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Less is Less: Fast Ad Delivery Undermines Impact

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LESS IS LESS: FAST AD DELIVERY UNDERMINES IMPACT

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ABSTRACT

In the digital media age, video advertisements are ubiquitous, including on streaming platforms such as YouTube and TikTok. People generally do not like advertisements, especially unskippable ones, and may prefer to do something else while an ad plays. Following recent research suggesting that faster speeds may increase engagement with videos , we examine whether speeding up video advertisements will increase people's attention when watching non-skippable ads as well as improve ad experience and memory. In two experiments, college participants were randomly assigned to watch an ad (Vrbo in Study 1, Five Star Notebooks in Study 2) at either normal or 25% faster (1.25x) speed. We did not find significant effects of playback speed in Study 1, perhaps because the ad did not have much informational content. However, in a higher-powered Study 2, we found that participants who watched the ad at 1.25x speed enjoyed it less, remembered it less well, and had lower brand sentiment than those who watched at normal speed. While these findings need replication and further research to test robustness across a range of ad types and lengths, our results suggest that speeding up ads may not be beneficial for advertisers.

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INTRODUCTION

In the digital media age, advertisements are everywhere. They appear as static advertisements on the sides of websites, as popup ads in apps, and as video advertisements on streaming websites and live TV. This study will focus on the video advertisements that pop up on streaming sites such as YouTube or Hulu. They are often unskippable and are an obstacle to endure in order to get to the content people are actually interested in. Given recent research (e.g., Duan and Chen 2019; Lang et al. 2020; Nagahama and Morita 2017) suggesting that higher video speeds have a positive impact on the viewers engagement with videos, we wondered if the benefits of speeding up video playback may apply to advertisements as well. In particular, is it possible that a faster advertisement will be more engaging to people, leading to greater attention toward and enjoyment of the ad, and subsequently to better memory for the ad and brand sentiment?

BACKGROUND

Playback Speed

The effect of playback speed on people's experience watching videos has been studied in a variety of fields as diverse as education, entertainment, and marketing. One prominent area of work is in education, where there is the natural question of the relationship between video playback speed and student learning outcomes in Massively Open Online Courses (MOOCs). For example, Lang et. al (2020) found that only one-fifth of MOOC learners ever modified video playback speed, which suggests that many users may be unaware of the option to change the playback speed or at least do not do it habitually. The median user who did change speeds tended to choose either 1.25x or 1.5x speed. Lang study had 4 hypotheses. (1) Students who watched the sped-up video will save time. (2) Students who watched the sped-up video will consume more content. (3) Speeding up the video will affect students' rewinding and pausing actions. (4)

Students who watched the sped-up videos will perform better (ex: get better grades) and as a result attempt more content and get better grades. In an experimental study, they randomly assigned learners to have their default video set to either normal speed or 1.25x speed. Although learners could change the video speeds themselves, they would have to manually adjust it every time they watched a new video. They found that the 1.25x speed group took less time to complete the MOOCs, which translated into higher course completion rates and persistence. Lang et al.'s (2020) findings are consistent with related work finding that students assigned to watch lecture videos as 1.5x speed scored higher on comprehension tests than those assigned to watch at 1x speed (Nagahama and Morita, 2017), although their sample size was fairly small (n =59). Students in the study assigned to watch lecture videos at 2x speed did not like doing so and did not perform better. Another study found that lecturers were perceived to be more credible and authoritative when speaking with a faster cadence (Simonds et. al., 2006). However, not all studies show a positive benefit of faster educational videos. For example, Ritzhaupt et. al (2015) found that video speed had no effect on learner's performance and that learners were more satisfied with normal video speed than with other video speeds. His study included trials which are repeated measures and the captions and video speeds are the between subject conditions The participants were 74% female and the rest were male. They first had the participants fill out a background survey, then had the participants go through the Trial 1 performance test, then the randomly assigned video presentation, then the Trial 2 performance test, and finally, the satisfaction survey. The performance test was a thirty-question multiple-choice test based on the contents of the video. The satisfaction survey contained fifteen questions from previous studies. Notably, this study is somewhat older than the other papers, so it is possible that students have

become more used to faster videos in more recent years as the option has become more common, with built in settings on platforms such as EdX, Coursera, YouTube, and even Netflix.

Another study done on playback speed in watching entertainment videos online explored why someone would speed up a video in the first place. Duan and Chen's (2019) surveyed 242 Chinese college students who reported watching drama shows on streaming platforms and found that 84.3% of participants watched streaming dramas above 1x speed. Their study was conducted at Guangxi University with its college students through a website called "The questionnaire star". They collected a total of 356 questionaries of which they cleaned and ended up with 242 valid questionnaires. Their participants include 185 (76.45%) female students and 57 (23.55%) male students. From these valid questionnaires, they choose 12 individuals to participate in indepth interviews to explore the behavioral reasons as to why one would want to watch their shows above 1.0x speed. 38.43% of the participants watched dramas for 0-3 hours a week, 21.49% of the participants watching 3-6 hours per week, 17.36% at 6-9 hours and 22.73% at over 9 hours a week. Herd mentality and entertainment are also reported reasons as to why one would watch dramas above 1.0x speed. Among 12 participants selected to partake in in-depth personal interviews, reasons reported included increasing time efficiency, preference for a fastpaced lifestyle, and as a remedy for plot dragging. This is consistent with recent work by Li (2022), which found that viewers of infotainment videos found them more enjoyable when viewed at 1.25x speed (compared to 1x speed) and reported paying more attention to them. Advertising Effectiveness

Companies spend significant amounts of money on advertising and a lot of this budget goes toward video ads whether on television or the internet. Companies therefore should care a lot whether people actually watch their ads and ultimately how effective they are in terms of

increasing people's brand sentiments and memory for the ad content. For example, a study on advertisement effectiveness by Bellman et al. (2020) examined whether viewing time had a nonlinear relationship with ad effectiveness found that as amount of time an ad is viewed increases, recall, recognition, ad liking, and purchase intention increase, but with diminishing returns.

Advertising researchers have started to examine the effects of advertisement speed. For example, Bolls et. al (2003) examined the effects of advertisement pacing on viewers' voluntary and involuntary attention to an ad and its effects on the viewers memory of the ad. Pacing refers to the number of visual cuts in the video, so not exactly speed, but a related concept. They found that while there may be some evidence that fast-paced ads have positive effects on the viewers involuntary attention (arousal), that attention appears to be directed towards the "advertisement execution" part of the ad and not the actual message of the ad. That is, participants paid more attention to the ad but had worse recall for the ad's message. In a related study, Sundar and Kalyanaraman (2004) also found that faster speed animations in ads seem to be better at holding participant's attention but also found that slower speeds seem to enhance the advertised website's appeal. These studies suggest that faster speeds may increase attention but have unintended consequences on both liking and remembering the ads.

Hypothesis

In summary, studies in a variety of domains have found that faster video speeds increase viewers' engagement and attention. Studies in education and entertainment seem to suggest that faster ads also lead to greater performance and enjoyment, respectively. However, studies on ad pacing and animation speeds seem to suggest that this increased attention may not confer benefits in terms of brand sentiments and ad memory. We therefore hypothesize that speeding up

the ad will increase people's attention towards non-skippable ads. However, we are less clear whether faster speeds will increase ad enjoyment and brand sentiments. Finally, we hypothesize that faster speeds will reduce ad memory.

STUDY 1: VRBO

To test the effect of playback speed on advertising effectiveness, we conducted a study in which we had participants watch an unskippable advertisement at normal or 25% faster speed, and then tested them about their memory for the ad and asked them about their experience watching the ad and brand sentiments.

Methods

Participants: We recruited 174 college students from the University of California, Riverside (76 females and 98 males) to complete a series of studies in exchange for partial course credit, of which this study was one. The average age of the participants was 21.2 (SD = 2.26, range = 19 to 36; 55.1% Asians, 26.3% Latino/Hispanic, 8.0% White/Caucasian, 1.7% Black/African, and 6.8% other ethnicities).

Video: We used a 60-second long Vrbo advertisement from the 2022 Super Bowl found on YouTube. We chose Vrbo because it was a well-established company, but not incredibly famous like Apple or Samsung. This would help minimize any preconceived notions that people may have regarding the company that could reduce the impact of the ad on participant's brand sentiment. That is, we wanted to reduce pre-existing differences in brand sentiment.

Questionnaire: The questionnaire was designed in Qualtrics, a web-based survey platform. We created a series of questions to ask about participant's experience watching the advertisement (see Table 1). Participants rated their agreement with statements on a Likert scale

from 1 to 7, with 1 being "Strongly Disagree" and 7 being "Strongly Agree." There was also a four-item quiz about the advertisement's content to measure the participant's memory for the ad.

Procedure: Participants were randomly assigned to the normal video speed group (1x) or the 25% sped-up group (1.25x). They first watched the video advertisement played at the assigned speed, with no option to change the speed or to skip, pause, or rewind the video. The page automatically advanced to the next page once the video was done. Participants then answered the Likert-scale questions about their experience watching the advertisement and about their brand sentiments. Finally, they completed the four-item multiple-choice quiz to test ad memory. We also asked about participants' demographics and typical behavior towards video advertisements outside this study.

Variable	Statement Wording
Enjoyment	I enjoyed this video.
Entertainment	I found this video entertaining.
Bad Experience	Watching this video was a bad experience.
Informative	I found this video informative.
Attention	I paid full attention to the entire video.
Understanding	I fully understood the content of this video.
Relaxing	I found this video relaxing.
Stress	I found this video stressful to watch.
Ad Message Understanding	The ad message is understandable.
Ad Relevance	The ad's message is relevant to me.
Ad Believable	The benefits described in the ad are believable to me.
Product Usage	After viewing this ad, I would consider using the product.
Brand Sentiment	I feel positively toward the brand in this ad.
Perceived Speed	The video playback felt faster than normal.
Audio Distortion	The audio in the video seemed distorted or weird.
Video Distortion	The images in the video seemed distorted or weird.

Table 1. Likert Survey Questions (1 - 7 agreement scale)

Ethics Statement

Electronic informed consent was obtained from all participants at the start of each study.

Results

We used Jamovi v.2.3 (2022) to analyze our data. Table 2 shows descriptive statistics for all the dependent variables we measured. We created scores for the memory task by adding up the number of correct responses out of four on the multiple-choice quiz. The group mean for the normal speed group was higher than the sped-up group for all of the dependent variables listed except for enjoyment and entertainment.

Variables	М		SD						
	1x (<i>n</i> =	1.25x (<i>n</i> =	1x	1.25x	Regression t-stat	Regression p-value	b- value	t-stat	p- value
	89)	92)							
Enjoyment	2.17	2.40	1.06	0.83	1.97	0.05	0.27	-1.636	0.104
Entertainment	0.64	0.84	1.21	0.98	1.43	0.152	0.23	-1.206	0.229
Bad Experience	-0.97	-1.23	1.09	0.99	-1.95	0.052	-0.29	1.696	0.092
Informative	-0.09	-0.23	1.14	1.08	-0.59	0.556	-0.10	0.837	0.404
Attention	1.38	1.35	0.87	0.84	-0.23	0.816	-0.03	0.268	0.789
Understanding	1.06	0.79	0.96	1.01	-1.63	0.105	-0.24	1.793	0.075
Relaxing	0.58	0.33	1.03	1.07	-1.39	0.166	-0.22	1.652	0.1
Stress	-1.31	-1.12	0.95	1.06	1.23	0.221	0.19	-1.305	0.194
Ad Message Understanding	0.93	0.73	1.05	1.10	-1.08	0.28	-0.17	1.275	0.204
Ad Relevance	0.19	0.14	1.18	1.10	-0.06	0.949	-0.01	0.294	0.769
Ad Believable	0.49	0.30	1.03	0.95	-1.16	0.248	-0.17	1.29	0.199
Product Usage	0.24	0.16	1.08	1.05	-0.2	0.84	-0.03	0.461	0.645
Brand Sentiment	0.57	0.44	0.98	0.86	-0.82	0.415	-0.12	0.972	0.332
Perceived Speed	-0.33	-0.11	1.26	1.33	1.13	0.259	0.22	-1.127	0.261
Audio Distortion	-1.10	-0.97	1.12	1.12	0.655	0.513	0.11	-0.802	0.423
Video Distortion	-1.21	-1.14	1.08	1.01	0.46	0.648	0.07	-0.464	0.643
Quiz Score	2.53	2.15	1.45	1.93	-1.22	0.224	-0.30	1.481	0.14

Table 2. Descriptive Statistics for Dependent Variables, *t*-tests and regressions of Normal vs. Fast Groups

In addition to Table 2 above, we ran linear regressions of the effect of video speed on all the dependent variables. We also included gender, age, and prior familiarity with the brand as control variables since these might impact prior preferences for Vrbo. Although these control

variables had significant effects for some dependent variables, we do not report these effects since they are not the focus of our research.

We found a marginally significant effects of faster speed on enjoyment (b = 0.269, t = 1.97, p = 0.050) and bad experience (b = -0.293, t = -1.96, p = 0.052), suggesting that participants enjoyed watching the ad somewhat more at 1.25x speed than at 1x speed. However, faster speed did not have a significant effect on any of the other dependent variables that we tested. For instance, faster speed did not have a significant effect on the memory quiz, but was in the direction of worse memory (b = -0.304, t = -1.220, p = 0.224). Similarly, faster speed did not significantly impact self-reported attention for the video (b = -0.030, t = -0.23, p = 0.816), its informativeness (b = -0.098, t = -0.59, p = 0.556) or stressfulness (b = 0.186, t = 1.23, p = 0.221), or sentiments toward the brand (b = -0.108, t = -0.82, p = 0.415). Although none these effects were significant, the direction of these effects was consistent with a negative impact of faster speeds with the exception of enjoyment, entertainment, and bad experience.

Discussion

For this study, we did not find many significant differences between the normal speed and sped-up groups. Although participants marginally enjoyed the ad more, the direction of the other insignificant effects suggest hinted at negative impacts of faster speeds on the ad's stressfulness, understanding, and effective. The lack of significant effects may in part be due to the smaller than expected sample size because the class we drew participants from had fewer students than expected. We also think that the Vrbo ad—which consisted of relaxing music playing over videos of family vacations—perhaps had too little content or was irrelevant to student participants. It is also possible that the memory quiz we used was too blunt an instrument to distinguish between different degrees of ad memory.

STUDY 2: FIVE-STAR NOTEBOOKS

To address the limitations of Study 1, we changed the ad to one that is more geared toward students. We also added a free-recall memory task to directly measure recall memory in addition to the cued memory that multiple-choice questions measure. We were also able to collect data from a larger sample of participants. Finally, following best practices in behavioral research, we pre-registered the methods and analyses for this study (<u>https://aspredicted.org/6fv8g.pdf</u>).

Methods

Participants: Participants were 380 college students from the University of California, Riverside (180 females, 198 males, 2 non-binary) completing a series of studies in exchange for partial course credit. The average age of the participants was 21.3 (SD= 3.04, range 18 to 44). We were able to recruit more participants for this study than Study 1 because the class that we drew participants from happened to have much higher enrollment this quarter.

Video: We used a 42-second long Five Star Notebooks advertisement found on YouTube that was originally posted on June 1, 2019. Our participants were college students and so using an ad for a company that makes school supplies made the ad more relevant. We also deliberately chose an ad that contained much more informational content so that participants would have more to remember.

Questionnaire: The survey was made on Qualtrics and was mostly similar to the survey from the first study. The main differences were that we included a free recall memory task and changed the multiple-choice quiz questions to reflect the new ad. The free recall memory task asked participants to list up to 10 things from the ad "that come to mind (product attributes, benefits, brand name, price, etc.)" with 10 blank text boxes, although we told participants they did not have to fill in all the blanks.

Procedure: The participants first watched the video advertisement at normal or 1.25x speed, then answered questions about their experience watching the advertisement on a 7-point Likert scale. They then completed the free-response recall memory task and the five-item multiple-choice memory quiz. Finally, we asked about participants' demographics, prior familiarity and usage of the brand, and typical behavior towards video advertisements outside this study.

Results

Similar to Table 2, Table 3 also shows descriptive statistics for all of the dependent variables we measured. We created scores for the memory tasks by simply counting the number of items recalled in the free recall task and by adding up the number of correct responses out of five on the multiple-choice quiz. The group mean for the normal speed group was higher than the sped-up group for all the dependent variables listed above except for stress, perceived speed, and audio/video distortion.

Variables	М		SD		_				
	1x (<i>n</i> = 195)	1.25x (<i>n</i> = 185)	1x	1.25x	Regression t-stat	Regression p-value	b- value	t-stat	p- value
Enjoyment	5.14	4.81	1.33	1.51	-2.07	0.039	-0.3	2.322	0.021
Entertainment	4.94	4.56	1.48	1.46	-2.19	0.02	-0.33	2.536	0.012
Bad Experience	2.35	2.59	1.44	1.52	-1.59	0.113	0.2	-1.59	0.113
Informative	5.51	5.3	1.26	1.24	-1.69	0.093	-0.19	1.685	0.093
Attention	5.7	5.5	1.38	1.59	-0.85	0.394	-0.13	1.309	0.191
Understanding	6.35	6.06	0.85	1.12	-2.62	0.009	-0.26	2.839	0.005
Relaxing	4.15	3.63	1.55	1.53	-3.31	0.001	-0.5	3.306	0.001
Stress	2.55	2.83	1.53	1.66	1.58	0.116	0.26	-1.701	0.09
Ad Message Understanding	6.12	5.85	1.1	1.24	-2.25	0.025	-0.25	2.248	0.025
Ad Relevance	5.37	5.16	1.47	1.36	-1.46	0.145	-0.14	1.459	0.145
Ad Believable	5.72	5.44	1.11	1.11	-2.5	0.013	-0.26	2.496	0.013
Product Usage	5.37	5.08	1.35	1.46	-2.07	0.039	-0.25	2.073	0.039
Brand Sentiment	5.53	5.25	1.09	1.23	-2	0.047	-0.22	2.395	0.017

 Table 3. Descriptive Statistics for Dependent Variables, regressions, and t-tests of Normal vs.

 Fast Groups

Perceived Speed	4.08	4.69	1.59	1.53	3.84	<.001	0.67	-3.842	< .001
Audio Distortion	2.93	3.45	1.51	1.75	3.08	0.002	0.5	-3.075	0.002
Video Distortion	2.35	2.7	1.23	1.38	2.65	0.009	0.32	-2.645	0.009
Quiz Score	3.35	3.28	0.97	0.99	-0.52	0.603	-0.05	0.635	0.526
Items Recalled	5.39	4.82	2.13	2.05	-2.39	0.017	-0.51	2.641	0.009

In addition to the *t*-tests in Table 3, we also ran linear regressions for the dependent variables as a function of speed while controlling for individual differences from age, gender, and prior brand familiarity and usage. We do not report the effects of the control variables since they are not the focus of our research.

Relative to the normal speed, faster speed made for a less enjoyable (b = -0.30, t = -2.07, p = 0.039), less entertaining (b = -0.33, t = -2.19, p = 0.020), and less relaxing video (b = -0.490, t = 3.31, p = .001). Faster speeds also reduced self-reported understanding of the video (b = -0.261, t = -2.62, p = 0.009) and the ad's message (b = -0.252, t = 2.25, p = .025). This reduced understanding was born out in the fact that faster speeds reduced the number of facts recalled about the ad (b = -0.501, t = -2.39, p = 0.017), although there was no difference in performance on the multiple-choice quiz (b = -0.05, t = -0.52, p = 0.603). Perhaps more importantly, participants in the faster speed condition also found the ad to be less believable (b = -0.260, t = 2.50, p = .013), were less likely to want to use the product advertised (b = -0.247, t = 2.07, p = .039), and felt worse brand sentiments toward Five Star Notebooks (b = -0.22, t = -2.00, p = .0.047).

Regressions also found that faster speeds did not have a significant impact on participant's attention (b = -0.13, t = -0.85, p = 0.394), stress (b = 0.26, t = 1.58, p = 0.116), perceived ad relevance (b = -0.138, t = 1.46, p = .145) and informativeness (b = -0.186, t = 1.69, p = .093), or

whether the ad was a bad experience (b = 0.204, t = -1.59, p = .113). However, the direction of these effects is also consistent with a negative impact of faster speeds as well.

These negative impacts of faster speeds could be at least in part due to the fact that the 1.25x speed video seemed faster to participants (b = 0.669, t = -3.84, p < .001) and had significantly increased audio (b = 0.497, t = -3.08, p = .002) and video (b = 0.317, t = -2.65, p = .009) distortions. We did not anticipate any distortions since the way videos are sped up on YouTube usually do not impact audio/video fidelity on a modern device (especially for 1.25x speed). Since participants completed the study on their own devices, it is possible that they did not have sufficiently fast processors or internet speeds to accommodate the faster speed video.

We also analyzed participants' self-reported behaviors regarding their usual ad watching practices. In our college student sample, participants reported that they most frequently encountered advertisements on YouTube (75.7%), social media sites such as Facebook and Instagram (18.3%), and only a small portion on more traditional media on Hulu (2.4%) and television (1.8%). More importantly, only 16.8% of participants report watching ads when they are unskippable; instead, most participants do something else while the ad plays (72.8%) or even give up and switch to a different app or video entirely (10.5%). This suggests that companies have an uphill battle to capturing consumer attention during ads. And just using skippable ads is not the answer; 93% of participants reported that they always skip ads and the remaining 7% sometimes do.

Discussion

Unlike for the Vrbo ad in Study 1, we found many significant effects of video speed for the Five Star Notebook ad. We had hypothesized that speeding up the ad will increase people's attention towards the ad but that faster speeds will also reduce ad memory. While we did find the

hypothesized negatives effects on ad memory, we also found many other negative impacts of faster speeds on the experience watching the ad and people's brand sentiments. We also did not find our hypothesized positive effect on attention, although our attention measure was based on a single self-reported item.

GENERAL DISCUSSION

Two studies tested whether speeding up playback would affect people's experience watching an unskippable ad, as well as their brand sentiments and ad memory. The results were different from what we expected. We had thought that since people generally dislike video ads that play before and during their chosen video, then speeding up the ad may make them more tolerable. The results show the exact opposite. The total word count for the free recalls made had no significant relationship with speed, but the number of free recalls made did have a significant relationship with speed and familiarity. The number of free recalls made was significantly less in the sped-up group than in the normal speed group (1.0x). Attention and stress levels also had no significant relationship with speed, but attention did have a significant relationship with age. Not only did the participants enjoy the sped-up ad significantly less than the normal speed (1x) ad, but they also understood it less. One rationale for results is that nowadays, ads on YouTube and other social media/streaming platforms are much shorter than they are on live television. Most of the non-skippable ads on YouTube are no longer than thirty seconds. Some are as short as five seconds. If you speed up an ad that is already very short, then the ad may be over before viewers even realize what the ad was advertising. This can greatly decrease the effectiveness of these ads and the viewers engagement with it.

Limitations

There are limitations to this study. This study was conducted with college students with an average age of 21.3 years and results could be different for older people, not only due to differences in patience but also because younger people may have grown less accustomed to watching advertisements having grown up with YouTube instead of broadcast television. The video we chose was 42 seconds long and geared toward students, so it also does not accurately represent ad lengths and content for the general ad's population. This study also focused on video ads one would see on places like YouTube. Ads on live television are generally longer and so this study may not accurately represent live television ads.

Future Directions

Future studies should include older people from diverse backgrounds using ads relevant to their age range. Adults of various ages may have similar or entirely different reactions to sped-up ads than people in their twenties. In the age of data analytics, people are now shown more ads that are relevant to their activities on the internet so different age groups will receive different ads. Given this, it is not too farfetched to think that perhaps different age groups will also respond differently to changes in playback speed. Future research could also do a study focusing on ads that play during live television and see what the viewer's response may be. Ads of varying lengths should also be studied to see if people's response to sped-up ads change with the length of ads. Another direction could be to ask participants to predict how they will react to a sped-up ad versus a normal sped ad before they watch the ad. Afterwards, we ask them about their experience watching the ad, test them on retention of ad content, and ask them if they were correct about their prediction. Although our study found faster ads to be worse experiences, it is possible that people still choose to watch ads faster. Finally, a study using eye-tracking methods

to objectively measure attention to the video would provide a more accurate study of whether attention increases for faster video speeds as past studies suggest.

Conclusion

This study still needs replication and further research to confirm the generalizability of its findings, but its results found that speeding up ads did not improve people's enjoyment, retention, understanding, or brand sentiments. It did the opposite. The results of this study could help further the development of effective advertising by showing there is a limit to how fast ads can be shown to ensure ad effective. It also points to advertisers needing different methods of getting consumers' attention in the digital media age.

References

- Bellman, S., Beal, V., Wooley, B., & Varan, D. (2020). Viewing time as a cross-media metric:
 Comparing viewing time for video advertising on television and online. *Journal of Business Research, 120*, 103-113. http://dx.doi.org/10.1016/j.jbusres.2020.07.034
- Bolls, P. D., Muehling, D. D., & amp; Yoon, K. (2003). The effects of television commercial pacing on viewers' attention and memory. *Journal of Marketing Communications*, 9(1), 17–28. https://doi.org/10.1080/1352726032000068032
- Duan, S, & Chen, X.. (2019) Why College Students Watch Streaming Drama at Higher Playback Speed: the Uses and Gratifications Perspective. *International Joint Conference on Information, Media and Engineering (IJCIME)* https://doi.org/10.1109/ijcime49369.2019.00087.
- Lang, D., Chen, G., Mirzaei, K., & Paepcke, A. (2020). "Is Faster Better?" Proceedings of the Tenth International Conference on Learning Analytics & Knowledge, 260-269 https://doi.org/10.1145/3375462.3375466.
- Li, Y. (2022). Consequences of faster playback of video and audio. *University of California, Riverside Working Paper*.
- Nagahama, T. & Morita, Y. (2017). Effect Analysis of Playback Speed for Lecture Video Including Instructor Images. *Technical Report* 1. 50–58 http://jaems.jp/contents/icomej/vol11/06_Nagahama.pdf
- Ritzhaupt, A. D., Pastore, R., & Davis, R. (2015). Effects of captions and time-compressed video on learner performance and satisfaction. *Computers in Human Behavior*, 45, 222–227. https://doi.org/10.1016/j.chb.2014.12.020

- Simonds, B.K., Meyer, K.R., Quinlan, M.M., & Hunt, S.K. (2006). Effects of Instructor Speech Rate on Student Affective Learning, Recall, and Perceptions of Nonverbal Immediacy, Credibility, and Clarity. *Communication Research Reports*, 23(2), 187-197.
- Sundar, S. S., & Kalyanaraman, S. (2004). Arousal, memory, and impression-formation effects of animation speed in web advertising. *Journal of Advertising*, *33*(1), 7-17.
- Yoon, S., Bang, H., Choi, D., & amp; Kim, K. (2020). Slow versus fast: How speed-induced construal affects perceptions of advertising messages. *International Journal of Advertising*, 40(2), 225–245. https://doi.org/10.1080/02650487.2020.1766233