

UTILIZING CINEMATIC STORIES TO SHIFT FEAR INTO COMPASSION
TOWARDS PIT BULL TYPE BREEDS

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Abstract

Creating entertaining yet educational stories to cultivate curiosity in caring for animals can improve animal welfare as well as our own public health under a One Health initiative. More specifically, tailoring well-crafted cinematic stories utilizing thoughtful anthropomorphism about misunderstood dog breeds such as pit bulls can potentially debunk sensationalized media myths surrounding their reputation. Further research is worth pursuing on how an anthropomorphic film with an emotional arc utilizing a non-aggressive pit bull character can decrease a population's previous concerns of “scary” dog breeds discriminated against under breed specific legislation while also championing the use of particular films as moral educators. While the pilot data showed both positive and negative trends in subjects’ perceptions of pit bulls, “scary” dog breeds, and animal sentience after watching the film *Kitbull*, emotional cinematic stories and the content within those stories matter. We as animal welfare scientists and media professionals must work in collaboration to create truthful yet compelling stories utilizing anthropomorphism more thoughtfully so that we may nurture an audience’s empathy and compassion towards misunderstood animals in society. By increasing our efforts in improving domesticated dog welfare with a focus on debunking societal myths about mislabeled “dangerous” dog breeds such as the pit bull through motion picture stories, we not only better animal and human welfare within local communities, but world-wide.

Introduction

Saturday night: The smell of buttery popcorn is in the air. A delicious ice cold fountain drink is in your hand as you nestle into an oversized chair surrounded by friends among a mass of excitedly chatty people. Suddenly, the lights go dark as surround sound speakers swell with cinematic music celebrating a highly anticipated film's opening night. Cut to Monday night: you are in pajamas, under a soft cuddly blanket, with a glass of red wine in hand. You are ready to binge watch episodes of the latest hit show after a really tough day at work. You cry, you laugh, and you're ready to escape your world to dive into another. Our lives are centered around stories both publicly and privately. A great story can even have us rooting for the bad guy if we are able to empathize with their life struggles to overcome trials and tribulations ([Keen et al., 2012](#)). Be it understanding humanity and childhood trauma through a murderous mob boss in *The Sopranos* or rooting for a talking rat to live his dreams as a chef in Disney's *Ratatouille*, we as humans rely on stories to understand ourselves and the world we live in past present, and future.

As film critic [Roger Ebert](#) emphasizes about our necessity for cinematic storytelling:

“For me, the movies are like a machine that generates empathy ...It helps us to identify with the people who are sharing this journey with us. And that, to me, is the most noble thing that good movies can do and it's a reason to encourage them and to support them and to go to them.”

Before outlining ways in which cinematic storytelling, anthropomorphism, and animal welfare are intertwined, we must first understand from an anthropological perspective why we are drawn to stories in the first place. Fictional narrative began organically for *homo sapiens* “as a way of discovering more of what it might be to be human”(Boyd 2017). We must not be short sighted into thinking stories are only for entertainment purposes or on the opposite spectrum, strictly as evolutionary advancement of the human race. My research in cinematic storytelling

and anthropomorphism relies on multiple disciplines to create a bigger picture so that we may be able to think outside the box for improving animal welfare. These disciplines include socio-cultural anthropology, neurology, film history, psychology, media, philosophy, marketing, biology, and animal welfare science. With these individual disciplines working under one umbrella of Penn Vet's "One Health" initiative ([Levin 2018](#)), we can develop creative solutions in which stories can help improve the quality of life for ourselves, animals, and the world around us.

I. THE NECESSITY OF NARRATIVE FOR HUMAN EVOLUTION & SOCIAL CONNECTION

A. Our ancestral & physiological connection to stories

Storytelling, art, and performance is a "human universal" found cross culturally among peoples ([Brown 2004](#)). About 2.5-1.5 million years ago, the cranial expansion of *erectus* or *heidelbergensis* allowed for the development of the prelinguistic mimetic mind for social teaching of fire-making, tool-making, and cooperative hunting ([Boyd 2017](#)). While there is debate on whether language evolved from this prelinguistic mimetic mind due to genetic phenotypic plasticity or behavior, our ancestor *erectus* needed to find better ways in communicating the events of the day for social cooperation ([Boyd 2017](#)). While the timeline of language development lacks concrete evidence ([Hauser et., al 2014](#)), the common ancestor of *Homo sapiens* and *Homo neanderthalensis* known as *Homo heidelbergensis* began to develop speech about half a million years ago ([Boyd 2017](#)). Boyd suggests that this timeline of language development allowed for storytelling to be a key form of communication between our ancient ancestors through the beginnings of folk psychology ([2017](#)). Fast forward to the present day,

stories continue to be vital “...in evoking higher orders of theory of mind via the imagination...” in modern civilization as well as hunter gatherer societies ([Wiessner 2014](#)).

Along with our unique development of language and ability to string complex thoughts together to tell stories, we also respond physiologically to emotional arcs within these stories due to the release of oxytocin ([Zak 2015](#)). Oxytocin is released in the brain when we become emotionally invested in a moving moment by a character within a story ([Zak 2015](#)). This physiological release of oxytocin does not discriminate from person to person. Connection to storytelling is once again, a human universal that does not discriminate against race, gender, culture, or urban, rural, and/or suburban environments ([Brown 2004](#)). We find ourselves cheering on a fictional hero to defeat a villain or crying when a character we never knew personally passes away ([Zak 2015](#)). Not only do we feel connected to human characters, but we also become emotionally attached towards non-human characters such as animals, robots, and even aliens like Baby Yoda in *The Mandalorian* ([Lange 2019](#), [Urquiza-Haas & Kotrschal 2015](#)). If stories are beneficial for human evolution ([Boyd 2017](#)), reflect societal values to allow for better social cooperation ([Smith 2017](#)), stimulate physiological responses for us to better relate to the world around us ([Zak 2015](#)), and can be used as an educational tool for teaching morality ([Ward 2010](#)), why not use entertainment for the greater good? More specifically, why not develop cinematic stories as a solution for teaching compassion and empathy towards others, including animals?

B. Increased Accessibility to Motion Picture Stories in the Modern Era

Since the beginning of paid public viewing of films in 1895 ([Science & Media Museum 2021](#)), the technological advances of watching stories on screen has increased substantially. Today, Video On Demand (VOD) streaming platforms create more affordable accessibility to

watch motion pictures for mass consumption ([Feeney 2014](#)). The more viewers who watch a specific television show or film, the grander the scale of how that specific story may impact social order, justice, morals, and empathy ([Hallander 2021](#)). In the twenty-first century, the opportunity to be entertained and informed through motion picture narrative be it on the big screen or a social media post is on a wider reaching platform than our past hunter gatherer oral story traditions around campfires ([Wiessner 2014](#)). Although the advancements of media and film are exciting and convenient in the modern era, current fictional narrative content has a greater impact on society's moral compass both positively and negatively towards humans and animals alike than ever before.

II. ANTHROPOMORPHISM IN FILM & MEDIA

A. Anthropomorphism & Baby Schema

[Urquiza-Haas & Kotrschal](#) define anthropomorphism as “...the attribution of human characteristics or behaviour to any other nonhuman entity in the environment and includes phenomena as diverse as attributing thoughts and emotions to both domestic and wild animals, to dressing a Chihuahua dog as a baby, or interpreting deities as human...” ([2015](#)).

Anthropomorphic animal characters in stories can be a source of both fear and/or obsession through social contagion ([Herzog 2006](#)). Our ability to alienate animals who seem more distant from human consciousness while showing more compassion for animals that are phylogenetically closer (or we think are closer) to our own makeup ([Miralles et al., 2019](#)) can be contributed to what is known as the baby schema ([Borgi et al., 2014](#)). The baby schema effect is crucial for understanding our curiosity of animal characters whose facial features may include “a large head and a round face, a high and protruding forehead, large eyes, and a small nose and

mouth commonly found both in human and animal infants” ([Borgi et al., 2014](#)). [Borgi et al’s](#) research shows how the baby schema is present in human development as early as three to six years old ([2014](#)). The baby schema paired with anthropomorphism in a fictional story may be a key ingredient in determining if an animal is cared for and protected by a community, or hunted and demonized in reality.

When anthropomorphism is used strategically to entertain as well as to cultivate empathy, people may purposefully and/or subconsciously feel more compassion towards real-life animals they see as characters in a cinematic story. Our fascination with baby-like animals is not just learned, but a part of our genetic makeup as to how we categorize something as “cute” or scary ([Borgi et al 2014](#)). We must understand how to use anthropomorphism in great storytelling with emotional arcs to not alienate an animal or person, but how we can cultivate curiosity in learning more about what may scare us or excite us. Neuroscientist [Zak](#) states, “After years of experiments, I now consider oxytocin the neurologic substrate for the Golden Rule: If you treat me well, in most cases my brain will synthesize oxytocin and this will motivate me to treat you well in return.” ([2015](#)).

B. “The Good, The Bad, & The Ugly” of Anthropomorphism

Before diving into the realms of how anthropomorphism has the potential to increase animal welfare through cinematic storytelling, we must be equally aware of how character exploitation of animals within a film has negatively impacted those specific animals throughout history. This false demonization of animals not only decreases animal welfare, but also public health and the natural world we live in. This then negatively impacts WHO’s “One Health” approach in “designing and implementing programmes, policies, legislation and research in

which multiple sectors communicate and work together to achieve better public health outcomes” ([WHO 2017](#)).

One of the most poignant examples of animal villainization in a film with real-world consequences is from the 1975 Hollywood blockbuster hit *Jaws*. Based off the bestselling novel by Peter Benchley, *Jaws* has currently grossed \$471,411,300 worldwide ([IMDB](#)), produced four separate *Jaws* films within the franchise, and has a notorious music soundtrack which may have also contributed to audiences “instinctive yet exaggerated fear” of these big fish ([Nosal et al., 2016](#)). Depicting sharks as “mindless eating machines” ([Romeo 2020](#)), the film’s antagonist is a “rogue” shark that craves human flesh ([Neff & Hueter 2013](#)). [Neff](#) coins the term “*The Jaws Effect*” and discusses how this particular film created such hysteria within a society that a government body assaulted animal welfare to assuage public fear ([2014](#)). In 2001, the Western Australian government enacted a formal kill order through the “Shark Response Plan”, allowing fishery officers to immediately kill a shark who attacked or would “potentially” attack humans near public beaches ([Neff 2014](#)). Thankfully, conservation forward television programs such as Discovery Channel’s *Shark Week* aim to counterbalance the fear of shark attacks around the world ([Neff 2014](#)). No matter if cinema instills awe or fear within society, “no other animal, on land or in the water, generates the entertainment income that shark species do” ([Neff 2014](#)).

While cinematic stories such as *Jaws* fuel public fear that have the power to enact animal kill order legislation based on fictional anthropomorphic narrative, other animal characters in the spotlight can stimulate social contagion and obsession ([Herzog 2006](#)). Just as there are fads in fashion, there is quantitative data that explores the public’s interest in dog breeds that correlates to a breed’s presence in popular movies ([Ghirlanda et., al 2014](#)). Eight years after the 1985 re-release of Disney’s *101 Dalmatians*, the American Kennel Club (AKC) reported an increase

from 8,170 Dalmatian puppies to 42,816 puppies ([Herzog 2006](#)). While Dalmatians were overbred and sold during this time, this particular breed has had the steepest population decline reported after social contagion faded ([Herzog 2006](#)). Sadly, the amount of over breeding of purebred Dalmatians due to popularity decreased Dalmatian welfare as well as relinquishment of the breed to shelters and rescues ([Navarro 1997](#)). Similarly, the popular HBO show *Game of Thrones* resuscitated social contagion for huskies and northern dog breeds that looked similar to dire wolves without prospective owners taking into account the care needed for these active dog breeds ([Daly 2019](#)). These examples reveal that both fear and obsession towards an animal within a cinematic story has the potential to significantly decrease animal welfare as well as our own health and safety.

C. An Agent for Change: How Anthropomorphism Increases Empathy to Improve Animal Welfare & Social Morals

Despite the criticism that anthropomorphism in storytelling can lead to poor animal welfare, there are even more current examples in how anthropomorphism can inspire, educate, and encourage empathetic concern and compassion for animals as well as ourselves. When used strategically in tandem with creativity, stories with anthropomorphic animal characters and motifs can increase animal welfare and human health cohesively for a “One Health” benefit ([Levin 2018](#)).

The 2019 briefing of AZA’s accredited [Seattle Aquarium](#) outlined empathy as a top priority for patrons with subcategories of affective empathy, cognitive empathy, and empathetic concern ([2019](#)). As the Seattle Aquarium briefing states “...if we introduce a crab as a biological example of a crab just like any other crab there will likely be less empathy than if the crab is introduced with a name, gender, story, and unique needs.” ([Seattle Aquarium 2019](#)). Providing

another example of how stories can increase interest in animal wellbeing, [Malecki et al](#) found that after subjects read a short fictional story about animal abuse, the experimental group was more concerned with animal welfare than the control group ([2016](#)). Therefore, anthropomorphism in storytelling can generate public interest in not only bettering an animal's welfare through empathetic concern, but in how that animal is also a sentient being no matter if they are a stereotypically "cute" animal ([Borgi et al., 2014](#)) or a crustacean.

To teach the values of empathy and kindness in the first place, anthropomorphism in film can be utilized as a moral educator starting from early childhood. According to [Ward](#), Disney's *The Lion King* can be an educational tool that teaches children about personal excellence by following the journey of the protagonist Simba who searches for the meaning of his life's purpose within the world ([Ward 2010](#)). Providing further support that *The Lion King* is an indispensable moral educator, [Leeuw and van der Laan](#)'s research in the Netherlands discovered that children were more likely to show helping behavior towards a friend after watching a clip from the movie compared to their peers who were not shown the clip ([2017](#)). Furthermore, preschool educators believe Disney characters are essential to psychological development and childhood self discovery ([Binkley 2016](#)).

Creative, emotional, and moral narrative can be "part of the solution to the contemporary problem of ethical relativity" according to philosopher Macintyre ([Ward 2010](#)). Teaching these moral values through Disney's modern day cinematic folklore is not far-fetched being that these same principles have been present in stories ever since our ancient hunter-gatherer days ([Wiessner 2014](#)). *The Lion King*'s narrative as well as the characters utilized within the story are understood cross-culturally given the film's success world-wide. Therefore, as a "human

universal” ([Brown 2004](#)), Disney’s cinematic storytelling through films like *The Lion King* can be both entertaining as well as socially educational globally.

As entertaining as anthropomorphic motion pictures are, they are simultaneously cost effective, accessible, and have shown to assist viewers in retaining factual information. [Geerdts et al](#) research showed anthropomorphic storybooks “did not interfere with factual learning about real animals” ([2015](#)). Children were able to retell factual, scientific information with biological explanations after reading a fictional anthropomorphic story ([Geerdts et al, 2015](#)). Similar to the idea that anthropomorphism does not negate fact but can be used as a creative learning tool, [Fukano et al](#) focused their studies on how an anthropomorphic anime Japanese TV series intrigued families to search the internet to learn more about specific species used within the show ([2019](#)). Researchers found the show not only piqued a population’s interest in conservation, but inspired advocacy with financial donations towards those specific animals in the series at zoos ([Fukano et al 2019](#)).

While anthropomorphism has many One Health benefits as outlined above, we must be careful to not use this tactic to manipulate, frighten, or emotionally damage a population either. I suggest utilizing what I would like to call *thoughtful anthropomorphism*. *Thoughtful anthropomorphism* heeds critics' warnings in using anthropomorphism haphazardly. Instead, *thoughtful anthropomorphism* encourages writers and creatives to craft great stories with emotional arcs that are both entertaining and educational. Under this usage of anthropomorphism, producers, public relation teams, directors, artists, and writers are also prompted to provide disclaimers and/or further education about the animals used in a story both to dissuade demonization and to prevent possible social contagion.

Thoughtful anthropomorphism also has the potential to be an indispensable tool for zoos and aquariums to increase empathy for animals both in exhibition and in the wild for conservation purposes similar to the focus of the 2019 Seattle Aquarium briefing. *Thoughtful anthropomorphism* aligns with the [AZA's](#) mission to “provide a fun, safe, and educational family experience”. By purposefully weaving factual information within an entertaining story, anthropomorphism can make a difference in the world we live in by cyclically increasing animal welfare and therefore, our own welfare too.

D. Disney's *Cruella*: A Current Example of Thoughtful Anthropomorphism

While *101 Dalmatians* fueled social contagion, Disney gave viewers another perspective on Dalmatians in the 2021 film *Cruella*. The Dalmatians in *Cruella* are literal murder weapons in young Cruella's childhood by viciously killing her mother at a party ([Crow 2021](#)). The importance of mentioning the 2021 film *Cruella* is the overarching theme that anyone can be made a hero or villain depending on who tells the story ([Garber 2021](#)). I applaud Disney's use of *thoughtful anthropomorphism* to not villainize the Dalmatians or the Dalmatian breed in general for their act within the story. Instead, the film shows how the owner of the aggressive Dalmatians should be held accountable for their aggressive actions and that this demonic behavior of the Dalmatians changes once they are in the care of other characters. Genetics, previous trauma, past experiences, socialization, training, and husbandry are all pieces of the whole in assessing dog behavioral aggression. More so, this new narrative in *Cruella* responsibly focused on a person's values in the ability to care and train a dog for their own moral agenda. To quote the Dreamworks film *How to Train Your Dragon*, “Good dragons under the control of bad people do bad things”.

III. MAN'S BEST FRIEND OR FOE: THE PIT BULL

A. Background: Pit Bull History

One particular animal that has notoriously fallen from hero to villain in Hollywood is the pit bull ([Cornelissen and Hopster, 2010](#)). Similar to other “scary” or “villainous” predators in stories and media such as sharks, wolves, and snakes, “the popular media commonly portrays pit bulls as demonic animals - unpredictable and savage in their behavior toward humans.” ([Twining, Arluke, & Patronek 2000](#)). To note, “pit bull” is not one specific breed of dog, but an “elastic, imprecise, and subjective phrase” that encompasses four pedigreed dogs ([NPR’s Fresh Air 2016](#)). These four pedigreed dogs include the American pit bull terrier, American Staffordshire terrier, Staffordshire bull terrier, American Bully, or any mix thereof ([Dickey 2016](#)). According to the [ASPCA](#), today’s pit bulls are descendents of the English bull-baiting dog ([2022](#)). When bull-baiting was outlawed in the 1800s, these dogs became the victims of dog fighting rings while being bred to become quicker, more agile, and athletic ([ASPCA](#)). However, while some pit bulls were bred for fighting, others were simultaneously bred for companionship due to their overall friendly nature ([Enos 2014](#)).

B. Pit Bull Temperament

While headlines about dog fighting can tarnish pit bull reputation overall, only a small fraction of pit bulls will ever become a part of the dog fighting world or other illegal activities ([Dickey 2017](#)). In fact, “Dogs used for fighting needed to be routinely handled by people; therefore aggression toward people was not tolerated” according to the [ASPCA](#). This statement by the ASPCA is also supported in David Simon’s hit HBO drama *The Wire* where the character Cheese handles his docile and friendly pit bull before entering a dog fighting ring (*The Wire* Season 3 episode 2). Despite a portion of pit bulls still being used in notorious dog fighting rings

such as the 2007 Bad Newz Kennels case involving previous NFL quarterback Michael Vick ([Schmidt 2007](#)), pit bulls can be a great candidate as a family companion ([Enos 2014](#)).

In the 1920s, advertisers actually used pit bull type breeds in campaigns not as blood thirsty killers, but as relatable “average Joe’s” in society (Dickey 2017). Expert in canine aggression and bite inhibition Dr. Ian Dunbar ([APDT](#)) has attempted to “tamp down the flames” of pit bull hysteria, handling various dog breeds throughout his career (Dickey 2017). He concludes that pit bulls on a behavioral spectrum act no different than other dog breeds when handled (Dickey 2017). Furthermore, Dr. Dunbar believes pit bulls are one of the easiest breeds to socialize due to their friendliness (Dickey 2017). To drive the point home again, “Good dragons under the control of bad people do bad things” (Dreamworks *How To Tame Your Dragon*).

To support the claims of pit bull friendliness from Dr. Ian Dunbar, Bronwen Dickey, and the ASPCA, research has shown that when temperament tested, pit bulls and golden retrievers do not significantly outperform one another. The American Temperament Testing Society assessed 870 pit bulls and 785 golden retrievers ([dogtime.com](#)). Out of 870 pit bulls tested, 86% of the dogs passed while 85.2% of the golden retrievers passed the same exact temperament test ([dogtime.com](#)). Supporting The American Temperament Testing Society’s results, [Ott et al’s](#) research shows that there is little variation between golden retriever aggression and breeds labeled as “aggressive breeds” categorized under breed specific legislation ([2008](#)). While genetic nature can play a role in a dog’s temperament, the nurture in how a dog is handled, trained, and socialized is another crucial aspect in a dog’s overall behavioral well-being. A [National Geographic interview](#) by Simon Worrall with author of *Pit Bull: The Battle Over An American*

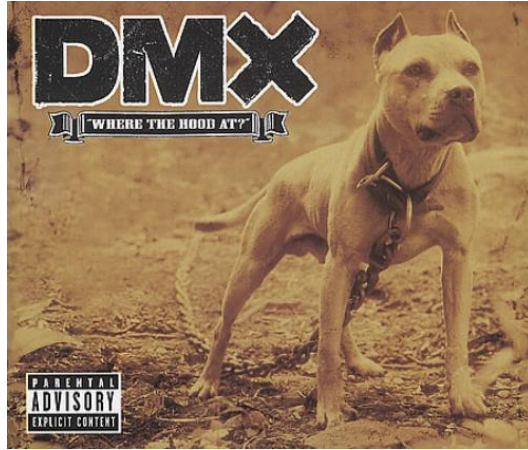
Icon Bronwen Dickey reminds us that we always have to look at the individual dog and not a broad generalization of a breed ([2016](#)).

C. Consequences of Media Sensationalism On Pit Bull Type Breeds



"I'm Neutral, BUT - Not Afraid of Any of Them" Poster
 Getty Images - Wallace Robinson WW1 print 1915

While the pit bull was celebrated in Hollywood on *Little Rascals*, *Our Gang*, and on WWI patriotic cards symbolizing the United States (Dickey 2016), society's perception of pit bulls as a representation of the “every-man” dog began to take a dramatic turn in the 1980s. During this time, hip hop culture began to adopt the image of the pit bull within the black community. Pit bull imagery with chains and a stiff stance was especially present in the music genre gangsta rap even after the 1980s ([Alonso-Recarte 2020](#)) as shown on DMX’s album cover *Grand Champ* with the hit single “Where the Hood At” in the year 2003.



Rapper DMX Album Cover *Grand Champ* with single “Where The Hood At” 2003

UMG Recordings Inc, An Island Def Jam Music Group Release

The year 1980 was also the same year that breed banning legislation began in America starting in Hollywood, Florida ([Animal Legal & Historical Center 2001](#)). In America’s culture climate, fear of “otherness” not only impacted dog breeds, but race as well ([Alonso-Recarte 2020](#)). Unfortunately, sensationalism and fanning the flames of alarmism is good for business in terms of media success. As [Smit](#) describes, a pit bull sleeping at home won’t sell papers, but a pit bull fatally attacking a child will make headlines (2021). Similar to *The Jaws Effect*, public perceptions of pit bulls as generally “viscous” in the 1980s along with their connection to hip hop culture pressured a multitude of legislators to create laws to ban the feared breeds outright and restrict their presence in communities ([AVMA 2022](#)). The shift from hero to villain “otherness” resulted in counties, cities, states, and even some countries to ban pit bull type breeds and/or mixes ([Dickey 2016](#)). According to Dickey, in more than 850 USA cities, Ontario, and the entire United Kingdom, pit bulls are either completely banned or heavily regulated (2016).

IV. HOW CINEMATIC STORIES CAN IMPROVE DOG & HUMAN WELFARE

A. Pilot Research Proposal

Given my research on the studies and literature throughout this thesis, I propose that an anthropomorphic animated short film with an emotional arc showcasing a pit bull in a positive light being rescued by a responsible caretaker will decrease falsified fearful perceptions of pit bulls and other “scary” dog type breeds. Furthermore, this film will not only shift a population’s misconstrued perceptions about pit bull aggression, but simultaneously nurture compassionate feelings towards these breeds. By improving domesticated dog welfare within communities, our own mental and physical health will reap the benefits through the mission of One Health.

B. Why Does This Pilot Study Matter?

As of the year 2022, no research has been done to my knowledge on measuring shifts in compassion towards pit bulls within a population specifically using fictional cinematic stories with anthropomorphic characters. This pilot study matters because generalized fear of a domesticated dog breed is both a public health issue and an animal welfare concern. As multiple studies and behavioral analysis have shown, categorizing all pit bulls as aggressive is a societal myth in need of being debunked. Breed banning legislation has not been successful in curbing dog bites (Dickey 2016). The welfare of responsible pit bull caretakers is at risk with the inability to find adequate housing ([Graham et al., 2018](#)). The branding of pit bulls and other intimidating breeds as a “vicious breed” limits companion animal veterinary care and quality training which furthers their risk in harmful behavior and declining health ([VetStreet 2015](#)). Using a tool as accessible, cost effective, and entertaining as a motion picture can potentially change perceptions of misunderstood dog breeds on a grassroots level. With enough interest in a film, pit bull and dog welfare advocacy can change attitudes about pit bull “otherness” across the world, not just in the United States. These movements can then shift outdated regulations on

breed banning legislation so that science may become the backbone of support for understanding animal behavior, not media and mythical hearsay.

Methods

I. MATERIALS & METHODS

A. IRB Approval & CITI Training

Before launching the pilot study, approval was given through the University of Pennsylvania's Institutional Review Board by the Human Research Protections Program under review Category Exempt on February 7, 2022 with protocol number 850545. Principal Investigator and advisor Dr. Jennifer Punt and researcher Natalie Wagner completed the CITI Human Research training Social Behavioral/Research course for final approval of the IRB for the pilot study "Cinematic Storytelling, Narrative, & Media on Animal Welfare". Once the data was de-identified, it was shared with Dr. Thomas Parsons for statistical analysis in Excel and R Studio.

B. The Movie - Independent Variable

Written/directed by Rosana Sullivan and produced by Kathryn Hendrickson, Pixar Animation Studios 9 minute short film *Kitbull* was selected as the movie for subjects to watch in this pilot study. According to [IMDB](#), the synopsis is as follows: "An unlikely connection sparks between two creatures: a fiercely independent stray kitten and a pit bull. Together, they experience friendship for the first time". I selected *Kitbull* not only for the high ratings and prestige it has garnered within the film industry including an Oscar nomination in 2020, but because of the emotional responses of viewers on Youtube & IMDB such as:

- *“Never thought an 8 minute cartoon with no dialogue could make me feel so much. This is art”*
- *“Whenever I feel the need to shed a gallon of tears, it's good to know you're there for me. Thanks, Pixar.”*
- *“I love how the animators chose a Pit Bull and a Black Cat. The two breeds that always seem to get the most hate”*
- *“No matter how many times i rewatch this i tear up at the end. Such a beautiful and real story.”*

The film also includes motifs of animal rescue, implied dog fighting, and anthropomorphism, all in which were necessary topics for the viewer to see within a movie. Lastly, the film is rated PG with no unnecessary gore, torture, death, war, drug use, sexual content, profanity, or traumatic events.

C. Qualtrics Questionnaires - Dependent Variable

For my pilot study in how a film can potentially shift perspectives from fear to compassion towards pit bull type breeds, Qualtrics XM was used through the University of Pennsylvania to create two identical questionnaires. Questionnaire 1 was used for the consent form for human subjects to proceed with participating in the pilot. Questions consisted of six bucket categories:

1. “Scary” dog breeds including pit bulls
2. “Non-Scary” dog breeds
3. “Scary” animals
4. “Non-Scary” animals
5. Media and cinematic story consumption

6. Demographics - age, race, gender the subject identified as

The questions were designed so that subjects could not remain neutral in selecting their answers. Subjects had to answer “True” or “False”, fill out short answers, or answer how they felt about a question/statement as:

1. Strongly agree
2. Somewhat agree
3. Somewhat disagree
4. Strongly disagree

Careful consideration was given to the ordering of questions, the randomization of animal categories, accessibility in understanding English used in the questionnaires, and unbiased language when posing questions to the subject so that answers were not skewed towards or against my hypothesis. Questionnaire 2 questions were randomized through Qualtrics but Questionnaire 1 was not randomized so I could control the flow of the original questions posed to the subjects before viewing the film. Subjects' names were never disclosed. Answers to the study were de-identified by the researcher for privacy and confidentiality. Participants were asked their favorite actor/actress, favorite movie, and favorite TV show to make a match between Questionnaire 1 and Questionnaire 2 along with recording of the Empathy Quotient in a third form on Qualtrics to compare their answers before and after watching *Kitbull*.

D. Empathy Quotient - Independent Variable

To measure a subject's empathy, Simon Baron-Cohen's 60 question Empathy Quotient was used in the pilot for subjects to complete once they answered both questionnaires and watched the film. While empathy is difficult to measure empirically, Simon Baron-Cohen's empathy quotient is one of the few tools used to measure a person's empathy through self

reporting ([Lawrence et al., 2004](#)). To ensure validity and reliability, the empathy quotient has a high test-retest reliability over a 12 month time period and can distinguish between control and clinical groups according to ([Lawrence et al 2004](#)). The empathy quotient was designed by Baron-Cohen at the Autism Research Center at the University of Cambridge ([Psychology Tools](#)). Empathy scores range from ([Theguardian.com](#)):

- 0-32 = *You have a lower than average ability for understanding how other people feel and responding appropriately.*
- 33-52 = *You have an average ability for understanding how other people feel and responding appropriately. You know how to treat people with care and sensitivity.*
- 53-63 = *You have an above average ability for understanding how other people feel and responding appropriately. You know how to treat people with care and sensitivity.*
- 64-80 = *You have a very high ability for understanding how other people feel and responding appropriately. You know how to treat people with care and sensitivity.*

E. Recruitment

Adults ages eighteen years and older were eligible to participate in the study. Through word of mouth, email, Instagram, Nextdoor, and Facebook, twenty six adults were interested in participating in the pilot. They were emailed instructions with links to the Qualtrics questionnaires including the consent form, the film *Kitbull* on Youtube, and the empathy quotient. Out of twenty six participants, nineteen data sets were collected. Due to human error, four participants' data were disqualified due to skipping Questionnaire 2. Another subject stopped midway through the pilot and reported that *Kitbull* looked too sad to continue until the end of the film. Therefore, out of nineteen data sets recorded by Qualtrics, fourteen subjects' data sets could be used for analysis.

F. The Pilot Study

Participants were emailed instructions and information to contact myself (the researcher) as well as advisor and IRB if they had any questions regarding the pilot. Care was taken to make sure subjects were aware that the study was completely voluntary and that they could opt out at any time without penalty for whatever reason be it disinterest or potential discomfort of the subject. The pilot study from start to finish took about 35-45 minutes to complete for all subjects. Subjects were asked to complete the entire pilot study in one sitting and to not use any type of search engine or third party for further information about the questions and statements asked. Subjects were also instructed to complete the study alone and on a computer/laptop device.

G. Statistical Analysis & Visualizations

The responses recorded in Qualtrics were de-identified and then recorded into an Excel spreadsheet by me, the researcher. This deidentified data was then analyzed in R studio and Excel programs by Dr. Thomas Parsons and myself. Dr. Parsons performed a non parametric statistical test on the data. More specifically, the paired samples Wilcoxon test (also known as Wilcoxon signed-rank test) which is a non-parametric alternative to paired t-test was used to compare study participant's survey responses before and after screening *Kitbull*. The Wilcoxon-Signed-Rank test was implemented in R using the command "wilcox.test" in the base package "stats" (R Core Team, 2020). The outcomes of these tests were reported with no statistical differences found between before and after responses to any of the survey questions by Dr. Parsons.

Visually, histograms were chosen to present data results regarding subject perception of pit bulls, dog breeds under breed specific legislation, animal sentience, connection to animals, and the use of *The Lion King* as a moral educator.

Results

The pilot data showed trends in shifting subjects' attitudes towards dog breeds before and after watching the anthropomorphic film *Kitbull*. While some answers to statements such as "You have an emotional connection to animals" did not change after watching the film, perceptions about pit bull type breeds, dog breeds discriminated against under breed banning legislation, beliefs about the pit bull owners themselves, and the idea that a film such as *The Lion King* can be used as a moral education tool were impacted after watching the film. As expected, a subject's empathy score in the pilot study data was not an indicator of how a subject would respond to the questionnaires. The pilot supports the idea that further research on empathy and animal perception is worth pursuing to continue supporting my argument that film is accessible to the masses for educational and entertainment purposes. My hypothesis, "Adults who watch an anthropomorphic cinematic film with an emotional arc showing a non-aggressive pit bull being rescued will decrease fearful perceptions of pit bull type breeds and other "scary" breeds while increasing compassion towards those breeds" was both supported and refuted in this pilot depending on both the content of the film as well as behaviors of the pit bull character within the storyline.

To outline the subjects who participated in the pilot study, nine subjects identified as female and five subjects identified as male. One subject was in the age range of 18-24 years old, six subjects were in the age range of 25-34 years old, three subjects were in the age range of 35-44, one subject was between the ages of 45-54, and three subjects were between 55-64 years old. One subject had a below average empathy score, six subjects had an average empathy score, five subjects scored an above average empathy score, and two subjects had a high score for empathy.

Fourteen subjects total were a part of the pilot study with results represented in histograms below for both Questionnaire 1 and Questionnaire 2.

Figure 1: Subjects are less likely to agree that pit bulls & scary dogs breeds are more aggressive than other dog breeds after watching the anthropomorphic short film with an emotional arc "Kitbull".

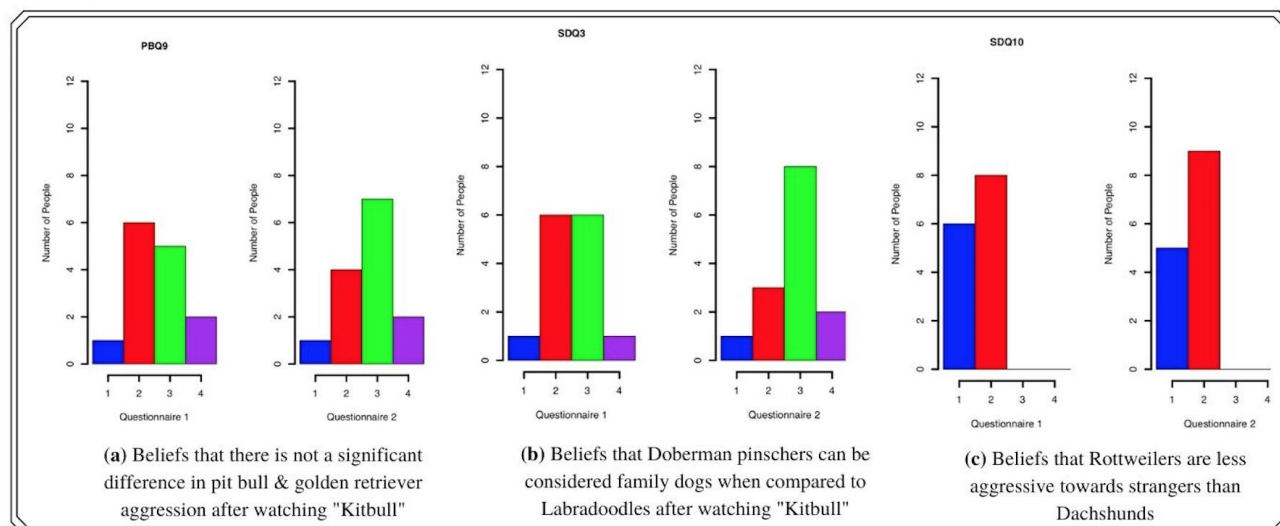


Figure 1: Subjects are less likely to agree that pit bulls & scary dogs breeds are more aggressive than other dog breeds after watching the anthropomorphic short film with an emotional arc "Kitbull". Subjects answers were recorded in Qualtrics XM to Questionnaire 1 before watching the short film "Kitbull". Questionnaire 2 was completed directly after watching the film with questions identical to those used in Questionnaire 1. **(a)** Subject responses to PBQ9: "There is a significant difference in aggression between golden retrievers and pit bull type breeds". Test outcomes Wilcoxon signed rank test with continuity correction data: datboth[, i] by When $V = 3$, p -value = 0.3458 alternative hypothesis: true location shift is not equal to 0 **(b)** Subject responses to SDQ3: "Labradoodles (Poodle & Labrador mixed breed) are better family dogs than Doberman Pinschers". Test outcomes Wilcoxon signed rank test with continuity correction data: datboth[, i] by When $V = 6$, p -value = 0.1736 alternative hypothesis: true location shift is not equal to 0 **(c)** Subject responses to SDQ10: "Studies show Dachshunds are less aggressive on a behavioral scale towards strangers than Rottweilers". Test outcomes Wilcoxon signed rank test with continuity correction data: datboth[, i] by When $V = 1$, p -value = 1 alternative hypothesis: true location shift is not equal to 0 **(a&b)** On the X axis, subjects could select their responses as Strongly agree (1 Blue), Somewhat agree (2 Red), Somewhat disagree (3 Green), and Strongly disagree (4 Purple). **(c)** On the X Axis, subjects could select their responses as True (1 Blue) or False (2 Red). **(a,b,c)** The Y axis for Figure 1 is the amount of subjects whose answers were recorded in Qualtrics XM. Histograms were created through R Studio with a non parametric statistical test by Dr. Thomas Parsons after given de-identified data recorded in Excel.

The pilot data showed a promising trend that subjects' heightened perception of specific dog breed aggression lessened after watching the film *Kitbull*. According to the pilot data, following the journey of a non-aggressive "scary" dog breed in a film minimized viewers' concerns of not just pit bull aggression, but also of Doberman pinscher temperaments and Rottweiler behavior. The data outlined in Figure 1a showed that half of the pilot's subjects strongly agreed and somewhat agreed that there was a significant difference in aggression between pit bulls and golden retrievers before viewing *Kitbull*. After viewing the film, only five out of the fourteen subjects held these beliefs with nine out of fourteen subjects strongly

disagreeing and somewhat disagreeing in the statement that pit bulls and golden retrievers had a significant difference in behavioral aggression. Since the anthropomorphic pit bull protagonist in the film never acted out in aggression towards handlers or another animal, the pilot data showed that there is potential benefit in showing a film like *Kitbull* so that viewers can more truthfully believe pit bulls and golden retrievers are more similar than they are different.

The pilot research data also showed promising trends supporting my claim that a film showing a bully breed could positively impact subject perception of breeds categorized under breed banning legislation such as Doberman pinschers and Rottweilers. As outlined in Figure 1b, the data showed ten out of fourteen subjects strongly disagreed and somewhat disagreed with the statement that Labradoodles are better family dogs than Doberman pinschers after watching the film. This is a hopeful finding for future research into the subject of breed perception in film since in Questionnaire 1, “Strongly agree” and “Somewhat agree” responses were 50% of the population’s held beliefs before viewing the movie. Although a Doberman or a Labradoodle were never shown in the *Kitbull* story, the pilot data supports the idea that subjects are less likely to agree that scary dogs breeds are more aggressive than other breeds after watching this anthropomorphic short film with an emotional arc. Once again, further research is suggested based off of the findings of this pilot study.

Subject perception of Rottweilers is of great interest within this pilot population as shown in Figure 1c. Although Rottweilers are shown in the media and film world as attack dogs and guard dogs, this population believed Dachshunds were more aggressive towards strangers than Rottweilers. Nine out of fourteen subjects believed Rottweilers were less aggressive towards strangers than Dachshunds after watching *Kitbull*. With this knowledge, we can begin to further our research into subjects' feelings as to why Rottweilers, although bigger than pit bulls and

represented as dangerous in cinematic storytelling, seem to be the least feared out of the banned breeds used in this pilot.

Figure 2: Negative views of pit bull owners and pit bulls as fighting dogs increased after watching a film with content that included implied dog fighting.

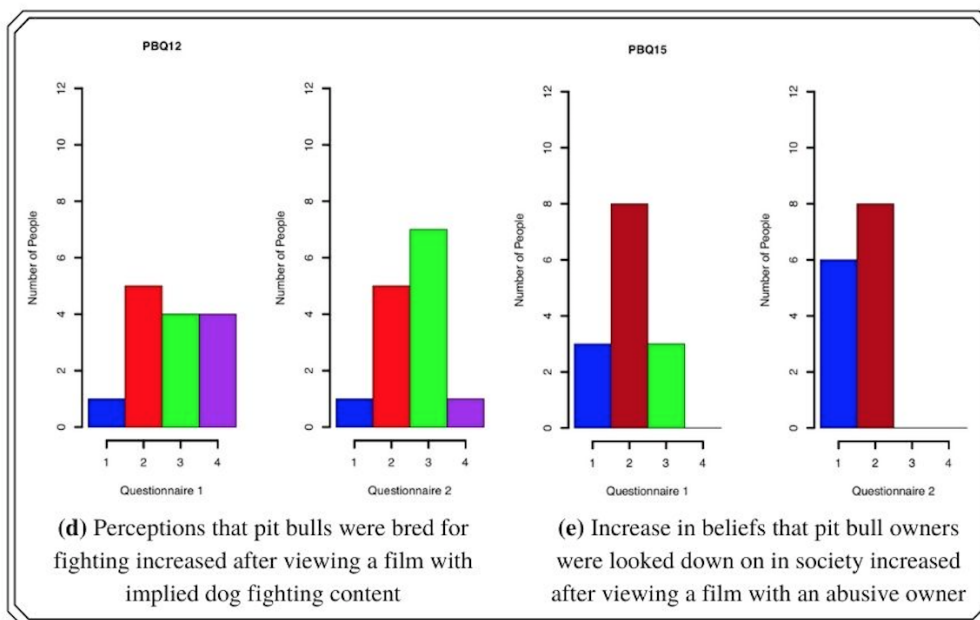


Figure 2: Negative views of pit bull owners and pit bulls as fighting dogs increased after watching a film with content that included implied dog fighting. Subjects answers were recorded in Qualtrics XM to Questionnaire 1 before watching the short film "Kitbull". Questionnaire 2 was completed directly after watching the film with questions identical to those used in Questionnaire 1. **(d)** Subject responses to PBQ12: "Pit bull type breeds are bred for fighting". Test outcomes included a Wilcoxon signed rank test with continuity correction data: datboth[, i] when $V = 12$ and $p\text{-value} = 0.407$. The alternative hypothesis true location shift is not equal to 0. **(e)** Subject responses to PBQ15: "Pit Bull owners are looked down on in society". Test outcomes included a Wilcoxon signed rank test with continuity correction data: datboth[, i] when $V = 3.5$ and $p\text{-value} = 0.07076$. The alternative hypothesis true location shift is not equal to 0. **(d&e)** On the X axis, subjects could select their responses as Strongly agree (1 Blue), Somewhat agree (2 Red), Somewhat disagree (3 Green), and Strongly disagree (4 Purple). The Y axis is the amount of subjects whose answers were recorded in Qualtrics XM. Histograms were created through R Studio with a non parametric statistical test by Dr. Thomas Parsons after given de-identified data recorded in Excel.

Although the pit bull character was never seen fighting another dog or person within the story, the pilot data results shown in Figure 2d and Figure 2e went against my hypothesis slightly. While data trends showed subject perception in "scarier" dog breed behavioral aggression decreased after watching the film, the data suggests that even when dog fighting is implied within the context surrounding a pit bull character, a portion of subjects will still veer towards considering pit bulls as a dog fighting breed. Although four subjects strongly disagreed

that pit bulls were bred for fighting before watching the film, this option was only chosen by one participant after viewing *Kitbull*. Instead, “Somewhat disagree” increased by three subjects post the film. While the aggregated data set showed no population change in subjects who selected “Somewhat agree” and “Strongly agree”, some subjects who previously held a strong belief that pit bulls were not bred for fighting were not as confident in their original stance after watching the film. The pilot data as shown in Figure 2d suggests a film should not solely rely on a viewer’s emotional investment of an anthropomorphic character with hopes for better animal welfare. Movie content nuances such as setting, smaller roles within the film, music, how the emotional arc unfolds, and even events that are implied within a storyline may all contribute to how subjects view pit bulls according to the trends of subject responses to pit bull questions in regards to dog fighting.

The data in Figure 2e does not show how subjects viewed dog breeds or perceptions of animal sentience, but on how they viewed owners of pit bull type breeds before and after watching *Kitbull*. In Questionnaire 1, three out of fourteen subjects somewhat disagreed with the statement that pit bull owners were looked down on in society. After watching *Kitbull*, zero subjects selected “Somewhat disagree” that pit bull owners were looked down on in society and instead, “Strongly agree” responses rose by 50%. While I will go into more detail about how this particular question may resonate for subjects in the discussion portion of my thesis, there was a trending shift in how subjects believed pit bull caretakers are looked down on in society after watching the film with content about dog abuse, dog rescue, criminal activity, and implied dog fighting.

Figure 3: An anthropomorphic film without dialogue has no impact on population's belief that pit bulls can lock their jaws.

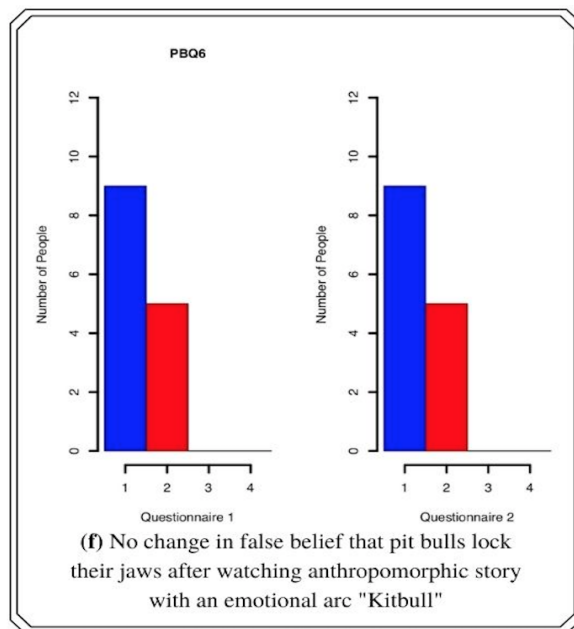


Figure 3: An anthropomorphic film without dialogue has no impact on population's belief that pit bulls can lock their jaws. Subjects answers were recorded in Qualtrics XM to Questionnaire 1 before watching the short film "Kitbull". Questionnaire 2 was completed directly after watching the film with questions identical to those used in Questionnaire 1. (f) Responses to PBQ6: "Pit bull type breeds can lock their jaw once they bite". Test outcomes included a Wilcoxon signed rank test with continuity correction data $\text{datboth}[, i]$ when $V = 1.5$ and $p\text{-value} = 1$. The alternative hypothesis true location shift is not equal to 0. On the X Axis, subjects could select their responses as True (1 Blue) or False (2 Red). The Y axis is the amount of subjects whose answers were recorded in Qualtrics XM. Histograms were created through R Studio with a non parametric statistical test by Dr. Thomas Parsons after given de-identified data recorded in Excel.

When asked to make a selection of "True" or "False" if a pitbull can lock its jaw, more subjects believed this statement to be "True" by 45%. To note, an individual subject changed their statement from "True" to "False" after watching *Kitbull* while another subject changed their answer from "False" to "True". While this may have been human error, we cannot rule out that this was also intentional and needs further investigation. Regardless, the pilot data showed a trend in strongly held beliefs such as a pit bull's ability to lock its jaws once they bite is unlikely to waiver if not addressed and corrected with dialogue within the script. While *Kitbull* never addressed this myth and more so, does not have dialogue between characters in the film, this pilot data result is important and requires a deeper dive into researching the limitations of what an anthropomorphic film can and cannot change in regards to deeply ingrained societal myths.

Figure 4: Increased interest in Disney's "The Lion King" to be used as a moral educator after watching the short anthropomorphic film "Kitbull" with animal characters.

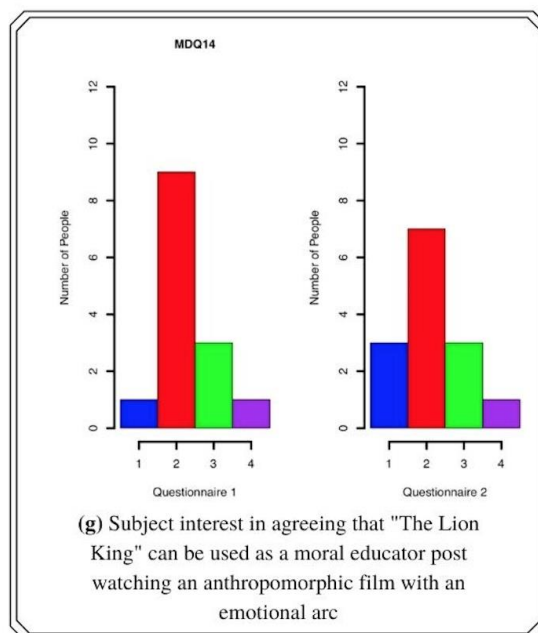


Figure 4: Increased interest in Disney's "The Lion King" to be used as a moral educator after watching the short anthropomorphic film "Kitbull" with animal characters. Subjects answers were recorded in Qualtrics XM to Questionnaire 1 before watching the short film "Kitbull". Questionnaire 2 was completed directly after watching the film with questions identical to those used in Questionnaire 1. (g) Subject responses to MDQ14: "The Lion King movie is a moral education learning tool for children to aim for personal greatness". Test outcomes included a Wilcoxon signed rank test with continuity correction data: datboth[, i] when $V = 2.5$ and $p\text{-value} = 0.4237$. The alternative hypothesis true location shift is not equal to 0. On the X axis, subjects could select their responses as Strongly agree (1 Blue), Somewhat agree (2 Red), Somewhat disagree (3 Green), and Strongly disagree (4 Purple). The Y axis is the amount of subjects whose answers were recorded in Qualtrics XM. Histograms were created through R Studio with a non parametric statistical test by Dr. Thomas Parsons after given de-identified data recorded in Excel.

Along with researching subject perceptions about pit bulls, scary dog breeds, and pit bull ownership, the pilot study also required subjects to answer how they felt about using Disney's *The Lion King* as a moral education tool for personal greatness. I wanted to measure if the population watching *Kitbull* would even consider another Disney PG rated film as a way to educate children about personal achievement. While the aggregated data set in Figure 4g showed that four out of fourteen subjects strongly disagreed and somewhat disagreed that *The Lion King* is a moral educational tool for personal greatness, nine subjects somewhat agreed that Disney's *The Lion King* is a moral educational tool while only one subject selected "Strongly agree" before watching *Kitbull*. However, after watching the film, "Strongly agree" increased by two

subjects which suggested that an anthropomorphic film with an emotional arc can impact a subject's belief that film can be used in an educational setting to teach morality.

Figure 5: Subjects personal connection to animals and beliefs of deer population management did not change after watching the anthropomorphic film with an emotional arc "Kitbull".

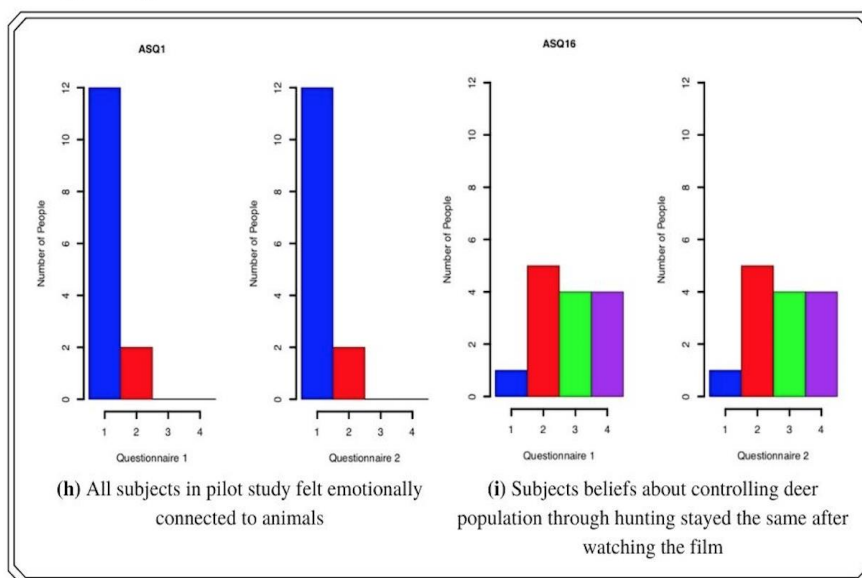


Figure 5: Subjects personal connection to animals and beliefs of deer population management did not change after watching the anthropomorphic film with an emotional arc "Kitbull". Subjects answers were recorded in Qualtrics XM to Questionnaire 1 before watching the short film "Kitbull". Questionnaire 2 was completed directly after watching the film with questions identical to those used in Questionnaire 1. **(h)** Subjects responses to ASQ1 "You have an emotional connection to animals". Test outcomes included a Wilcoxon signed rank test with continuity correction data datboth[, i] when $V = 0$ and $p\text{-value} = \text{NA}$. The alternative hypothesis true location shift is not equal to 0. **(i)** Subjects responses to ASQ16: "Hunting deer is acceptable if they are overpopulated". Test outcomes included a Wilcoxon signed rank test with continuity correction data datboth[, i] when $V = 0$, $p\text{-value} = \text{NA}$. Alternative hypothesis true location shift is not equal to 0. **(h&i)** On the X axis, subjects could select their responses as Strongly agree (1 Blue), Somewhat agree (2 Red), Somewhat disagree (3 Green), and Strongly disagree (4 Purple). The Y axis is the amount of subjects whose answers were recorded in Qualtrics XM. Histograms were created through R Studio with a non parametric statistical test by Dr. Thomas Parsons after given de-identified data recorded in Excel.

While Figures 1-4 have shown the changes of subject perception of pit bulls, scary dogs, pit bull owners and using *The Lion King* as an educational tool, Figure 5 shows subjects' answers to questions that did not change after watching *Kitbull*. While there were wide ranges in subjects' answers both before and after watching the film, answers to the statement "You have an emotional connection to animals" had never waivered. In fact, all subjects strongly agreed and somewhat agreed with this statement. Furthermore, twelve out of fourteen subjects selected "Strongly agree" despite the range of answers to the questions presented in the pilot.

While all subjects felt that they had an emotional connection to animals, Figure 5i shows five subjects somewhat agreed that hunting deer is acceptable if they are overpopulated with one subject who strongly agreed with this statement. Regardless if subjects felt that hunting deer was better or worse for animal welfare if they were overpopulated, subject answers remained the same both before and after watching *Kitbull*. Although my pilot study is focused on subject perceptions of pit bulls, scary dogs, and pit bull ownership, I would also suggest pursuing further investigations in analyzing subject perceptions of rats, sharks, and snakes before and after watching *Kitbull* or another anthropomorphic film.

Discussion

Showing an anthropomorphic film with an emotional arc focusing on a non-aggressive pit bull as the main character can shift societal beliefs not only about pit bull type breeds, but also about breeds discriminated against through breed banning legislation and regulations. While the pilot data supports this claim, I still propose that *thoughtful anthropomorphism* is the key ingredient in storytelling that can make a lasting impact on animal welfare. As a reminder, *thoughtful anthropomorphism* sets parameters around how anthropomorphism is used in writing to make a positive impact on the world around us in a more targeted, educational way. Storytellers and creatives should take all consideration to not accidentally sway public opinion of animals and people through manipulation or falsifying facts about an animal that could result in demonization or societal stigma. As [Geerdts et al](#) research shows, when anthropomorphism is used thoughtfully in fictional storytelling, subjects can retain factual information ([2015](#)) without the need to sacrifice creative and emotional content.

While the release of oxytocin is the “biological instrument that puts people in thrall to a story” ([Zak 2015](#)), emotions may not be able to shift deeply planted fears of pit bulls alone.

Shame and vulnerability researcher [Brene Brown](#) suggests that we need to build a bridge between our emotions and our thinking (HBO's [Atlas of the Heart](#)). This is exactly how *thoughtful anthropomorphism* can be utilized for pit bull advocacy, allowing subjects to distinguish fact from fiction surrounding pit bull stigma in stories and the media.

An anthropomorphic film following the journey of a non-aggressive scary dog breed cultivates kindness towards these breeds while narrowing the gap between “good dog” and “bad dog”. This statement is supported through the pilot’s data showing subjects' change of heart when comparing behavioral aggression of pit bulls with a more revered family dog such as the golden retriever. In contrast to pit bull type breeds used in genres of drama or action thrillers such as *The Wire*, *John Wick* and *Once Upon A Time In Hollywood*, golden retrievers have been placed in family friendly stories on our television screens like the film *Air Bud* and TV show *Full House*. While golden retrievers have permeated more family friendly media, more initiative from writers, producers, production companies, and media outlets is needed to represent pit bulls in this same context. If a population regards pit bulls as similar to golden retrievers behaviorally, there is a better chance in lifting breed banning legislation, increasing pit bull adoptions from shelters and rescues, and bettering public health initiatives for more responsible canine ownership.

To further support my claim that cinematic stories with an emotional arc have the ability to shift perspectives on the friendliness of misunderstood breeds, there was an increase in subjects' responses believing Doberman pinschers could be considered a family pet after watching *Kitbull*. Subjects' feelings softened towards Doberman pinschers and regarded them similarly to Labradoodles as a qualified family dog. No matter the breed, choosing to welcome a dog into a home should be done with consideration to a person's lifestyle, time commitment, and

overall compatibility. The goal for this specific question was to investigate if people could look past a Doberman's "sinister" reputation and to not judge a dog breed based on appearances alone ([Embrace Pet Insurance](#)). On the opposite spectrum, stimulating social contagion to acquire certain breeds due to the popularity of a cinematic film should be controlled and responsibly managed. While fads to acquire dog breeds decrease dog welfare ([Herzog 2006](#)), the pilot data shows that a film such as *Kitbull* could increase compassion towards the more misunderstood breeds in society. We do not want to encourage social contagion towards pit bulls, Doberman's, or Rottweilers. The goal is to show that these breeds, given the right environment and care, should be given a chance of companionship just like any other breed.

Although the anthropomorphic pit bull is not aggressive within the story, *Kitbull's* content does imply the character as a fighting dog with an abusive criminal owner. Analyzing the data gathered, the population in this pilot may be unaware that although pit bulls were originally bred for fighting and bull baiting, most pit bulls today are for companionship ([ASPCA](#)). While pit bull type breeds are absolutely exploited for dog fighting, there may be a more productive way in accurately portraying pit bull type breeds in modern day life. One idea to increase the welfare of pit bulls and build advocacy for these breeds is to build a character within a story that has nothing to do with dog fighting. Simply showing a pit bull as a "good-ol" family dog in a well created story may allow audiences to shift perspective that pit bulls are not bred for fighting, but have evolved into companion dogs just like any other breed. Admittedly, a happy pit bull in a family setting does not make as dramatic of a headline or captivating story ([Smit 2021](#)). Creating the emotional arc of a pit bull running away from an abusive owner participating in a dog fighting ring is extremely captivating for an audience. However, a question for a production team could be: how can we create an entertaining story about humanity while inserting a pit bull as a

companion dog without the needed drama of rescue, dog fighting, or heightened criminal activity within the emotional arc or overall story content?

My intention was to not only assess a population's view on pit bulls and the more intimidating breeds, but to also explore how a population may feel about pit bull owners. Admittedly, I believed that subjects would focus on the rescuer of the pit bull at the end of the film rather than the dog's abuser. However, the results suggest that the subjects felt very strongly about the dog abuse by the first owner and were more emotionally charged by this representation of pit bull owners. It is also important to note that the abusive owner was a part of the emotional arc of the film where the pit bull and his cat friend are escaping the compound. As stated previously, domesticated dog welfare and public health is cyclical under the umbrella of One Health. If a population wrongfully looks down on pit bull owners for simply having a bully breed as their dog companion of choice, these caretakers are at a greater risk for alienation, securing safe and proper housing, access to insurance, and declining mental health due to stigmatization.

If a heartfelt story like *Kitbull* can't overturn a population's negative views on pit bull ownership, then how can we begin to shift that narrative? How can we lessen the drama surrounding pit bull stereotypes of both the dog breed and the owners? Can a "feel good" show like *Modern Family*, *Schitts Creek*, or *Parks and Recreations* have a pit bull character as a "regular" dog like the Jack Russell character in *Frasier*? If we lessen the drama around pit bull type breeds, we can potentially decrease fear while increasing curiosity of what these breeds are truly like in our communities.

To note, Pixar's *Kitbull* is a film without dialogue. With storytelling as a "human universal" ([Brown 2004](#)), this specific story can transcend language to be watched by an audience anywhere in the world. However, a film relying on emotion alone may not be able to be

as successful in bettering animal welfare from an educational standpoint as a film with dialogue. Although *Kitbull* changed subjects' answers in the categories of behavioral aggression, family friendly dogs, impression of pitbull owners, and purpose of pit bull type breeds, this film had no impact on the aggregated data set on false perceptions of locking jaws. With more than half of the subjects selecting "True" to the statement that pit bulls lock their jaws, the pilot data suggests that dialogue addressing this myth may be necessary to overturn deeply saturated misconceptions about pit bulls. We then have to ask: Does subject perception of a pit bull locking its jaws have anything to do with a belief in innate aggression? Or is this belief in locking of the jaw simply a misguided fear due to generalized pit bull physicality in jaw size, a muscular build, and stockiness? While I will be going into details later about refining the pilot, interviews are needed to inquire specifically about why subjects believe pit bulls lock their jaws, where or who did a subject hear this myth from, and if subjects believe pit bulls lock their jaws due to the breed's outward physical characteristics.

The pilot data shows that no matter a subject's empathy score, there was little to no correlation between the score and subject response. This further suggests that stories have the capability to impact society at large, not just a select few. This claim is also supported by the fact that a portion of subjects shifted their answers in agreeing that *The Lion King* could be used as a moral educator for personal greatness after watching *Kitbull*. Although subjects changed perceptions about pit bulls and scary breeds within the pilot, all fourteen subjects selected that they had an emotional connection to animals. While responses varied from question to question, formal research is worth pursuing a population's beliefs about animal sentience, how they respond to characters that are represented under the baby schema, and their ideas about "good" versus "evil" animals as depicted within media.

While emotional stories can shift perceptions of how we view the world around us, we need creatives and scientists to work in tandem to channel *thoughtful anthropomorphism* within a story to debunk myths surrounding misunderstood animals such as the pit bull. The pilot data confirms that we need to cast a wider net in research between animals, culture, and cinematic storytelling for the greater good of One Health. Good cinematic storytelling with an emotional arc does indeed impact how an audience perceives pit bulls and other misunderstood dog breeds both positively and negatively. With an increase in accessibility to stories now more than ever due to streaming platforms, it is even more crucial to know the content being consumed by viewers to track trends in animal welfare around the world.

Refining The Pilot for Future Research

Online surveys are a convenient way to gather data. However, there may be errors and confusion from participants which may leave data to be rejected or skewed. Four participants did not complete Questionnaire 2 but watched the film, filled out Questionnaire 1, and scored on the empathy quotient. Unfortunately, not following the directions of the pilot disqualified these four data sets that could have been useful in the pilot research. While the pilot had a diverse range of age and gender, it would be more ideal to have a vast range in race within the study as well as more subjects as a whole going forward.

Now that Covid-19 pandemic mandates are easing, I suggest scheduling subjects to participate in-person rather than online if possible. Similar to the pilot, subjects would still be watching the film by themselves so they are not influenced by others in the room or the researcher. To reduce any technological confusion, questionnaires would be cued on a laptop ready to answer by the participant so they would not have to navigate the links themselves. A

participant could simply fill in their answers in Qualtrics on a laptop provided by the research team.

Although subjects changed their responses after viewing *Kitbull*, it is still a difficult task to measure how emotionally moved participants were after viewing the film. After the pilot, there are still many questions to how a subject feels about pit bulls, not just if their answers changed on a survey. For further research, I suggest a 5-10 minute interview of each participant after viewing a film. In the interview, the researcher would be able to ask the subject if they:

1. Think pit bulls were a dangerous breed
2. Where they heard pit bulls can lock their jaws
3. If they would feel safe if a family member rescued a pit bull
4. Describe how they felt while watching the film and how they feel afterwards
5. How they personally view pit bull owners
6. If the film inspired them to volunteer at a shelter or support a rescue with time, donations, etc
7. If they think fictional films with factual content could be used a tool that could educate others about pit bull advocacy or other misunderstood animals

I also suggest that further research would include measuring heart beat, blood pressure, and oxytocin levels before and after watching the film. We would then measure if a subject's heart beat, blood pressure, and oxytocin increased while watching the film to physiologically show that participants are triggered in heightened emotional arcs within a story. Measuring these variables would be non-invasive to the participant with ideally a finger monitor during the screening and orally swabbing for an oxytocin sample before and after watching the film.

Conclusion

In the Broadway musical *Wicked*, Glinda the Good Witch asks “Are people born wicked? Or do they have Wickedness thrust upon them?” (Schwartz 3:36). This same question is asked throughout this paper in regards to animals, especially the ones we title as “villainous” such as the pit bull. As discussed, these labels are usually bestowed upon animals that are misrepresented through storytelling in film, media, and alarmist headlines. Are these “scary” animals actually wicked, or do we as a society thrust this title upon them? The pilot research shows that storytelling does indeed impact the way people think and feel about animals both compassionately and fearfully. We must use *thoughtful anthropomorphism* to implement and target specific characters, content, and emotional arcs within a film to make a difference with a One Health prerogative.

With no previous research on how an anthropomorphic film can increase an individual’s compassion towards pit bulls, the pilot data gives us confidence to pursue further research in how cinematic stories can generate kindness, curiosity, and empathy towards animals that are wrongfully villainized in film, media, and story narrative.

Appendix

Figure 6: Subjects' feelings & perceptions about animal sentience before & after watching "Kitbull"

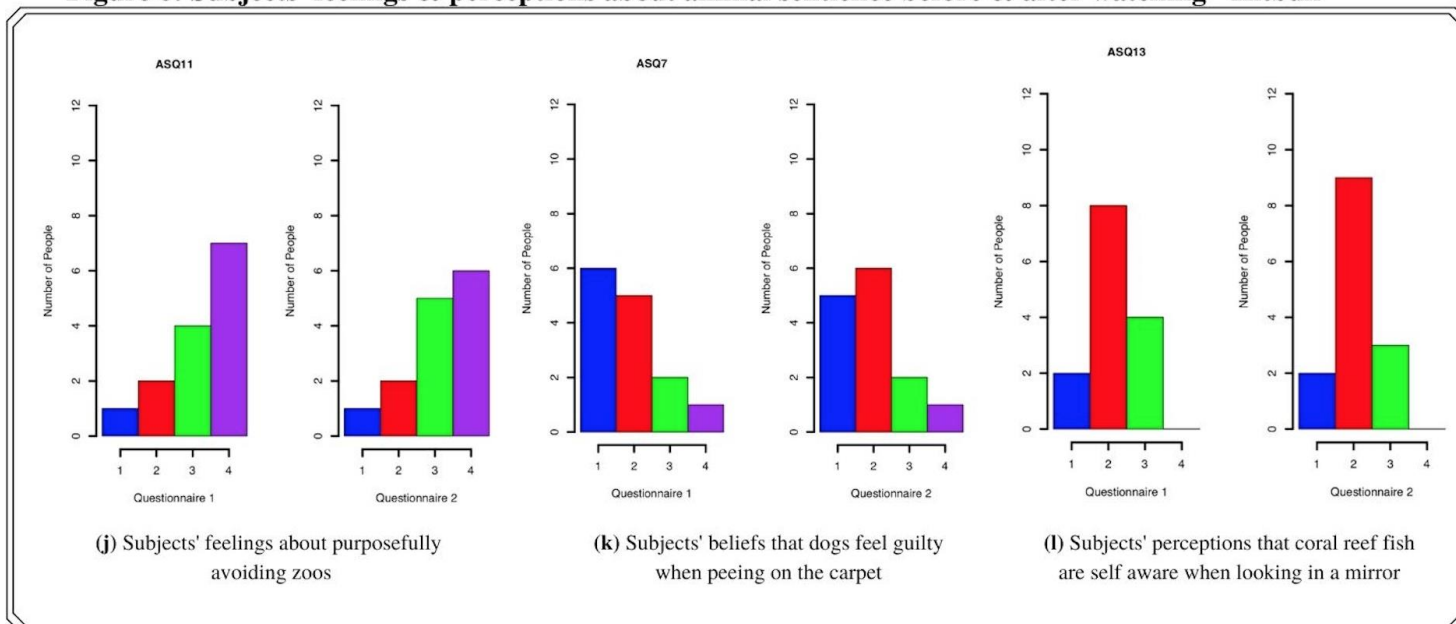


Figure 6: Subjects' feelings about animal sentience before & after watching "Kitbull". Subjects answers were recorded in Qualtrics XM to Questionnaire 1 before watching the short film "Kitbull". Questionnaire 2 was completed directly after watching the film with questions identical to those used in Questionnaire 1. (j) Subject responses to ASQ11: "You purposefully avoid going to zoos". Test outcomes included a Wilcoxon signed rank test with continuity correction data datboth[, i] when $V = 0$ and $p\text{-value} = 1$. The alternative hypothesis true location shift is not equal to 0. (k) Subject responses to ASQ7: "Dogs feel guilty when we yell at them if they pee on the carpet". Test outcomes included a Wilcoxon signed rank test with continuity correction data datboth[, i] when $V = 1$ and $p\text{-value} = 1$. The alternative hypothesis true location shift is not equal to 0. (l) Subject responses to ASQ13: "Coral Reef Fish are self aware and recognize themselves in a mirror". Test outcomes included a Wilcoxon signed rank test with continuity correction data datboth[, i] when $V = 2$ and $p\text{-value} = 0.7728$. The alternative hypothesis true location shift is not equal to 0. (j,k,l) On the X axis, subjects could select their responses as Strongly agree (1 Blue), Somewhat agree (2 Red), Somewhat disagree (3 Green), and Strongly disagree (4 Purple). The Y axis is the amount of subjects whose answers were recorded in Qualtrics XM. Histograms were created through R Studio with a non parametric statistical test by Dr. Thomas Parsons after given de-identified data recorded in Excel.

Figure 7: Subjects feelings & perceptions about "scary animals" before & after watching "Kitbull"

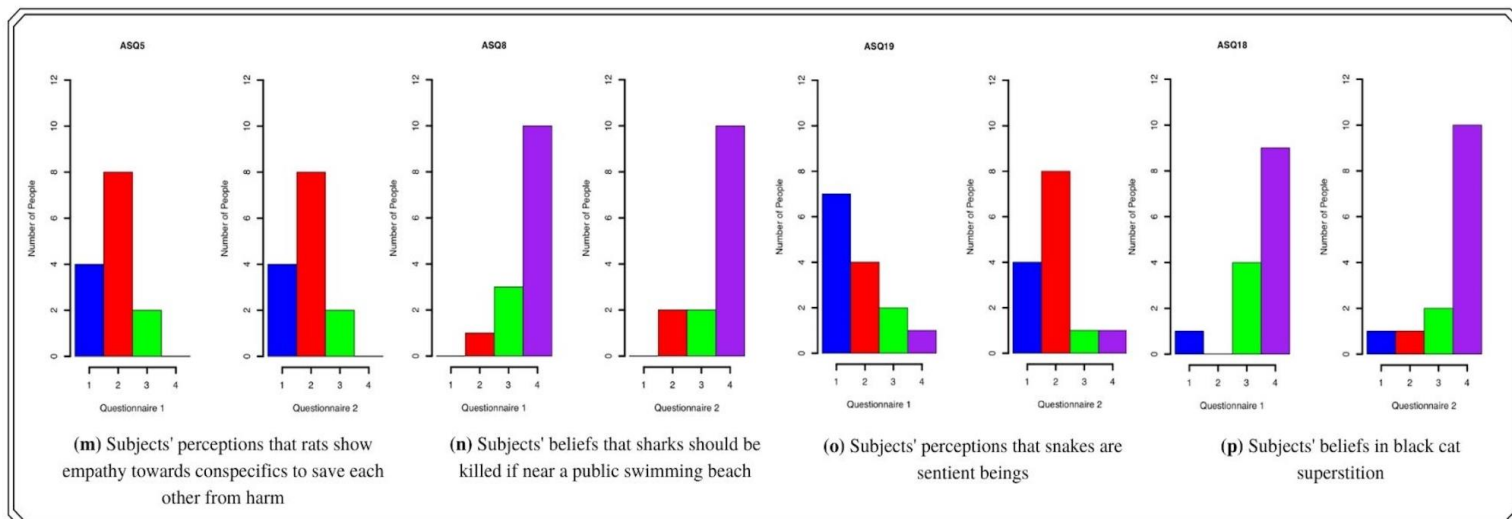


Figure 7: Subjects feelings & perceptions about "scary animals" before & after watching "Kitbull". Subjects answers were recorded in Qualtrics XM to Questionnaire 1 before watching the short film "Kitbull". Questionnaire 2 was completed directly after watching the film with questions identical to those used in Questionnaire 1. **(m)** Subject responses to ASQ5: "Rats show empathy towards other rats to save each other from harm". Test outcomes included a Wilcoxon signed rank test with continuity correction data datboth[, i] when $V = 10.5$ and $p\text{-value} = 1$. The alternative hypothesis true location shift is not equal to 0. **(n)** Subject responses to ASQ8: "A shark should be killed if near public beaches where people swim regularly". Test outcomes included a Wilcoxon signed rank test with continuity correction data datboth[, i] when $V = 0$ and $p\text{-value} = 1$. The alternative hypothesis true location shift is not equal to 0. **(o)** Subject responses to ASQ19: "Snakes are sentient (able to perceive and have feeling/sensations)". Test Outcomes included a Wilcoxon signed rank test with continuity correction data datboth[, i] when $V = 7.5$ and $p\text{-value} = 0.4237$. The alternative hypothesis true location shift is not equal to 0. **(p)** Subject responses to ASQ18: "You would feel spooked if a black cat crossed your path today". Test outcomes included a Wilcoxon signed rank test with continuity correction data datboth[, i] when $V = 1.5$ and $p\text{-value} = 1$. The alternative hypothesis true location shift is not equal to 0. **(m,n,o,p)** On the X axis, subjects could select their responses as Strongly agree (1 Blue), Somewhat agree (2 Red), Somewhat disagree (3 Green), and Strongly disagree (4 Purple). The Y axis is the amount of subjects whose answers were recorded in Qualtrics XM. Histograms were created through R Studio with a non parametric statistical test by Dr. Thomas Parsons after given de-identified data recorded in Excel.

Figure 8: "Cinematic storytelling & animal welfare" pilot study population empathy score

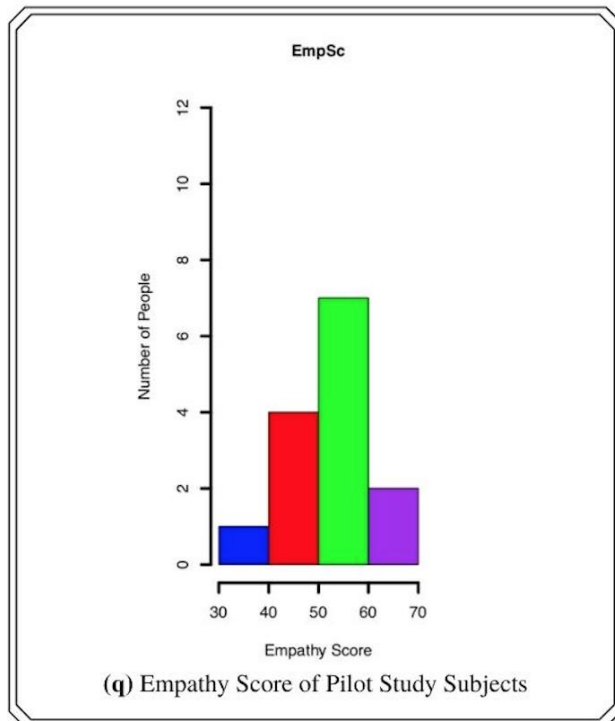


Figure 8: Empathy Score of Pilot Study Population. (q) Empathy Scores were recorded by the participants themselves in a separate form on Qualtrics XM after completing Questionnaire 1, Questionnaire 2, viewing the film, and the Empathy Quotient Score online Test outcomes included a Wilcoxon signed rank test with continuity correction data datboth[, i] when $V = 0$ and $p\text{-value} = \text{NA}$. The alternative hypothesis true location shift is not equal to 0. On the X axis for "EmpSc" are the subjects' average empathy scores arranged from low (Blue 30) to high (purple 70). One subject had a below average empathy score, six subjects had an average empathy score, five subjects scored an above average empathy score, and two subjects had a high score for empathy. The Y axis is the amount of subjects whose answers were recorded in Qualtrics XM. Histograms were created through R Studio with a non parametric statistical test by Dr. Thomas Parsons after given de-identified data recorded in Excel.

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