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Are the Trailers the Real Star of Star Wars: the Last Jedi?

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ABSTRACT

A literature review was conducted that found overwhelming evidence that movie trailers are physiologically stimulating to the viewer. An observational experiment was conducted that involved surveying a total of 204 subjects from randomly selected clusters. They were grouped into categories for further study. Of those 204, 102 had not seen Star Wars: the Last Jedi at the time of surveying. (Responses for movie satisfaction were not recorded from this group.) 31 of them had seen the movie but hadn't seen the trailer, 34 had seen the movie and saw the trailer by happenstance, and 37 had seen the movie and actively sought out the trailer. Confidence intervals were constructed that found a statistically significantly higher overall enjoyment rating for the group that had gone out of their way to see the trailer versus the other two groups that had seen the movie. The data shows a high correlation between people who had seen the trailer and higher satisfaction ratings of the movie. This may point to how much a trailer actually improves a viewer's enjoyment of a movie.

INTRODUCTION

Movie trailers are everywhere on TV. They air during the most watched events such as the super bowl. Obviously, they are an effective marketing tool, otherwise they would not exist. I want to study exactly how effective they are in a movie that has copious amounts of surrounding hype in it; specifically, Star Wars: the Last Jedi. Literature review, data collection, and statistical analysis will be conducted in order to determine if there is any statistically significant difference in enjoyment of the film when the viewer didn't see the trailer, if they saw the trailer by happenstance, and if they actively sought out to watch the trailer.

LITERATURE REVIEW

A Japanese study from Aoyama Gakuin University researched the human response to movie trailers based on a scientific measurement called a GSR, or Galvanic Skin Response. The GSR, also known as the skin conductance response, is the human reaction in which the skin can briefly become a better conductor of electrical current when mental or physical stimuli occur that are physiologically arousing. The graph on the previous page (figure 1) shows that the majority of the viewer's peak GSR value occurs during the initial 8 seconds of the trailer and the last 30 seconds of the trailer. This is promising to my study because the proof is now here that a movie trailer is stimulating enough to cause a major spike in the person's GSR, an indication of excitement or other positive emotion towards the movie trailer. GSR is a reliable way to test this because "GSR experiments are used as a new way to visualize viewers' emotional responses and identify key factors that motivate them to see the advertised film" (Amasaka, Fukuchi, Goto, & Iida, 2012). An indication that positive emotions are measurable by GSR, I think, is a clear indication that movie trailers create suspense and would therefore make for a more enjoyable movie experience.

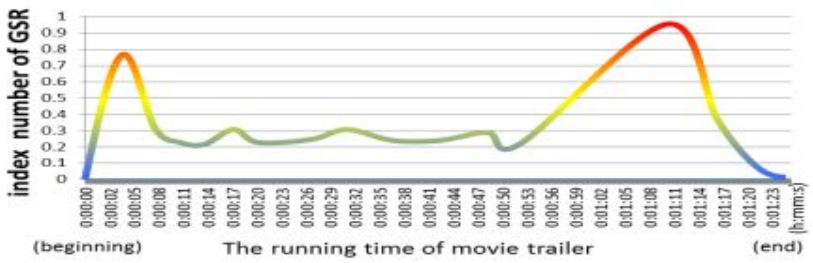

Figure 1

An important topic I want to discuss is how genre can play a vital role in the success of a movie. Firstly, the trailer to that movie must accurately show the genre of the movie. Also, the type of movie is key. The effect of the trailer for a new action movie, such as Wild Card (2015, Jason Statham), which was expected to flop from the get-go, is extremely different from the effect that the trailer for Star Wars: the Force Awakens (2015, Daisy Ridley, John Boyega) because Star Wars has a massive cult following and standalone films (by definition) have no following beforehand. A claim by a 2012 study titled *The Effects of Film Trailers on Shaping Consumer Expectations in the Entertainment Industry* states, "Every participant (in their study) states that there are particular genres that they would not willingly choose to watch; thus the accurate portrayal of genre in trailers seems of great concern to them" (Finsterwalder, Kuppelwieser, & de Villiers, 2012). This goes to show the importance of targeted trailers; for example you would never see a trailer for a romantic comedy during a

football game, and you would never see a trailer for a violent action movie during a daytime talk show such as The Ellen Degeneres Show or The Oprah Winfrey Show.

It turns out that targeted movie trailers is very essential to the entertainment industry, as a properly targeted trailer can be the difference of millions of dollars of gross income for a movie's success. A 2005 study titled *Mission Possible: Targeting Trailers to Movie Audiences* states that "Some movie marketers have begun to segment audiences by their genre preferences to target trailers in cinemas. They are creating multiple trailers for multiple audiences." (Hixson, 2005) Hixson brings up a good point, that multiple movie trailers could show different genres within the same movie. However I don't think that this fits with Finsterwalder, Kuppelwieser, & de Villiers's claim earlier that the perceived genre of the movie was essential to the enjoyment of the movie. The fact that there are different statements by Hixson and Finsterwalder, Kuppelwieser, & de Villiers makes me think that there is legitimate debate between the two sides here: to watch the trailer or to not watch the trailer.

It is also worth discussing brain activity during a movie trailer, which was researched in 2014 by a large group in China from The Neurological Institute, Taipei Municipal Gan-Dau Hospital, New Taipei. The group subjected patients to nature scenes and movie trailers and tracked patient's brain activity when resting, watching nature scenes, and watching movie trailers. The multitude of different kinds of media the subjects were shown served as control and experimental groups for this experiment. Their results showed that "the complexity ratios at Fp1, Fp2, and Fz channels derived from Movie session were significantly lower than that in resting state or when subjects watched Nature session" (Huang, et al, 2014). They essentially confirm what we already knew from previous articles: that movie trailers are stimulating and thus potentially emotionally critical in development of an experience when watching the full movie for the first time.

Predicting movie enjoyment has already been accomplished with fairly good accuracy by a 1994 study from the University of Pennsylvania, where a movie enjoyment rating scale (ENJMOD) has been developed by a pair of students. Their uses for movie enjoyment prediction is managerial decisions, and they say "by formalizing and applying the conceptual framework in the context of a movie experience, we demonstrated the usefulness of the modeling methodology to predict individual differences in enjoyment of movie experiences." (Eliashberg & Sawhney, 1994).

METHOD

Conducting my experiment will be difficult, and there are many factors I will have to account for. The movie I will be collecting my data based off of will be *Star Wars: The Last Jedi* (2017). I plan to give out a survey to as many people as I can, and I will use cluster sampling for this. I will assert that each Lathrop SSP class is, for the most part, identical to the next. I will randomly select some SSP classes to visit, and ask the entire class to fill out my survey. Because I think a large part of my sample will have seen the trailer, whether accidental or intentional, I think I won't have a large enough sample size of people who hadn't seen the trailer before watching the film to draw conclusive evidence, so I will have to change the way I present my survey. I plan to ask them, firstly, the question;

"*Have you seen the film* Star Wars: The Last Jedi *at the theater?"*

This question will weed out the responses I don't care about, like the percentage of the sample that has not seen the film yet. The next two questions will be specifically on the trailer of the film, as I ask;

"*Before watching the film, did you watch the trailer to the film?"*

I expect almost everyone to answer yes to this question, so I am going to further divide my sample by asking;

"*If yes, did you deliberately go out of your way to watch the trailer?"*

I think this question will be what separates the sample the most. I will divide the population into people who wanted to see the trailer so badly they actively sought it out on the internet and the people who may have seen the trailer while watching TV or scrolling through facebook. In that difference, I think I will find conclusive data that will solve this question I pose. After those three initial questions, I will ask the subject a number of questions on how much they enjoyed the movie. I will ask them about how they felt about a number of things in the movie, all on a scale from 1 to 10, including plot, character development, score, and overall. I hope that, using those numbers, I can make a connection between movie enjoyment and if the person went out of their way to watch the trailer.

Please answer the following questions to the best of your ability.

1) Have you seen the film *Star Wars: the Last Jedi* in theatres?

[ ] yes [ ] no

If no, please do not answer any other questions.

2) If yes, did you view the trailer for the film before watching it?

[ ] yes [ ] no

If no, please do not answer question 3.

3) If yes, did you go out of your way to view the trailer? (Examples of yes answer: viewed it on youtube the day it was released, intentionally watched the football game in which the trailer was first aired for the purpose of watching the trailer. Examples of no answer: saw it on your facebook feed, saw it on television, but did not watch television for the intent of viewing the trailer)

[ ] yes [ ] no

4) Please rate the quality of the plot in the film on a scale from one to ten, with ten being excellent and one being awful.

1 2 3 4 5 6 7 8 9 10

5) Please rate the quality of the soundtrack in the film on a scale from one to ten, with ten being excellent and one being awful.

1 2 3 4 5 6 7 8 9 10

6) Please rate the quality of character development in the film on a scale from one to ten, with ten being excellent and one being awful.

1 2 3 4 5 6 7 8 9 10

7) Please rate the overall quality of the film on a scale from one to ten, with ten being excellent and one being awful.

1 2 3 4 5 6 7 8 9 10

Additional Comments:

DATA

	Saw The Last Jedi, didn't see the trailer			
	Plot	Score	CD	Overall
	3	5	3	4
	7	6	8	8
	7	6	5	9
	7	4	8	8
5	8	9	9	9
	5	5	5	5
	1	1	1	1
	7	8	5	7
	8	8	9	9
10	6	7	7	7
	7	7	6	8
	8	9	8	9
	8	9	8	9
	10	3	2	1
15	8	10	8	9
	9	7	7	6
	1	1	1	1
	4	2	6	5
	10	8	10	10
20	10	10	8	10
	8	9	9	10
	8	9	9	10
	4	6	5	2
	1	1	1	1
25	9	7	7	6
	7	3	2	4
	7	8	5	7
	3	5	3	4
	7	6	8	8
30	7	6	5	9
	7	4	8	8

Figure 2

The data I collected seems to follow my initial thoughts at first glance, with those who saw the trailer and went out of their way to see it giving it much higher scores than the other two groups. Figure 2 (left) includes the entire set of data I collected from groups subjects who self-reported as having saw the movie, but did not see the trailer. (Please note that the four groups are as follows: Plot is question 4, Score is question 5, CD (character development) is question 6, and Overall is question 8). I had a few interesting data points in this group, ranging from those who chose to give every question a score of 1 and some giving multiple questions a score of 10. Overall, we saw these averages and standard deviations in this group (figure 3, below).

	Plot	Score	CD	Overall
Average	6.516129(	6.096774:	6	6.580645:
Std Dev	2.567371:	2.687685:	2.695675:	2.997489:

Figure 3

What I find interesting about this data set is its unusually high standard deviations. As we move on to the other groups, we can see that the standard deviations drop significantly among all groups. The overall quality of the film, the criteria I am most interested in investigating has a standard deviation of almost 3, which means that the data will vary wildly among that group. This set of data should be noted for its low scores and high standard deviations.

	Saw TLJ, saw trailer accidentally			
	Plot	Score	CD	Overall
	1	5	1	2
	8	8	7	8
	8	7	8	8
	8	10	7	8
5	4	5	6	5
	6	8	4	8
	7	9	10	8
	9	7	8	10
	7	7	7	7
10	6	8	9	5
	8	10	6	7
	8	5	7	8
	8	7	9	8
	7	8	7	7
15	9	8	8	8
	9	10	10	10
	8	8	6	7
	8	8	9	10
	6	5	4	7
20	8	10	7	10
	8	8	9	8
	6	8	2	6
	7	9	8	7
	7	8	7	7
25	9	7	7	8
	4	1	10	5
	6	4	5	4
	8	7	8	6
	8	8	6	7
30	7	8	7	8
	8	7	8	5
	8	6	5	7
	7	6	7	7
	6	8	4	6

Figure 4

The next group is also interesting. It features a slight increase in average score and a decrease in standard deviation. This group is defined as everyone who self-reported as having saw the film *Star Wars: the Last Jedi* in theatres at the time of surveying, and had seen the trailer, but saw the trailer accidentally or didn't go out of their way to see the trailer. This group also, like the last group, has relatively high standard deviations. Also, similar to the last group, we see a large range of values in the responses we got, including multiple 10's and multiple 1's. What you will find, though, is that the scores get much more consistent, in addition to much higher, as we move on among the groups. I think that this means we could see a statistically significant difference in a few categories because of that. Specifically, the overall scores look to rise and rise as we move along, as well as get close to a more consistent number.

	Plot	Score	CD	Overall
Average	7.117647(	7.294117(	6.852941:	7.117647(
Std Dev	1.647122	1.883411(	2.119639(	1.736675

Figure 5

The data set to the left (figure 4) is the total accumulation of all data points in this group, and the data set above (figure 5) is a brief summary of the data.

The last data set is, in my opinion, the most interesting. This is the third data set, or group C. Group C is everyone who self-reported as having seen the movie in the theater, and went out of their way to see the trailer beforehand. In this group, there are not any scores anywhere of 1's or 2's. I think that this only solidifies my hypothesis that as we are moving along in the groups, we are growing to higher numbers and more consistent numbers. The data set to the right (figure 6) show the complete data set for this group, while the summary table below (figure 7) gives a simplified version of the entire data set, broken up by categories.

	Plot	Score	CD	Overall
Average	7.945945	8.702702	8.108108	8.594594
Std Dev	1.682358	1.309471	1.882430	1.480605

Figure 7

	Saw TLJ, saw trailer intentionally			
	Plot	Score	CD	Overall
	10	10	10	10
	9	8	10	9
	8	9	9	10
	10	7	9	10
5	8	9	10	8
	9	10	9	8
	7	9	5	7
	9	6	10	9
	8	8	9	9
10	2	10	7	7
	10	8	9	10
	7	10	6	8
	9	7	8	10
	7	8	6	9
15	9	10	8	6
	10	10	10	10
	7	9	4	10
	8	9	6	5
	10	10	10	10
20	10	10	10	10
	4	8	3	6
	8	9	8	9
	8	10	9	9
	9	8	9	9
25	7	8	9	8
	7	9	8	7
	6	9	7	6
	7	10	7	9
	6	8	10	7
30	8	10	5	10
	8	9	10	9
	9	6	10	10
	9	10	9	9
	8	8	8	9
35	7	5	6	6
	7	10	9	10
	9	8	8	10

Figure 6

INFERENTIAL STATISTICS

In this section, I will be examining the data try to find statistically significant differences among groups based on the scores that were reported in the survey. Specifically, I will be constructing confidence intervals for all 4 categories for all 3 groups for a total of 12 confidence intervals. The goal of the confidence intervals is to find μ, or the true average value of the score given on the survey for each group for each category. I can construct these confidence intervals because I meet all the assumptions for the Central Limit Theorem. In each test case, I have at least 30 data points and each data point is independent of each other data point. I will be using 95% confidence for this test, or a critical score of 1.96. Because I have what I believe to be a large enough sample size for every test, I will be using the test standard deviations as the population standard deviations. I recognise that this may lead to bias, but I am proceeding with the calculations anyway. The equation for this interval is:

$$CI = \bar{x} \pm \left(1.98 * \left(\frac{Sx}{\sqrt{n}}\right)\right)$$

To begin, I will calculate the confidence interval for the first group's plot score. The first group, A, is those who had seen the movie *The Last Jedi* at the time of surveying, but had not seen the trailer to the film before watching the film.

CI=6.516±(1.96*(2.567/5.568)

CI=6.516±(.9036)

(5.612, 7.419)

Confidence interval for group A, plot (A-plot) = (5.612, 7.419). This means that I can say, with 95% confidence, that the true average value of this score lies somewhere in between those two values.

Next, the music score for group A.

CI=6.097±(1.96*(2.688/5.568)

CI=6.097±(.9462)

(5.281, 6.913)

Confidence interval for group A, score (A-score) = (5.281, 6.913). This means that I can say, with 95% confidence, that the true average value of this score lies somewhere in between those two values.

Next, the character development score for group A.

CI=6±(1.96*(2.695/5.568)

CI=6±(.9487)

(5.051, 6.949)

Confidence interval for group A, character development (A-CD) = (5.051, 6.949). This means that I can say, with 95% confidence, that the true average value of this score lies somewhere in between those two values.

Next, the overall score for group A.

$$CI=6.581\pm(1.96*(2.997/5.568)$$
$$CI=6.581\pm(1.055)$$
$$(5.526, 7.636)$$

Confidence interval for group A, overall (A-ovr) = (5.526, 7.636). This means that I can say, with 95% confidence, that the true average value of this score lies somewhere in between those two values.

The first set of confidence intervals went as expected, with no high-end going astronomically high and no low-end going lower than one would have presumed.

Next, I will calculate the confidence intervals for group B. Group B is made of responses that indicated they had seen the movie, had seen the trailer, but didn't go out of their way to see the trailer. We will begin with the scores for the plot from this group.

$$CI=7.118\pm(1.96*(1.647/5.831)$$
$$CI=7.118\pm(.554)$$
$$(6.564, 7.672)$$

Confidence interval for group B, plot (B-plot) = (6.564, 7.672). This means that I can say, with 95% confidence, that the true average value of this score lies somewhere in between those two values.

For my next trick, I will construct the confidence interval for the music score of group B.

$$CI=7.294\pm(1.96*(1.883/5.831)$$
$$CI=7.294\pm(.633)$$
$$(6.661, 7.927)$$

Confidence interval for group B, score (B-score) = (6.661, 7.927). This means that I can say, with 95% confidence, that the true average value of this score lies somewhere in between those two values.

Next, I will do the confidence interval for group B's character development score.

$$CI=6.853\pm(1.96*(2.119/5.831)$$
$$CI=6.853\pm(.712)$$

(6.141, 7.565)

Confidence interval for group B, character development (B-CD) = (6.141, 7.565). This means that I can say, with 95% confidence, that the true average value of this score lies somewhere in between those two values.

Next, and most importantly, I will construct the confidence interval for the overall score given by subjects of the survey who fell into group B.

CI=7.118±(1.96*(1.737/5.831)

CI=7.118±(.584)

(6.534, 7.702)

Confidence interval for group B, overall (B-ovr) = (6.534, 7.702). This means that I can say, with 95% confidence, that the true average value of this score lies somewhere in between those two values.

Group B, in a similar sense to group A, went as expected. However, in group B, it is natural to see smaller intervals because of the smaller standard deviations and larger sample size. Before moving on to group C, I just want to point out that we expect the intervals to rise more and more as we move on. I think that there may even be a statistically significant difference between a few of the categories between group A and C. Group C is everyone who reported as having seen the film and went out of their way to see the trailer to the film before having saw the film.

Firstly, the plot score for group C.

CI=7.946±(1.96*(1.682/6.083)

CI=7.946±(.541)

(7.405, 8.487)

Confidence interval for group C, plot (C-plot) = (7.405, 8.487). This means that I can say, with 95% confidence, that the true average value of this score lies somewhere in between those two values.

Next, the music score for group C will have its confidence interval constructed.

CI=8.703±(1.96*(1.309/6.083)

CI=8.703±(.422)

(8.281, 9.125)

Confidence interval for group C, score (C-score) = (8.281, 9.125). This means that I can say, with 95% confidence, that the true average value of this score lies somewhere in between those two values.

Next, I will construct the confidence interval for group C's character development scores.

$$CI=8.108\pm(1.96*(1.882/6.083)$$
$$CI=8.108\pm(.606)$$
$$(7.502, 8.714)$$

Confidence interval for group C, character development (C-CD) = (7.502, 8.714). This means that I can say, with 95% confidence, that the true average value of this score lies somewhere in between those two values.

Last, and, arguably, most importantly, I will construct the confidence interval for the overall score given by testing subjects who self reported as having seen the film and went out of their way to see the trailer.

$$CI=8.595\pm(1.96*(1.481/6.083)$$
$$CI=8.595\pm(.477)$$
$$(8.118, 9.072)$$

Confidence interval for group C, overall (C-ovr) = (8.118, 9.072). This means that I can say, with 95% confidence, that the true average value of this score lies somewhere in between those two values.

These groups of intervals are exactly what I wanted to see out of my data set. They are clean, went off without a hitch, and provide useful data. In an organized way, here are the confidence intervals:

A-plot: (5.612, 7.419)	B-plot: (6.564, 7.672)	C-plot: (7.405, 8.487)
A-score: (5.281, 6.913)	B-score: (6.661, 7.927)	C-score: (8.281, 9.125)
A-CD: (5.051, 6.949)	B-CD: (6.141, 7.565)	C-CD: (7.502, 8.714)
A-ovr: (5.526, 7.636)	B-ovr: (6.534, 7.702)	C-ovr: (8.118, 9.072)

DISCUSSION

These numbers point towards what I have suspected all along: that there is a correlation between high enjoyment scores and watching the trailer to a movie. There is a statistically significantly higher satisfaction rating given by group C over group A and B in the overall category, which is why I continue to believe that movie trailers are crucial in the overall enjoyment of viewing a film. I would be foolish if I didn't acknowledge that there may still be flaws in the design on this study. Someone who is more of a Star Wars fan (such as me) would of course gone out of their way to see the trailer and, being a huge Star Wars fan, enjoyed the movie more just because it was a

Star Wars movie. However, I couldn't find a reasonable way to eliminate this factor from my study in the time I had to complete it. I think I could get more accurate results on the overall impact of a trailer in a movie by studying more kinds of movies, not just movies with already massive followings such as Star Wars. In the future, I want to do exactly the same kind of research on other movies, but especially on Solo: a Star Wars Story. The movie is still Star Wars, but the hype for it is completely different. I would do the same for Incredibles 2 and Avengers: Infinity War because they are all very hyped movies. I would also want to research in the same way for movies that get less hype. I think doing this study over a great many different kinds of movies would lead me to a solid conclusion on the actual impact of a trailer on a movie, not just a very exciting Star Wars movie like I have done for this study.

CONCLUSION

Looking at this data can tell us a number of valuable things on how a person's consumption of a trailer can impact their movie viewing enjoyment experience. While, based on the data, there is no statistically significant difference in how a person will enjoy the plot of this movie or the character development based on trailer intake, but we can see the statistically significant differences in the other two categories. In the score (music) category, there is a statistically significant difference in the enjoyment of the score for group C subjects and the other two groups, A and B. And in the overall enjoyment category, which I argue is the most important, there is a statistically significant difference in favor of people who went out of their way to see the trailer before viewing *Star Wars: the Last Jedi* versus people who either did not see the trailer, didn't go out of their way to see the trailer, or actively avoided the trailer. This is exactly the conclusion I was looking for at the beginning of the experiment, that there is a statistically significant difference on overall enjoyment of this film based on how a person takes in the trailer to it.

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