

Coolness Factor in Virtual Reality Motion Picture Context

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Abstract

This study aims to explore whether virtual reality can be more effective than traditional 2D in influencing empathy, sympathy, movie coolness and word-of-mouth. To achieve this aim, we used a factorial design 2 (movie story: documentary, animation) x 2 (technology format: 2D, VR) between-subjects experiment approach. The movies chosen followed the criterion of both VR and 2D counterparts are available in the market and are the same in terms of story plot, visual elements, and characters. Findings reveal the combined effects of technological format and movie genre have a significant influence on coolness perception. Empathy influences movie coolness and these, in turn, predict word-of-mouth.

Keywords: Brand Coolness, Motion Picture, Storytelling, Word-of-Mouth

Track: Advertising & Marketing Communications

1. Introduction

Considering the high-risk investment on movies production, the story and marketing efforts are decisive factors to the success in the box office. Brand coolness can be one of these tools contributing to understand the role of narratives in movies industry. As Warren, Batra, Loureiro and Bagozzi (2019) claim, being cool is a positive and desirable trait for things and brands and can result in favorable and positive brand attitudes, higher willing-to-pay and word-of-mouth. These identified benefits of brand coolness can contribute to a movie's success rate. Nonetheless, to our knowledge, the concept of brand coolness has not been explored into the fictional brands (movies), nor associated to the technological format of the movie (e.g., virtual reality or traditional 2D).

Virtual reality (VR) represents the construction or use of a virtual world where users feel immersed as if they were part of that environment (Loureiro et al., 2019). At the core of a VR immersive experience is the empathy factor (Shin, 2018). Empathetic responses are often considered by screenwriters and film critics the ultimate experience a spectator can have from a movie. Therefore, considering the multisensory stimuli the technology can provide, there has been a high investment in VR in the motion picture industry, yet cinematic virtual reality is still at an early stage. As Mateer (2017) and Ross (2020) argue, new VR synesthetic techniques and directing methods need to be adapted and developed considering the opportunities but also the limitations that the technology still holds. Within this context, a question arises: how technology format and movie genre influence movie coolness? And how emotional responses to movies (e.g., empathy) influence movie coolness and word-of-mouth (WOM)?

The current study intends to contribute to answer these questions through an experiment using two genres of movie ("Crow: The Legend" and "Is Anna Ok?") to be watched in two technological formats (2D and VR). Thus, we aim to explore whether VR can be more effective than traditional 2D in influencing empathy, sympathy, movie coolness and WOM.

2. Hypotheses development

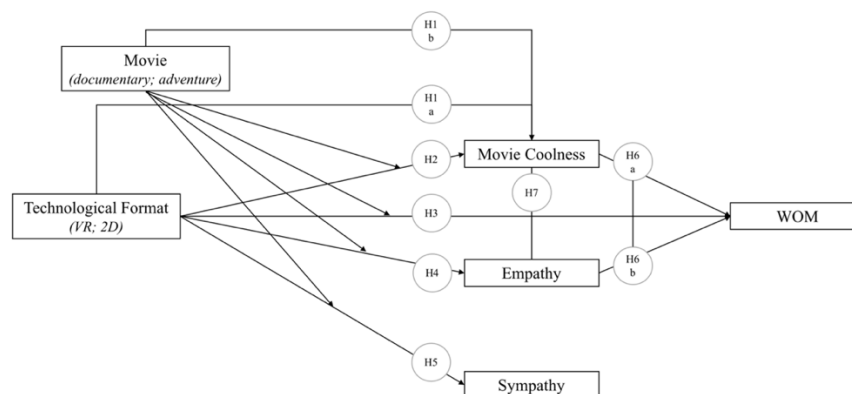
Considering storytelling to enhance brand coolness (Gaustad et al., 2018), VR movies will provide an experience that can reinforce the perception of coolness, by some of the 10 characteristics pointed out by Warren et al. (2019). Thus, the perceptions of brand coolness are expected to be affected by the technological format in which a movie is presented. The present study considers two different formats of experiencing a movie: through traditional 2D screens and through VR. Hence, the following hypothesis is proposed (see figure 1):

H1a: *Perceptions of movie coolness are different between two movies format: 2D and VR*

Movie genre is an important determinant of movie consumption decisions by the audience (Desai & Basuroy, 2005). Movie genre preferences is also positively related to consumer personality and lifestyles. Therefore, considering that movies preferences are positively related to consumer's personality, audiences with different movie preferences and personalities are expected to have different perceptions of coolness in movies. Thus, we hypothesize that:

H1b: *Perceptions of movie coolness are different between two movies genre: documentary and animation*

Figure 1. *Conceptual Model*



H2: *There is an interaction effect between technological format (2D or VR) and movie genre (documentary and animation) on movie coolness*

Ross (2020) explains that VR can provide processes that create a more direct experience of the movie to the spectator and can even heighten empathy in the audience. Empathy is a stronger emotional response than sympathy and, therefore, a key element when examining the emotional relationship between the spectator and the fictional characters (Escalas & Stern, 2003). Therefore, considering the expectations but also the limitations and challenges VR has regarding its application in the motion picture industry, it would be relevant to understand how the technology affect consumers' empathy, sympathy and brand coolness perceptions comparing with 2D traditional screens. On this basis, the following hypotheses are proposed:

H3: *There is an interaction effect between technological format (2D or VR) and movie (documentary and animation) on sympathy*

H4: *There is an interaction effect between technological format (2D or VR) and movie (documentary and animation) on empathy*

Positive and negative WOM play a crucial role determining moviegoers' consumption decisions, as it allows consumers to evaluate the quality of a movie even before watching it. In fact, WOM can be decisive of a movie's success, considering that positive WOM can lead to a greater audience watching the movie and, therefore, greater box office performance. Therefore, and considering the recent investments in VR by movie studios, the present study also hypothesizes how does the technological format affect word-of-mouth.

H5: There is an interaction effect between technological format (2D or VR) and movie (documentary and animation) on WOM

Positive brand coolness perceptions can result in positive brand attitudes, such as WOM (Warren et al., 2019). Therefore, considering the motion picture industry, we hypothesize that positive movie coolness perceptions can result in positive WOM.

Hypothesis 6a: Movies coolness perceptions influence WOM

As Sheldon (2019) claim, directed empathy while experiencing a movie can result in an emotional connection. Empathy responses can influence consumers attitudes toward advertising. Hence, it is expected that higher levels of empathy responses to movies can lead to positive WOM.

H6: WOM is a function of movie coolness (H6a) and empathy(H6b).

Sympathy responses to an advertising can result in positive consumers attitudes (Escalas & Stern, 2003). Nonetheless, empathy responses have an even greater ability to influence those attitudes, since empathy responses origin from a strong emotional connection in which the viewer is absorbed in another's person feelings, and that person can be a character from an ad, or a character from a movie. Empathy responses are considered by movie criticism and literature as the ultimate experience (Sheldon, 2019). However, as Shin (2018) argues whether users feel empathy depends on the users' own traits and cognition.

Emotions and feelings can indeed have and high impact on the way users perceive narratives and how does that reflect in terms of attitudes and judgements. When a brand is considered cool, consumers attitudes are more favorable (Warren et al., 2019). Thus, it is expected that when consumers have an emphatic response toward a film, then they will more easily regard the same movie as being cool. The following hypothesis is suggested:

H7: Empathy responses to movies influence movie coolness

4. Methodology

4.1 Research design

This study employed a factorial design 2 (movie story: documentary, animation) x 2 (technology format: 2D, VR) between-subjects experiment. The dependent variables are

brand coolness (here adapted to movie coolness), sympathy, empathy, and WOM. The movies chosen for this research follow the criterion of both VR and 2D counterparts are available in the market and are the same in terms of story plot, visual elements, and characters. The 2D counterparts are available on YouTube, and the VR version was downloaded to be experienced with the Oculus Rift headset device. Two groups of participants: the control group, in which the respondents watched one of the movies through YouTube in 2D format and the experimental group, in which the participants were invited to experience one of the movies through VR format. After watching the movie each participant fulfilled the questionnaire. The movies took between 12 to 22 minutes to watch. A total of 145 participants were recruited (78 participate in the control group, which experienced the movies in 2D format).

4.2 Variable and measurement

The constructs in the questionnaire were measured with multi-item scales using 7-point Likert scale (1 = strongly disagree, 7 = strongly agree) and took 5 minutes to be fulfilled. Therefore, Sympathy and Empathy were addressed through three items each based on Escalas and Stern (2003). WOM with two items was adapted from Zeithaml et al. (1996). Brand coolness used one items for each of the 10 dimensions adapted from Warren et al. (2019). Additionally, two questions were considered to have an overall evaluation of movie coolness: “after watching the movie, how cool would you consider it?” and “Considering your overall experience watching the movie, how cool would you perceive it?”. A 7-point Likert Scale (1 = very uncool, 7 = very cool) was used.

5. Results

Independent samples t-test were used to compare the control group (n=78) and the experiment group (n= 67) regarding the movie format (2D, VR). The 10 characteristics of movie coolness are perceived differently, except Rebellious ($t=-.343$, $p=.732$) (see figure 2 left). Regarding movie genre, independent samples t-tests reveal that only the characteristic Authenticity are perceived not being differently ($t=1.764$, $p=.080$) (see figure 2 right). Thus, H1a and H1b are supported (Hair, Black, Babin, & Anderson, 2009).

The results of the two-way ANOVA through the test of Between-Subjects effects show that the combined effects of technological format and movie genre has a significant influence on movie coolness ($F_{(1, 141)}=5.123$, $p=.025$) (see table 2) and so H2 is supported. The mean values of movie coolness tend to be higher in the case of VR than 2D format. In particular, for the movie *Is Anna Ok?* The difference between the two format is higher ($4.56(\text{VR}) - 3.41(\text{2D})= 1.15$) than for *Crow: The Legend* ($5.38(\text{VR}) - 4.97(\text{2D})= 0.41$).

Figure 2. movie coolness characteristics perceived through format technology and movie genre

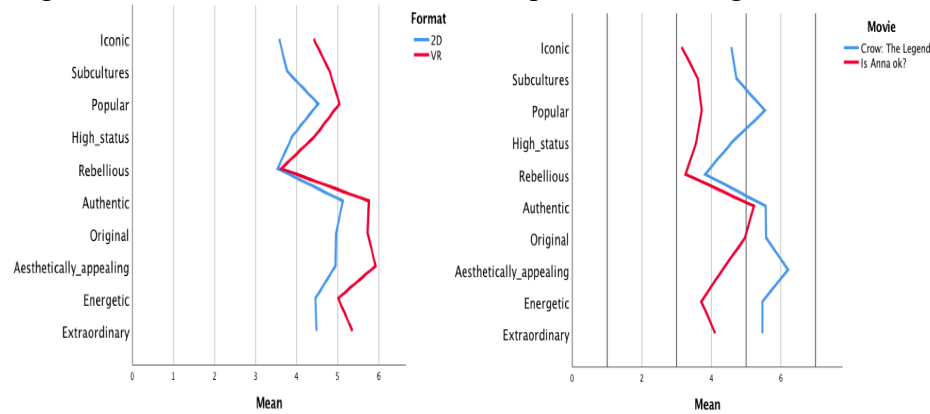


Table 2. Tests of Between-Subjects Effects for Movie Coolness

Source	Type III Sum of Square	Df	Mean Square	F	Sig.	Partial Eta Square
Corrected Model	74.131	3	24.710	26.701	.000	.362
Format	21.511	1	21.511	23.244	.000	.142
Movies	50.280	1	50.280	54.331	.000	.278
Format*Movies	4.741	1	4.741	5.123	.025	.035
Error	130.489	141	.925			
Total	3333.840	145				
Corrected Total	204.620	144				

The two-way ANOVA was employed to test the hypotheses H3, H4 and H5 through the test of Between-Subjects effects (see table 3). Considering the combined effect of technological format and movie genre on sympathy, the findings reveal that although technological format and movie genre individually have a significant effect on sympathy, the interaction is not significant ($F_{(1, 141)}=2.366, p=.126$), meaning that H3 is not supported (only the single effects are significant). The same situation is observed to the interaction effect of technological format and movie genre on empathy ($F_{(1, 141)}=2.656, p < .05$) is significant and so H4 is not supported (only the single effects are significant). Regarding the variable WOM, the interaction effect of technological format and movie genre is significant ($F_{(1, 141)}=16.623, p < .05$) supporting H5.

The beta values of movie coolness ($\beta=.531, t=9.026$) and empathy ($\beta=.390, t=6.631$) are significant at the .01 level, meaning that H6 is supported. The VIF value (1.537) is below 3.33, what does not pose any issue regarding multicollinearity (Hair et al., 2009). The model shows a good level of predictive power (R^2) as movie coolness and empathy explained 68.8% of the variation of WOM. As for the second model (see table 4) the simple regression reveals that the empathy has a positive and significant effect on movie coolness ($\beta=.591, t=8.760$), supporting H7. Empathy explained the variance of movie coolness in 34.9%.

Table 3. Tests of Between-Subjects Effects for Sympathy, Empathy and WOM

Source		Df	Mean Square	F	Sig.	Partial Eta Square
<i>Sympathy</i>						
Corrected Model		3	6.667	8.305	.000	.150
Format		1	8.242	10.267	.002	.068
Movies		1	10.804	13.459	.000	.087
Format*Movies		1	1.899	2.366	.126	.017
Error	113.187	141	.803			
Total	5453.667	145				
Corrected Total	133.188	144				
<i>Empathy</i>						
Corrected Model		3	66.757	34.333	.000	.422
Format		1	182.550	93.885	.000	.400
Movies		1	20.561	10.574	.001	.070
Format*Movies		1	5.164	2.656	.105	.018
Error	274.161	141	1.944			
Total	3043.444	145				
Corrected Total	474.432	144				
<i>WOM</i>						
Corrected Model		3	82.150	43.122	.000	.478
Format		1	180.739	94.874	.000	.402
Movies		1	52.742	27.686	.000	.164
Format*Movies		1	31.668	16.623	.000	.105
Error	268.612	141	1.905			
Total	3648.000	145				
Corrected Total	515.062	144				

6. Conclusions

Four major aspects presented in the current study deserve to be discussed. First, as Warren et al. (2019) suggest, movie coolness is a good predictor of the willing to talk about and recommend the movie. This effect reveals to be more effective than a mere empathy with the movie. Thus, experimenting a movie in virtual reality affects movie coolness perceptions and reinforces its coolness characteristics more than movies watched in traditional 2D screens. Second, aligned with prior studies (Desai and Basuroy 2005) the current also claim that the movie genre is an important determinant of movie consumption. Thus, the story is particularly important to reinforce movies' coolness characteristics, which influence coolness perceptions more than the technological format. Traditional 2D movies with lower scores on coolness characteristics components can benefit from a significant increase of coolness perceptions when experienced in VR. Yet, when a movie is already perceived as cool in 2D, the increase of coolness perceptions due to the technological format is less significant. Therefore, even though both factors (the format and the movie story) affect brand coolness significantly, the movie story is more important than the format and the interaction between the format and the movie story. Third, empathic responses are often considered by literature and movie critics

the ultimate experience to movies (Sheldon, 2019). Research on advertising and emotional literature explains that both sympathy and empathy responses can influence consumers' attitudes toward a brand. Nevertheless, it is important to note that sympathy is considered more a distanced feeling, while empathy is a stronger emotional reaction, which, in turn, exercises an influence on consumers' attitudes (Escalas and Stern, 2003). Fourth, emotional responses (sympathy and empathy) to movies are affected by the technological format used to present a movie, being higher in VR format than 2D. However, the impact of the technological format was greater in empathy responses than in sympathy responses. In fact, regarding sympathy, the conducted analysis suggests that (similarly to brand coolness), the movie story has a higher impact than the format. By the way of contrast, the format in which a movie is presented affects empathy more than the movie story. Thus, VR affects humans' perceptions and cognitive levels (Shin, 2018).

6.1 Theoretical contribution

This research contributes to theory by exploring how the mentioned technological tool differs from traditional 2D screens regarding constructs that consider consumer behavior aspects (e.g., emotional responses) and marketing concepts (e.g., brand attitudes and brand coolness perceptions). Secondly, brand coolness conceptualization can be extended to fictional brands, as the movie story influences coolness characteristics. Coolness components are also influenced by the format, and the application of VR to movies can help reinforcing the lacking characteristics of coolness, thus resulting in more positive coolness perceptions.

6.2 Managerial implications

Although movies are a highly profitable industry, it is also considered a risky venue due to the high costs associated. First, WOM can be a determinant factor movie consumption, even before the audience has watched it. Thus, studios and movie producers should focus on providing a movie that motivates positive WOM by carefully select and prepare the story and gradually prefer the VR to 2D. The story should fit with the personality and identity of the target audience. Technologic format can also create a difference and VR tend to be more appealing than 2D. Secondly, movie coolness has been identified as pivotal to influence WOM. Thus, movie producers should employ the 10 characteristics of brand coolness and analyze which could be the most relevant to their story and the whole movie. Third, the current study further suggests that empathy influences brand coolness perceptions. More precisely, the more empathic reactions a spectator has toward a movie, the cooler the movie can be perceived. The technological format has proven to be more important than the movie

story to create empathy. Thus, it would be reasonable for studio managers to explore the technological skills that VR has to elicit empathic responses in the spectator. However, the quality of the story should never be overlooked, considering its influence on empathy.

6.3 Limitations and future research

The findings and implications of the present study extends former studies on VR as a marketing tool and as a new form of movies to be more frequently employed. At the same time, brand coolness, emotional responses and word-of-mouth were regarded associated to fictional brands. Nonetheless, despite the valuable insights this research has provided, some limitations should be pointed out, as well as suggestions for future research. First, due to the limited commercial availability of movies in VR on Oculus' website that also have a 2D counterpart, the study only considered two movies, which are from two different genres (animation and documentary), thus, external validity may be improved in the future. Future research may consider including not only different movie genres (e.g., horror, drama, comedy), but also more movies within the same genre. Second, the demographics (nationality, age and gender) did not play an important role in the current research, which limits the study culturally. Thus, future research could be improved by understanding how demographic aspects can impact the results. Third, the present study does not consider the novelty of the technology. Therefore, it would be interesting for future research to conduct further analysis on groups of consumers who have been in touch with the technological device before and have experienced VR movies and compare the results with a group that has never experienced VR. This would allow for more refined insights on the importance of the movie story and the technological format on consumers perceptions. Fourth, the current study does not consider the influence that star power may have on the overall experience toward the movie. Considering Desai and Basuroy (2005) and Peng, Cui and Li (2012), the familiarity a consumer might have with different movies and respective elements (e.g., genre, stars, music, story) might influence the ratings and the expected quality of a movie. Hence, this limitation encourages future research to explore and consider the importance of the elements within a movie that can impact, negatively or positively, the brand experience toward that movie. Fifth, to our knowledge, this study is the first of its kind to consider brand coolness perceptions to movies. However, it remains to be understood how the lifecycle of brand coolness applies to fictional brands and to be explored what other drivers should be explored and used to enhance brand coolness perceptions. Finally, according to Mateer (2017), the development of cinematic virtual reality remains highly uncertain in the Classical Hollywood Cinema. Thus, we strongly encourage future research to consider consumer behavior concepts

as a fundamental pillar in research and further develop applicable scales that consider the specifications of the technological device.

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