

The Effects of Personalized Advertisements on Consumer Decision-Making Behavior

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ABSTRACT: Advertisers have increasingly turned to personalized advertisements to increase profitability in recent years. While lay belief and industry practices suggest that these targeting strategies are effective and elicit positive consumer responses, little empirical evidence supports this. In this project, we find that counterintuitively, consumers tend to experience less enjoyment and have lower purchase intentions. These effects are driven by the fact that consumers both tend to trust personalized ads less and experience more epistemic fragmentation (when online targeting isolates users, increasing their vulnerability). Our findings contribute to consumer behavioral research in the technological sphere.

KEYWORDS: Behavioral and Social Sciences, Behavioral Economics; Consumer Behavior Marketing; Algorithm Aversion; Personalized Advertisements.

■ Introduction

Stopping advertising to save money is like stopping your watch to save time. -Henry Ford

Advertisements have a long history and have greatly evolved throughout the years: from the first newspaper ad in the US in 1704 to the first mailed advertisement by Sears in 1892, to the Golden Age of Advertising in the 1900s when advertising rose in popularity after ads came to radio and television. In 1935, market research was introduced, where companies gathered information about consumers. Digital advertising began with the first banner from AT&T in 1994.¹ Today, online targeted ads dominate the marketing world. In fact, according to Instapage, Google collects enough personal data from users to equal 595,555 sheets of paper over the course of one year.¹ AI-generated ads undoubtedly have many benefits, evident in the high levels of engagement; in fact, marketers see an average of 56% increase in sales when they use personalized experiences.² However, consumers' resistance towards AI-generated ads are equally significant.

The study aims to examine consumers' resistance toward personalized ads, as well as their moderators and mediators. This research question is important to advertisers, as it can guide them on improving their ads to increase engagement. Consumers who are shown AI ads are expected to impulse purchase less frequently than consumers that see traditional ads. Consumers are also less likely to overestimate their happiness. These consequences are caused by the consumers' lack of trust due to psychological reactance caused by epistemic fragmentation and what I term "the creepiness" of AI. The effects of personalized advertising can vary due to moderators, especially consumer-centric ones, including consumer age and experience with persuasion. (See Wright+Friestad, Persuasion knowledge work).

Various empirical research has been done on the broad topic of consumer behavior. Prevailing assumptions by consumers and industry experts are that targeted ads are more effective

at convincing and are more positively received by consumers compared to non-personalized ads. However, we find that consumers reject personalized ads due to the lack of trust and epistemic fragmentation.

As a way to test and verify my research questions and hypotheses, we conducted an experiment survey (N=279) in a laboratory setting.

The results are significant and relevant in our society today. Technology has become an increasingly powerful way to attain a strategic advantage in marketing and attract consumers who have shifted to online, personalized consumption. For instance, 51% of digital marketers say that personalization is their number one priority, and 92% reported using personalization techniques in their marketing.² These numbers exemplify the urgency and value of understanding the complex consequences of personalized marketing, which will help sellers make better decisions on how to maximize the efficiency of personalized ads as well as help consumers better understand their attitudes towards AI and technology as a whole.

■ Conceptual Framework

Personalized Advertisements:

Personalization is the process that uses information about the customer to produce individualized advertisements.³ Moreover, these advertisers anticipate and serve users' interests and needs.⁴ The information used includes the consumer's demographic, psychographic, lifestyle, interests, and behavior. This is possible through cookie technology, which tracks consumer behavior.⁵ Evidently, personalization raises important privacy questions and is increasingly under stricter regulatory control. The goal of ads, especially personalized ads, is to provide an enhanced customer experience by recommending items to consumers, which advertisers expect will increase satisfaction and profitability.⁶

The development of AI technology has contributed significantly to the rise of personalized ads. Many recent studies have focused on the abilities of AI. Research has shown that people

people prefer AI recommendations for utilitarian options and resist AI recommendations for hedonic options, preferring human recommendations instead.⁷ Utilitarian attributes reflect instrumentality, functionality, nonsensory attributes, and rationality.⁸ Hedonic qualities reflect the experiential effect associated with a product, sensory enjoyment, and emotions.⁸ This explains AI technology's current limits and why customers may not trust AI. This leads to customers purchasing less due to a lack of trust.

Impulsive Consumption:

Impulse purchases make up 60% of total purchases.⁹ According to Aslam *et al.*, impulse buying is when a person feels a sudden desire to buy a specific product⁹ and pays no attention to other possibilities. Stern states that there are four types of impulse buying.¹⁰ The first is pure impulse buying, which is random and emotional. The second type is reminder impulse buying behavior which is the drive to stock up; the third is suggestive impulsive buying behavior, which uses reasoning to justify the decision. The last type is planned impulse buying behavior, which is planned impulse buying behavior where one buys because of a low price or offer. For this study, we will focus on pure impulse buying.

Therefore, integrating the concepts of personalized advertising and impulsive consumption together, we propose that personalized ads, which cause distrust, are less likely to cause "random and emotional" buying.¹⁰

Formally:

H1: Non-personalized advertisements are more likely to cause consumers to impulse buy than personalized ads.

Impact Bias & Decreased Utility:

In addition to impulsive consumption, we will also measure the consumers' impact bias (overestimating happiness), which evidently ties into utility maximization. Utility maximization is making preferences that are "consistent with each other and with the axioms of rational choice".¹¹ Kahneman and Thaler state that people try to make choices that will "make them as well-off as possible, as judged by themselves, not others."¹¹ However, modern economics reveals that one often has irrational judgments. One such example is affective/hedonic forecasting, the prediction of the hedonic effect of a change in the future,¹¹ which is proven to be faulty.

Kahneman and Thaler assume that when making a choice, the consumer predicts the utility of an outcome at first (t0) that will be experienced at a later time (t1).¹¹ They also believe that hedonic forecasting can be erroneous when 1) the emotional state of the agent is significantly different at t0 and t1; 2) when the decision focuses on aspects of the outcome that will not be important when actually experienced; 3) when choices are made based on flawed evaluations of past experiences; 4) when people inaccurately predict their future adjustment to new life circumstances.¹¹

Many indications show how impact bias leads to decreased utility, as consumers are more likely to make non-optimal purchases. Forecasts of future emotions are anchored in the current emotional state, known as projection bias.¹² This leads to inconsistency with utility maximization because it is unlikely that future emotions will be the same as present emotions.

Thus, when the current emotional state is negative, it will likely decrease expected happiness.

Formally:

H2: Consumers faced with personalized ads are less likely to overestimate their expected happiness, resulting in purchasing fewer items that do not maximize utility.

Psychological Reactance & Trust:

Psychological reactance theory explains why consumers resist personalized ads, which are meant to be more persuasive than non-personalized ads. The theory indicates that when persuasion threatens one's freedom, one is likely to reject messages and perceive the message to be negative.⁵ Generally, recommenders face backlash, which causes decreased satisfaction levels.⁶ Consistent with past research, Fitzsimons and Lehmann witnessed reactance within the decision maker, especially when the experts' recommendations were inconsistent with the decision maker's previous attitudes.⁶

In this project, we operationalize backlash against the source of the ad as consumers lose trust in the source. Indeed, once consumers feel threatened and experience reactance, they tend to trust personalized ads less. Quick explores four components of reactance theory: freedom, a threat to freedom, reactance, and restoration of freedom.¹³ The threat occurs when something makes it more difficult for a person to exercise freedom, which is a belief about how one can behave.¹³ Reactance is the motivational state expected to occur when freedom is eliminated or threatened.¹³ Factors that increase reactance are domineering language and the intent to persuade,¹³ which personalized ads contain. When faced with a threat, consumers will aim to restore freedom by derogating the source of the threat.¹⁴ Thus, consumers will reject the product or even the company that is targeting them. Wicklund proposes that consumers will also exercise different freedom to gain a feeling of control and choice.¹⁵ This can lead to consumers buying more from non-personalized ads than personalized ads.

Overall, we propose that consumers will not trust personalized ads because they threaten the consumer's freedom to choose what they want to see.

Formally:

H3: The consumer's lack of trust in personalized ads reduces the effect personalized ads have on impulsive consumption.

H4: The consumer's lack of trust in personalized ads reduces the effect personalized ads have on consumers overestimating their happiness.

Regarding personalized ads, the consumers' psychological reactance is caused by epistemic fragmentation and the feeling of creepiness.

-Epistemic Fragmentation

Few behavioral researchers have explored the role of epistemic fragmentation in consumer responses. Critically, this paper serves as a conceptual and theoretical bridge, connecting epistemic fragmentation, consumers' impulsive consumption, and impact bias.

Epistemic fragmentation occurs when information available to each individual is limited to what is targeted at them.¹⁶ Groups of users may be excluded from receiving certain ads based on advertisers' targeting choices.¹⁷ Its effects are re-

markable; a notable example is the Cambridge-Analytica data scandal. In 2018, Cambridge Analytica used data from 87 million Facebook accounts without consent to help Trump's 2016 campaign target key voters with online ads.¹⁶ Milano *et al.* claim that epistemic fragmentation increases consumers' vulnerability to harmful advertising while also damaging public information consumption and preventing regulation efforts.¹⁸ Consumers are shown different content because of tracking cookies and inferred interests, which have proven to be fallible. It also results in content deprivation when consumers are not shown beneficial ads.¹⁸

Advertising platforms play a major part in epistemic fragmentation. "Platforms may inadvertently cause ads to deliver primarily to a skewed subgroup of the advertiser's selected audience".¹⁷ Employment and housing ads can experience significantly skewed delivery. Al *et al.* conducted a study that further proved the skewed delivery of targeted ads along racial and gender lines.¹⁷ Their targeted audience was identical for all ads created—50% white and 50% black. However, their ads for jobs in the lumber industry reached an audience that was 72% white and 90% male, and their ad for employment in taxi companies reached a 75% black audience.

Additionally, the preference for two items can be different when compared to each other (joint evaluation) or evaluated separately.¹² Thus, when targeted advertising and epistemic fragmentation eliminate joint evaluation, the power of consumers to choose also decreases.

We propose that epistemic fragmentation results in the consumer's loss of power. This causes negative sentiments, including distrust, reducing the consumer's willingness to purchase, which is consistent with reactance theory, as explained in the previous section.

Formally:

H5: Epistemic fragmentation decreases the effect personalized ads have on impulsive consumption

H6: Epistemic fragmentation decreases the effect personalized ads have on consumers overestimating their happiness

-Sense of Creepiness

Reactance theory is also applicable to a mediating factor: creepiness. We propose that the creepiness consumers feel from personalized ads is mainly rooted in privacy concerns and the feeling of their identity being threatened.

Privacy is defined as a person's ability and right to control how their personal information is spread and the use of personal information on other platforms.¹⁹ Personalized ads can increase feelings of creepiness from being watched, tracked, and targeted.⁵ Christian *et al.* found that when perceived personalization increases, the creepiness felt by consumers increases.⁵ Additionally, their studies also show that reactance increases when creepiness increases.

In addition to privacy concerns, a study on interactions between customers and humanoid service robots (HSR) reveals the discomfort customers feel towards AI compared to human employees. Indeed, robots close to being human-like but fail to attain full humanness cause discomfort.²⁰ This is because of the mismatch between the anticipation and reality of robots, which ultimately are not human. Consistent with

the uncanny valley concept, Mende *et al.* state that consumers will respond more favorably to a service robot that seems less human-like.²¹ Overall, consumers are expected to experience discomfort, namely eeriness and a threat to their identity, when interacting with HSRs. This is relevant to personalized ads, as personalized ads attempt to create a more human-like and personal shopping experience tailored to each individual customer. Ultimately, personalized ads attempt to mimic human advertising, which advertises based on customer-seller interactions. However, online personalized ads are evidently unable to achieve the same personal touch as human advertisers. This explains why customers would reject personalized ads because of the eeriness and threatening nature of the personalized ads' attempts to be "personal."

Similar to epistemic fragmentation, we propose that the feeling of the creepiness of personalized ads decreases the consumer's feeling of control and freedom, causing them to buy less and feel warier towards the ad. This is also consistent with the reactance theory.

Formally:

H7: The feeling of creepiness decreases the effect personalized ads have on impulsive consumption

H8: The feeling of creepiness decreases the effect personalized ads have on consumers overestimating their happiness

Persuasion Experience:

We propose that an aspect of the consumer that moderates the extent of impulsive consumption is the consumers' past experiences with persuasion. The persuasion model by Friestad & Wright explains how people's persuasion knowledge influences their responses to persuasion attempts.²² Friestad & Wright came up with a model detailing the factors that determine the outcome (success) of the persuasion attempt.²² These include persuasion knowledge (the ability of consumers to cope with persuasion and the agent's knowledge of persuasion production), agent knowledge (knowing the goals of the advertiser), and topic knowledge (beliefs about the topic). We propose that people with more persuasion knowledge are expected to resist personalized ads more.

H9: The amount of persuasion knowledge consumers have decreases the likelihood to impulse buy.

H10: The amount of persuasion knowledge consumers have decreases the likelihood to overestimate their happiness.

The age of consumers also impacts their likelihood to impulse buy. The majority of online impulse consumers are between 19-39 years old.⁹ Friestad & Wright explains this by stating that people's motivation to learn how to cope with marketers' and others' persuasion attempts effectively should increase throughout life.²² This explains how with age comes experience and thus a higher capability of resisting and distrusting persuasion attempts.

H11: The age of consumers decreases the likelihood to impulse buy.

H12: The age of consumers decreases the likelihood to overestimate their happiness.

We present our data, empirical analysis, and results in the next section.

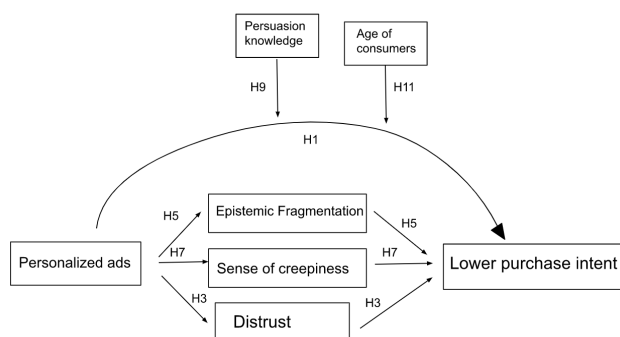


Figure 1: A conceptual model for lower purchase intent.

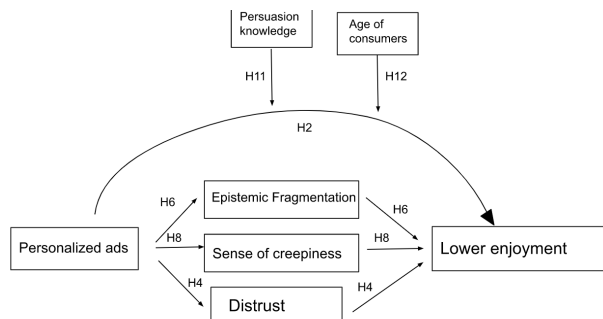


Figure 2: A conceptual model for lower enjoyment.

Methods

We recruited 300 people through Prolific to participate in exchange for money. Every participant, regardless of age, read this hypothetical situation: "Imagine that you are on a budget this month, and you are trying to save as much money as possible. As such, you are trying to avoid spending money on unplanned purchases. One day, as you scroll through social media, you see an interesting ad pop up by your favorite coffee brand for your favorite flavor of coffee drink." Half of the participants were in the control group and were shown the non-personalized ad (Figure 1). The personalized group was asked the screener question: "Generally, how would you describe your sleep patterns?" The options were "Early bird (early riser)" or "Night owl (late sleeper)." Those who chose the early bird option were shown in Figure 2, and those who chose the night owl were shown in Figure 3.

As shown in Table 1, both groups were asked the same questions and the participants responded using the 7-point Likert Scale (except for the cost answer, to which they answered using a sliding scale from \$0-\$30). The wording of the points on the scale was adjusted to fit the question—the word personalized coffee advertisement was used in questions for the personalized group. We omitted the word personalized for the control group. At the end of the survey, we asked for their gender and age.

Table 1: Questions participants were asked in the survey.

1. How likely are you to buy the coffee from the (personalized) coffee advertisement that you saw?
2. How much money would you spend to buy the coffee shown in the (personalized) coffee advertisement?
3. How much do you think you would enjoy the coffee shown in the (personalized) coffee advertisement?
4. How happy do you think you would be after you purchased the coffee shown in the personalized coffee advertisement?
5. To what extent did you find the personalized coffee advertisement convincing?

6. To what extent did you find the personalized coffee advertisement appealing?
7. To what extent do you feel that the coffee mentioned in the personalized coffee advertisement would suit your lifestyle preferences and needs?
8. To what extent did the individualized nature of the personalized coffee advertisement influence your decision to purchase the coffee?/To what extent did the generic nature of the coffee advertisement influence your decision to purchase the coffee?
9. To what extent did you feel isolated when viewing and evaluating the personalized coffee advertisement?

Since our hypothetical situation stated that the participant is on a budget and trying to save as much money as possible, it implies that any unplanned purchase like coffee is an impulsive buy. Question 1 and question 2 measured purchase intent, the dependent variable. Question 3 measured enjoyment (overestimation of happiness), also the dependent variable. Questions 4-6 measured the level of trust consumers had in a mediator. Questions 7-9 measured epistemic fragmentation, another mediator.



Figure 3: Control ad.



Figure 4: Personalized ad for early risers.



Figure 5: Personalized ad for late sleepers.

We determined the significance of each variable using the P-value. The lower the P-value, the greater the statistical significance. A p-value of 0.05 or lower is considered statistically significant, and there is less than a 5% chance that the result occurred by chance.

Results and Discussion

After excluding 21 participants for failing the attention checks, we had 279 valid responses. 58.07% of survey-takers identified as being female. One hundred thirty-nine people

were in the control group, and 140 were in the personalized group.

A one-way ANOVA between subjects was conducted to compare the effect of personalized ads on impulse consumption and consumers' overestimation of happiness.

There was a directionally significant effect of personalized ads on impulsive consumption at the $p < 0.05$ level for the three conditions [$F(1, 277) = 0.34$, $p = 0.5615$] (Figure 4). The mean of purchase intent for the personalized group ($M = 2.91$) was lower than the control group ($M = 3.03$). These results suggest that more data will show that the personalized group will likely impulse buy from their ads. There was a marginally significant effect of personalized ads on future enjoyment at the $p < 0.05$ level for the three conditions [$F(1, 277) = 3.73$, $p = 0.0546$] (Figure 5). The mean of enjoyment for the personalized group ($M = 3.76$) was lower than the control group ($M = 4.18$). Taken together, these results suggest that the personalized group is less likely to overestimate their happiness upon their purchase. There was a marginally significant effect of personalized ads on the amount of trust at the $p < 0.05$ level for the three conditions [$F(1, 277) = 3.32$, $p = 0.0694$] (Figure 6). The mean of trust for the personalized group ($M = 3.52$) was lower than the control group ($M = 3.88$). Taken together, these results suggest that the personalized group had less trust in the personalized ads. There was a directionally significant effect of personalized ads on the amount of epistemic fragmentation at the $p < 0.05$ level for the three conditions [$F(1, 277) = 1.12$, $p = 0.2910$] (Figure 7). The mean of epistemic fragmentation for the personalized group ($M = 2.14$) was higher than the control group ($M = 2.00$). These results suggest that more data will prove that personalized ads cause epistemic fragmentation.

Regarding our hypothesis about the mediators, we ran mediation analyses but did not find any statistically significant results.

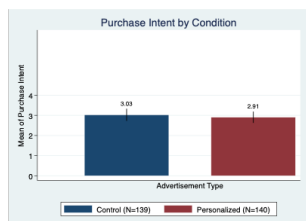


Figure 6: Purchase intent and ad condition.

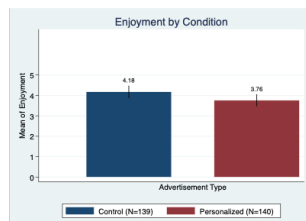


Figure 7: Enjoyment and ad condition.

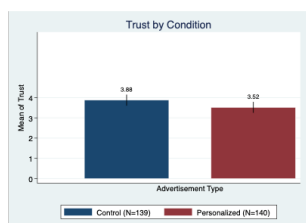


Figure 8: Trust and ad condition.

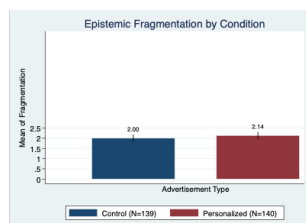


Figure 9: Epistemic fragmentation and ad condition.

Overall, we found marginally significant results for the relationship between the ad condition (personalized or control) and enjoyment as well as trust. We found directionally signifi-

cant results for the relationship between the ad condition and purchase intent as well as with epistemic fragmentation.

Limitations & Next Steps:

Due to our budget limit, we could only request 300 participants to take the survey. This is significant because the p -value tends to increase when the sample size is smaller. The simplistic survey that only contained a single product could not take into account the participants' demographics, such as age and gender. Thus, we were not able to gather data for moderator analysis.

People may be unintentionally biased toward certain products even though the instructions were to feel positive about the product. Specifically, the instructions say that the participants "see an interesting ad pop up by your favorite coffee brand for your favorite flavor of coffee drink." In this case, participants may not be "coffee people." Future studies should have multiple products to account for the bias. Additionally, greater personalization of ads would be useful since this study's screener question (sleeping habits) is quite broad. Future work should make the consumer experience more realistic and ensure more accurate and truthful results. Specifically, researchers could anonymously email different kinds of ads to participants, pretending to be a brand. Then, consumers will be asked questions that measure their feelings about the ads. This would make the ad experience more. However, it isn't easy to conduct such an experiment due to ethics in marketing research.

Academic Implications:

This paper makes many contributions to the academic field of marketing. Our results demonstrate consumers' resistance to artificial intelligence and algorithmic aversion. It can help UX/UI designers, as it describes the relationship between humans and technology. Our results are consistent with results studying human interaction with humanoid service robots.²¹ These results also demonstrate the psychological reactance theory,¹³ revealing how consumers cope with their freedoms being taken away.

Managerial Implications:

The future of online advertising is significant due to the rise of online shopping. The results of our study show how companies can maximize the success of their personalized ads. Although certain aspects, such as epistemic fragmentation, are an unpreventable consequence of personalized ads for consumers, advertisers can make personalization more appealing by being less creepy. For example, personalized ads should not be as direct and personal as they commonly are. On platforms as a whole, consumers should have the option to choose exactly how much of their information they consent to be shared. Consumers should also have the option to opt-in or opt-out of personalized ads. These results apply to online marketing and other fields that utilize AI technology, such as the medical field.

Conclusion

It is important to understand how although the rise of AI technology (including personalization) may seem appealing, humans are still likely to reject AI when it makes them feel threatened and uncomfortable. Our study explains this occurrence, as results show how consumers distrust and feel more

isolated from the personalization ad. More comprehensive results would be revealed with a larger sample size and testing a variety of products. While personalized advertisement research has risen in prominence, most studies have focused on the reasons for the success and efficiency of the ads. However, only a few researchers focus on the negative consumer experience. Thus, this paper explains an often overlooked yet significant consequence of the increase of AI in marketing.

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■ References

- Quick, T. The Evolution of Advertising & How Personalization Improved Over Time <https://instapage.com/blog/advertising-evolution-how-personalization-has-improved-over-time-4> (accessed Aug 27, 2022).
- Agarwal, A. 19 Personalization Statistics You Need to Know in 2021 <https://outgrow.co/blog/personalization-statistics#:~:text=51%25%20of%20digital%20marketers%20say,personalization%20techniques%20in%20their%20marketing> (accessed Aug 27, 2022).
- Montgomery, A. L.; Smith, M. D. Prospects for Personalization on the Internet. *Journal of Interactive Marketing* **2009**, 23, 130–137.
- Kalyanaraman, S.; Sundar, S. S. The Psychological Appeal of Personalized Content in Web Portals: Does Customization Affect Attitudes and Behavior? *Journal of Communication* **2006**, 56, 110–132.
- Christian, J.; Karissa, F.; Handoyo, B.; Antonio, F. The Effect of Perceived Ads Personalization Toward Online Impulse Buying Tendency with Mediating and Moderating Variables, Evidence from Indonesian Millennial E-Commerce Customers. *KINERJA* **2021**, 25, 103–120.
- Fitzsimons, G. J.; Lehmann, D. R. Reactance to Recommendations: When Unsolicited Advice Yields Contrary Responses. *Marketing Science* **2004**, 23, 82–94.
- Longoni, C.; Cian, L. Artificial Intelligence in Utilitarian vs. Hedonic Contexts: The “Word-of-Machine” Effect. *Journal of Marketing* **2020**, 86, 91–108.
- Batra, R.; Ahtola, O. T. Measuring the Hedonic and Utilitarian Sources of Consumer Attitudes. *Marketing Letters* **1991**, 2, 159–170.
- Aslam, H.; Rashid, M.; Chaudhary, N. Impact of Personalized Social Media Advertising on Online Impulse Buying Behavior. *SEI-SENSE Business Review* **2021**, 1, 12–25.
- Stern, H. The Significance of Impulse Buying Today. *Journal of Marketing* **1962**, 26, 59–62.
- Kahneman, D.; Thaler, R. H. Anomalies: Utility Maximization and Experienced Utility. *Journal of Economic Perspectives* **2006**, 20, 221–234.
- Loewenstein, G.; O'Donoghue, T.; Rabin, M. Projection Bias in Predicting Future Utility. *The Quarterly Journal of Economics* **2003**, 118, 1209–1248.
- Quick, B. L. Reactance Theory and Persuasion. *The SAGE Handbook of Persuasion: Developments in Theory and Practice* **2012**, 167–183.
- Kohn, P. M.; Barnes, G. E. Subject Variables and Reactance to Persuasive Communications About Drugs. *European Journal of Social Psychology* **1977**, 7, 97–109.
- Wicklund, R. A. *Contemporary Issues in Social Psychology. Contemporary Psychology: A Journal of Reviews* **1974**, 19, (3), 356–362.
- Milano, S. Targeted Ads Aren't Just Annoying, They Can Be Harmful. Here's How to Fight Back <https://www.fastcompany.com/90656170/targeted-ads-arent-just-annoying-they-can-be-harmful-heres-how-to-fight-back> (accessed Aug 27, 2022).
- Ali, M.; Sapiezynski, P.; Bogen, M.; Korolova, A.; Mislove, A.; Rieke, A. Discrimination Through Optimization: How Facebook's Ad Delivery Can Lead to Biased Outcomes. *Proceedings of the ACM on Human-Computer Interaction* **2019**, 3, 1–30.
- Milano, S.; Mittelstadt, B.; Wachter, S.; Russell, C. Epistemic Fragmentation Poses a Threat to the Governance of Online Targeting. *Nature Machine Intelligence* **2021**, 3, 466–472.
- Westin, A. F. Special Report: Legal Safeguards to Insure Privacy in a Computer Society. *Communications of the ACM* **1967**, 10, 533–537.
- Mori, M.; MacDorman, K.; Kageki, N. The Uncanny Valley [From the Field]. *IEEE Robotics & Automation Magazine* **2012**, 19, 98–100.
- Mende, M.; Scott, M. L.; van Doorn, J.; Grewal, D.; Shanks, I. Service Robots Rising: How Humanoid Robots Influence Service Experiences and Elicit Compensatory Consumer Responses. *Journal of Marketing Research* **2019**, 56, 535–556.
- Friestad, M.; Wright, P. The Persuasion Knowledge Model: How People Cope with Persuasion Attempts. *Journal of Consumer Research* **1994**, 21, 1–31.

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