

## **A Comparative Study of AI and Human-Generated Health Video Appeal**

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### **ABSTRACT**

*This study explores the efficacy of AI-generated health-related content (HRC) compared to human-produced videos in terms of audience trust and engagement. Utilizing a sample of 24 middle-aged South Asian females, we compared videos generated using invideo.ai based on popular YouTube videos to their actual human-generated counterparts across two genres: general wellness and instructional walkthroughs. Results showed no significant difference in viewer response, with one exception—AI-generated wellness content was statistically more likely to encourage viewers to follow the advice. These findings suggest that AI can produce health content on par with, or in some cases better than, human creators, highlighting the potential benefits and risks of AI in health communication and beyond.*

### **Introduction**

Before the recent surge in the popularity of Artificial Intelligence (AI), simple models had already been applied in a wide range of fields. One of the most prominent technologies was Natural Language Processing (NLP), which is a subset of AI focused on building algorithms capable of comprehending (Natural Language Understanding) and recreating (Natural Language Generation) realistic human speech and writing. Thus far, Natural Language Understanding (NLU) has been more prevalent due to its large applications in information summarization and textual analysis; however, as these AI models improve, NLP's ability to generate language (NLG) is gaining traction. One such way the technology is being applied is through script writing and video production (Khurana et al., 2022). As NLP can both comprehend and generate, when given a prompt these models can create a script and then read their own scripts to match them with corresponding video clips.

One potential application of this self-sufficient process could be to produce online videos, specifically Health Related Content (HRC). A study from BioMed Central Public Health found

that out of 3,000 YouTube users surveyed, 87.6% consume HRC on the platform, and 84.7% base decisions on the content they consume (Mohamed and Shoufan, 2024). Another study from the Department of Psychology at San Francisco State University found that an individual's personality and behaviors typically determined their predisposition toward AI, with more agreeable people being more inclined to trust the technology (Garcia et al., 2024). Therefore, this study aimed to determine if the same high opinions and trust audiences hold of HRC would hold with content generated by an AI video production model.

## **Method**

### *Participants*

The experiment consisted of 24 participants who ranged from 38 to 50 years old. All of these respondents identified as South Asian females, and none were compensated for their participation.

### *Materials*

The original videos and transcripts were sourced from YouTube, with our search prioritizing those with higher view counts and shorter lengths (under 10 minutes for the general wellness, and under 4 minutes for the tutorial). We decided on two genres of health-related content (HRC) to replicate: general wellness, as they are currently the most popular form of HRC, and instructional videos, as they typically hinge on the viewer following recommendations in the video. As such, we decided on the videos "7 Stupid Health Mistakes" by Dr. Eric Berg DC and "How to do CPR on an Adult (Ages 12 and Older)" from the channel Cincinnati Children's.

We then utilized the AI video generation site *invideo.ai*, which generates videos using stock footage and voice presets using prompts inputted by users. In place of prompts, we copied the transcripts of the two original videos provided by YouTube into *invideo.ai*. To account for the lack of a caption option on our videos, we added the instruction "add default white subtitles with no animation". For the purposes of this experiment, a premium account was purchased so that footage was unmarked and participants would not be able to discern the video's source.

Questions asked after the videos aimed at quantifying respondents' opinions using a Likert scale of one to seven. The same five were asked after every video:

1. How much do you trust/believe the contents in this video?
2. How likely are you to follow the advice given by the video?
3. How easy/difficult was following the information in the video?

- 4. How engaging was the video?
- 5. Overall, how much did you enjoy this video?

The overall purpose of these questions was to gauge the viewers’ reactions while watching the video—the production and talking points—as well as the lasting impact. The videos and questions were finally compiled into a survey using Google Forms.

**Procedure**

All participants received the same script before participating: “You will be watching two health-related videos and asked for your feedback on them both; the whole survey should only take around 15-20 minutes. Please answer all of the questions in one sitting so that you retain the video’s contents. Thank you for your participation!” Participants were randomly sent the link to either the human or AI survey in order to remove confounding variables. Data was accumulated over a 2 week period before survey responses were closed off.

**Results**

The forms for the AI and human-generated videos received 10 and 14 responses respectively. Below is a table of the respondents’ means for each question in both forms,

General Wellness Videos (means)		
	AI (invideo.ai)	Human (Dr. Eric Berg DC)
How much do you trust/believe the contents of this video?	6.10	5.14
How likely are you to follow the instructions provided in the video?	5.80	4.21
How easy was it to follow the information in the video?	5.90	5.71

How engaging was the video?	6.00	5.50
Overall, how much did you enjoy watching this video?	6.00	5.50

CPR Videos (means)		
	AI (invideo.ai)	Human (Cincinnati Children's)
How much do you trust/believe the contents of this video?	5.78	6.07
How likely are you to follow the instructions provided in the video?	5.80	6.07
How easy was it to follow the information in the video?	6.00	6.00
How engaging was the video?	5.90	6.14
Overall, how much did you enjoy watching this video?	6.00	6.07

In a t-test comparison on the same questions across the two forms, the  $df = 22$  for all questions, and there was no statistical significance ( $t < 1$ ) in all responses except one. The one question that showed a statistically-significant difference was for the general wellness video and the question "How likely are you to follow the advice given by the video?",  $t = 2.49$ ,  $p = 0.02$ .

We also combined the responses from the AI and human-generated videos to correlate the values to those of different questions. We first combined and correlated responses to the general wellness videos. The results are as follows:

- Questions 1 and 2:  $r = 0.8352$ ,  $df = 22$ ,  $p < .01$
- Questions 1 and 3:  $r = 0.3538$ , ns
- Questions 1 and 4:  $r = 0.4803$ ,  $df = 22$ ,  $p < .05$
- Questions 1 and 5:  $r = 0.6109$ ,  $df = 22$ ,  $p < .01$
- Questions 2 and 3:  $r = 0.4610$ ,  $df = 22$ ,  $p < .05$
- Questions 2 and 4:  $r = 0.4084$ ,  $df = 22$ ,  $p < .05$
- Questions 2 and 5:  $r = 0.4932$ ,  $df = 22$ ,  $p < .05$
- Questions 3 and 4:  $r = 0.6940$ ,  $df = 22$ ,  $p < .01$
- Questions 3 and 5:  $r = 0.7554$ ,  $df = 22$ ,  $p < .01$
- Questions 4 and 5:  $r = 0.8345$ ,  $df = 22$ ,  $p < .01$

We then combined and correlated responses to the CPR instructional video:

- Questions 1 and 2:  $r = 0.7102$ ,  $df = 22$ ,  $p < .01$
- Questions 1 and 3:  $r = 0.5901$ ,  $df = 22$ ,  $p < .01$
- Questions 1 and 4:  $r = 0.6850$ ,  $df = 22$ ,  $p < .01$
- Questions 1 and 5:  $r = 0.7538$ ,  $df = 22$ ,  $p < .01$
- Questions 2 and 3:  $r = 0.6468$ ,  $df = 22$ ,  $p < .01$
- Questions 2 and 4:  $r = 0.5218$ ,  $df = 22$ ,  $p < .01$
- Questions 2 and 5:  $r = 0.5317$ ,  $df = 22$ ,  $p < .01$
- Questions 3 and 4:  $r = 0.8363$ ,  $df = 22$ ,  $p < .01$
- Questions 3 and 5:  $r = 0.8120$ ,  $df = 22$ ,  $p < .01$
- Questions 4 and 5:  $r = 0.9567$ ,  $df = 22$ ,  $p < .01$

In general, with one exception, the between-item correlations were all statistically significant. Not surprisingly, the correlations across the two types of videos between how much the viewer believed the video and how likely the user was to follow the video's recommendations were high. There were also strong relationships between trust and engagement and trust and enjoyment, but since only correlations were calculated, the direction of causality is unclear. Do people trust videos they find engaging and enjoyable or do they enjoy and are engaged in videos they trust or is some other dynamic happening?

### **Discussion**

This experiment aimed to determine if AI-generated health-related content could replicate the same response human videos inspire in their audiences. The results of our survey found that almost all recorded aspects of viewer engagement with the videos were unchanged by the source. While there was no statistical significance in our data, the fact that the means were so similar implies that AI can create health content just as good as humans in the eyes of this audience.

In fact, the AI may even be better in some aspects, as the question "How likely are you to follow the instructions provided in the video?" asked for the general wellness tips video produced a statistically significant p-score in favor of the AI-generated content. This score is not attributed to a particularly high mean from the AI video (5.80) but rather a lower mean from the human video (4.21). This outlier in the human mean is consistent in the responses to the question "How much do you trust/believe the contents in this video?", for which it received multiple scores of 1. Since participants did not trust or believe the advice, it then follows that they would not follow it. As such, the AI video received consistently average responses to this question.

The scores for the CPR videos were consistent across both videos with no outliers. This data can be explained by the fact that this video is more objective information, with no face or "personality" backing up the points and influencing viewers' opinions. Additionally, the videos were also much shorter than the general wellness videos, so there were little points of variation for viewers to differ from.

Through these findings, it is evident that AI is at a point where anyone can create health-related content on par or better than that of humans. For content creators, this could mean that editing and even recording videos are obsolete processes, as the AI could recreate the results of their videos with just a script. Of course, in this experiment, the benefits of this technology's power were examined as it was used to disseminate factual health information to the viewers; however, there are cases where the content could change and be used for harm. Since the viewers' belief was so high regardless of the source, and access to AI video generation is common, anyone could make a high-production video with little effort spreading misinformation or slander to an

unassuming audience. This potential could be further researched in a similar study, examining if similar results held true for other opinion-oriented content with the potential for misinformation such as political videos.

In the future, as this technology continues to evolve and improve, it is vital that audiences are educated in how to identify the source of content they consume, regardless of the creator's intent.

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