Flatten the Curve*" graphic, one of the most impactful viral campaigns in social media about COVID-19 during the pandemic period. More than 70 graphics were produced and widely distributed as accessible and multi-language visual communication products. In this article they describe key outputs of the Wiles Morris successful collaboration and offer advice for scientists-illustrators collaborations in translating complex information in an accessible, clear and concise fashion.

Sánchez-Holgado et al. explore the impact of data visualization in journalism, comparing traditional news with data-enhanced journalistic pieces. Their study ($N = 700$) indicates that data visualization increases comprehension and fosters positive attitudes toward it. Factors like comprehension and interest significantly influence attitudes, suggesting avenues for further investigation into data-driven news performance.

Bierer and Kassis dive into understanding the use of numeric data in healthcare and clinical research for informed decision-making, emphasizing the role of communicators to ensure information facilitates comprehension and autonomy that leads to health numeracy. This article introduces health numeracy in clinical research, advocating for tailored communication strategies, discussing seven numeric concept categories and emphasizing the importance of supportive visuals to enhance understanding of research-related information. They further conclude that increasing communicator awareness of health numeracy and utilizing visual representations in clinical research communication can better serve audience needs.

Visual formats in academia and higher education - videos and posters

Schorn presents a mini review that compiles the state of research on explainer videos, with a focus on persuasive effects in informal settings. Even though these are frequently used for educational purposes, they lack a consistent definition and categorization in literature. While most studies focus on their educational value, they also serve persuasive goals. However, there's limited research on their persuasiveness, despite their significant role in promoting scientific topics and marketing. Explainer videos, with their storytelling techniques and informal style, potentially influence attitudes and behaviors. Understanding their impact, particularly in science communication, is crucial due to conflicting information online. This review highlights research gaps and emphasizes the need to explore their persuasive effects in informal settings.

Finally, Faulkes analyses the visual structure of award-winning student posters from a large scientific society conference showing that these mainly adopt a journal article format, with about 75% following an "Introduction, methods, results, discussion" structure and two-thirds using a columnar layout. They commonly include multiple graphs and references, despite minimal formatting

requirements. Despite traditional formats on poster design, new designs such as billboards or digital formats can bring new opportunities for increased dissemination and publication.

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JM: Conceptualization, Writing – original draft. AC: Conceptualization, Writing – review & editing. PJ: Writing – review & editing.

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JM works for Science for Change (SFC).

The remaining authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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