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Preparing for an era of deepfakes and AI-generated ads: A framework for understanding responses to manipulated advertising

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ABSTRACT

Traditionally, the production and distribution of advertising material has relied on human effort and analog tools. However, technological innovations have given the advertising industry the digital and automatic tools enabling advertisers to automate much of the advertising processes, and produce “synthetic ads,” or ads comprising content based on the artificial and automatic production and modification of data. The emerging practice of synthetic advertising, to date the most sophisticated form of ad manipulation, relies on various AI techniques such as deepfakes and generative adversarial networks (GANs), to auto-create content that depicts an unreal, albeit convincing, artificial version of reality. In this paper, a general framework is constructed to better understand how consumers respond to all forms of ad manipulation. It is anticipated that this paper will help to explain how consumers respond to the more sophisticated forms of synthetic ads – such as deepfakes - that are emerging at an accelerating rate. To guide research in this area, a research agenda is developed focusing on three manipulated advertising areas – ad falsity, consumer response, and originality. Furthermore, the implications for theory and industry are considered.

Keywords: Manipulated advertising, synthetic media, deepfakes, generative adversarial networks (GANs), artificial intelligence (AI), machine learning

Suggested citation

INTRODUCTION
Recent technological developments, particularly those leveraging artificial intelligence (AI) and machine learning, are challenging the contemporary notion of advertising and advertising content (Campbell et al. 2020; Li 2019; Qin and Jiang 2019). Advertising is shifting from content created and altered using only analog and digital tools, towards “synthetic advertising.” Synthetic advertising falls under the larger umbrella of manipulated advertising, albeit in a highly advanced form. Synthetic advertising refers to ads that are generated or edited through the artificial and automatic production and modification of data. Typically, this relies on AI algorithms, such as deepfakes and generative adversarial networks (GANs) to auto-create content that depicts a highly convincing, yet artificial and fake version of reality. Deepfakes, currently the more popular of the two methods, use AI to substitute the attributes (e.g., face, voice, skin tone, gender) of a source with those of a target (Floridi 2018; Karnouskos 2020; Kietzmann et al. 2020). To consumers, some synthetic advertising can be virtually impossible to distinguish from reality, and it is likely that advances in technology will make it more difficult to do so.

To date, content produced by synthetic methods is mostly user-generated, often by technologists showcasing their AI prowess by training AI to swap faces or voices of very different actors or politicians. Hence, at the moment much of this user-generated content is obviously fake. For example, in two comedic spoofs, the face of Rowan Atkinson (a.k.a., Mr. Bean) was swapped first with Charlize Theron’s face in an ad for the Dior J’adore fragrance (Crookedpixel 2019) and second with Donald Trump’s face in a news report (Venkataramakrishnan 2019). Presumably, the producers’ intentions are not to fool, mislead, or trick audiences, but to create humor and demonstrate the potential capabilities of this emerging technology. However, professional content creators – such as advertisers – are likely to be able to produce much higher quality content.

To keen advertisers, early examples of synthetic ads signal a potential paradigm shift in advertising: that is, a fundamentally different way of creating highly compelling ads using AI tools. For example, deepfake technology was used for the first time in an election campaign to change Mr Manoj Tiwari’s—leader of India’s ruling Bharatiya Janata Party—English speech that criticized a political opponent to, at first, Hindi—the language of target voters, then 20 additional local dialects (Jee 2020). While some readers might feel that such manipulations are difficult to execute, and that commercially accessible solutions will be available only in the distant future, the startup Rosebud.ai illustrates that synthetic ad production is already quite possible and accessible to ad agencies. This company’s technology enables the ethnicity, age, expressions, or gender of any model to be instantly altered, enabling consumers to see models who are similar to them with little additional cost. Synthetic advertising tools can also generate altogether new content, creating individuals and objects that do not exist and have never existed. For example, GANs can auto-generate imaginary models that are tailored to fit advertising goals in a totally hands-off, unsupervised process without the need to hire human models or other professionals (Wong 2019). The possibilities enabled by such synthetic advertising tools raise a number of questions for both advertising practitioners and academics.

This paper develops a framework to better understand how consumers respond to all forms of manipulated advertising, but with a particular focus on the more advanced forms of synthetic ads that are currently emerging. To ground the paper in existing
literature and theory, an extensive review is provided of the relevant literature surrounding advertising manipulation and, more importantly, its effects on consumers and society. Two important outputs stem from this endeavor. First, different methods of advertising manipulation are characterized along a spectrum that ranges from more manual analog tools (e.g., lighting, make-up) to interactive digital tools (e.g., photoshop, computer animation) to AI-driven synthetic tools (e.g., deepfakes, GANs). Next, this spectrum of ad manipulation is leveraged to develop a more comprehensive framework explaining how and why consumers respond differently to different forms of ad manipulation. This framework not only explicates the principal mechanisms – verisimilitude, creativity, and ad falsity awareness – behind responses to ad manipulation, but also suggests how many of these relationships are intensified when personal data is used to individualize ads for target consumers. The framework is innovative since it combines research that has often been carried out in separate streams. By offering insight into the underpinnings of consumer responses to manipulated advertising, the model contributes to both theory and advertising practice. Hence, a research agenda is presented based on three areas (i.e., ad falsity, consumer response, and originality) that are important for theory development and industry insight.

BACKGROUND

Evolution of Advertising Manipulation
In order to influence brand perceptions, advertisers have always altered data so that what is depicted in ads will appeal to consumers in a rational or emotive way (Pawle and Cooper 2006) and purchase likelihood (Morris et al. 2002). Ad manipulation refers to any technique used to alter an ad and can include a range of techniques and technologies employed during pre-production (e.g., clothing or application of make-up), production (e.g., using special lights or camera lenses), and/or post-production (e.g., retouching photos or recordings) (Rust and Oliver 1994). Hence, one can argue that ads have always been artificial representations of reality, and that manipulated content in ads is as old as advertising itself.

However, the sophistication of this manipulation has changed considerably over time, as summarized in Table 1. Early instances of manipulation in political advertising, for instance, include such classic portraits as President Lincoln’s head appearing on John Calhoun’s body (Gorman 2012). Given the technology available at the time, this was likely achieved by removing the head from the original photograph, gluing it onto the target photo, and then re-imaging it by taking a photo of the manipulated image. In more recent times, Old Spice’s Smell Like a Man, Man ad campaign was highly edited post-production using a combination of green screens and video-editing tools (McLysaght 2014). In comparison, President Tiwari’s deepfake ad showing him speaking Hindi dialects (Jee 2020) relies on a more sophisticated manipulation technology, in this case a deepfake. The examples illustrate the evolution of manipulation sophistication in advertising across three generations, exemplified respectively by analog photographs taken and developed in now-obsolete dark-rooms, digital images edited with tools such as Photoshop, and content auto-created by AI.

It is important to note that these are not successive generations where one technique replaces another; rather, these are evolutionary generations that may co-exist and are often combined in creative ways. The next sections discuss ad manipulation using these generations.
Table 1: Manipulation in Advertising

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**Generation 1.0 Analog Manipulation**

*Analog manipulation* refers to mechanical interventions that shape the content captured in photos, videos, or audio recordings. It often requires skillful and talented craftspeople who make use of tangible, physical tools (e.g., make-up, lighting, airbrushes, paintbrushes, or dyes) to perfect the content and remove any ‘flaws’ or natural blemishes (McDonald and Scott 2007). As analog manipulation can be done using comparatively simple tools, it has been common for most of advertising history (Lazard et al. 2018). In pre-production, this manipulation creates the best conditions possible for ad production using, for example, make-up, camera angles, lighting and special camera lenses. Similarly, in post-production, analog manipulation can involve cutting the audio or video physical magnetic tape or retouching raw negatives with paint, ink, or airbrushing. However, often with simplicity come limitations, as these analog manipulations make it more challenging to personalize content due to the sheer amount of effort and time involved in their production.

**Generation 2.0 Digital Manipulation**

*Digital manipulation* involves computer-aided alterations and productions. Digital tools (e.g., Adobe’s Photoshop, Apple’s Final Cut Pro or iMovie) make ad editing more straightforward and accessible not only to advertising professionals, but also to owners of smartphones (Dewey 2015). For example, while the first digital filters enabled advertising professionals to retouch, enhance, or somehow alter photos and videos, these features are now embedded in popular smartphone applications such as Instagram and TikTok. However, more complex digital tools (e.g., computer animation or computer-generated imagery (CGI)) can help advertisers move from merely editing to applying more sophisticated techniques such as augmenting ads with new digital content. After much training and effort, ad creators using CGI can, for instance, ‘fill’ a stadium with cheering fans or allow brand logos to come ‘alive’ before consumers’ eyes. These digital tools accelerate the quality (and quantity) of content manipulations that are possible. While analog tools are still common in the advertising industry, many analog techniques are now wholly conducted digitally. This has resulted in a shift from relying on human talent to relying instead on interactions between humans and specialist
computer programs (e.g., the analog skill of ‘airbrushing’ is now the digital skill of ‘photoshopping’).

**Generation 3.0 Synthetic Manipulation**

*Synthetic manipulation* refers to the autonomous editing or generation of content by means of AI algorithms. These algorithms enable content to be both synthetically generated (e.g., in the case of GANs), and seamlessly edited using technologies (e.g., in the case of deepfakes). Deepfakes swap the attributes (e.g., face, voice, skin tone, gender, handbag color, fashion design, etc.) of a source with those of a target by training a deep neural network called an autoencoder (Floridi 2018; Karnouskos 2020; Kietzmann et al. 2020). Autoencoders work through a three-step process. First, the so-called encoder extracts usually around 300 dimensions, such as more abstract facial characteristics and emotional expression, from a highly dimensional input such as a face. In the second step, the encoder places these dimensions (data), in a compressed format, in a bottleneck layer known as a latent space. Lastly, the decoder takes the encoded, compressed data and converts it back to the original. This is the only data that can be used to reconstruct the input as faithfully as possible; however, it is a ‘lossy’ process since some detail will be missing from the reconstructed image. Nevertheless, from these 300 dimensions, a personal decoder can generate all types of facial expressions, even those that the person never conveyed. This process is iterated until the output data is nearly indistinguishable from the input data. Using these 300 dimensions, the autoencoder is able to “fill in” missing data to create new visual or auditory media.

Deepfakes rely on training two networks. In the case of the deepfake of the *J'adore* commercial illustrated in Figure 1, this includes one for Charlize Theron and one for Rowan Atkinson. The trick that allows an autoencoder to swap faces is to train the encoder to recognize more general facial features that are common to the two people. By linking the encoders, the autoencoder can use the input of Theron to generate a matching image of Atkinson with the same unique head orientation, facial and emotional expressions as those of Theron, and then insert this new face into the original footage.

**Figure 1: Side-by-Side Comparison of Dior J'adore Ad and Deepfake**

Note: Original ad with Charlize Theron (left) and deepfake with Rowan Atkinson, aka Mr. Bean (right). A more convincing experience is offered by comparing the actual videos ([https://bit.ly/2xC76G1](https://bit.ly/2xC76G1))
While deepfakes alter existing input data or media, GANs can generate original, synthetic media. This is achieved by employing two oppositional networks: the generator and the discriminator (Whittaker et al. 2020). The generator creates synthetic output (e.g., images, audio) based on input training data (e.g., a human face or voice). This network is pitted against the discriminator network that tries to differentiate between the generator’s synthetic output and the real data (e.g., other real human faces or voices). If the discriminator is successful, the generator iterates to try to improve its output so a difference will no longer be detected. Collectively, both networks raise the quality of the generated synthetic output to new heights. GANs can successfully transfer the style of an image from one domain to another, while preserving the key attributes (Kim, Ratneshwar, and Thorson 2017), resulting in content that is strikingly similar to the original content. These include the non-existing models and clothes shown in Figure 2, but also photorealistic anime characters, portraits and album covers, altering faces to show the aging or de-aging process or gender swapping (Antipov, Baccouche, and Dugelay 2017), as well as creating images from text (Reed et al. 2016). In short, while synthetic manipulation opens up vast new possibilities for producing high quality ads at a fraction of traditional costs, advertisers are only beginning to understand how this sophisticated manipulation might impact the effectiveness of their ads.

Ad Manipulation and Personalization
While all ad manipulation enables some degree of personalization, synthetic manipulation can approach a level of hyper-personalization, or individualization, where content can be tailored in real time to each individual customer based on data extracted from social media, retail sensors, or loyalty programs (Campbell et al. 2020; Kietzmann et al. 2020; Schelenz, Segal, and Gal 2020). Imagine seeing an ad that features a model matching your ethnicity and height, wearing clothes similar to those you have purchased previously, standing on a street near your home or workplace, accompanied by a message specific to your awareness of and relationship with the advertising brand. Potentially, personalized decoders for each customer could allow advertisers to create manipulated ads showing garments on the customer’s own body instead of on a model, similar to the futuristic ads in the 2002 blockbuster Minority Report. With more sophisticated manipulation, there are more opportunities to personalize an ad in order to increase its effectiveness.
Personalized ads can lead to improved attitudes, better purchase intentions, and other favorable outcomes (Aguirre et al. 2015; Mukherjee, Smith, and Turri 2018; Tong, Luo and Xu 2020). However, this hyper level of personalization can lead to increased awareness of (and disquiet about) customer surveillance, or the acquisition, storage, and use of consumers’ personal data (Plangger and Watson 2015; Turow, McGuigan, and Maris 2015). Driven by their attitudes towards customer surveillance (Plangger and Montecchi 2020), consumers’ reactions may also depend on the awareness or covertness (versus overtness) of this customer surveillance leading to the activation of privacy concerns (Martin and Murphy 2017; Okazaki et al. 2020) or increased feelings of vulnerability (Aguirre et al. 2015; Hill and Sharma 2020; Martin, Borah, and Palmatier 2017). Thus, to avoid these pitfalls and reap the advantages of this type of advertising, a conceptual understanding of the consumer implications of ad personalization and ad manipulation is developed in the next section.

DEVELOPING A FRAMEWORK FOR CONSUMER RESPONSE TO MANIPULATED ADVERTISING

Because the tools developed for synthetic ad manipulation are relatively new, this field of research is still in its infancy (Kietzmann et al. 2020; Schelenz, Segal, and Gal 2020). However, synthetic ad manipulation is an extension of effects made possible by analog and digital manipulation techniques. While research on analog and digital content manipulation has generally taken place at a more topic-specific or ad hoc level, the underlying effects and mechanisms identified in research on content manipulation are likely to extend to the realm of synthetic manipulation. This section develops a framework for understanding how consumers respond to ad manipulation. Firstly, a comprehensive review of relevant advertising literatures and concepts was undertaken, along with the analysis and conceptualization of underlying phenomena. Draft frameworks were tested, considered, and refined using thought experiments and various examples of manipulated ads. This enabled a framework to be designed that is as concise as possible, and useful in explaining consumer reaction to manipulated advertising.

Summarized in Figure 3, the framework begins with manipulation sophistication: the quality of an ad’s content creation and editing. Greater sophistication can enhance perceived verisimilitude – the extent to which an ad looks true or real – as well as an ad’s perceived creativity. Both verisimilitude and creativity can enhance an ad’s persuasiveness, but can also activate an awareness of ad falsity, leading to a possible decrease in the ad’s persuasion outcomes. In some cases, perceptions of creativity can cause consumers to be willing to sanction an ad that is artificially altered or created, reducing the negative effect of awareness of ad falsity. Having briefly outlined the framework and its constructs, each path is next described in more detail.

Effects of Increased Manipulation Sophistication

Manipulation sophistication refers to the polish and finesse of content creation or editing evident in an advertisement. This can be achieved by means of any combination of analog, digital, or synthetic manipulation techniques. More sophisticated manipulation techniques enable ads to be produced that feature greater degrees of perceived verisimilitude and perceived creativity.

Verisimilitude refers to having “a likeness to truth” (Fine 2019, 1) and the term is used in the advertising literature in relation to product placement and storytelling. Product placements that more fluidly insert advertised products and services into a
television show’s plot better illustrate the value of using and establishing associative connections (Russell 2002). Likewise, ads that feature storytelling that appears more realistic are more trusted and accepted, increasing narrative transportation (Escalas 2004, 2007; Green and Brock 2000, 2002; van Laer et al. 2014). Hence, an ad’s verisimilitude refers to the extent to which the consumer perceives the ad to be true or real. While verisimilitude can be produced using any manipulation technique, it is easier to achieve with more sophisticated techniques. For example, a picture could be retouched to meet an ad’s objective by applying physical treatments (analog), computer-assisted interventions (digital), or regenerating an entirely new image (synthetic). However, as the techniques become more sophisticated, the manipulation is more difficult to detect, and moreover, consumers are more likely to be convinced that an ad is real and unedited. Formally:

**Proposition 1:** Greater manipulation sophistication of an advertisement increases perceived verisimilitude.

**Figure 3: A Framework for Consumer Response to Manipulated Advertising**

In addition to enhancing verisimilitude, more sophisticated ad manipulation tools can improve advertising creativity. While creativity is generally associated with ‘divergence’ or ‘originality’, it is much more (Rosengren et al. 2020) and creative ads are those that are both original and relevant. Originality refers to an ad’s novelty, divergence, unexpectedness, and newness (Kim, Han, and Yoon 2010; Koslow, Sasser, and Riordan 2003; Sheinin, Varki, and Ashley 2011; Smith et al. 2007). Relevance refers not only to the appropriateness or alignment of the ad with a brand’s strategy and positioning but, importantly, to its usefulness and pertinence.
to consumers’ needs and preferences (Ang, Lee, and Leong 2007; El-Murad and West 2004). In contrast with originality, relevance is rarely considered to be an indicator of creativity in and of itself. Instead, research typically views relevance as a prerequisite for advertising to be interesting to its intended audience regardless of its level of creativity. Some scholars also argue that additional dimensions may be needed to fully understand advertising creativity (Ang, Lee, and Leong 2007; Haberland and Dacin 1992), arguing in favor of including dimensions specific to advertising: the quality of the ad execution, artistry, or production value (Modig and Dahlen 2019; Smith et al. 2007).

Manipulation sophistication can improve ad creativity by enhancing both the originality and relevance of the ad, as well as its execution quality. Advertising is typically limited by budgets which constrain production resources. In essence, while an ad agency may dream up a very original idea for an ad, the ability to actually execute that idea is often limited by funding. However, synthetic manipulation tools have the potential to drastically reduce these costs, enabling highly creative ideas to be actioned that would previously have been rejected for reasons of cost. For example, models can be virtually transported to different locations or even synthetically created to fit a client’s specific brief. Celebrities’ likenesses can also be utilized without the need for these people to physically attend a photo or film shoot. Moreover, as costly ideas become financially feasible, sophisticated manipulation techniques can also increase the ad’s relevance to consumers. For example, relevance could be increased by changing an ad’s language or location, as well as personalizing the ad to reflect individual consumer preferences or goals. In short, the more sophisticated manipulation techniques become, the greater will be the creativity possible within ads. Stated formally:

**Proposition 2:** Greater manipulation sophistication of an advertisement increases perceived creativity.

**Effects of Increased Verisimilitude**

Verisimilitude refers to how true, real, or convincing a manipulated ad appears to a consumer. Research shows that consumers respond better to product placements (Russell 2002) and stories (van Laer et al. 2014) that appear more realistic. It has been found that ad manipulation is more successful if a consumer cannot discern whether the content has been manipulated, instead perceiving it as a true depiction of reality. A high degree of perceived verisimilitude means consumers process a manipulated ad as if it were real, enabling established persuasive processes based on ad immersion to occur. If a consumer becomes aware that an ad has been manipulated, such processes are likely to be muted. Immersion in an ad can enable several persuasive processes such as fluency (Chang 2013; Hennig-Thurau and Houston 2019; MacInnis and Price 1987) to occur, although mental imagery and narrative transportation are likely to be most relevant in the context of manipulated advertising.

Consumers cognitively process all ads to some extent to create mental images generated by their imaginations and experiences produced by visual, auditory, haptic, or other stimuli (Heller et al. 2019; MacInnis and Price 1987). Mental images are useful in the purchase process (Hassabis and Maguire 2007) as they allow individuals to imagine the experience and benefits of using a product or service (Phillips, Olson, and Baumgartner 1995). These images are essential to improving purchase likelihood in low involvement situations (Escalas and Luce 2004), enhancing attitudes (Miller and Marks 1997), promoting consumer learning (Schlosser 2006), encouraging positive word-of-mouth (Heller et al. 2019), and evoking
affective responses (Miller and Marks 1997). Mental images can be vivid in the minds of consumers (Nisbett and Ross 1980), producing favorable consumer reactions including increased experience involvement (Coyle and Thorson 2001), enhanced future visualization (Shiv and Huber 2001), hedonic purchase choices (Roggeveen et al. 2015), and increased narrative transportation (Escalas 2004).

Ads that feature stories can also evoke narrative transportation, drawing a consumer into an ad, increasing their empathy with ad characters, and activating imagination (Escalas 2004; Green and Brock 2000; van Laer et al. 2014). It has been found that high levels of verisimilitude make it easier for consumers to imagine themselves in a particular situation, similar to the effects produced by virtual or augmented reality (Bogicevic et al. 2019; van Laer, Feiereisen, and Visconti 2019). Narrative transportation can result in favorable attitudinal and behavioral changes (Green and Brock 2002; van Laer et al. 2019). Advertising with successful narrative transportation leads to better processing fluency (Chang 2013), as long as it is congruent with the brand’s schema (Lane 2000).

Manipulated advertising with a higher degree of perceived verisimilitude likely enables consumers to be more easily persuaded by ads. Thus, it is hypothesized:

**Proposition 3:** Greater perceived verisimilitude of an advertisement increases persuasiveness.

In addition to enabling persuasive processes to occur, a high degree of verisimilitude also blocks consumers from being distracted by its manipulation. This occurs for three reasons. First, consumers are known to actively avoid ads they realize are manipulated (Baek and Morimoto 2012). Second, even if consumers do attend to an ad, recognition that an ad is manipulated is likely to affect processing. Narrative transportation may be impeded (Kim et al. 2017) and consumers may focus on the manipulation rather than an ad’s underlying message and imagery (c.f., Dessart and Pitardi 2019; Russell 2002; Russell and Russell 2009). This likely decreases comprehension of the message an ad is attempting to communicate. Finally, consumers generally gravitate toward the authentic over the fake (Beverland, Lindgreen, and Vink 2008; Maren, Weigand, and Reinartz 2019; Stern 1994). This likely makes consumers more skeptical of manipulated ads (Obermiller, Spangenberg, and MacLachlan 2005) and, even if a message is comprehended, less likely to accept it (Spielmann and Orth 2020).

The detection of manipulation is less likely when advanced technologies produce a synthetic reality that is almost indistinguishable from actual reality. In these cases, a consumer’s ability to detect ad manipulation will be impaired, decreasing awareness of falsity – the extent to which a consumer perceives an ad to be false. Stated formally:

**Proposition 4:** Greater perceived verisimilitude of an advertisement decreases awareness of falsity.

**Effects of Increased Creativity**

Ads perceived as creative are both original and relevant, although existing literature on creativity tends to focus on originality (Rosengren et al. 2020). Marketing practitioners believe that the more creative ads are better able to overcome consumers’ barriers, gain their attention, evoke favorable responses, and reinforce their attitudes toward the advertised brand (Marra 1990; Ogilvy 1983; Rosengren, Dahlén, and Modig 2013; Zinkhan 1993). In the advertising industry, there is a common belief that creativity is necessary for an ad to be
effective (Kover, Goldberg, and James 1995), with some advertisers equating ad creativity with ad effectiveness (Kover 1995).

Research largely confirms these beliefs, finding that creative ads are perceived more favorably and increase purchase intent (Ang and Low 2000), draw more attention and improve brand memory (Pieters, Warlop, and Wedel 2002), and are significantly more memorable and elicit greater recall than less-creative advertisements, even after one week (Till and Baack 2005). Originality makes advertising more likely to be attended to and processed (Pieters, Warlop, and Wedel 2002; Smith, Chen, and Yang 2008; MacInnis, Moorman, & Jaworski, 1991) and has a positive effect on consumer response, as consumers have a predisposition to appreciate divergent stimuli and deem them intrinsically interesting (Barron, 1955; Yang and Smith 2009). Rosengren et al.’s (2020) meta-analysis suggests that the main advantages of creativity in advertising lie in its ability to make ads enjoyable and liked, fostering positive ad and brand attitudes.

Similar effects are expected when considering creative ads in terms of their relevance. Relevant ads are both appropriate to a brand’s strategy and, more importantly, useful and pertinent to consumers. Relevance is commonly achieved by ad personalization that often results in more persuasive power to change or reinforce attitudes, intentions, and behaviors (Aguirre et al. 2015; Mukherjee, Smith, and Turri 2018; Tong, Luo and Xu 2020). This effect is due to a reduction in consumers’ search costs and cognitive effort as the creators of ads have preemptively identified and met consumer needs or preferences (Montgomery and Smith 2009).

Thus, increased perceptions of creativity – whether in terms of origination or relevance – is expected to make ads more successful. For parsimony, these two aspects were collapsed into a single proposition:

**Proposition 5:** Greater perceived creativity of an advertisement increases persuasiveness.

While greater ad creativity tends to have positive effects, in some cases it can also activate awareness that an ad is false. The availability of more sophisticated manipulation tools has enabled the advertiser to construct highly creative content that blurs the line between fact and fiction (e.g., a Cheerios cereal ad shot in outer space), or invent entirely false realities (e.g., a centaur, with a human head and torso, and the lower body of a horse). Naturally, forms of creativity that stray toward fiction or mythology, are likely to cause consumers to realize an ad is false. Even though research demonstrates that personalized (e.g., Bleier and Eisenbeiss 2015) and targeted ads (e.g., Goldfarb and Tucker 2011; Iyer, Soberman, and Villas-Boas 2005; Yan et al. 2009) elicit more positive responses, highly personalized ads are expected to similarly cue consumers into recognizing an ad is fake. If this is cued by personalization efforts enabled by covert customer surveillance (Martin and Murphy 2017; Plangger and Montecchi 2020), falsity awareness can activate consumers’ privacy concerns (Awad and Krishnan 2006; Okazaki et al. 2020) or feelings of vulnerability (Aguirre et al. 2015) that may lead to negative reactant outcomes (e.g., negative attitudes or word of mouth, complaints, switching intentions). Based on both of these underlying mechanisms, it is hypothesized:

**Proposition 6:** Greater perceived creativity of an advertisement increases awareness of ad falsity.

**Effect of Increased Awareness of Ad Falsity**

Awareness of ad falsity encompasses three types of falsity: product-related claims, product-unrelated claims, and presented
reality. First, false *product-related claims* can be presented either textually (e.g., “this product will help you lose weight”) or visually (e.g., by depicting weight loss that is unlikely or atypical). Such false claims are understandably of concern for marketers and important public policy research has investigated ways to detect and mitigate such deception (e.g., Hastak and Mazis 2011; Hoy and Stankey 1993; Petty and Andrews 2008). A commonly used remedy is a disclosure (e.g., “results not typical”), since alerting consumers to the deception depicted in the ad enables consumers to “correct” for the deception (FTC 2020).

Second, even if an ad’s claims about a product or service are technically all true, the ad can contain other *product-unrelated claims* or pieces of information that are untrue (Petty and Andrews 2008). These types of claims generally fall outside of the definition of false advertising, as it is assumed that they can be easily detected by consumers or have minimal effects on marketplace behavior. For instance, an ad showing Napoleon meeting President Trump would obviously be false because time travel is not possible.

Third, an ad’s *presented reality* can be false if it presents a version of the world that differs from the actuality or, even if the world is accurately depicted, the version is created through artificial means. In advertising, this can occur in a multitude of different ways: green screens can be used to transport actors to different places; stunt doubles can make it look like a star has performed an incredible feat; Photoshop can produce perfect images of models; and CGI can be used to augment reality with animation. While such practices are generally legal provided that an ad’s claims about a product or service are accurate, a grey area is emerging concerning depictions of hyperrealism, especially in the beauty context. Due to body image concerns, several countries have begun regulating or mandating disclosures for advertisements produced with the aid of Photoshop (Boreau and Nepomuceno 2019; Bower 2001).

In this paper, all of the ways that consumers can view an ad as false are grouped under the term *ad falsity* – whether they relate to products, claims or presented reality. There are several reasons for consumers’ typically negative reactions when they are made aware of an ad’s falsity. First, consumers are known be sensitive to false information in advertisements out of a desire to self-protect or cope with persuasion attempts (Friestad and Wright 1994). Consumers generally distrust advertising and sales agents since their goals are often in conflict with those of their customers (e.g., Campbell 1995; Campbell and Kirmani 2000; Main, Dahl, and Darke 2007; Wei, Fischer, and Main 2008). Therefore, the recognition that a communication is meant to be persuasive causes consumers to view it more skeptically and question the veracity of its claims (e.g., Darke and Ritchie 2007).

Furthermore, consumers generally prefer authentic products and experiences to those that are regarded as fake (Beverland, Lindgreen, and Vink 2008; Maren, Weigand, and Reinartz 2019; Stern 1994). This effect occurs because consumers often use consumption items to construct their own identities (Beverland and Farrelly 2010; Morhart et al. 2015). Authenticity is shown to be particularly important in areas such as brand extensions (Spiggle, Nguyen, and Caravella 2012) and social media (Audrezet, De Kerviler, and Moulard 2018; Cornwall 2019). When consumers perceive ads as inauthentic or fake, they are less likely to accept the advertised offer (Spielmann and Orth 2020), leading us to expect similar effects to occur among consumers in response to the perceived falsity of an ad’s creative construction.
Finally, research shows that consumers make inferences about the firm’s financial investment in its advertising (Ducoffe 1995, 1996). Consumers generally respond to ads that are perceived as more expensive, either in terms of their creativity (Lange, Rosengren, and Blom 2016; Modig, Dahlén, and Colliander 2014) or placement (Dahlén, Granlund, and Grenros 2009). Consumers compare their perception of an ad’s cost with the cost placed on them in terms of time or effort. If they perceive an ad to place a relatively high cost on them relative to the advertiser’s costs (e.g., as is the case with spam email), then consumers react negatively (Campbell 1995). The same mechanism is expected to apply in the case of ads that are perceived to be false.

In summary, all of the research on persuasion knowledge, authenticity, and advertisement value suggests that the greater the consumer’s awareness that an ad contains falsities, the less will be its effectiveness. Stated formally:

**Proposition 7:** Greater awareness of ad falsity decreases persuasion outcomes.

**Effect of Perceived Creativity on Ad Falsity**

Ads that are seen as false are generally likely to elicit a negative response, however, this is not true in all cases. Consumers may be willing to condone manipulated ads featuring high levels of creativity based on the underlying value that such creativity provides. For instance, manipulated ads may be more entertaining, exciting, or engaging than non-synthetic ads created with the same budget. Likewise, the increased relevance that manipulated ads can afford consumers can result in time savings and better inspire consumers than less relevant ads. Since consumers are known to trade off different perceived benefits of advertising against their costs (Campbell 1995), consumers are expected to also tolerate manipulated advertising when it provides greater value. Formally:

**Proposition 8:** Greater perceived creativity of an advertisement decreases the negative effect of awareness of ad falsity on persuasion outcomes.

**A RESEARCH AGENDA FOR MANIPULATED ADVERTISING**

This paper develops a comprehensive framework for understanding how consumers respond to advertising that is manipulated to varying degrees. Hence, several contributions are made to the existing body of research on this topic. First, the framework ties together and organizes disparate research streams that are relevant to understanding responses to manipulated advertising. Although the authors considered a comprehensive range of concepts and literatures, they recognize the framework is a starting point for further theorizing on this topic. The goal is to catalyze research on this topic in the hope that future research will further refine and improve the framework.

Second, since the framework spans both traditional and emerging forms of manipulated advertising, it makes it easier for researchers to start examining new forms of manipulated advertising such as deepfakes and GANs. This is because one of the challenges of researching any new topic is to identify existing theory and research that can provide a foundation for future studies. By combining traditional and emerging forms of manipulated advertising within a single framework, it is clearer how research on more traditional ad manipulation might facilitate an understanding of the newer forms of manipulation.

Third, the paper suggests a series of testable propositions. Since they draw on the same literature and logic underpinning the framework, these propositions facilitate
research by providing researchers with “ready-to-go” relationships to test. This enables empirical researchers to focus on the tasks of operationalizing constructs and designing studies.

Fourth, in addition to the immediately testable propositions, manipulated advertising presents a host of further questions related to its implications for advertisers, brands, and regulators. As ad production technologies continue to evolve, the need for greater insight into the potentially serious issues as well as the opportunities offered by technological innovations, is likely to intensify. To assist interested researchers with ideas for future studies, the next three sections provide a brief overview of these ideas arranged according to broad research areas: ad falsity, consumer response, and originality (see Table 2).

**Table 2: Avenues for Future Research**

<table>
<thead>
<tr>
<th>Area</th>
<th>Suggested Questions for Future Research</th>
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| Ad Falsity            | • What types of content manipulation are more effective at driving verisimilitude or creativity?  
                         • What factors are key to detect highly sophisticated manipulated ads? Why?  
                         • In what circumstances would highly creative synthetic ads not lead to an awareness of ad falsity? What reputation or relationship benefits might brands accrue by intentionally activating persuasion knowledge?  
                         • What is the role of brand-customer relationships in determining both the awareness of ad falsity? What are the consequences of ad falsity on these relationships?  
                         • What is the role of regulators in protecting consumers from persuasive and sophisticated manipulated content? Or to what extent would an ad have to have a harmful intent or misleading message to fall under such scrutiny?  
                         • When would highly original synthetic ads break the verisimilitude illusion? How, or in what circumstances, can ad designers mitigate this by toning down synthetic ad’s originality?  
                         • How would the provision of quality or provenance information (e.g., seals, QR codes) in synthetic ads diminish the negative effects of ad falsity? What are the implications for the verisimilitude of ads with this added information?  
                         • How might brand reputation impact awareness of ad falsity? How can brands produce and deliver synthetic ads to customers that is regarded as not false?  
                         • To what extent will consumers be motivated to check the authenticity of questionable content they view? Even if they learn a damaging ad was not created by the brand, to what extent will consumers be able to “un-see” it?  
                         • How can technology help consumers identify the validity (or falsity) of a message and its source? What are intellectual property risks?  
                         • To what extent will outcomes change if disclosure labels are used that alerting consumers to synthetic ads?   |
| Consumer Response     | • How can advertisers best create personalized, relevant synthetic ads while preventing consumers from reacting negatively? When will these ads lose their effectiveness?  

- How will consumers permit their personal data to be used for producing synthetic ads? If they are reluctant, how can they be persuaded?
- How can brands safely enable consumers to create their own personalized synthetic ads to strengthen the effectiveness of intended messages?
- How can the positive effects of advertising personalization be balanced against possible reactance to such personalization with synthetic ads?
- How does synthetic ads in ads that mirror the viewer (i.e., in terms of ethnicity, gender, language, etc.) enhance how the ad is received (i.e., persuasiveness, believability, or informativeness perceptions)?
- To what extent will consumers be affected by synthetic ads that are individualized based on personal data? How does the overtness or covertness of the data collection matter?
- What is the role of self-censorship practices on social platforms in order to restrict harvesting of consumer data to limit the relevance of synthetic ads?
- How might synthetic ads affect the perceived level of ad investment? What tactics can be used to create synthetic ads that still appear premium?
- If synthetic ads become the advertising norm, how would non-synthetic ads highlight or attract the attention of consumers in a beneficial way?
- To what extent might highly sophisticated ads cause consumers ignore advertising in general as an information source?
- What is the role of non-synthetic ads (i.e., analog and digital content) in advertising if synthetic ads become the norm?
- To what extent can personalized synthetic ads reverse (or reinforce) stereotypes common to areas such as beauty, gender, and professionalism?
- How will consumers react to synthetic ads in ads that bring back dead celebrities or transport them to threatening locations (e.g., insurance ad that shows their home in danger)? What are the ethical or cognitive boundaries?
- What types of consumers responses are likely when all ads are highly tailored to each individual consumer?

**Antecedents and Consequences of Ad Falsity**

Due to the rise of native advertising and product placement, there has been much research on ad recognition (e.g., Campbell and Evans 2018; Wojdynski and Evans 2016). The framework suggests a similar need for research into what triggers consumers to recognize ad falsity. Ad falsity has been deliberately placed in the center of the framework (Figure 3). A major component of how consumers respond to manipulated ads depends on whether or not they recognize that an ad has been manipulated at all. For this reason, the framework purposefully deconstructs the competing effects produced by synthetic ads: the positive effects of verisimilitude and creativity, as well as the negative effect of ad falsity, enabling them to be combined in a multitude of different ways. While a high level of perceived verisimilitude can impede awareness of ad falsity, a high level of perceived creativity can both trigger ad falsity and dampen its ensuing effects. Research is needed to better understand each of these effects (P4, P6, and P8 in the framework, respectively) for several reasons.

Obtaining a better insight into how awareness of ad falsity affects consumer behavior has become of primary importance. Existing research on persuasion knowledge...
(Friestad and Wright 1994) suggests that consumers may react differently to an ad if they are aware that it has been manipulated. This effect may be more pronounced for certain products, such as those promoted by the beauty industry (Boreau and Nepomuceno 2019; Bower 2001). However, in other contexts, such as clothing or customized products, consumers may be very receptive to synthetic ads. It may also be the case that some consumers simply are not concerned about ad falsity, similar to those who are unconcerned about their privacy (e.g., Hoy and Milne 2010). Identifying and exploring factors that most affect consumer response to ad falsity will help to identify those areas where regulation may be needed to protect consumers. More broadly, it might be interesting to investigate whether there is a strict correlation between persuasion knowledge and ad falsity, or whether they can be independently triggered.

In addition to understanding the effects of ad falsity, research is also needed to determine how awareness of ad falsity is triggered. To date, due to their poor verisimilitude, it has been relatively easy to detect ads that have been manipulated. However, advertising is now entering an era where verisimilitude may be so high that consumers cannot detect ads based on their quality alone. While the framework broadly identifies verisimilitude and creativity as affecting awareness of ad falsity, there are likely nuances in both factors. Similar in some ways to the effect of narrative transportation (Escalas 2004; van Laer et al. 2014), some types of content manipulation may distract or obscure consumer recognition of an ad’s falsity. In other cases, such as ads that are deeply personalized, ad falsity may be jarringly obvious. There is a strong need to better understand falsity awareness. Research could also explore the topic of manipulated advertising literacy; since this is similar to persuasion knowledge (Friestad and Wright 1994), consumers are likely to become better able to detect and perhaps tolerate manipulated ads as their experience with them grows.

The Calculus Behind Response to Manipulated Ads
With ever more sophisticated manipulation of ads, consumers are faced with what the authors term an advertising calculus in deciding how they will react to them. Advertising calculus refers to the evaluation of trade-offs between an ads’ benefits (e.g., personalization) and its costs (e.g., privacy). This is similar to the concept of privacy calculus, where the benefits and costs of information disclosure are cognitively weighed (Culnan and Amstrong 1999; Kowatsch, Wentzel, and Fleisch 2015), as well as research on advertising value (Campbell 1995; Ducoffe 1996) where consumers’ reaction to an ad is based on the balance of their own and advertisers’ benefits and investments. With manipulated ads, consumers are likely to undertake a similar calculus, weighing both the negative and positive effects of personalized manipulated ads.

On one hand, consumers might value more sophisticated manipulated ads’ individualized relevance to their wants and preferences, possibly leading to stronger customer relationships (Vesanen 2007) or even a shift in preferences (Summers, Smith, and Reczdek 2016). While research demonstrates that personalized (e.g., Bleier and Eisenbeiss 2015) and targeted (e.g., Goldfarb and Tucker 2011; Iyer, Soberman, and Villas-Boas 2005) ads increase the effectiveness of advertising, it is unclear exactly how much incremental benefit more sophisticated manipulated ads can deliver, and whether consumers will appreciate such personalization. Likewise, consumers may find that highly sophisticated manipulated ads are more entertaining or exciting to watch.
than other ads. Determining how much more effective these ads are – and why – are two issues that would benefit from research.

However, if consumers perceive that the more sophisticated manipulated ads are fake, this may result in perceptions of inauthenticity (e.g., Becker, Wiegand, and Reinartz 2019) or low advertiser investment (Campbell 1995; Modig, Dahlen, and Collander 2014) that decrease their persuasiveness. Acquiring insight on these effects is likely to be useful for practitioners and may also expose various underlying processes that influence the effectiveness of highly manipulated ads. Personalized manipulated ads may be costly in terms of triggering reactance (Brinson, Eastin, and Cicchirillo 2018) and privacy concerns (Martin and Murphy 2017; Okazaki et al. 2020) or feelings of vulnerability (Agurrie et al. 2015; Hill and Sharma 2020; Martin, Borah, and Palmatier 2017). These negative reactions may be magnified if it is revealed that a consumer’s personal information has been subject to covert forms of customer surveillance (Agurrie et al. 2015; Plangger and Montecchi 2020). Future research could explore ways to personalize manipulated ads that minimize potential risks while maximizing the benefits that these ads offer.

**Originality in a World of Manipulated Advertising**

While ad manipulation techniques in many ways democratize creativity in advertising, ironically, they may also make creativity more challenging to accomplish, especially as this relates to originality which to date is the best-documented dimension of creativity (Rosengren et al. 2020). Originality is also associated with novelty, divergence, unexpectedness, and newness (Kim, Han, and Yoon 2010; Koslow, Sasser, and Riordan 2003; Sheinin, Varki, and Ashley 2012; Smith et al. 2007). If more sophisticated manipulation techniques make it possible for advertisers to set their ads in exotic locales or have actors perform gravity-defying stunts, then more and more ads may utilize such tactics, rendering them commonplace or dull. This may force advertisers to rethink the techniques and tactics that drive originality. At the macro level, a new era of extreme creativity may prompt investigation into how consumers respond to and process ads in a hyper-creative landscape. Will consumers find value in creative ads: those with increased originality and relevance? Or will highly creative ads accelerate wear-out and overwhelm consumers’ processing? Research on the effect of an increase in contextual creativity is likely to produce valuable insights.

In addition to posing challenges associated with creativity, an increase in more sophisticated manipulated advertising is likely to make it more difficult for advertisers to convey a high ad spend. Consumers are known to react differently to ads that appear to be more expensive to make (Campbell 1995; Ducoffé 1996; Modig, Dahlen, and Collander 2014). If more sophisticated manipulated ads enable any advertiser to create ads that perfectly mimic the style and film techniques of more expensive ads, how will advertisers convey that much effort (and financial investment) went into ad creation? The answer to this question may have important implications for brands, especially those in the luxury category, that often use advertising spend and quality to drive differentiation (Pentina, Guilloux, and Micu 2018). More sophisticated forms of advertising manipulation might level the playing field among advertisers, providing an additional catalyst for the already strong inroads that many of the new direct-to-consumer (D2C) brands are making against incumbents (Schlesinger, Higgins, and Roseman 2020). What new signals of expense can advertisers utilize to prevent such an outcome? Or will...
other mechanisms of differentiation emerge instead? In sum, increasingly sophisticated manipulated advertising renews calls (West, Koslow, and Kilgour 2018) for further research on ad creativity.

CONCLUSION
Manipulated advertising is becoming an increasingly prevalent phenomenon in advertising. Techniques such as deepfakes and GANs leverage AI and machine learning to generate convincing, true-to-life, synthetic ads that can be nearly impossible for consumers to detect. Through a comprehensive review, this article consolidates the insights from various and often previously unlinked literature to propose a conceptual framework for understanding the impact of ad manipulation on consumers. This framework maps how more advanced manipulation can lead to perceptions of verisimilitude and creativity that affect awareness of ad falsity and an ad’s persuasiveness. The framework applies to any means of ad manipulation—analogue, digital, and synthetic—but is of particular interest as more advanced forms of synthetic advertising are generated and personal data is used to further individualize ads for consumers. Research areas for further exploration are also identified. Given that ad manipulation is becoming increasingly sophisticated, this paper provides insight into both the potential challenges and opportunities it poses for advertising researchers and practitioners.

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