Attitudes toward genetics across 100 years of film and television

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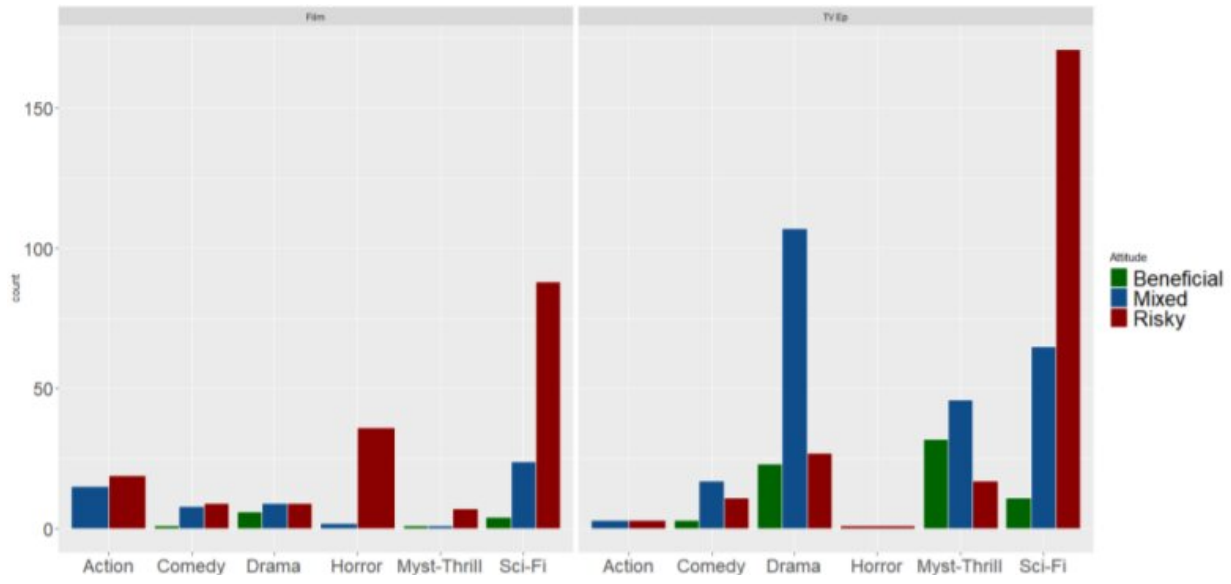

Differences in attitude by genre. Credit: DOI: 10.12929/jls.14.1-2.01

Science's influence on pop culture is undeniable, but equally important is how popular culture affects people's understanding of science. Jay Clayton, director of the Curb Center for Art, Enterprise and Public Policy, William R. Kenan, Jr. Professor of English and faculty member of the Evolutionary Studies Initiative, and his group wanted to explore how the concept of genetics has been treated in literature, movies, television and social media over the past century.

"How genetics is represented in culture is enormously important," Clayton said. "The images that circulate in popular culture both shape and reflect public attitudes toward science. Imagined worlds provide a space for reflection and depict the complex social and ethical issues that can emerge around scientific discoveries."

Graduate research fellow Ethan Gibbons, MA'18, led the study "Genetics in Film and TV, 1912–2020," published in the *Journal of Literature and Science*. Gibbons, along with Clayton and undergraduate student Isaac Stovall, analyzed more than 800 film and television episodes with storylines and themes that featured genetic concepts. The team coded the data for 109 variables, including whether the film or television show depicted genetic science as beneficial, risky or mixed. They found that attitudes varied significantly over time, across media platforms and by genre.

This deep dive into genetics in popular culture was funded by National Institutes of Health's National Human Genome Research Institute grant 5RM1HG009034 to Vanderbilt University Medical Center's Center for Genetic Privacy and Identity in Community Settings, of which Clayton is a faculty affiliate. Researchers from law, genetics, biomedical informatics, bioethics, the social sciences and the humanities also participated in this review. "Our team is charged with looking at how popular culture affects people's attitudes toward genetics," Clayton said.

Overall, films portrayed genetics as risky (70.6 percent) far more often than did television shows (42.7 percent). This difference stems from the preponderance of medical and forensic detective television shows which explore genetics' potential to improve medical care and to solve crimes. Horror and science fiction films were more likely to depict genetics in negative terms (74 percent) than dramas (20 percent), which often attempt to show both the benefits and risks of genetics.

Movies are more than twice as likely than TV to show genetic science in a negative way

With genre and time held constant, there were very few examples of a positive take on genetics in movies. "The 2007 movie The Last Mimzy presents genetics favorably. In order to save humanity from destroying itself from pollution, the main character is sent a toy-like object (a Mimzy) from the future," Gibbons said. "The Mimzy allows the characters to time travel into the future in order to bring as-yet uncorrupted DNA to future humans."

More common is a negative take on genetics in movies. "Take Blade Runner 2049. Some of the scary ways genetic data are handled in that movie are easy to imagine coming to pass in our own society," Clayton said. "Both the government and private corporations maintain vast databases that correlate every person's DNA with their health record, consumer habits, driver's license, criminal record, political and religious views and more. Of course, the movie also has many science fiction elements, too, like human clones created for work in toxic environments and off-world slave colonies."

Horror is 15 times more likely than action to paint genetic concepts as risky

Holding time period and medium constant, the genre of action was the closest to an even mix of risky and non-risky attitudes toward genetics. Compared to the action genre, horror was 15 times more likely to portray genetics as risky, while drama was a third as likely to treat genetics as risky.

Across genres, drama movies and mystery/thriller TV have the highest percentage of beneficial occurrences of genetics. Across horror film and

television episodes, genetic concepts are shown as risky. Imagine a genetics experiment gone wrong producing a monster that comes to murder all the scientists trying to stop it.

The 2000s had closest to equal number of risky and non-risky portrayals of genetic concepts

With medium and genre constant, there were significant differences among time periods. From 1970 to 1989, genetics were portrayed as risky 90 percent more often than the 2000s. The 2010s showed genetics as risky one-third less often than the 2000s.

The researchers found that eugenics was usually presented in a positive light in the time between 1912 and 1949. Eugenics was considered a way of improving mankind—often with blatantly racist undertones—that is now widely discredited. The researchers reviewed movies in which, generally, white characters conquered adversaries by using superior intellect. This supposed superiority was then passed down to the next generation.

"The first film in our dataset was directed by D.W. Griffith, who three years later released Birth of a Nation, which infamously portrayed the Ku Klux Klan as heroes, leading to an explosion in the group's numbers," Clayton said. "More contemporary movies like Gattaca warn against the dangers of eugenics in powerful terms."

"I think the Frankenstein motif, in which genetics is depicted as dangerous, will likely continue in movies," Gibbons said. "It's just such a catchy hook for movies about science. I also think the use of forensic genetics to solve crimes is likely to remain a major plot point in police procedurals and other TV shows. The interesting change will be in how genetic ancestry filters into popular media as ancestry testing companies

continue to grow in popularity."

More information: Ethan Gibbons, Isaac Stovall, and Jay Clayton, Genetics in Film and TV, 1912–2020, *Journal of Literature and Science* (2021). DOI: 10.12929/jls.14.1-2.01. www.literatureandscience.org/v …-14-issues-1-2-2021/

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