

The Differing Effects of Narrative Transportation

Across Animated and Live Action Movies

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### Abstract

This paper looks to request permission to conduct a full study to determine the differences in the levels of Narrative Transportation between animated and live action films. With over two decades of study, Narrative Transportation has been at the forefront of the recent scientific community. Based upon previous studies in the field, we hypothesized that animated and live action movies would create different levels of Narrative Transportation based solely on the differing properties of the two styles. Specifically, due to the complete control and computer generated content present in animated movies, their corresponding levels of Narrative Transportation would be higher than those found in movies made using a live action format. After conducting a pilot study to this effect, we found data that would support this hypothesis. Due to the nature of the pilot study though, we could not confirm our findings. We therefore are requesting to conduct a full study in order to determine if animated movies do produce higher levels of Narrative Transportation as compared to live action movies.

*Keywords:* Narrative Transportation, Absorption, Animation

## The Differing Effects of Narrative Transportation

### Across Animated and Live Action Movies

#### **Introduction**

You can picture it now. You just got home after the latest and greatest movie in your favorite series. The drama, the suspense, the action, it had it all, and now as you turn on your phone you are confronted by the one question guaranteed to make you wonder if you even watched it; ‘How many of these Easter Eggs did you notice? How did you miss it you ask yourself, the picture of him and his dad was clearly there, they weren’t hiding that poster in the movie so why can’t you seem to recall it. Did you fall asleep, blink? What happened, how come you don’t recall seeing it?’

This reality of becoming completely caught up in a movie to the point where you become blinded to individual stimuli, is just one example of the scientific phenomena known as Narrative Transportation. When presented with a coherent story, the mind often becomes absorbed within the story itself, tunneling its focus into the actions and emotions of the characters portrayed on screen (Green & Clark, 2012). As we then fall deeper and deeper into this absorption, our focus begins to narrow, isolating us from the outside world and in some ways even from occurrences of peripheral stimuli within the narrative itself (Bezdek and Gerrig, 2016).

While at first this mental transportation doesn’t seem deserving of scientific research, after all who doesn’t want to be lost in their stories, the effects of Narrative Transportation are truly far reaching and influential. Studies done have shown that students whom learn information within the context of a narrative perform significantly better than those who learn without the story context (Moore & Miller, 2020). Outside of the classroom, a 2016 study (Schweitzer and Ellis A,) found that having a story present encouraged viewers to think deeper thoughts about the presented content than they would otherwise think. Beyond being able to think deeper about material within the framework of a story, Narrative Transportation

also causes more positive beliefs about the content than would be otherwise held when the content is presented without a story.

While the effects of Narrative Transportation can be seen across all forms of media, where it is perhaps most recognizable is within the world of film. Movies, at their core, are constructed to draw viewers in and to make them become a part of the story itself. When viewers feel a connection to the characters on screen, they dress as them, they buy memorabilia, they wait in line for hours for the newest releases, and most importantly they line the pockets of film executives with cash because of them. Due to this, films provide an excellent landscape to study Narrative Transportation as their success is due in no small part to the level of absorption that these films can create. Films also provide a second key measure of studying Narrative Transportation, their scenes. As movies are broken up into scenes, they have afforded researchers the ability to study the transportation present in scenes when they are shown out of order versus when they are shown in order (Cohen et al., 2015). This ability to show scenes out of order has allowed researchers to confirm that the absorption recorded is not being caused by the stimuli on screen, rather it is a byproduct of the story and the narrative itself (Bezdek and Gerrig, 2016).

When using films to measure Narrative Transportation though, the question arises as to how to measure the level of absorption present during the movie. In response to this question two schools of thought have risen: measuring physical responses during the film or instead measuring the cognitive information recalled after the film. In the 2015 study by Cohen et al, hand movements during the film in response to specific stimuli were used as a measure of the level of Narrative Transportation of the viewers. The second metric of study, as used in part during Bezdek and Gerrig's 2016 study, focuses on participant's mental responses to questionnaires that recall the stimuli presented within the film. Due to the limitations of our study, we followed the path of Cohen et al, in using hand movements as a measure of Narrative Transportation.

## **Literature Review**

Originating in Green & Brock's 2000 study, Narrative Transportation has been the subject of scientific study for over two decades. Within this time, there have been many studies into the specific effects of Narrative Transportation. By reviewing these studies, we were able to form the basis of our own study. In a recently published paper (Oh et al., 2020), interactive narratives were seen as being more engaging than those presented using static images. This, in conjunction with the research done by Keith & Griffiths, (2020) in which immersive content was received with higher levels of transportation; demonstrate the importance that absorbing viewers into the story has as a clear representation of Narrative Transportation. With these studies, and the 2019 (MacDorman) study where subjects rated a computer-generated doctor as being more enjoyable and engaging than a living one, we saw where we might be able to contribute to the field.

By combining the studies concerning immersion with those focusing on computer generated content, one area stands out as being a perfect target of research, that of live action and animated movies. Within the film industry, there are predominantly two forms of production used, those of live action and those using animation. Using previous studies done, we have hypothesized that animated films would carry with them a higher level of Narrative Transportation as compared to their live action counterparts. The reason for this being the focus of our study and the reason for our stance on the matter comes from the complementary research done in the field as seen in other studies into Narrative Transportation. For our study, we hope to build upon the research done by taking the ideas of animation and immersion and bringing them into a practical realm that connects these ideas together.

As movies rely on absorption to create revenue, filmmakers are always looking to increase the levels of transportation their films cause. In animated films specifically, filmmakers are presented with a medium where they can control every aspect of the world down to the pixel, thus creating a more immersive world and therefore a world in which Narrative Transportation is more potent (Keith & Griffiths, 2020). One example of the additional tools presented to filmmakers in animated films is found in the full control of music given to them. As music has been shown to increase the effects of Narrative

Transportation (Y. Chen et al., 2019), it follows that in films where the only sounds present are those that the editors themselves put in, that there would be higher levels of Narrative Transportation present as compared to live action films in which many natural sounds are used in production.

While comparing levels of Narrative Transportation across the two styles of films will allow us to determine if one style is more conducive to viewer absorption, there is a major problem that can arise. If we were to simply compare any live action film to any animated film we would introduce innumerable confounds into our experiment. Differences in transportation levels between the films could be caused by how well made a film is, the genre it is a part of, or perhaps because of features unique to animation as opposed to live action. In an effort to remove these confounds we therefore chose to only use movies that have been made using both the live action and animated formats. By only using these films, we hope to isolate the levels of transportation caused by the features unique to animation and live action styles rather than those caused by the actual story within the film. In specific for the pilot data we collected, we used Walt Disney movies, as there are multiple movies that have been made using both styles. Additionally, as both movies were made within the same parent company, the two versions of the movies maintain many of the same elements in their stories, which creates a nearly identical narrative across the two movies.

While we collected data within our pilot study that implies that our hypothesis is correct, the sample size was too small to conclude meaningful results from the subjects tested. Therefore, we hope to conduct a larger research experiment in order to confirm the findings that are alluded to by our pilot study. Within a full study, we expect to find that there are higher levels of Narrative Transportation within animated films as our pilot data, even with its small sample size, leans towards confirming our hypothesis to that effect.

### **Pilot Study**

To conduct our pilot study we first needed to determine which clips would be shown. After researching which movies made by Disney were done in both live action and animated versions, we watched each set of movies to determine which remakes contained shot-for-shot reshoots of scenes from their original versions.

After narrowing down the clips, we selected four scenes that had nearly identical live action and animated versions made. After selecting these eight clips, we needed to determine which stimuli we would ask subjects to recognize. In order to reduce potential questions and confounds concerning the stimuli chosen, we separated the four scenes into sets of two. In one set of two, we selected audio stimuli that appeared in the clips and in the other set of two scenes, we selected visual stimuli that appeared in the clips. These stimuli were selected as they contained elements that were clearly present within the scene itself. We attempted to keep the total number of stimuli identical across each version of the same scene and we were successful within one occurrence of the number of stimuli presented. We then split up these eight clips into groups of four. Within each of these two groups were two of each a live action and an animated clip. Furthermore, within the two live action clips shown to each participant, one used a visual stimuli and one used an audio stimuli. This process was then repeated for the animated clips. By splitting the clips in this way, we were able to create two sets of four clips that originated from four unique movies for each group. Between the two groups no live action clip had its corresponding animated version in the same group and so too for each animated clip.

After collecting and organizing the clips, we gathered seven Yeshiva University undergraduate students from within an Experimental Psychology course. As part of their semester, they were required to take part in an experiment and so they participated within our study. At first, we split the seven participants into one group of four students and one group of three students. After welcoming the first group into the study, we stated that we were going to be testing the effects that narratives had on awareness. By mentioning only this part, without specifying the expected differences between live action and animated styles, we were able to prevent the subjects from knowing exactly what the experiment was concerning. We informed them that they would be shown clips from various movies and would be asked to give a thumbs up each time they recognized the stimuli on screen. The choice of using a thumbs up to demonstrate recognition was based upon research done in which subjects raised a hand in order to indicate awareness of a stimuli within a film narrative (Cohen et al., 2015). We then instructed the group that before showing them a clip, we would both read a short summary that would describe the movie up until the point of the clip and we would

inform them of which stimuli they were to look for. The purpose of the summaries before each clip was to give the subjects the story that led up to what they were about to see in order that the clip be thought of as part of the larger movie. This was done in an effort to build the narrative for the subjects so that the clips were not seen as isolated events. We also informed them that at the conclusion of each clip that they would be asked to fill out a Narrative Transportation scale. These scales were designed so that across the questions given, we would be able to see how the participants self-reported their own levels of absorption into each clip. We hoped that these scales would reflect our hypothesis, however due to inconsistencies with the scale process, the results were not deemed valid to be used in our data collection. At that point, we began to read the first summary and proceeded with the study.

### **Results**

While subjects gave a thumbs up to each stimuli, a hidden experimenter recorded the amount of responses given by each participant. After showing the final clip and having the subjects complete the final transportation scale, we thanked them for their participation and debriefed the subjects as to the true purpose of our study. After completing the study, we compared the recorded responses from each participant to the total number of stimuli within each clip that they were shown. After compiling the data, we found that for animated clips the average amount of stimuli missed was 1.133 stimuli per clip while for live action clips the average number of stimuli missed dropped to .308.

While these responses do not demonstrate a significant difference between live action and animated clips, that can be seen as being predominantly due to the small sample size used in the pilot study. The results however do indicate that there may be a significant effect present as the number of stimuli missed during animated clips was over 200% more than the average number of stimuli missed during live action clips. To confirm these findings, we hope to conduct a full study. In this larger study, we would increase our subject pool by opening the study to all Yeshiva University undergraduate students. Additionally, in an effort to further increase the potential subject pool while also increasing the external validity of our



experiment, we would open our study to females as well as to males within the Yeshiva University student body.

### **Full Study Methodology**

To conduct the full study we will attempt to follow a similar process as was conducted in the pilot study as it proved a successful method of running the experiment. In a larger study though, we would look to adjust two key aspects. The first of these aspects is that we would refine the testing procedure, which would simply be a byproduct of conducting it more often. A concrete example where our experience would allow us to conduct testing more thoroughly would be in our using of the Narrative Transportation scales. While we initially intended to use these scales alongside the number of stimuli missed, due to noise and inconsistencies with our use of the scales the data was not deemed as being reflective of the experiments. A second aspect that we would look to adjust is that for a larger study we would look to acquire more testing materials. By utilizing more movies that contain scenes made in both live action and animated versions we would be able to reduce confounds by demonstrating that the changing effects of Narrative Transportation are not due to select features within the specific movies chosen for the pilot study. In selecting these additional movies, we will follow a similar process as was used in selecting the original clips used. Only remakes in which nearly identical scenes are present would be used, and stimuli that appear similarly across the two versions of the movie would be used for testing purposes. While the most likely location to find these additional movies is by combing through Disney's library of movies, we would expand our search to allow for a broader, and therefore more externally valid, set of resources to be used. In using additional clips, we would still provide viewers with summaries to set up the scenes shown, as was done in the pilot study.

In recording responses as a measure of Narrative Transportation levels, we would again use a thumbs up as it demonstrates a mental recognition of the stimuli on screen. After recording the responses from each participant we would then compare those responses to the total number of stimuli present in each clip, as was done in the pilot study. After collecting this data, in which we again expect to see a difference between

animated and live action clips, we will then analyze them in order to determine if the results are indeed statistically significant. Based upon the findings from our pilot data we would expect that the results would show that difference. To accurately conduct the analysis we would use a Within Subject T-test as we would be comparing two levels (live action and animated) of the independent variable of type of movie within an individual subject. After conducting a significance test with the increased sample size of a full study, we will be able to see if the expected differences would be present.

### **Predictions**

In the findings from a full study, we expect to show a significant difference in the level of viewer transportation when watching an animated clip as compared to when watching a live action clip. Specifically, we expect the level of absorption to be higher in the animated clips as would be evidenced in more missed stimuli on average in those clips. In explaining these expected findings, previous literature in the field of Narrative Transportation provides us the pieces that when used together can help to explain the increase in missed stimuli. As was stated, in a more immersive form of media levels of transportation tend to increase (Keith & Griffiths, 2020). This indicates that animated films should produce higher levels of Narrative Transportation, as animated films allow directors more control over items like music that itself has been shown to increase immersion in a film (Y. Chen et al., 2019). Beyond the added control that animated movies provide film directors with, animated content itself has been shown to be more immersive than its real life counterparts. In a 2014 study, viewers whom watched a fantasy film became more immersed in the content as compared to those whom watched a reality based clip (Chen). With animated clips, the entire world is a fantasy replication of reality, while in live action movies the fantasy of the story is mediated by the reality of the location of the scene and the actors on-screen. This total fantasy construct in animation would thereby maximize the effects found within Chen's 2014 study. Even without the fantasy aspect of animated scenes though, computer-generated content naturally generates higher levels of absorption than real life content (MacDorman, 2019). Therefore, with animated clips it is natural that they

would produce higher levels of transportation as compared with live action movies due to their nature as computer-generated content.

In addition to the previous literature, our own pilot data indicates that there should be a significant difference between the levels of transportation in animated movies versus live action ones. While not significant due to the small sample size, the over 200% increase in stimuli missed in animated clips when compared with live action clips demonstrate that a difference is likely to exist even as the sample size increases. As both the implications of previous studies as well as our own pilot data suggest, even when we conduct a full study the differences present in the average number of missed stimuli should be significant enough to confirm our proposed hypothesis.

### **Implications**

As we expect findings from a full study to demonstrate enough significance to confirm our hypothesis, we need to begin looking at what this means in our daily lives. Even as filmmakers continue to produce movies at a higher rate each year, the goal of these projects remains the same, to maximize revenue. With this goal in mind, it would follow that one way to increase consumer demand and enjoyment of the product would be to increase the levels of absorption in their movies. With the expected data from our full study, those who create animated films would seem to already be a step ahead of their competition, as all else being equal, the films with higher levels of transportation would produce higher levels of absorption.

Another area where these findings would prove commercially significant is within the world of advertisements. As companies continue to learn more about how to create successful ads that increase sales of products or services and that are shared more, attention should be paid to a full-length study based in the area that this paper covers. By simply making animated advertisements instead of using living actors, the potential would exist for producers to create more successful advertisements. However, more research into this specific area would need to be done as advertisements, especially for tourist destinations, would still seem to need to use live clips from the destination in question.

## Discussion

Looking ahead to future studies in this area there is a clear secondary study that should follow. While our study focuses on the effects of animated versus live action films, a dissection of audio and visual stimuli should follow. As we used both audio and visual stimuli in comparing animated and live action, it should be noted that the precise split of stimuli missed between audio and visual clips were not identical. In animated audio clips, the average number of stimuli missed was 1.125 per clip while in animated visual stimuli clips the average sat at 1.143. Across live action clips as well, a difference existed between visual stimuli and audio stimuli of .426 missed and .167 missed respectively. With these differences in mind, a future study using recorded data to conduct a two-way Anova test in order to determine if an interaction effect is present between the two forms of stimuli should follow.

Future studies should also look to improve on an important limitation of our proposed study. As the majority of remakes are done in live action, the transportation effect that we suggest is due to animation might instead be linked to the age of the movies used. Older movies, which also happen to be made in the animated style, might be more immersive due in some part to their nature of being older. To account for this, live action movies, which are then remade into animated versions should also be used in conducting a future study.

Beyond this limitation though, the findings from the pilot research as well as the previous literature in the surrounding fields shed light onto the potential results from a full study. Due to the full control that they gives to producers, animated films should create higher levels of Narrative Transportation in viewers as compared to the levels present while watching live action films. As the field of Narrative Transportation continues to grow as it enters its third decade of research, this study would represent another step in understanding the phenomena of Narrative Transportation and its presence across many aspects of our daily lives.

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### **Appendix**

Link to Narrative Transportation Scales used:

<https://docs.google.com/document/d/1yFLxAlh6TaEaxW3kTAFoKNeYLAYPHyL3xQ1sRYx0MC0/edit#heading=h.gjdgxs>

Clips used in this study came from the following Disney Movies

Lion King (1994) & (2019)

101 Dalmatians (1961) & (1996)

Lady and the Tramp (1955) & (2019)

Beauty and the Beast (1991) & (2017)