ONLINE APPENDIX A – SUMMARY OF PRIOR STUDIES ON AD CHOICE

Table A.1. Summary of Prior Studies on Ad Choice				
Author(s)	**Experimental Conditions and Manipulation**	**Dependent Variable(s), Mediator(s) and Moderator(s)**	**Key Findings**	**Proposed Explanation(s) for Ad Choice Effect**
Katz (2010)	**Conditions**: choice (absent vs. present) *No Choice Condition*: participants were assigned a video ad to watch. *Choice Condition*: participants chose to watch a video ad; two or three ad options were provided.	DVs: 1. Completion rate (CR) 2. Click-through rate (CTR) 3. Ad awareness 4. Ad recall 5. Purchase intention (PI)	Ad choice improves CR, CTR, ad awareness, ad recall, and PI.	<u>Theoretical Foundation</u>: Choice-making Satisfies Users' Need for Autonomy Ad choice has been found to satisfy users' need for autonomy, resulting in positive feelings (such as empowerment, Katz 2010) and increased ad likability, which in turn affect user attention to the ad (Nettelhorst and Brannon 2012a; 2012b, Nettelhorst et al. 2014, Nettelhorst et al. 2017, Bellman et al. 2021). Also, ad choice has been found to reduce negative reactions, such as psychological reactance (Ahn and Ham 2022) and feeling interrupted (Garrett et al. 2020).
Nettelhorst and Brannon (2012a)	**Conditions**: choice (absent vs. present) *No Choice Condition*: participants were assigned a video ad for an MP3 player to watch. *Choice Condition*: participants chose between a video ad for an	DV: Attention to the ad Moderator: Gender	1. The main effect of ad choice is not significant. 2. The main effect of gender is not significant. 3. The interaction between ad choice and gender is significant: ad choice increases user attention to the ad *only* for female users.	

	MP3 player and a video ad for a digital camera.			*Please note: cognitive dissonance theory has been discussed in the series of work by Nettelhorst and his colleagues. However, it is important to clarify that the theory itself explains the moderating effect of choice difficulty. It is not an explanation for the ad choice effect (see Festinger 1957).*
Nettelhorst and Brannon (2012b)	**Conditions**: choice (absent vs. easy vs. difficult) *No Choice Condition*: participants were assigned a video ad for an MP3 player to watch. *Easy Choice Condition*: participants chose between a video ad for an MP3 player and a video ad for a vacuum (participants' interests in the MP3 player ad were pretested to be significantly higher than those in the vacuum ad). *Difficult Choice Condition*: Same as the "choice condition" in Nettelhorst and Brannon (2012a) (participants' interests in the MP3 player ad were pretested to be slightly higher than those in the digital camera ad).	DV: Attention to the ad Moderators: 1. Gender 2. Need for cognition (NFC, high vs. low)	1. The main effect of ad choice is not significant. 2. The main effects of gender and NFC are not significant. 3. The interaction between ad choice and gender is significant: compared to easy choice and no choice, difficult choice attracts more user attention to the ad *only* for female users. 4. The interaction between ad choice and NFC is significant: compared to easy choice and no choice, difficult choice attracts more user attention to the ad *only* for users with a low NFC.	

Nettelhorst (2013)	**Conditions**: 2 choice (absent vs present) × 2 attractiveness of actors in the video ads (high vs. normal) × 2 video ads (product promotion vs. public service announcement) *No Choice Condition*: participants were assigned a video ad to watch. *Choice Condition*: participants chose between two video ads. *Attractive Condition*: actors in the video ads were attractive. *Normal Condition*: actors in the video ads were average-looking. *Product Promotion Ad Condition*: the two video ads contained a video ad for an MP3 player and a video ad for a digital camera. *Public Service Announcement Ad Condition*: the two video ads contained a video ad for binge-	DVs: 1. Ad skipping behavior 2. Ad zipping behavior Moderator: Gender	1. In terms of ad skipping behavior, all main effects, two-way interaction effects, three-way interaction effects, and four-way interaction effects (including participants' gender as a moderator) were not significant, except for a significant interaction effect among ad choice, actor attractiveness, and video ads. 2. In terms of ad zipping behavior, all main effects, two-way interaction effects, and three-way interaction effects were not significant.	

	drinking prevention and a video ad for animal-abusing prevention.			
Nettelhorst et al. (2014)	Same as in Nettelhorst and Brannon (2012a)	DV: Positive beliefs about ad content Moderator: Gender	1. The main effect of ad choice is significant: ad choice leads users to have more positive beliefs about ad content. 2. The main effect of gender is significant: female users have more positive beliefs about ad content than male users. 3. The interaction between ad choice and gender is not significant.	
Nettelhorst et al. (2017)	**Conditions**: choice with different number of options (0 vs. 2 vs. 3 vs. 6) *Choice with Zero Option (No Choice) Condition*: participants were assigned a video ad for a laptop (the target ad in this study) to watch. *Choice with Two Options Condition*: participants chose	DV: Cognitive effort spent on ad Moderator: Gender	1. The main effect of ad choice is significant: ad choices with 2 or 3 or 6 options lead users to spend more cognitive effort on processing ads than the no choice condition. There was no significant difference among ad choices with 2, 3, and 6 options. 2. The main effect of gender is not significant. 3. The interaction between ad choice and gender is not significant.	

	between a video ad for a laptop and a video ad for headphones. *Choice with Three Options Condition*: participants chose among video ads for a laptop, headphones, and apps. *Choice with Six Options Condition*: participants chose among video ads for a laptop, headphones, apps, audio speakers, HDTVs, and streaming media players.			
Garrett et al. (2020)	**Conditions**: choice (absent vs. present) *No Choice Condition*: participants were assigned a video ad to watch. *Choice Condition*: participants chose between two video ads.	DV: Perceived ad effectiveness Mediator: Perceived ad intrusiveness	1. The main effect of ad choice on perceived ad effectiveness is not significant. 2. The main effect of ad choice on perceived ad intrusiveness is not significant.	
Bellman et al. (2021)	**Conditions**: choice (absent vs. normal choice vs. overchoice vs. easy choice)	DVs: 1. Arousal 2. Brand Recognition/Recall	1. Ad choice increases arousal. 2. Ad choice does not have a reliable impact on brand recognition/recall, A_{ad}, and B_{ad}.	

	No Choice Condition: participants were assigned a video ad to watch. *Normal Choice Condition*: participants chose between two video ads for the same brand. *Overchoice Condition*: participants chose among three video ads for the same brand. *Easy Choice Condition*: participants chose between two video ads for different brands/different product categories/different brands and different product categories.	3. Ad attitude (A_{ad}) 4. Brand attitude (B_{ad}) Moderator: Gender	3. Gender does not have a reliable moderating impact on the ad choice effect.	
Ahn and Ham (2022)	**Conditions**: 2 choice (absent vs. present) × 2 ad involvement (high vs. low) *No Choice Condition*: participants were assigned a video ad for soap to watch. *Choice Condition*: participants chose between a video ad for	DVs: 1. Ad attitude (A_{ad}) 2. Brand attitude (B_{ad}) 3. Purchase intention (PI) Mediator: Psychological reactance	1. Ad choice improves A_{ad}, B_{ad} and PI. 2. Psychological reactance mediates the effect of ad choice on A_{ad}, but not on B_{ad} and PI. 3. Ad involvement moderates the impact of ad choice on A_{ad} and B_{ad}:	

	soap and a video ad for paper towels. *High Involvement Condition*: participants read a soap-shopping priming scenario before watching a video ad for soap. *Low Involvement Condition*: participants read a laptop-shopping priming scenario before watching a video ad for soap.		ad choice increases A_{ad} and B_{ad} *only* when ad involvement is low.	
This Paper	Please see Table 1 in the main manuscript for the conditions included in each of the six studies.	Our major DV: 1. Attention to the ad We also test the effect of ad choice on the following variables: 2. Memory of ad content 3. Likelihood of skipping ad 4. Ad-playing duration 5. Ad attitude (A_{ad})	1. The positive impact of ad choice on user attention to the ad is evident only when users are unfamiliar (vs. familiar) with the content of ad options. 2. The positive impact of ad choice on user attention to the ad is more salient when choice options contain more ad-relevant information. 3. Both suppressing conjecture formation in the choice condition and encouraging conjecture formation in the no choice condition could weaken the positive ad choice effect.	<u>Theorized Process</u>: Conjecture-formation-and-confirmation Ad choice leads users to develop conjectures about the content of ad options. Users will then pay more attention to their chosen ad to verify their conjectures.

		6. Purchase intention (PI)	4. Making an irrelevant choice prior to viewing an ad does not lead to greater user attention to the ad.	
Note: This table excludes two studies, Vogt (2017) and Wong et al. (2017). First, Vogt (2017) is an unpublished master thesis that may have some cells with significantly underpowered samples, including one cell with only 6 participants. Additionally, the dependent variables and moderators examined in Vogt (2017) have also been tested in other reviewed studies. Second, Wong et al. (2017) is a conference paper, with the conference proceedings containing only the abstract and no further information about the research.				

References:

Ahn RJ, Ham CD (2022) Exploring the effect of ad choice in online video-streaming platforms: Moderated by ad involvement and mediated by psychological reactance. *Journal of Current Issues and Research in Advertising*. 43(4):360-376.

Bellman S, Potter RF, Robinson JA, Varan D (2021) The effectiveness of various video ad-choice formats. *Journal of Marketing Communications*. 27(6):631-650.

Festinger L (1957) A theory of cognitive dissonance (Stanford Univ Pr).

Garrett CL, Goldfarb EL, Scarff AR (2020) Examining the effect of choice-based ads on perceived ad intrusiveness and effectiveness. Unpublished bachelor dissertation, Whitman College.

Katz H (2010) The pool lane one: Making a splash with online video. *Journal of Interactive Advertising*. 10(2):72-77.

Nettelhorst SC (2013) The effects of actor attractiveness and advertisement choice on mechanical avoidance behaviors. Unpublished doctoral dissertation, Kansas State University.

Nettelhorst SC, Brannon LA (2012a) The effect of advertisement choice on attention. *Computers in Human Behavior*. 28(2):683-687.

Nettelhorst SC, Brannon LA (2012b) The effect of advertisement choice, sex, and need for cognition on attention. *Computers in Human Behavior*. 28(4):1315-1320.

Nettelhorst SC, Jeter WK, Brannon LA (2014) Be careful what you wish for: The impact of advertisement choice on viewers' expectations. *Computers in Human Behavior*. 41:313-318.

Nettelhorst SC, Jeter WK, Brannon LA, Entringer A (2017) Can there be too much of a good thing? The effect of option number on cognitive effort toward online advertisements. *Computers in Human Behavior*. 75:320-328.

Vogt P (2017) The use of choice to reduce negative reactions to online interstitial advertising. Unpublished master dissertation, Northern Illinois University.

Wong J, Newton J, Tsarenko Y, Newton F (2017) The benefits of allowing consumers to choose their online advertisements. Linda Robinson, Brennan, Linda, Reid, Mike, eds. *Australian and New Zealand Marketing Academy Conference*. (RMIT University, Melbourne, Australia), 199.

ONLINE APPENDIX B – DETAILS OF EXPERIMENTS

1. Screenshots of Experimental Video Webpages

1.1. Study 1

Here is Obama's record on jobs

CNN

7,833 views

Description:

President Barack Obama took office in the throes of the worst recession since the Great Depression, as the future of the country's economy was in doubt and workers were being laid off like crazy.

Eight years later, it's clear that the Obama presidency has been pretty solid for the US labor market.

It's the last time Obama will be in office for the release of a report, leading the White House to put its final spin on what it said were eight years of "labor market progress" under Obama. We now have the last jobs report before the election, so Christine Romans takes a look back at Obama's record on job creation, unemployment and wages. Here are the numbers.

All Comments

J He didn't do any jobs.
Jerry W · 2 weeks ago · 14

P A failed presidency
Peter Bruce · 2 weeks ago · 10

W FAKE NEWS! Why aren't you reporting about the lowest job participation rate in 40 years? Why is that figure NEVER included in this dishonest reporter's Obama propaganda pieces? She doesn't include the fact that millions of Americans are unemployed and have dropped out of the work force this are not counted in these bogus employment rates. This reporter is famous for reporting FAKE job numbers. She is a total propagandist. No wonder no one trusts these dinosaurs media outlets anymore
Waterpenny1 · 2 weeks ago · 124

D Now let's talk about debt
DJ. Khaled · 3 week ago · 34

C Clinton(bill) was the best, it's a shame his personal issues are overshadowing his accomplishments
claus van · 3 weeks ago · 56

B 1988-1992 (Bush Sr, Republican) - country in recession, lost re-election 1992-2000 (Clinton, Democrat) - booming economy, record jobs and rising wages 2000-2008 (Bush Jr, Republican) - crashed the economy, stock market, financial industry, housing industry, auto industry 2008-2016 (Obama, Democrat) - stabilized economy in nose drive. Ended with 73 months of job creation, unemployment down to 4.9%. Stock market at record highs. Why in the world would anyone want to hand the economy back over to the Republicans whose out dated policies (trickle down tax cuts for the rich) simply don't work anymore in a global economy? If you want a stable economy, home prices, stock market, and job creation, the Democrats are the easy choice!
blackvr4ttt · 3 weeks ago · 77

T Pure propaganda. Doesn't mention that 95 million Americans have dropped out of the workforce.
TheObamaFile · 3 weeks ago · 81

U And they say fox news is Bias and Unfair.. LMAO
Unknown person · 1 month ago · 23

M nice and pretty graphs showing factual information is always nice
Michael Elnajami · 1 month ago · 24

G CNN=Clinton News Network
Gold Gold · 1 month ago · 28

P Obama will be judged as one of the best Presidents of the United States even though the Republican Congress and Senate tried and keeps undermining everything he wanted to do without caring about the inhabitants of our Great Nations. It's important to elect a President,but it's equally important to elect Congress members and Senators who want to work with the President and not against him/her just for political reasons. These congress had been the worst in history and they need to be ousted.
peter lee · 1 months ago · 26

S Job count is not a good indicator of economical success
Simon Talbot · 1 months ago · 67

D because 1 full time job now is broken up into 5 part time jobs.
dawei wang · 1 months ago · 37

S Wow, Americans are so ungrateful, most countries would be happy to hear that 10 million Jobs were created considering that you guys were losing 750,000 a month when he took over and bush only created just over a million. What do you prefer?
Sean Graham · 1 months ago · 17

R Let take a closer look. Under Obama administration, debt rise from 9.5 trillion to 19.5 trillion. It's a rise of 10 trillion, ok? The top unemployment rate caused by de recession was 10%. As the total labor force is around 160 million, there were 16 million people unemployed. The amount of increase in debt was able to pay to this 16M, during 8 years, a salary of (10T$/8yrs)/16M = 78,000$ per unemployed, per year. Just think about....
Roberto Alves · 2 months ago · 25

J So basically he did ok, not bad, not great, just ok.
Jeffer Ddk · 2 months ago · 18

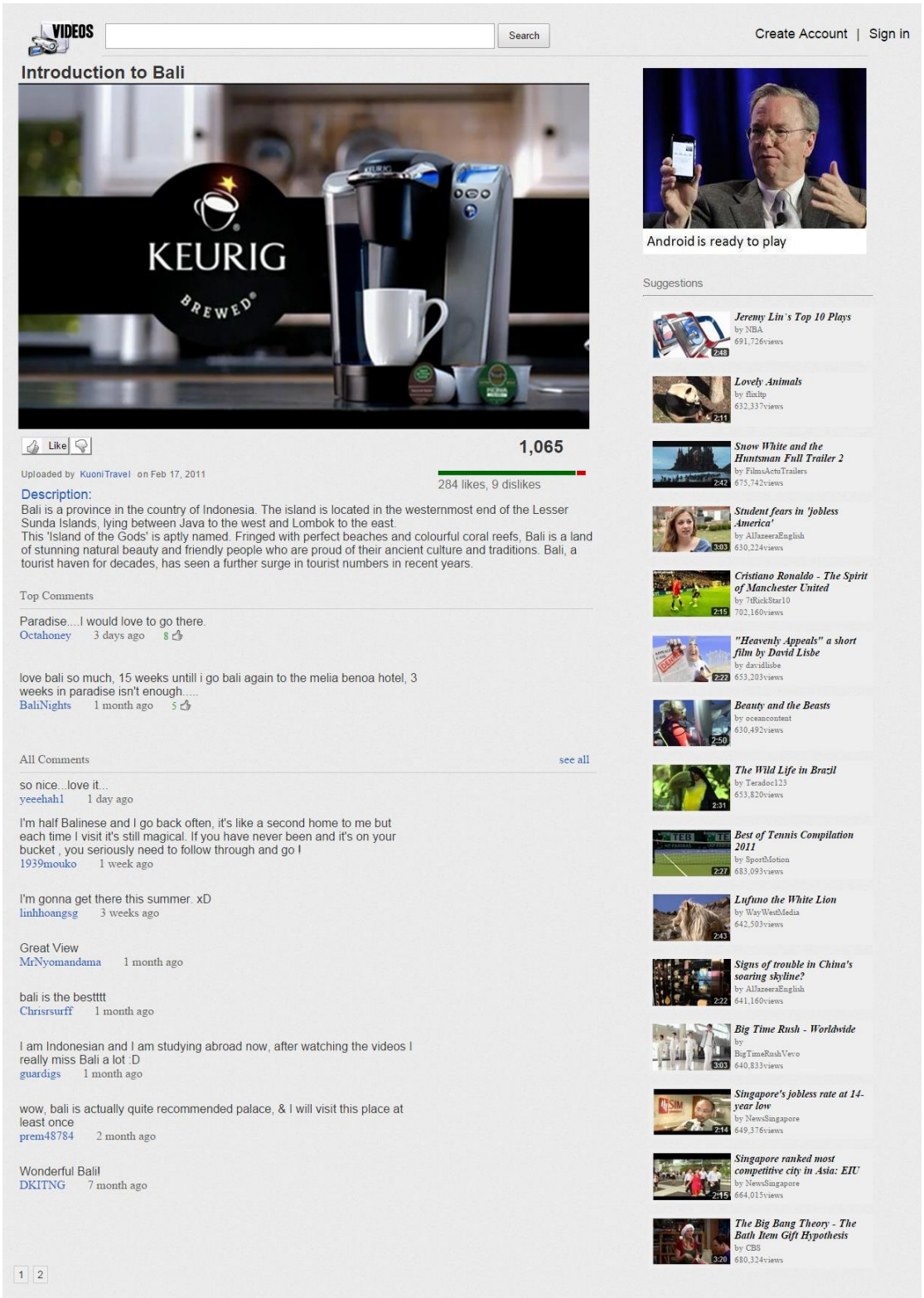
M When I hear claims like this I wonder if they have changed the way they select the criteria for gathering their sample or calculate the results.
Mnfopowers · 2 months ago · 22

K George W. "Mission accomplished." Obama: "Mission accomplished." One of these said it, the other did it.
Ken C · 2 months ago · 27

y Please do a story on the number of people on food stamps over the last 8 years.
Yakyakyak69 · 3 months ago · 41

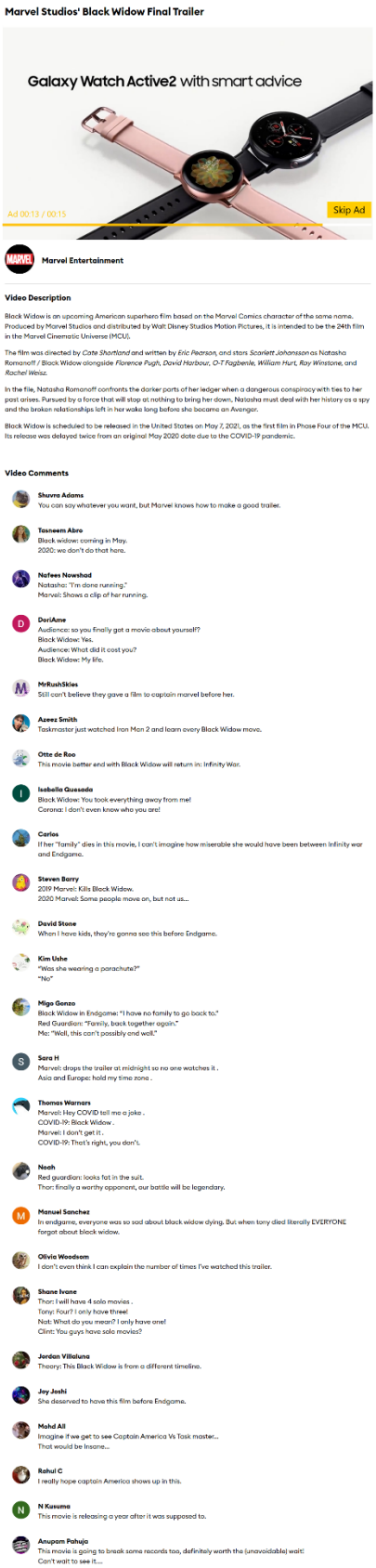
D Yea, they don't count the 90 million Americans that are working age but don't work. He has lost more jobs than he has created.
Daniel Cullinane · 3 months ago · 28

1.2. Study 2 and Study 3



1.3. Study 4a and Study 4b

1.4. Study 5



Marvel Studios' Black Widow Final Trailer

Marvel Entertainment

Video Description

Black Widow is an upcoming American superhero film based on the Marvel Comics character of the same name. Produced by Marvel Studios and distributed by Walt Disney Studios Motion Pictures, it is intended to be the 24th film in the Marvel Cinematic Universe (MCU).

The film was directed by *Cate Shortland* and written by *Eric Pearson*, and stars *Scarlett Johansson* as Natasha Romanoff / Black Widow alongside *Florence Pugh*, *David Harbour*, *O-T Fagbenle*, *William Hurt*, *Ray Winstone*, and *Rachel Weisz*.

In the film, Natasha Romanoff confronts the darker parts of her ledger when a dangerous conspiracy with ties to her past arises. Pursued by a force that will stop at nothing to bring her down, Natasha must deal with her history as a spy and the broken relationships left in her wake long before she became an Avenger.

Black Widow is scheduled to be released in the United States on May 7, 2021, as the first film in Phase Four of the MCU. Its release was delayed twice from an original May 2020 date due to the COVID-19 pandemic.

Video Comments

Shuvra Adams
You can say whatever you want, but Marvel knows how to make a good trailer.

Tasneem Abro
Black widow: coming in May.
2020: we don't do that here.

Nafees Nowshad
Natasha: "I'm done running."
Marvel: Shows a clip of her running.

DoriAme
Audience: so you finally got a movie about yourself?
Black Widow: Yes.
Audience: What did it cost you?
Black Widow: My life.

MrRushSkies
Still can't believe they gave a film to captain marvel before her.

Azeez Smith
Taskmaster just watched Iron Man 2 and learn every Black Widow move.

Otte de Roo
This movie better end with Black Widow will return in: Infinity War.

Isabella Quesada
Black Widow: You took everything away from me!
Corona: I don't even know who you are!

Carlos
If her "family" dies in this movie, I can't imagine how miserable she would have been between Infinity war and Endgame.

Steven Barry
2019 Marvel: Kills Black Widow.
2020 Marvel: Some people move on, but not us...

David Stone
When I have kids, they're gonna see this before Endgame.

Kim Ushe
"Was she wearing a parachute?"
"No"

Miga Gonzo
Black Widow in Endgame: "I have no family to go back to."
Red Guardian: "Family, back together again."
Me: "Well, this can't possibly end well."

Sara H
Marvel: drops the trailer at midnight so no one watches it .
Asia and Europe: hold my time zone .

Thomas Warnars
Marvel: Hey COVID tell me a joke .
COVID-19: Black Widow .
Marvel: I don't get it .
COVID-19: That's right, you don't.

Noah
Red guardian: looks fat in the suit.
Thor: finally a worthy opponent, our battle will be legendary.

Manuel Sanchez
In endgame, everyone was so sad about black widow dying. But when tony died literally EVERYONE forgot about black widow.

Olivia Woodsom
I don't even think I can explain the number of times I've watched this trailer.

Shane Ivane
Thor: I will have 4 solo movies .
Tony: Four? I only have three!
Nat: What do you mean? I only have one!
Clint: You guys have solo movies?

Jordan Villaluna
Theory: This Black Widow is from a different timeline.

Joy Joshi
She deserved to have this film before Endgame.

Mohd Ali
Imagine if we get to see Captain America Vs Task master...
That would be Insane...

Rahul C
I really hope captain America shows up in this.

N Kusuma
This movie is releasing a year after it was supposed to.

Anupam Pahuja
This movie is going to break some records too, definitely worth the (unavoidable) wait!
Can't wait to see it...

2. Instructions for Experiments

2.1. Study 1

In the survey, we would like to know your opinions about some videos. Click on the link below to start the survey.

2.2. Study 2 and Study 3

The purpose of this study is to investigate users' behavior in making travel plans. Please read the passage below and follow the steps to get familiar with Bali, Indonesia.

"The recess week is coming! Bali, a beautiful island in Indonesia, is one ideal place many people dream of exploring. Suppose you and your friends have decided to go there to enjoy the beauty of nature and the hospitality of local residents. As the team leader, you are responsible for the planning of the trip. The information about Bali is shown below."

2.3. Study 4a and Study 4b (translated)

The purpose of this study is to investigate users' behavior in making travel plans. Please read the passage below and follow the steps to get familiar with Hong Kong.

"Suppose you have decided to go to Hong Kong for the coming vacation. Now, you want to make a plan for the trip. The information about Hong Kong is shown below."

2.4. Study 5

We are interested in knowing your opinions about a new movie. Click on the link below to start the survey.

3. Questions for User Memory of Ad Content

In Study 2 and Study 3, we measure participants' memory of ad content through multiple choice questions in a post-experiment survey. The multiple choice questions are presented below. Please note that the questions are presented one by one in sequence and the participants are not allowed to go back to the previous page to modify their answers.

1. Which of the following brands was featured in the video ad?
    a. Mr. Coffee
    b. Nescafe
    c. Keurig
    d. Hamilton

2. Other than coffee, what else can the advertised product make?
    a. Fresh Juice
    b. Soy Milk
    c. Tea
    d. None of the above

3. Which of the following statements was NOT mentioned as the features of the advertised product in the video ad?
    a. It can be cleaned easily after use.
    b. It has different flavors of coffee and tea to choose from.
    c. It makes your coffee delicious and fresh.
    d. It saves your morning time.

4. Based on the video ad, what are the required steps for you to make a cup of nice coffee using the advertised product?
    a. Decide, Press, Enjoy
    b. Press, Brew, Enjoy
    c. Select, Press, Enjoy
    d. Choose, Brew, Enjoy

5. Which of the following pictures best resembles the advertised product in the video ad?

	
A.	B.
	
C.	D.

4. Measurements for User Attitude and Purchase Intention

In Study 5, we measured participants' attitude toward the video ad and intention to purchase the advertised product in a post-experiment survey. Specifically, participants' attitude toward the video ad was measured with four items adapted from Hampel et al. (2012) ("1 – strongly disagree" to "7 – strongly agree", $\alpha = .94$): (1) The video ad before the movie trailer is good. (2) I have a favorable impression of the video ad. (3) The video ad before the movie trailer is interesting. (4) The video ad before the movie trailer is fun to watch.

Participants' purchase intention was measured with four items adapted from Jiang and Benbasat (2007) ("1 – strongly disagree" to "7 – strongly agree", $\alpha = .96$): (1) It is likely that I will buy the advertised product. (2) I will purchase the product the next time I need a smartphone/notebook/smartwatch. (3) Supposing that a friend calls me to get my advice in his/her search for a smartphone/notebook/smartwatch, I would recommend him/her to buy the advertised product. (4) I will definitely try the advertised product.

References:

Hampel S, Heinrich D, Campbel C (2012) Is an advertisement worth the paper it's printed on? The impact of premium print advertising on consumer perceptions. *Journal of Advertising Research*. 52(1):118-127.

Jiang Z., Benbasat I. (2007) Investigating the influence of the functional mechanisms of online product presentations. *Information Systems Research*. 18(4):454-470.

ONLINE APPENDIX C – SUPPLEMENTARY ANALYSES

1. Supplementary Analyses of Eye-tracking Data

In the manuscript, for our eye-tracking studies (i.e., Study 2, Study 3, Study 4a, and Study 4b), we used total fixation duration (i.e., the total length of time the participants spent viewing the video ad) to capture user attention to the video ad. In addition to total fixation duration, we also obtained participants' *total fixation count*, *average fixation duration*, and *proportional fixation duration* on the video ad. Specifically, total fixation count refers to the total number of fixations people have on an area of interest (AOI) within a period of time. Average fixation duration is the average time a fixation on an AOI lasts. Proportional fixation duration is the ratio of the total duration of the fixations on an AOI over the total duration of the fixations on the whole visual field. In our study, total fixation count on the video ad is extracted from the eye-tracking data. Average fixation duration is calculated by summing up the duration for all fixations (i.e., total fixation duration) on the video ad and dividing it by the number of fixations (i.e., total fixation count) on the video ad. Proportional fixation duration is calculated by dividing participants' total duration of fixations on the video-playing window by their total duration of fixations on the entire video webpage while the video ad is playing. In this appendix, we use total fixation count, average fixation duration, and proportional fixation duration to measure user attention to the video ad and report the results for each eye-tracking study.

1.1. Study 2

Three separate one-way (ad delivery approach: direct-exposure, choice without ad-relevant information, and choice with ad-relevant information) ANOVA tests using the three supplementary attention measures (i.e., total fixation count, average fixation duration, and proportional fixation duration) as key dependent variables reveal patterns similar to the results reported in the main study. Specifically, the three experimental conditions differ in participants' attention to the video ad ($F(2, 87)$s > 6.4, ps < .01). Planned contrasts show that participants in the choice with ad-relevant information condition pay more attention to the video ad than those in the direct-exposure condition ($F(1, 87)$s > 12.26, ps < .01) and the choice without ad-relevant information condition ($F(1, 87)$s > 5.71, ps < .05). No significant difference is found between the choice without ad-relevant information condition and the direct-exposure condition ($F(1, 87)$s < 2.81, ps > .05). The detailed results are summarized in Table C.1.

Table C.1. Results on Supplementary Measures of User Attention to the Video Ad

Metrics / Condition	Total Fixation Count	Average Fixation Duration	Proportional Fixation Duration
Direct-exposure	40.00[a]	0.19[a]	0.40[a]
Choice w/o Ad-relevant Info	46.07[a]	0.20[a]	0.48[a]
Choice w/ Ad-relevant Info	59.10[b]	0.24[b]	0.69[b]

Note: Means denoted by a different letter in the same column are significantly different at p < 0.05; means denoted by a common letter in the same column are not significantly different.

1.2. Study 3

Three separate 2 (ad delivery approach: direct-exposure vs. choice) × 2 (ad-relevant information: more vs. less) ANOVA tests using the three supplementary attention measures (i.e., total fixation count, average fixation duration, and proportional fixation duration) as key dependent variables reveal patterns similar to the results reported in the main study. Specifically, the results reveal a significant main effect of ad delivery approach, i.e., choice-based advertising leads participants to pay more attention to the video ad than direct-exposure advertising ($F(1, 136)$s > 20.19, ps < .01). More importantly, we find a significant interaction effect between ad delivery approach and ad-relevant information amount ($F(1, 136)$s > 9.25, ps < .01). Planned contrasts show that when more ad-relevant information is provided in the choice options, choice-based advertising leads participants to pay significantly more attention to the video ad than direct-exposure advertising ($F(1, 136)$s > 28.38, ps < .01). When less ad-relevant information is provided in the options, however, the advantage of choice-based advertising over direct-exposure advertising is largely weakened ($F(1, 136)$s < 3.71, ps > .05). The detailed results are summarized in Table C.2.

Table C.2. Results on Supplementary Measures of User Attention to the Video Ad

Ad-relevant Information	Ad Delivery Approach	Total Fixation Count	Average Fixation Duration	Proportional Fixation Duration
Less	Direct-exposure	52.71	0.23	0.60
	Choice	59.49	0.24	0.70
More	Direct-exposure	39.43	0.18	0.39
	Choice	70.63	0.26	0.82

Note: In the case of more ad-relevant information, choice leads to more user attention than direct-exposure ($F(1, 136)s > 28.38$, $ps < .01$); in the case of less ad-relevant information, the advantage of choice over direct-exposure is weaker ($F(1, 136)s < 3.71$, $ps > .05$).

1.3. Study 4a

Three separate one-way (ad delivery approach: direct-exposure, direct-exposure with conjectures, choice and choice with conjectures inhibited) ANOVA tests using the three supplementary attention measures (i.e., total fixation count, average fixation duration, and proportional fixation duration) as key dependent variables reveal patterns similar to the results reported in the main study. Specifically, the results reveal a significant difference among the four experimental conditions in terms of user attention to video ad ($F(3, 131)s > 4.91$, $ps < .01$). Planned contrasts show that participants in the choice condition pay more attention to the video ad than those in the direct-exposure condition ($F(1,131)s > 9.82$, $ps < .01$). It is also found that when participants are given the opportunity to choose from a few ad options but are distracted from forming conjectures about ad content (i.e., those in the choice with conjectures inhibited condition), the provision of ad choice does not increase their attention to the video ad compared to the direct-exposure condition ($F(1,131)s < .86$, $ps > .05$). In the direct-exposure with conjectures condition, however, we find that after being prompted to make conjectures about the upcoming ad, participants pay more attention to the video ad than those in the direct-exposure condition ($F(1,131)s > 4.12$, $ps < .05$). The detailed results are summarized in Table C.3.

Table C.3. Results on Supplementary Measures of User Attention to the Video Ad			
Metrics / **Condition**	**Total Fixation Count**	**Average Fixation Duration**	**Proportional Fixation Duration**
Direct-exposure	24.40[a]	0.22[a]	0.43[a]
Direct-exposure w/ Conjectures	45.88[bc]	0.25[b]	0.57[b]
Choice	58.23[b]	0.27[b]	0.62[b]
Choice w/ Conjectures Inhibited	31.38[ac]	0.22[a]	0.44[a]
Note: Means denoted by a different letter in the same column are significantly different at p < 0.05; means denoted by a common letter in the same column are not significantly different.			

1.4. Study 4b

Three separate one-way (ad delivery approach: direct-exposure, choice, and direct-exposure following ad-irrelevant choice) ANOVA tests using the three supplementary attention measures (i.e., total fixation count, average fixation duration, and proportional fixation duration) as key dependent variables reveal patterns similar to the results reported in the main study. Specifically, the results reveal a significant difference among the three experimental conditions in terms of user attention to the video ad ($F(2, 128)$s > 4.49, ps < .05). Planned contrasts show that participants in the choice condition pay more attention to the video ad than those in the direct-exposure condition ($F(1, 128)$s > 8.43, ps < .01) and the direct-exposure following ad-irrelevant choice condition ($F(1, 128)$s > 4.26, ps < .05). There is no significant difference between the direct-exposure following ad-irrelevant choice condition and the direct-exposure condition ($F(1, 128)$s < .74, ps > .05). The detailed results are summarized in Table C.4.

Table C.4. Results on Supplementary Measures of User Attention to the Video Ad			
Metrics / **Condition**	**Total Fixation Count**	**Average Fixation Duration**	**Proportional Fixation Duration**
Direct-exposure	23.52[a]	0.21[a]	0.46[a]
Choice	65.02[b]	0.27[b]	0.62[b]
Direct-exposure following Ad-irrelevant Choice	22.95[a]	0.22[a]	0.51[a]
Note: Means denoted by a different letter in the same column are significantly different at p < 0.05; means denoted by a common letter in the same column are not significantly different.			

2. Analyses of User Memory of Ad Content

In addition to user attention to the video ad, in Study 2 and Study 3, we also measured user memory of ad content after they completed the experimental task. Five multiple choice questions related to the ad content were presented to participants and the number of correctly answered questions (i.e., memory score) was used as the proxy of participants' memory of ad content.

2.1. Study 2

A one-way (ad delivery approach: direct-exposure, choice without ad-relevant information, and choice with ad-relevant information) ANOVA test reveals a significant difference among the three experimental conditions in terms of user memory of ad content ($F(2, 87) = 5.83$, $p < .01$). Planned contrasts show that participants in the choice with ad-relevant information condition score higher ($M_{C\ w/\ ad\text{-}relevant\ info} = 4.1$) than those in the direct-exposure condition ($M_{DE} = 3.3$, $F(1, 87) = 9.11$, $p < .01$, Cohen's $d = .82$) and the choice without ad-relevant information condition ($M_{C\ w/o\ ad\text{-}relevant\ info} = 3.33$, $F(1, 87) = 8.37$, $p < .01$, Cohen's $d = .76$). No

significant difference is found between the choice without ad-relevant information condition and the direct-exposure condition ($F(1, 87) < 1$, $p > .05$, Cohen's $d = .03$). In other words, choice with ad-relevant information condition is more effective in improving user memory of ad content than the other two conditions. This finding further corroborates our results on user attention to the video ad.

2.2. Study 3

A 2 (ad delivery approach: direct-exposure vs. choice) × 2 (ad-relevant information: more vs. less) ANOVA with the participants' memory scores (same as Study 2) as the dependent variable reveals a significant main effect of ad delivery approach: compared to direct-exposure advertising, choice-based advertising improves participants' memory of ad content ($M_C = 4.41$, $M_{DE} = 3.66$, $F(1, 136) = 24.05$, $p < .01$, Cohen's $d = .81$). Consistent with our results on user attention to the video ad, the interaction effect between the two independent variables is statistically significant ($F(1, 136) = 6.24$, $p < .05$). Planned contrasts show that when more ad-relevant information is provided in the options, choice-based advertising leads to higher memory scores than direct-exposure advertising ($M_C = 4.63$, $M_{DE} = 3.49$, $F(1, 136) = 27.39$, $p < .01$, Cohen's $d = 1.37$). However, when there is less ad-relevant information in the options, the advantage of choice-based advertising over direct-exposure advertising in terms of improving participants' memory scores is weakened ($M_C = 4.2$, $M_{DE} = 3.83$, $F(1, 136) = 2.89$, $p > .05$, Cohen's $d = .37$). These findings on user memory of ad content further corroborate our results on user attention to the video ad.

3. Balance Checks

To examine whether participants' age and gender differed across our experimental conditions, we conducted balance checks for each of the six studies. The results showed that there was no significant difference among conditions in terms of participants' age (*p*s > 0.05) and gender (*p*s > 0.05). The detailed results are shown below.

Table C.5. Results of Balance Checks

Study	Age				Gender		
	df1	df2	F	*p*	df	χ^2	*p*
Study 1	3	196	1.05	.37	3	5.75	.13
Study 2	2	87	.2	.82	2	.36	.84
Study 3	3	136	1.55	.21	3	1.79	.62
Study 4a	3	131	2.04	.11	3	2.67	.45
Study 4b	2	128	1.65	.2	2	.15	.93
Study 5	3	337	.46	.71	3	6.29	.1

4. Confounding Checks

To test whether or not our main results are subject to some demographic and situational variables, we included some variables as control variables in our data analyses. The results showed that the patterns of our findings remained the same after controlling for participants' age (all six studies), gender (all six studies), and interests in the advertised product (Study 4a and Study 4b). Further, some prior studies suggest that the ad choice effect may be contingent on users' gender (Nettelhorst and Brannon 2012a, 2012b). We included gender as an independent variable in the data analyses and the findings indicated that the interactions between gender and ad choice were insignificant (*p*s > .1). The detailed results are shown below.

4.1. Study 1

(1) No control variable is included.

Table C.6. ANOVA Summary Table for User Indicative Attention to the Video Ad				
Source	**df**	**Mean Square**	**F**	**Sig.**
Ad Delivery Approach	1	3993.63	10.41	.001
Familiarity with Ad Content	1	3034.95	7.91	.005
Ad Delivery Approach * Familiarity with Ad Content	1	2052.76	5.35	.022

(2) Age and gender are included as control variables.

Table C.7. ANOVA Summary Table for User Indicative Attention to the Video Ad				
Source	**df**	**Mean Square**	**F**	**Sig.**
Ad Delivery Approach	1	3606.265	9.435	.002
Familiarity with Ad Content	1	2878.274	7.530	.007
Ad Delivery Approach * Familiarity with Ad Content	1	1974.091	5.165	.024
Age	1	964.465	2.523	.114
Gender	1	93.958	.246	.621

(3) To further test the moderating role of gender (Nettelhorst and Brannon 2012a, 2012b), gender is included as another factor.

Table C.8. ANOVA Summary Table for User Indicative Attention to the Video Ad				
Source	**df**	**Mean Square**	**F**	**Sig.**
Gender	1	91.850	.236	.628
Ad Delivery Approach	1	4071.989	10.468	.001
Familiarity with Ad Content	1	3083.072	7.926	.005
Ad Delivery Approach * Familiarity with Ad Content	1	2181.205	5.608	.019

Ad Delivery Approach * Gender	1	164.865	.424	.516
Familiarity with Ad Content * Gender	1	135.574	.349	.556
Ad Delivery Approach * Familiarity with Ad Content * Gender	1	129.408	.333	.565

4.2. Study 2

(1) No control variable is included.

Table C.9. ANOVA Summary Table for User Attention to the Video Ad				
Source	**df**	**Mean Square**	**F**	**Sig.**
Ad Delivery Approach	2	329.33	14.66	.000

(2) Age and gender are included as control variables.

Table C.10. ANOVA Summary Table for User Attention to the Video Ad				
Source	**df**	**Mean Square**	**F**	**Sig.**
Ad Delivery Approach	2	347.634	16.689	.000
Age	1	169.937	8.158	.005
Gender	1	70.763	3.397	.069

(3) To further test the moderating role of gender (Nettelhorst and Brannon 2012a, 2012b), gender is included as another factor.

Table C.11. ANOVA Summary Table for User Attention to the Video Ad				
Source	**df**	**Mean Square**	**F**	**Sig.**
Gender	1	14.352	.624	.432
Ad Delivery Approach	2	333.295	14.491	.000
Ad Delivery Approach * Gender	2	4.231	.184	.832

4.3. Study 3

(1) No control variable is included.

Table C.12. ANOVA Summary Table for User Attention to the Video Ad				
Source	**df**	**Mean Square**	**F**	**Sig.**
Ad Delivery Approach	1	1336.12	48.50	.000
Ad-relevant Information	1	1.99	.07	.789
Ad Delivery Approach * Ad-relevant Information	1	554.57	20.13	.000

(2) Age and gender are included as control variables.

Table C.13. ANOVA Summary Table for User Attention to the Video Ad				
Source	**df**	**Mean Square**	**F**	**Sig.**
Ad Delivery Approach	1	1252.928	45.324	.000
Ad-relevant Information	1	1.948	.070	.791
Ad Delivery Approach * Ad-relevant Information	1	573.295	20.739	.000
Age	1	35.818	1.296	.257
Gender	1	20.389	.738	.392

(3) To further test the moderating role of gender (Nettelhorst and Brannon 2012a, 2012b), gender is included as another factor.

Table C.14. ANOVA Summary Table for User Attention to the Video Ad				
Source	**df**	**Mean Square**	**F**	**Sig.**
Gender	1	7.409	.263	.609
Ad Delivery Approach	1	1304.887	46.278	.000
Ad-relevant Information	1	.352	.012	.911
Ad Delivery Approach * Gender	1	9.018	.320	.573

Ad-relevant Information * Gender	1	8.853	.314	.576
Ad Delivery Approach * Ad-relevant Information	1	499.803	17.725	.000
Ad Delivery Approach * Ad-relevant Information * Gender	1	.108	.004	.951

4.4. Study 4a

(1) No control variable is included.

Table C.15. ANOVA Summary Table for User Attention to the Video Ad				
Source	**df**	**Mean Square**	**F**	**Sig.**
Ad Delivery Approach	3	886.99	11.61	.000

(2) Age, gender, and interests in the advertised product are included as control variables.

Table C.16. ANOVA Summary Table for User Attention to the Video Ad				
Source	**df**	**Mean Square**	**F**	**Sig.**
Ad Delivery Approach	3	844.233	10.920	.000
Age	1	46.111	.596	.441
Gender	1	3.414	.044	.834
Interests in Advertised Product	1	61.196	.792	.375

(3) To further test the moderating role of gender (Nettelhorst and Brannon 2012a, 2012b), gender is included as another factor.

Table C.17. ANOVA Summary Table for User Attention to the Video Ad				
Source	**df**	**Mean Square**	**F**	**Sig.**
Gender	1	16.467	.214	.645
Ad Delivery Approach	3	906.273	11.753	.000
Ad Delivery Approach * Gender	3	64.491	.836	.476

4.5. Study 4b

(1) No control variable is included.

Table C.18. ANOVA Summary Table for User Attention to the Video Ad				
Source	**df**	**Mean Square**	**F**	**Sig.**
Ad Delivery Approach	2	2720.95	27.64	.000

(2) Age, gender, and interests in the advertised product are included as control variables.

Table C.19. ANOVA Summary Table for User Attention to the Video Ad				
Source	**df**	**Mean Square**	**F**	**Sig.**
Ad Delivery Approach	2	2433.989	25.022	.000
Age	1	325.624	3.347	.070
Gender	1	9.479	.097	.755
Interests in Advertised Product	1	157.710	1.621	.205

(3) To further test the moderating role of gender (Nettelhorst and Brannon 2012a, 2012b), gender is included as another factor.

Table C.20. ANOVA Summary Table for User Attention to the Video Ad				
Source	**df**	**Mean Square**	**F**	**Sig.**
Gender	1	.170	.002	.967
Ad Delivery Approach	2	2466.729	24.509	.000
Ad Delivery Approach * Gender	2	11.011	.109	.896

4.6. Study 5

(1) No control variable is included.

Table C.21. ANOVA Summary Table for User Indicative Attention to the Video Ad				
Source	**df**	**Mean Square**	**F**	**Sig.**

Ad Delivery Approach	3	1655.62	7.24	.000
Ad Length	2	4689.64	20.52	.000
Ad Delivery Approach * Ad Length	6	316.81	1.39	.219

(2) Age and gender are included as control variables.

Table C.22. ANOVA Summary Table for User Indicative Attention to the Video Ad				
Source	**df**	**Mean Square**	**F**	**Sig.**
Ad Delivery Approach	3	1539.452	6.749	.000
Ad Length	2	4701.136	20.610	.000
Ad Delivery Approach * Ad Length	6	333.781	1.463	.190
Age	1	205.212	.900	.344
Gender	1	375.871	1.648	.200

(3) To further test the moderating role of gender (Nettelhorst and Brannon 2012a, 2012b), gender is included as another factor.

Table C.23. ANOVA Summary Table for User Indicative Attention to the Video Ad				
Source	**df**	**Mean Square**	**F**	**Sig.**
Gender	1	482.107	2.090	.149
Ad Delivery Approach	3	1267.737	5.495	.001
Ad Length	2	3919.790	16.991	.000
Ad Delivery Approach * Gender	3	168.345	.730	.535
Ad Length * Gender	2	126.025	.546	.580
Ad Delivery Approach * Ad Length	6	220.238	.955	.456
Ad Delivery Approach * Ad Length * Gender	6	148.721	.645	.694

References:

Nettelhorst SC, Brannon LA (2012a) The effect of advertisement choice on attention. *Computers in Human Behavior*. 28(2):683-687.

Nettelhorst SC, Brannon LA (2012b) The effect of advertisement choice, sex, and need for cognition on attention. *Computers in Human Behavior*. 28(4):1315-1320.

ONLINE APPENDIX D – SUPPLEMENTARY ANALYSES IN STUDY 2

1. Examining the Dynamics of User Attention

To further analyze the participants' eye-tracking data in Study 2, we examine their attention to the video ad across different ad-playing periods. Specifically, we divide the 30-second video ad into three sessions of equal length (10 seconds each) and obtain the participants' total fixation duration in each session.

ANOVA tests show that in all three sessions, the participants' total fixation duration on the video ad is *persistently* longer in the choice with ad-relevant information condition ($M_{session\ 1}$ = 4.74 secs, $M_{session\ 2}$ = 3.95 secs, $M_{session\ 3}$ = 5.37 secs) than that in the choice without ad-relevant information condition ($M_{session\ 1}$ = 3.44 secs, $M_{session\ 2}$ = 2.36 secs, $M_{session\ 3}$ = 3.76 secs, $p < .05$ for all sessions) and the direct-exposure condition ($M_{session\ 1}$ = 3.21 secs, $M_{session\ 2}$ = 1.79 secs, $M_{session\ 3}$ = 2.59 secs, $p < .05$ for all sessions; see Table D.1). There is no evidence that the choice effect attenuates when the ad unfolds. Moreover, no significant difference is found between the choice without ad-relevant information condition and the direct-exposure condition ($p > .05$ for all sessions).

This analysis also helps rule out novelty as an alternative explanation of the ad choice effect. Specifically, if the positive impact of ad choice is caused by the novelty effect, one would reasonably expect that the novelty effect would attenuate gradually with the progress of the video ad because participants in the choice with ad-relevant information condition would find that the video ad did not differ from other normal video ads after it began to play.

However, the results show that the advantage of choice with ad-relevant information persists throughout different periods of the video ad. Hence, the positive impact of ad choice with ad-relevant information does not seem to be caused by the novelty effect of ad choice.

Table D.1. Results on User Attention in Three 10-Second Sessions in Study 2

Ad Delivery Approach	Session 1		Session 2		Session 3	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Direct-exposure	3.21	2.01	1.79	1.87	2.59	2.49
Choice w/o Ad-relevant Info	3.44	1.81	2.36	1.45	3.76	2.58
Choice w/ Ad-relevant Info	4.74	1.46	3.95	2.64	5.37	2.65

2. Examining User Interest in Further Ad Information

In the manuscript, we argue that choice-based advertising attracts user attention because users are interested in discovering further information to verify their conjectures about their chosen ad. However, we did not directly measure such interest in our experiment because it could vanish with information acquisition (e.g., watching the video ad) and hence could not be accurately captured after the experimental task. In addition, measuring participants' interest in further ad information obtrusively before they watch the video ad could affect their subsequent attention to the video ad. Hence, we conduct a supplementary experiment to measure user interest in further ad information.

A total of 90 participants (52.2% male, M_{age} = 21.4 years, SD_{age} = 1.58 years)[1] recruited from the same subject pool as in Study 2 were randomly assigned to one of three experimental conditions - *direct-exposure, choice with ad-relevant information,* and *choice without ad-relevant information.* The experimental design and task were similar to those in Study 2 except that in this supplementary experiment, just before the video ad started, the participants completed a short survey that measured their interest in viewing further ad content. Specifically, we measured user interest in further ad information with two items ("1 – strongly disagree" to "7 – strongly agree", $\alpha = .82$): (1) I intend to find more information about the video ad. (2) I am interested in knowing what kind of product will be advertised in the video ad.

An ANOVA test reveals a significant difference in user interest in further ad information across the three experimental conditions ($F(2, 87) = 6.16$, $p < .01$). Planned contrasts shows that participants in the choice with ad-relevant information condition are more interested in viewing the full content of the video ad ($M_{C\ w/\ ad\text{-}relevant\ info} = 3.67$) than those in the direct-exposure condition ($M_{DE} = 2.57$, $F(1, 87) = 10.86$, $p < .01$, Cohen's $d = .81$) and the choice without ad-relevant information condition ($M_{C\ w/o\ ad\text{-}relevant\ info} = 2.77$, $F(1, 87) = 7.27$, $p < .01$, Cohen's $d = .7$). No significant difference is found between the choice without ad-relevant information condition and the direct-exposure condition ($F(1, 87) < 1$, $p > .05$, Cohen's $d = .16$). This finding is consistent with our view that users' interest in discovering further ad

[1] The participants are different from those in Study 2.

information is augmented when the choice options reveal relevant information about the ad content.

ONLINE APPENDIX E – DETAILS OF TWO PRE-TESTS

1. Pre-test One

The first pre-test was conducted before Study 1. As Study 1 aimed to manipulate people's prior knowledge about ad content (familiar vs. unfamiliar), it was important to ensure that the participants had not seen the video ads before they participated in our experiment. We used three video ads about some niche brands in the Asia-Pacific region that participants from the US were unlikely to have seen. A pre-test was then conducted to investigate people's knowledge about the video ads as well as their preference for the video ads.

We recruited participants on MTurk and asked them to evaluate three video ads. The sequence of the video ads was randomized. After watching each video ad, participants were required to indicate whether they had previously watched the video ad and their attitude toward the video ad ("I like the video ad.") on a 7-point Likert scale. In total, 50 participants (56% male, M_{age} = 34.66 years, SD_{age} = 8.37 years) completed our survey. None of them has previously watched any of the three video ads and there is no significant difference in terms of their attitude toward the video ads (M_{ad1} = 4.52, M_{ad2} = 4.7, M_{ad3} = 4.78, $F(2, 98) < 1$, $p > .05$). Thus, these three video ads were used as focal video ads in Study 1.

2. Pre-test Two

The second pre-test was conducted before Study 2. In the choice with ad-relevant information condition in Study 2, the choice options were represented by three different thumbnail-sized pictures captured from the same video ad. In order to control for people's preference for

different ad options, it is important to select thumbnail-sized pictures with similar attractiveness. A pre-test was then conducted to examine people's perceived attractiveness of the three thumbnail-sized pictures captured from the video ad.

A total of 60 participants (51.7% male, M_{age} = 21.53 years, SD_{age} = 1.53 years) were recruited from a public university. Specifically, the participants were presented with three thumbnail-sized pictures (see the choice with ad-relevant information condition in Figure 2 of the main manuscript) and told that each picture represented a video ad. They were then required to indicate their preference for each ad option ("The ad option looks good.") on a 7-point Likert scale. The results show that there is no significant difference in terms of their preference for three ad options ($M_{option1}$ = 4.78, $M_{option2}$ = 5.03, $M_{option3}$ = 4.77, $F(2, 118) < 1$, $p > .05$). Thus, the three thumbnail-sized pictures were used to represent ad options in Study 2.