



# Utilizing Art and Animation as a Tool for Promoting Health Care Among Youth and Middle Aged Rural Population

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## Abstract

The proliferation of digital channels of interaction has presented several opportunities to improve the appeal of health communication, particularly for those with little health literacy. Videos and animations are only two examples of the many ways that information may be conveyed over the Internet. Video computer customising was shown to be more helpful than text laptop tailoring in helping people quit smoking, according to a research comparing the two. However, a recent analysis of the literature found that written and visual content are generally equally effective.

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## Introduction

Throughout the decades, artists have used visual representations to reinterpret medical challenges, giving new insights to the field. A possible method for enabling and deepening communications that redresses the power imbalance in contact between physicians, medical specialists, medical educators, and students or patients is the artistic engagement of medical illustrators or animators as image producers. Artists often aim to elicit an emotional response rather than just provide scientific information. The artist's role in the interpretation and visualisation of medical data goes beyond the merely didactic. When compared to the reductionist plain medical facts, the artistically depicted picture articulated by an artist might be a refreshing change of pace. Through medical animation, he can make tales that might increase the reach of medical imaging. Several concerns concerning the authenticity of the shown and simulated visuals are raised by this: In what ways does the creator make decisions based on the medical data? Does art only reflect or create the world in which we live? To the letter or with some spin? When

creating art, does the artist only reflect or shape the medical world around them?

In medical animation, striking an aesthetic equilibrium between authenticity and clarity is a significant challenge. Medical concepts might be tough to illustrate. Aesthetic modification is defined as the introduction, removal, or alteration of discernible elements in a picture during post-production. To prevent misrepresentations and misunderstandings, medical pictures have been properly manipulated to enable superposition or clarity augmentation for medical educational, experimental, and scientific reasons without requiring direct physical involvement. In a 2001 study (Tsafirir & Ohry),

Artists as visual communicators, on the other hand, adopt specific approaches, not with the intent to alter the truth that they were attempting to clear, but to make images included and characterised to attract the interest of the recipient while maintaining him on the path of the image without renouncing the reality, but perhaps beyond the limits.



When data is tampered with in this way, it calls into doubt the veracity of medical animation documentation. Some artists have the mistaken belief that any amount of manipulation is feasible, leading them to filter and alter their work for the purpose of aesthetics. (Lyttle2015)

From idea conception to final representation, animators are driven by a desire to showcase the medical world and convey tales according to the animator's creative vision, which is informed by the animator's own experiences and the credited medical reference. Medical illustrators, for instance, depict surgical processes and provide images of healthy and sick body parts to demonstrate the latter's impact on the former. Showing how normal tissue operates, or how dysfunctional tissue is affected by disease. An artist might structure or stylize identical animated materials in multiple ways, with varied interpretations of the actual world, leading to the claim that neither illustration nor animation is the whole truth. (McNally2015)

The illustrative editing style is not the same as processing or manipulation. All photographs are altered in some way, and the degree of alteration is a matter of taste rather than a compromise on the accuracy of the depicted medical condition. Adding or removing critical medical information, or arbitrarily rearranging data are the only examples of processing that cross the line into manipulation. The medical artist's role requires him to add both scientific rigour and aesthetic flair to his illustrations or animations of medical situations. (Hajar2011)

Many technical trials are necessary before any artistic input can be made in medical animation. Seeing the world as it really is could call for the most mechanically artificial of renderings. In order to look genuine, articulating, stylizing, processing, editing, and even manipulation have permeated all levels of reality formation. That which suggests reality more clearly has greater constructive force behind it. In order to display on an additional level of conceptualization, semantics and interaction between users

must be considered, and pictures that explain medical circumstances in a more easily understood and comprehensive manner are required. From the early stages of concept (creative) development such as storyboarding, animations or pre-visualization, conceptual art (character and environment), through the production phase such as character creation, environments which comprise the story of the animation, modelling, texturing, setup, the animation process, lighting, rendering, and animation tests, and finally into the post-production phase such as edit, there is room for artistic assistance at almost every stage of medical animation practise.

The text modalities (or presentation formats) of animations and textual information are radically different. Unlike flyers or webpages, which often include written content, animated shorts typically feature spoken language. The cognitive framework of multimedia education explains how humans take in new information via a combination of text and visuals. Humans, according to this theory's underlying dual-channel premise, use distinct pathways in their brains to take in and make sense of the visual and aural worlds. It is anticipated that each channel would have its own restricted processing capability. This indicates that people are more likely to retain data provided in both visual and aural formats than in either medium alone. Both text and images in written communications are visual and are processed visually. In contrast, animations combine spoken text with moving images. Using animations with two distinct modes might lessen the possibility that the recipient would feel mental fatigue. Information processing is slowed down by cognitive overload.

The limited capacity theory of motivated, mediated processing of messages states that humans are more able to process, remember, and recall information when they have more accessible cognitive resources. Information recall indicates the last step of processing, retrieval. This leads us to the following hypothesis (H1): Health messages that use

spoken language (as opposed to written text) increase retention of information.

As a result, it stands to reason that individuals would respond more favourably to readily digestible messages than they will to those that require more mental effort. A study of websites corroborated this theory, finding that sites containing both visual and aural information were more likely to inspire favourable and long-lasting attitudes than ones with solely visual information. One may assume that individuals are more receptive to communications that have both visual and audio components. Our second hypothesis follows: listeners are more likely to take health messages seriously if they are delivered verbally (as opposed to reading them) (H2).

### **Health Literacy and Illustration versus Animation**

For the sake of making educated choices about one's health, "health literacy" is defined as "the degree to which individuals can obtain, process, understand, and communicate about health-related information". It's a wide, vague idea that's still being worked out. People who have difficulties reading also tend to have difficulties with health literacy since the two are so intertwined. Audiences with minimal health literacy may find spoken messaging especially useful since they don't need reading. Many people who belong to groups with poor health literacy also lack the health-related expertise necessary to comprehend the information provided. Therefore, people with little health literacy may experience cognitive overload when exposed to health-related knowledge. People with inadequate health literacy may benefit greatly from efforts to reduce cognitive burden by adopting message elements that assist processing. Our third hypothesis, then, asserts that only persons with inadequate health literacy will benefit from hearing the message rather than reading it (H3).

Moving pictures may have an effect on how people feel about the information being

conveyed, in addition to enhancing recollection. The audience's attention is more likely to be captured by an animated ad than by a static one because of the greater level of detail in the animation. The fluidity of animations makes them more engaging and thought-provoking to viewers. A survey of internet advertisers found that consumers responded favourably to animated ads compared to static ones. However, only in the case of audible text messages can the beneficial impact of moving visuals be anticipated on attitudes. People's visual attention is divided between the written content and the images since both are processed by the eyes. The human eye is naturally drawn to things in motion. Thus, the incorporation of both motion and text increases mental effort and slows down processing. This may have a chilling effect on how people feel about the message. In light of this research, it is hypothesised (H5) that animations (as opposed to drawings) will have a more favourable effect on message attitudes when the text is spoken.

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The results of a meta-analysis comparing the educational value of animations and graphics were conclusive: animations are more effective. According to the authors, a mental representation may benefit from having an external model provided by an animation. Since part of learning and comprehending is forming a good mental picture, animations will be more helpful in this regard than pictures. This is especially true for groups of viewers who, including those with poor health literacy, lack the information necessary to form such mental images on their own. Given this line of thinking, animated visual material should facilitate better information processing than drawings. This won't remain the case forever, however. Unlike static images, animations demand the viewer's undivided attention because of all the moving parts. It has been argued that because of the constant evolution of the visual data, viewers of animations need to maintain a heightened state of attention. This has the potential to expand people's brainpower, which is needed for accurate information processing. Listening

to the text rather than reading it is believed to help receivers deal with the higher cognitive strain. People with inadequate health literacy are more prone to feel cognitive overload, hence it is important that the textual content in animations be spoken rather than written. As a result, it is hypothesised (H4a) that animations (instead of images) will have a beneficial effect on memory, but only if the text is read aloud. People with poor health literacy (H4b) will be the only ones to experience this interaction effect.

Communication theory predicts, however, that how individuals rate the message will influence how they feel about the action. If a message concerning colorectal cancer has qualities that improve the way in which information is processed, then familiarity with the language used in the message will likely lead to a more favourable reception. The term "spill-over effect" describes how favourable impressions of the message might influence subsequent evaluations of its effectiveness. favourable reactions to a commercial or a game may have a favourable influence on consumers' perceptions of the brand, a phenomenon known as a "spillover effect" in the area of communication. As a result, one's outlook about cancer screening may change for the better if one has a favourable impression of the message. Intention to act is influenced by one's perspective on doing the action, according to the idea of planned behaviour. Health studies consistently find that those who have a favourable outlook on cancer screening have a higher intention to participate in the process.

### Discussion

While our research did find that those with lower health literacy were more likely to benefit from animated health messages, it also found that those with higher health literacy did not experience any detrimental impacts. This is consistent with the findings of a research on personalised health information, which found that audiovisual messages on quitting smoking are successful across all levels of education. This research contributes to the body of knowledge by

exploring how distinct characteristics of animations affect how people with varying levels of health literacy perceive and absorb information. Better understanding of animations' potential for lowering health information processing inequalities might be gained by isolating the most effective components of audiovisual communications or textual text messages.

Whether or not animations are useful in health communication depends on the information that is being conveyed. Our communications focused on the progression of colorectal cancer, the removal of colon polyps, and the testing method, all of which lend themselves well to visual representation in animation. Some material just doesn't lend itself to visual representation. One study's unfavourable outcome might be due to the fact that animated videos weren't used to convey information about giving informed permission. Sleep apnea and the effectiveness of positive airway pressure or inhaler usage in asthma were the primary foci of the research that revealed beneficial benefits for audiovisual messaging. Therefore, animations are most likely to be successful when the graphics accurately depict the message's subject matter and aid in comprehending that subject matter. Unless this is the case, the activity of animations may divert attention away from the material being presented. In such a scenario, viewers may recall their exposure to the animation more than any specific details. Our results may have been the result of the animation's accurate depiction of the text without the inclusion of any irrelevant or distracting elements.

People with little health literacy are more likely to remember information if it is spoken to them, although this result may be explained in a variety of ways. The cognitive theory of multimedia learning postulates that receiving knowledge via several forms might enhance information processing. The correlation between health literacy and functional literacy also provides some insight. It's possible that the superiority of the spoken messages when no reading was necessary was

due to the fact that individuals with poor health literacy were less proficient readers. In this research, we stratified our sample to account for differences in educational background, but we did not assess participants' reading comprehension.

### Limitations

The animation suffered since it was cut up into shorter chunks, which prevented it from seeming as natural as it might have. In their native habitats, audiences may see cartoons in their whole, rather than in segments. Therefore, future studies should investigate the effects of modalities and animations on lengthier messages. Complete animations, on the other hand, should be handled even better since the exposure is smoother and less disrupted by awkward pauses. Furthermore, a recent meta-analysis on the modality impact revealed that spoken messages are often preferred over written ones in system-paced communications. Our findings of a modal difference in self-paced communications lend credence to the notion that modal differences would be much more pronounced in lengthier, system-paced messages.

People require a variety of abilities to make the most of the information they find online. Finding pertinent information online and determining the reliability of that information, for instance, are not covered by our health literacy score. The eHEALS is one eHealth literacy scale that more accurately measures these abilities. Since eHealth literacy has been demonstrated to be connected to colorectal cancer awareness and screening participation, it may be important to include eHealth literacy in future study on screening for colorectal cancer information. However, eHEALS has certain limitations, including an inaccuracy in reflecting people's real performance on online tasks. As our research investigated the effect of health literacy on efficiency of information the process, we deemed SAHL-D to be the optimum health literacy test for this purpose, even in an online situation.

### Conclusions

In conclusion, the best approach to convey complex health messages to persons with limited health literacy is via animated visual information mixed with spoken text. Due to the elimination of memory discrepancies, this approach may even overcome the gap between audiences with poor and high health literacy. People with inadequate health literacy are more likely to have a favourable attitude towards the message and the screening if they hear it spoken aloud. All of the animations and the voiceover were really well done. A trained animator created the animations, while a radio news anchor read the script. This may have also contributed to the spread of optimistic views of the message. The software needed to create animations is either free or cheap. However, you may not be able to create a nice, believable, and professional-looking animation using the tools available in these programmes. More study is needed to determine whether the quality of animations has an impact on the effectiveness of their messages. For the time being, we advise sticking with industry-standard tools for developing health animations. Those with limited health literacy performed better when exposed to spoken cartoons, whereas those with high health literacy showed no detrimental format effects. This finding suggests that in public health communication, messages targeted at those with poor health literacy are appropriate for those with high health literacy as well.

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