

LEARNING MILLENNIAL-STYLE

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Abstract

The growing use of on-line educational content and related video services has changed the way people access education, share knowledge, and possibly make life decisions. In this paper, we characterize how video content affects individual decision-making and willingness to share in the context of a personal financial decision. We find that misleading advertising curtails the time people invest in searching for the best alternative and causes worse decisions. Content geared toward giving better instructions helps to overcome this effect. Such actionable content improves both search quality and financial decisions. However, including such content may decrease sharing unless it is perceived to be sufficiently useful. As such, there is a potential risk to adding actionable content to videos. Our work has important implications for policies guiding financial literacy training, and also has broader impact for education in the information age.

Keywords: Video; Finance; Learning; Information Sharing; Deceptive Advertising

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1. Introduction

Demand for on-line educational content and related video services has exploded over the last few years, suggesting that we are experiencing a global paradigm shift in the way people access education, share knowledge, and possibly make decisions. According to You Tube, over one billion unique users access their content every month¹ and the views of educational content have nearly doubled from 2011 to 2013². More U.S. adults 18-34 access YouTube than any cable network (Nielsen ratings), and its impact is growing as people of all ages are adopting this form of learning³.

What makes this education channel particularly powerful is its information sharing capabilities. Helpful information can be used and then easily shared, which potentiates the effects of directed education. Especially considering the growth of Facebook and Twitter, this outlet is a potentially useful channel to influence the literacy and decision-making of our population. In the best case scenario, useful content goes viral or reaches a large promoter and distributes itself. This is not only interesting for academics, but is an opportunity for policy makers to improve the decisions that people make. Regrettably, though, studying the interplay between sharing media and taking the action advocated by that media has been largely overlooked by both⁴.

¹ According to You Tube, six billion hours of video content are watched per month and one hundred hours of new video content is uploaded to the website every minute. See <http://web.archive.org/web/20140929030109/http://www.youtube.com/yt/press/statistics.html>.

² Specifically, from 2011 to 2013, views of educational videos on You Tube increased by 99% in the United States. In the summer of 2013, people spent over 142 million hours watching educational content, which was a 100% increase over the summer of 2012. See <https://www.youtube.com/trendsdashboard>, September 24, 2013.

³ <http://web.archive.org/web/20140929030109/http://www.youtube.com/yt/press/statistics.html>.

⁴For example, while there has been considerable recent work that has examined the factors that influence sharing (e.g., Berger 2011; Berger and Milkman 2012; Chen and Berger 2013) and the

In this paper, we investigate how video content affects individual decision-making and willingness to share, and how its efficacy is impacted by other sources of competing information. We study this in the context of a personal financial decision, while keeping in mind that the lessons from our work likely apply to other decision contexts. Addressing poor financial literacy is clearly a first order concern, but efforts to ameliorate this problem have not taken advantage of millennial-style learning. Indeed, it appears that “just in time” financial education may be superior to traditional channels (Fernandes, Lynch, and Netemeyer, 2014), videos may be superior to other methods of delivering financial literacy training (Lusardi, 2014; Heinberg et al., 2014), and vicarious learning through entertainment can be quite effective (Berg & Zia 2013).

We began by producing our own video, which is a cartoon in which a TV viewer uses a “magic remote” to uncover hidden messages while watching a credit card commercial⁵. Instead of cherry-picking videos that already existed on You Tube, we made this investment so that we could control the content of the video and produce variation by creating several versions that differed in particular ways. Moreover, doing so removed the concern that subjects could have previously viewed our videos before participating in our experiments.

All versions of the video contained three main messages: 1) beware of credit card fees; 2) interest rates may not be fixed; 3) the credit limits may not be specified, but do exist. When we created the videos, we added elements from Heath and Heath (2007) to maximize the probability that people would share our video. As such, the videos were meant to be simple, humorous,

effects of social media on sales (e.g., Stephen and Galak 2012), there has been little to study the interplay between the two.

⁵ The video may be viewed at <http://player.vimeo.com/video/70597491>. The password is “remote”. Please do not download, post, or share the video.

engaging, concrete, and tell a story. Before conducting our main experiment, we pilot-tested the videos and confirmed them to be perceived by subjects to be sharable, enjoyable, and useful.

In our main experiment, 803 subjects first viewed a version of the video and subsequently were asked to choose one of four credit cards from an on-line offering. One of the credit cards was in fact the dominant choice, based on its interest rate, fees, and credit limit. All four credit cards were presented on a single page, with links to reveal key pricing and terms. As such, we could also keep track of how much time subjects spent analyzing prices and how many clicks they made before making a choice. Following the credit card choice, subjects were asked whether they wished to share the video with others (Berger, 2011) and were asked to rate the video on several dimensions based on how the subject felt (Olney, Holbrook, and Batra, 1991).

The study used a 2x2 between-subject design. Subjects were randomized between viewing our baseline video and our treatment video, which was the baseline video plus an additional tag that included both a summary of the three main messages and a segment that explained where to locate these pieces of information on a typical credit card offer. Subjects were also randomized based on whether the credit card page included deceptive advertising or not. Deceptive advertising was communicated by labeling the credit cards with misleading statements such as “low APR” or “low fees” when there were other cards available with lower APR or fees. Subjects who were not treated with deceptive advertising did not view labels at all on their credit card offerings.

Viewing the tagged video increased the choice of the best credit card and deceptive advertising led to worse decisions. These results confirm that subjects appeared to understand their tasks and take the study seriously. Participants treated with deceptive advertising spent less time making the decision. In contrast, subjects deployed more attention upon seeing the tagged

video, but only if they chose in the presence of misleading ads: advertising crowded out active information acquisition unless there were concrete instructions to follow. This finding reinforces the notion that a clever informative video is not enough: the information given must also be actionable.

In addition to these effects on choice and amount of attention, there were important differences in relative focus of attention. Participants allocated relatively more attention to the dominant card if they saw the tagged video than if they saw the baseline video. This improved allocation of attention led to higher choice quality with the tagged video.

Just as importantly, subjects perceived the tagged video to be more useful and increased the likelihood that subjects would apply for a credit card in the future. However, after controlling for perceived effectiveness, subjects were less inclined to share the tagged version than the base video. Therein lies the fundamental problem for encouraging good financial decisions through social media: the very videos that have the greatest potential to be useful and increase decision quality may also be the ones that are the least shareable. It is possible that actionable videos may not simultaneously increase individual information acquisition and percolation of “good” information in the marketplace.

Based on this, our study yields several novel insights. First, online videos do have the potential to increase the quality of household financial decisions, but merely presenting the information in an engaging sticky format is not sufficient. The information must be interpretable and implementable in order to direct attention appropriately. Second, effective does not necessarily mean sharable. Last, video content and competing information such as deceptive advertisements affect choice through their respective effects on the amount and allocation of attention, which may lead to multiple effects on sharing. Factors that increase perceived

effectiveness alone without affecting properties of the video may increase the likelihood of sharing, but an ineffectively tagged video that does not enhance perceived effectiveness could actually decrease sharing.

2. Method and Design

2.1 Video Production

The storyline and production of the video was accomplished with a professional animator. Our goal was to make the video informative for a common but important life choice, but also to make it entertaining enough to make it worth watching and sharing with others. We chose the domain of credit card traps because we felt it would be relevant to a broad cross-section of the population. In choosing the storyline and developing the video, we focused on Heath and Heath's (2007) features of "stickiness" to maximize its potential for effectiveness and longevity of effects.

The animated video leads the viewer through a story from a first-person perspective. The main character watches a credit card commercial on television and discovers a "magic remote" on his coffee table that allows him to uncover hidden captions in the commercials, see what the spokesman in the commercial is hiding by flipping around the perspective of the camera, and detect hidden messages when rewinding the video.

The video is approximately two minutes long and conveys three basic points about credit cards. The first is that "no preset spending limit" is not the same as "no spending limit". The second is that there are a lot of hidden fees that can add up. The third is that "fixed APR" does not necessarily mean that an APR that cannot change.

In our experiment, we presented two different versions of the video to our subjects. The first version, which we call our “baseline” video, is the standalone story as described above. The basic idea was to convey the three primary messages humourously, much like many popular online videos. The second version, which we call the “tagged” video, included a short addition to the end of the baseline video, which was composed of a recap of the three main messages and a schematic of where to find key information on the standard pricing and terms document that typically accompanies credit card offers (see Figure 1). This “tagged” version was designed to make it crystal clear to the viewer exactly how to use the information that was contained in the base video. Indeed, previous research (e.g., Beshears et al. 2010) has indicated that many consumers are not able to act on information like this if it is not clear how to use it.

Before performing the experiment as described more below, we performed pretests on subjects to determine how the video is perceived. Pretesting indicated that participants from our subject population found the video to be engaging and shareable. It also indicated that the recap and the implementation schematic had additive effects on video effectiveness. As such, we used the combination of the two in our tagged video. This enabled a large enough effect size to observe whether it was moderated by other factors, but also meant that the observed effects are the result of the combination of summary and implementation instructions.

2.2 Credit Card Choice

After viewing a video, participants in the study made a hypothetical credit card choice from a website that we constructed to emulate real on-line websites.⁶ Figure 2 is a screenshot

⁶ Specifically, we constructed our screenshots to be similar to the credit card offerings at www.chase.com. Additionally, we formatted pricing and term disclosures similar to those at

from our experiment. Subjects were asked to choose from among four credit cards. The initial screen had only cursory information about the four credit cards, but had a “Pricing and Terms” link below each card. Using the links, participants could seek out diagnostic information such as APR’s, fees, and spending limits, in order to compare the terms offered from the various cards. Clicking on the “Pricing and Terms” link led subjects to view a standardized form similar to the ones typically used in on-line credit card offers (Figure 2).

Based on the factors emphasized in the video, one of the credit cards was the dominant choice. That is, it was strictly better than the other three cards in at least one dimension and at least as good in all of the others. The only way to learn this, however, was to uncover and compare the pricing and terms of all four credit cards. As such, choice of the dominant card served as one dependent variable of interest and indicated high choice quality.

Since we were able to observe when subjects clicked on each link, how long they spent examining each term sheet, and the number of total clicks they used, we could estimate the effort subjects used to acquire information about their decision. It also allowed us to record where participants directed their attention and identify when subjects simply rushed through the experiment

Because consumers frequently have to contend with competing information when they make real decisions, we chose to study a particularly pernicious source: deceptive advertising. Indeed, as in the everyday consumer environment, the advertising may not be technically wrong, but is deceiving to consumers as it makes a product sound more attractive than it really is. In our study, we examined the effect of this competing information by assigning some participants to see no advertising and some to see relatively minor deceptive advertising in the form of tag lines

Chase. The bottom panel of Figure 3 provides a screenshot from the Chase website that demonstrates how it is similar to what was used in our experiment.

associated with each credit card in the choice phase of the study. These tag lines were not necessarily false, but they appeared to be more diagnostic than they truly were. For example, one card was labeled “Low APR”. That statement may have been true in an absolute sense, though the card actually had the highest APR from the set and so the statement was misleading in a relative sense. Figure 3 contrasts the two versions of the screenshots that subjects viewed before making their choice. Panel A of Figure 3 shows a case in which no added information was given, whereas Panel B adds the taglines to each card⁷.

2.3 Design and Procedure

Two key factors were manipulated in the experiment, so we used a 2 (Video: Traditional, Traditional + Implementation) x 2 (Advertisements: No Ads, Misleading Ads) between-participant experimental design⁸. The traditional baseline video provided an entertaining presentation of three credit card traps. The tagged video (Traditional + Implementation) gave a brief recap and additional guidance regarding where to find the information embedded in a pricing and terms disclosure. In the Misleading Ads condition, when consumers were choosing a credit card, they saw taglines for each of four cards (“Low minimum payment”, “Low fees”, “Use it anywhere”, “Low APR”), which were intentionally misleading. The “Use it anywhere” card was the dominant option. In the No Ads condition, there were no taglines associated with any card.

⁷ These data in our study were collected in two waves. The second wave included additional language to clarify that the credit card labels were from the credit card company, not recommendations from the researchers (see Figure 3 note).

⁸ The second wave also included a “Tag Only” condition. For parsimony, we focus on the Traditional and Traditional + Implementation videos.

Our procedure was as follows. Participants began by watching one of two videos, depending on condition. After viewing the video, participants chose one credit card from a set of four. Each credit card was identified by letter (A, B, C, D; card C was the dominant card), a stock picture of a credit card, and a link that would reveal pricing and terms below the card display. Participants in the Misleading Ads condition also saw taglines for each card. The survey recorded which option participants chose, how many times they viewed the pricing and terms for each card, and the amount of time spent viewing the pricing and terms for each card.

After the credit card choice, the survey assessed sharing using measures based on Berger (2011). Participants reported *willingness to share* and *likelihood of sharing* the video with friends, family members, and coworkers on seven-point scales (from 1 = Not at all to 7 = Extremely). These six items were combined into a single sharing scale. Also, based on Barasch and Berger (2013), we asked whether participants were more likely to share the video with a specific individual or a broad group.

After measuring willingness and likelihood of sharing, we measured how effective participants thought the video was and how confident they were in their choice. Participants rated five items measuring choice efficacy and video effectiveness on a 7-point scale (where 1 = Strongly disagree, 7 = Strongly agree). These items were: 1) “I am confident that I picked the best credit card;” 2) “Choosing the best credit card was easy;” 3) “The video helped me make my choice more efficiently;” 4) “I would have made the same choice without the video” (reverse coded); and 5) “The video would help my best friend make the right credit card choice.”

Following that, we asked a variety of 7-point semantic differential items regarding how the participant was feeling, based on Olney, Holbrook, and Batra (1991). The scales assessed current happiness (*Happy-Unhappy*, *Pleased-Annoyed*, *Satisfied-Unsatisfied*, *Contented-*

Melancholic, Hopeful-Despairing) and arousal (*Relaxed-Bored, Stimulated-Relaxed, Excited-Calm, Frenzied-Sluggish, Jittery-Dull, Wide awake-Sleepy, Aroused-Unaroused*). Also based on Olney et al.'s measures of advertisements, we measured how participants would describe the video along several dimensions: special (*Peculiar-Ordinary, Just like any other video-Different from any other video, Average-Special, Weird-Normal, Nothing special-Outstanding*), hedonic (*Unpleasant-Pleasant, Fun to watch-Not fun to watch, Not entertaining-Entertaining, Enjoyable-Not enjoyable*), utilitarian (*Important-Not important, Informative-Uninformative, Helpful-Not helpful, Useful-Not useful*), and interesting (*Makes me curious-Does not make me curious, Not boring-Boring, Interesting-Not interesting, Keeps my attention-Does not keep my attention*). These measures allowed us to assess how the videos were perceived and whether the tag changed the assessment of the video.

To test whether the effects of the video or ads varied according to important consumer characteristics, participants reported how frequently they share videos through each of four channels (Facebook, Email, Twitter, and Google+), and whether or not they have a credit card (and if so how many credit cards). As the choice among four credit cards assumed participants were going to apply for a card, we also measured the extent to which participants thought the video made them more or less likely to apply for a credit card. Finally, participants described their reactions to the video in their own words and provided basic demographic information (Age, Sex, Ethnicity, Education, Income).

2.4 Participants

Eight hundred and three participants (367 women) recruited on Amazon Mechanical Turk participated in this study. Age ranged from 18 to 72, with a median age of 30. Median income

fell between \$25,000 and \$50,000, and median education was some college, but not a four-year degree. As our study focused on sharing of videos via social media, it was important to assess whether this action was relevant to our subject population. Indeed, more than 50% of the sample shared reported sharing a video via email or social media at least 2 to 3 times per month.

3. Results

We begin by reporting how attention and choice varied as a function of the type of video and the presence of deceptive advertisements. Following that, we characterize the effect of the manipulations on perceived effectiveness of the video and attitudes toward sharing.

3.1 Attention and Choice

Attention paid to the pricing and terms of each card was operationalized in two ways: *the number of views* and *the amount of time spent*. Each of these variables exhibited a severe positive skew, so each was subjected to a natural log-transform (after adding 1 to account for 0's). Two measures were calculated for each variable: the average across cards and the difference between cards. The averages served as proxies for total attention deployed in evaluating pricing and terms. Differences were calculated between the logged value for card C and the average logged value across the other three cards; these differences served as proxies for allocation of attention to the best card. The resulting attention measures were analyzed by regressing each measure on Video (Base = -1, Tag = 1), Advertisements (No Ads = -1, Misleading Ads = 1), and their interaction.

Full regression results are given in Table 1. Using either metric, participants paid more attention when they saw no ads (vs. misleading ads) and when they saw the tagged video (vs. the

base video), but each of these effects was qualified by a significant interaction. Participants only deployed more attention upon seeing the tagged video if they chose in the presence of misleading ads; in the absence of misleading ads, the amount of attention did not vary. No matter which video participants saw, they deployed less attention in the presence of misleading ads. These results held for both average views and average time as proxies for attention. Advertising, even though it was misleading, crowded out active information acquisition unless there were concrete instructions to follow otherwise.

Just as importantly, the tagged video enabled participants to better direct their attention. Using either the number of views or the amount of time as a proxy for attention, participants allocated relatively more attention to the dominant card if they saw the tagged video than if they saw the baseline video. Misleading ads decreased the difference in views per card, but not time per card. Even though the information regarding pricing terms was available for all of the participants, the tag in the video helped treated subjects to focus their attention on the important information⁹.

We also examined how choice of the dominant card (Card C) varied as a function of the type of video, advertisements, and their interaction via logistic regression. Those who saw misleading advertisements were less likely to choose Card C than those who saw no advertisements (33.3% vs 51.4%, $z = -5.356$, $p < .001$). Participants who saw the tagged video were more likely to choose the dominant option than those who saw the video without the tag (50.1% vs. 34.4%, $z = 4.721$, $p < .001$). There was no significant interaction between advertisement and video type ($p > .1$). The effect was directionally, but not significantly, larger

⁹ This finding underscores our assertion that subjects took the decision in our experiment seriously, even though they were not given explicit monetary incentives. Indeed, as one would expect, for those subjects that were further “educated” in the video, they spent more time investigating and searching for the dominant choice.

for the deceptive ads condition than the no ads condition; see Figure 4. This finding reinforces the notion that a clever informative video is not enough: the information must also be actionable.

Next, we evaluated whether variation in attention could explain variation in choice. We conducted mediation analyses using Hayes' (2013) PROCESS macro (model 8) with confidence intervals based on 10,000 bootstrapped samples. We tested whether there were effects of misleading advertising, video tag, or their interaction on choice through parallel mediators of amount of attention and allocation of attention (in the same analysis), operationalized both as views and time (in separate analyses). In other words, were there indirect effects of the manipulation on choice through attention?

We conducted three sets of analyses on bootstrapped samples (see Hayes 2013 for details). One set of analyses regressed the average attention on ads, video, and their interaction. The second regressed differences in attention on ads, video, and their interaction. The third regressed choice quality on ads, video, their interaction, average attention, and difference in attention. See Table 2 for individual regression results. To test the indirect effects, we examine 95% bootstrapped confidence intervals (Hayes 2013; Zhao, Lynch & Chen 2011).

Whereas the effects of the manipulations on attention were largely similar across metrics, the indirect effects of the manipulations on choice through attention varied by metric. The indirect effects on choice via attention as measured by time largely mirrored the effects of the manipulation on time. Just as there was an interaction effect of the manipulation on average time spent, the indirect effect of the video on choice quality via average time spent varied according to the presence of misleading ads ($B = 0.0507$, 95% CI: (0.0191, 0.0948)). When misleading ads were present, the tagged video led to better choices than the base video through its effect on average time spent inspecting pricing and terms ($B = 0.0886$, 95% CI: (0.0369, 0.1588)). In

contrast, when misleading ads were absent, there was no such indirect effect. Similarly, just as there was an effect of video on difference in time spent, there was an indirect effect of video on choice quality via difference in time spent such that tagged video increased choice quality by better allocating attention ($B = 0.1158$, 95% CI: (0.0427, 0.2012)). There were no main or interactive indirect effects of advertising via difference in time spent.

Analysis of views revealed a somewhat different story. The effect of video via difference in views largely paralleled the time results: the tagged (vs. base) video led to more views of the best card and thereby better choices ($B = 0.1591$, 95% CI: (0.0770, 0.2520)). Unlike analysis of time, misleading ads decreased choice quality in part by reducing the asymmetry in views ($B = -0.1976$, 95% CI: (-0.2935, -0.1130)). There was no interaction. Interestingly, in contrast to time spent there were no indirect effects via average views.

These mediation analyses suggest multiple ways in which this video did (and other videos could) improve decisions. First, the tagged video increased choice quality by appropriately directing attention (whether measured via clicks or time). Second, the tagged video increased choice quality by increasing the amount of time participants spent examining pricing and terms when facing deceptive advertising but not when facing no ads; the video made a difference when it mattered most. However, the tagged video's effect on number of clicks had no effect on choice. Presumably this indicates that merely clicking more on preferred options was not enough to increase choice quality; instead, actual time spent (necessitating at least one, but no more, clicks) helps to account for these effects.

3.2 Perceptions and Attitudes toward Sharing

To assess perceptions of the video and attitudes toward sharing, we began by analyzing how the different versions of the videos differed with regard to the subjects' overall assessments and feelings. The manipulations had no effects on either happiness or arousal. Likewise, we analyzed whether how special, hedonic, useful, and interesting the videos were varied as a function of the type of video, ad, and their interaction. There were no main or interactive effects of ad ($ps > .3$). The tagged video was perceived as less special ($M_{\text{Base}} = 4.83$, $SD = 0.93$; $M_{\text{Tag}} = 4.68$, $SD = 0.91$; $t(799) = -2.389$, $p = .017$) and more useful ($M_{\text{Base}} = 5.22$, $SD = 1.30$; $M_{\text{Tag}} = 5.84$, $SD = 1.12$; $t(799) = 7.199$, $p < .001$), but did not differ on hedonic or interesting ($ps > .2$).

We also considered how the various treatments affected people's tendency to share. The six sharing items (Cronbach's $\alpha = 0.94$) were combined into a single sharing measure and analyzed as a function of video, ads, and their interaction. Participants were marginally more likely to share the video after deciding in the face of misleading ads ($M_{\text{NoAds}} = 4.32$, $SD = 1.70$; $M_{\text{Ads}} = 4.53$, $SD = 1.78$; $t(799) = 1.736$, $p < .09$). No other effects were significant ($ps > .7$). Even though the video including the implemental tag had a significant effect on choice, it was no more likely to be shared.

The variable that turned out to be key for understanding our sharing results was the perceived effectiveness of the video. We combined the five effectiveness items into a single measure (Cronbach's $\alpha = 0.62$) and regressed perceived effectiveness on the type of video, ads, and their interaction. There were no main or interactive effects of advertisements, but participants reported that the video with the tag was significantly more effective ($M = 4.49$, $SD = 0.91$) than the video without the tag ($M = 3.74$, $SD = 0.94$; $t(799) = 11.573$, $p < .001$).

Based on this we considered how the various treatments affected peoples' tendency to share, after controlling for the effect perceived effectiveness. We analyzed the single sharing measure as a function of video, ads, and their interaction. We again used Hayes' (2013) PROCESS macro (model 8) to examine the interactive effects of the video tag and misleading advertisements on sharing through perceptions of video effectiveness. See Table 3. Neither the interaction nor the main effect of ads was significant. However, the tagged video increased sharing via its effect on perceived effectiveness ($B = 0.2490$, 95% CI: (0.1885, 0.3181)).

There is an important caveat to these findings. After accounting for the indirect effects via perceived effectiveness, there was a residual direct effect of the video tag on sharing. Notably, this direct effect is negative ($B = -0.269$, $SE = 0.062$, $t(798) = -4.306$, $p < .001$), providing evidence for competitive mediation such that the indirect and direct effects operate in opposite directions (Zhao et al. 2013). The tagged video did increase sharing by increasing perceived effectiveness. However, it also decreased sharing directly. The relative weights on these two paths may differ in different circumstances, and therein lies a fundamental problem for encouraging good financial decisions through social media: the very videos that have the greatest potential to increase decision quality may also be the ones that are the least shareable.

Finally, we considered the effects the treatments had on the propensity for people to apply for a credit card following the experiment. When choosing one of four credit cards, participants were not given a "no choice" option. One question then is whether their likelihood of applying for a credit card was affected by the ads or the video. Regressing the likelihood of applying on video, ads, and their interaction revealed that the ads had no main or interactive effects, but the type of video had a strong effect on likelihood of applying ($t(799) = 6.132$, $p < .001$). Participants rated themselves as significantly more likely to apply for a credit card when

shown the video including the tag ($M = 3.33$, $SD = 1.31$) than the baseline video ($M = 2.77$, $SD = 1.29$). Apparently the baseline video made participants wary of credit cards without empowering them with the ability to make an effective choice. By showing them where to find the necessary information, the tagged video increased the likelihood of applying relative to the base video.

4. Conclusion

Based on our analysis, we make the following conclusions. First, online videos do have the potential to increase the quality of household financial decisions, but merely presenting the information in an engaging sticky format is not sufficient. The information must be interpretable and implementable in order to direct attention appropriately. Second, effective does not indicate sharable. In our study, had the tagged video not been perceived to be more effective (which may not always covary with actual effectiveness), it would have been considerably less likely to be shared. Finally, we provide process evidence suggesting how the video and deceptive advertisements affected choice through their respective effects on amount and allocation of attention, as well as the importance of understanding multiple paths to sharing. Factors that increase perceived effectiveness alone without affecting properties of the video may increase the likelihood of sharing, but changing the video without affecting perceived effectiveness can actually decrease sharing.

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Figure 1. Video screenshots. The top left panel shows the video protagonist using the magic remote to turn on sub-titles. The top right panel shows the subtitles that are displayed. The bottom left panel shows the recap. The bottom right shows the implementation instructions of how to act on that information. The tag, portrayed via the two bottom panels, was not shown to the baseline participants.

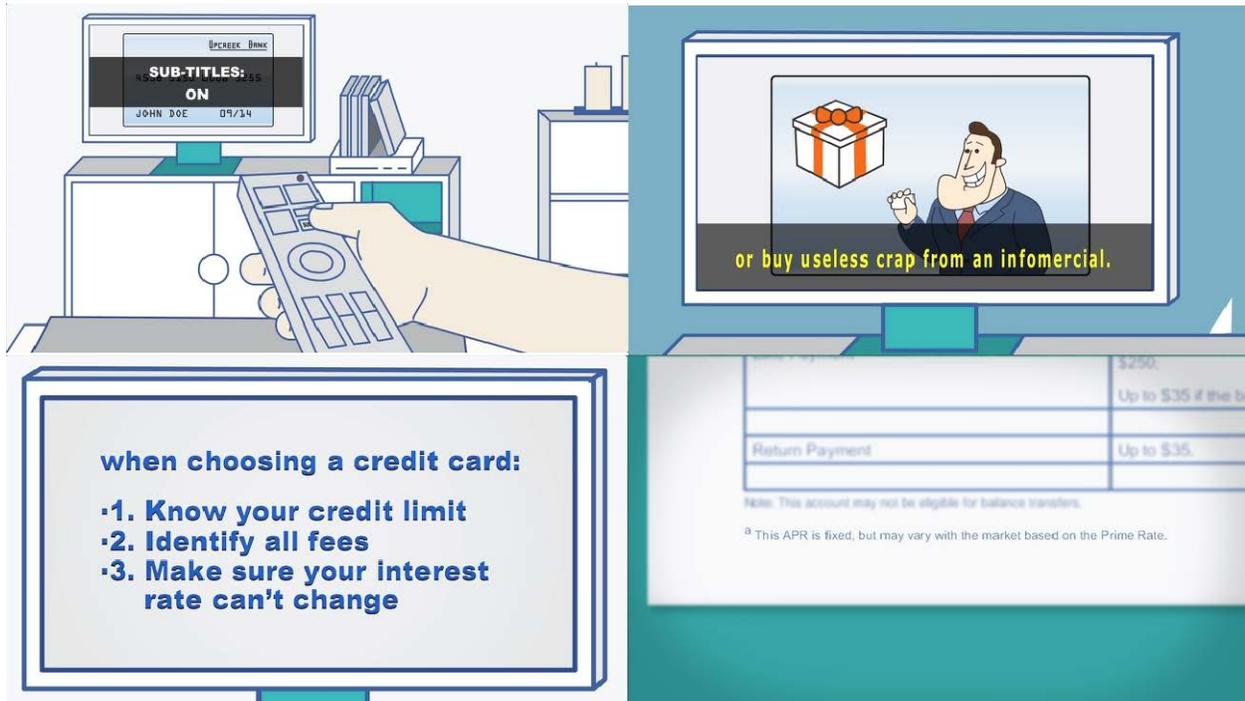


Figure 2. Choice stimuli used in the study. The taglines (e.g., “Low minimum payment”) were excluded in the “No Ads” condition. The Pricing & Terms information was only shown if participants clicked on “Pricing & Terms” under a card. If participants clicked on the Pricing & Terms for Card B while the screen displayed the information for Card C, the information would change to Card B.

Suppose that you need to apply for a new credit card. You've received the four card offers below. Which one would you choose?

| | | | |
|---|---|---|---|
| Card A | Card B | Card C | Card D |
|  |  |  |  |
| Low minimum payment Pricing & Terms | Low fees Pricing & Terms | Use it anywhere Pricing & Terms | Low APR Pricing & Terms |

Click the the Card C Pricing & Terms link again to hide this information.

Pricing & Terms (C)

Please take a moment to carefully review the Pricing & Terms below.

Pricing Information

| INTEREST RATES AND INTEREST CHARGES | |
|--|---|
| Purchase Annual Percentage Rate (APR) | 13.99% ^a |
| Balance Transfer APR | 13.99% ^a |
| Penalty APR and When It Applies | 29.99% ^a The Penalty APR will be applicable to your Account if you: <ul style="list-style-type: none"> • fail to make any Minimum Payment by the date and time due (late payment); • exceed your credit limit (if applicable); • make a payment to us that is returned unpaid. |
| How to Avoid Paying Interest on Purchases | Your due date will be a minimum of 21 days after the close of each billing cycle. We will not charge you periodic interest on purchases if you pay your entire balance by the due date each month. |
| Minimum Payment | \$10/month |
| Spending Limit | \$700 |

| FEES | |
|------------------------------|--|
| Annual Membership Fee | \$50/year |
| Activation Fee | \$60 |
| Penalty Fees | |
| Late Payment | Up to \$15 if the balance is less than \$100; Up to \$25 if the balance is \$100 to less than \$250; Up to \$35 if the balance is \$250 or more. |
| Return Payment | Up to \$35. |

Note: This account may not be eligible for balance transfers.
^a This APR is fixed, but may vary with the market based on the Prime Rate.

| | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|
| Card A | Card B | Card C | Card D |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Figure 3. Credit card stimuli. The top panel shows the misleading ads condition. The middle panel shows the no ads condition. The bottom panel shows the similar offering from Chase.com.

Now, suppose that you need to apply for a new credit card. You've received the four card offers below. Which one would you choose?

| Card A | Card B | Card C | Card D |
|---|---|---|--|
|  |  |  |  |
| Low minimum payment Pricing & Terms | Low fees Pricing & Terms | Use it anywhere Pricing & Terms | Low APR Pricing & Terms |
| Card A | Card B | Card C | Card D |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Note. For half of participants, the second sentence above read “You’ve received the four card offers below accompanied by descriptions from the credit card company.”

Now, suppose that you need to apply for a new credit card. You've received the four card offers below. Which one would you choose?

| Card A | Card B | Card C | Card D |
|---|---|---|--|
|  |  |  |  |
| Pricing & Terms |
| Card A | Card B | Card C | Card D |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

| Chase Freedom® | Chase Slate® | CHASE SAPPHIRE PREFERRED® |
|--|---|--|
|  |  |  |
| <ul style="list-style-type: none"> ✓ Earn a \$100 Bonus after you spend \$500 in your first 3 months from account opening. ✓ 5% Cash Back on up to \$1,500 spent in bonus categories each quarter ✓ No Annual Fee[†] | <ul style="list-style-type: none"> ✓ 0% Introductory APR for 15 months[†] ✓ \$0 Balance Transfer Fee when you transfer a balance during the first 60 days your account is open[†] ✓ \$0 Annual Fee[†] | <ul style="list-style-type: none"> ✓ 40,000 bonus points after spending \$3,000 in the first 3 months from account opening ✓ 2X Points on travel and dining ✓ \$0 Intro Annual Fee, after that \$95[†] |
| <input type="checkbox"/> Compare | <input type="checkbox"/> Compare | <input type="checkbox"/> Compare |
| Learn More | Learn More | Learn More |
| [†] Pricing & Terms | [†] Pricing & Terms | [†] Pricing & Terms |

Figure 4. Choice share per condition. Darker areas represent choice of the best card.

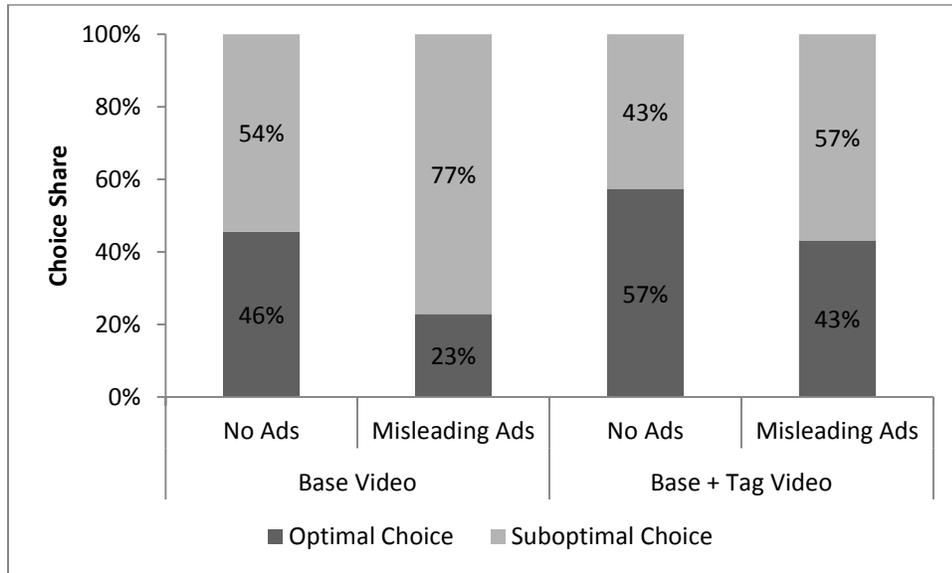


Table 1. Regression coefficients for attention metrics. Tagged video was coded 1 for tagged video, -1 for baseline video. Misleading ads was coded 1 for misleading ads condition, -1 for no ads condition.

| Antecedent | Average Ln(Seconds + 1) | | | | Difference in Ln(Seconds + 1) | | | |
|----------------|-------------------------|------|---------|-------|-------------------------------|------|---------|-------|
| | Coef | SE | t (798) | p | Coef | SE | t (798) | p |
| Constant | 1.946 | .046 | 41.875 | <.001 | .094 | .018 | 5.358 | <.001 |
| Tagged Video | 0.110 | .046 | 2.366 | .018 | .055 | .018 | 3.132 | .002 |
| Misleading Ads | -0.403 | .046 | -8.682 | <.001 | -.026 | .018 | -1.496 | .135 |
| Tag x Mislead | 0.147 | .046 | 3.167 | .002 | .016 | .018 | 0.936 | .350 |

Conditional effects.

| Antecedent | Average Ln(Seconds + 1) | | | |
|----------------|-------------------------|------|---------|-------|
| | Coef | SE | t (798) | p |
| Vid No Ads | -0.037 | .066 | -0.566 | .572 |
| Vid Mislead | 0.257 | .066 | 3.916 | <.001 |
| Ads Base Vid | -0.551 | .066 | -8.347 | <.001 |
| Ads Tag Vid | -0.256 | .066 | -3.914 | <.001 |

| Antecedent | Average Ln(Views + 1) | | | | Difference in Ln(Views + 1) | | | |
|----------------|-----------------------|------|---------|-------|-----------------------------|------|---------|-------|
| | Coef | SE | t (798) | p | Coef | SE | t (798) | p |
| Constant | 1.000 | .026 | 38.993 | <.001 | .179 | .010 | 17.984 | <.001 |
| Tagged Video | 0.062 | .026 | 2.407 | .016 | .039 | .010 | 3.900 | <.001 |
| Misleading Ads | -0.213 | .026 | -8.289 | <.001 | -.048 | .010 | -4.843 | <.001 |
| Tag x Mislead | 0.073 | .026 | 2.862 | .004 | .013 | .010 | 1.287 | .199 |

Conditional effects.

| Antecedent | Average Ln(Views + 1) | | | |
|----------------|-----------------------|------|---------|-------|
| | Coef | SE | t (798) | p |
| Vid No Ads | -0.012 | .036 | -0.321 | .748 |
| Vid Mislead | 0.135 | 0.36 | 3.728 | <.001 |
| Ads Base Vid | -0.286 | .036 | -7.851 | <.001 |
| Ads Tag Vid | -0.139 | .036 | -3.854 | <.001 |

Table 2. Regression coefficients for mediation model. Tagged video was coded 1 for tagged video, -1 for baseline video. Misleading ads was coded 1 for misleading ads condition, -1 for no ads condition.

| Antecedent | Choice (Logits) | | | | Choice (Logits) | | | |
|----------------|-----------------|-------|--------|-------|-----------------|-------|--------|-------|
| | Coeff | SE | z | p | Coeff | SE | z | p |
| Constant | -1.260 | 0.156 | -8.068 | <.001 | -1.229 | 0.146 | -8.406 | <.001 |
| Tagged Video | 0.280 | 0.085 | 3.303 | <.001 | 0.272 | 0.085 | 3.197 | .001 |
| Misleading Ads | -0.292 | 0.087 | -3.358 | <.001 | -0.261 | 0.087 | -2.997 | .003 |
| Tag x Mislead | 0.035 | 0.085 | 0.412 | 0.680 | 0.052 | 0.085 | 0.610 | .542 |
| AvgLnTime | 0.345 | 0.065 | 5.340 | <.001 | | | | |
| DiffLnTime | 2.111 | 0.217 | 9.705 | <.001 | | | | |
| AvgLnViews | | | | | 0.105 | 0.136 | 0.775 | .438 |
| DiffLnViews | | | | | 4.107 | 0.421 | 9.765 | <.001 |

Table 3. Regression coefficients for mediation model. Tagged video was coded 1 for tagged video, -1 for baseline video. Misleading ads was coded 1 for misleading ads condition, -1 for no ads condition.

| Antecedent | Perc Effectiveness | | | | Sharing | | | |
|---------------------|--------------------|-------|---------|-------|---------|-------|--------|-------|
| | Coeff | SE | t(799) | p | Coeff | SE | t(798) | p |
| Constant | 4.118 | 0.033 | 126.143 | <.001 | 1.714 | 0.264 | 6.494 | <.001 |
| Tagged Video | 0.378 | 0.033 | 11.573 | <.001 | -0.269 | 0.062 | -4.306 | <.001 |
| Misleading Ads | -0.027 | 0.033 | -0.827 | .408 | 0.125 | 0.058 | 2.159 | .031 |
| Tag x Mislead | -0.049 | 0.033 | -1.508 | .132 | 0.037 | 0.058 | 0.641 | .522 |
| Perc. Effectiveness | | | | | 0.659 | 0.063 | 10.536 | <.001 |