

Unbranded vs. Branded Direct-to-Consumer Advertising (DTCA)
Using Social Media Influencers: Examining the Effects of Message Type and Disclosure

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Abstract

Social media influencer (SMI) advertising is a recent tactic conducted by pharmaceutical companies to promote a disease or a prescription drug directly to consumers. This study examined the effects of unbranded and branded direct-to-consumer (DTC) SMI advertising along with the effects of sponsorship disclosure on consumers' attitude toward the ad and behavioral intentions. The Persuasion Knowledge Model was used as theoretical framework to understand the underlying mechanism of these effects. An online experiment with a 2 (unbranded vs. branded) x 2 (disclosure absence vs. presence) between-subject factorial design was conducted. Results showed that the unbranded message led to a higher attitude toward the ad than the branded version, and this effect was mediated by persuasion knowledge activation. Similarly, the absence of disclosure resulted in a higher attitude toward the ad than the presence of disclosure. A significant interaction effect between message type and disclosure on persuasion knowledge activation was also found. Theoretical and practical implications were discussed.

Table of Content

Acknowledgment.....	i
Abstract.....	ii
Table of Content	iii
List of Tables	vi
List of Figures.....	viii
CHAPTER 1. INTRODUCTION.....	1
Research Purpose.....	4
Thesis Chapters and Organization.....	4
CHAPTER 2. LITERATURE REVIEW.....	6
Different Types of DTCA: Distinction of Branded vs. Unbranded DTCA	6
Regulations on Branded and Unbranded DTCA	9
Previous Research on Differential Effects of Branded vs. Unbranded DTCA	12
Previous Research on the Effects of SMI's Sponsored Content	16
Persuasion Knowledge Model as the Theoretical Framework	17
Research on Sponsorship Disclosure and Persuasion Knowledge Activation	22
Consequences of Persuasion Knowledge Activation	27
CHAPTER 3. HYPOTHESES	32

Effects of SMI’s Sponsored Unbranded vs. Branded DTCA on Consumers’ Attitude Toward the Ad and Behavioral Intentions.....	32
Effects of SMI’s Sponsored Unbranded vs. Branded DTCA on Persuasion Knowledge Activation and Its Associated Outcomes.....	33
Effects of Sponsorship Disclosure on Persuasion Knowledge Activation.....	34
Sponsorship Disclosure and Consequences of Persuasion Knowledge Activation.....	35
CHAPTER 4. METHOD.....	37
Experimental Design	37
Stimuli	37
SMI Selection	39
Participants	39
Procedure.....	40
Measurements.....	41
CHAPTER 5. DATA ANALYSIS AND RESULTS.....	44
Participant Characteristics	44
SMI Likability Check.....	44
Randomization Check	45
Analysis 1: Unbranded vs. Branded Message Conditions with the Same SMI Photo	47

Analysis 2: Unbranded vs. Branded Message Conditions with the Product Image ..	50
Hypotheses Testing Results: Analysis 1	53
Hypotheses Testing Results: Analysis 2.....	68
CHAPTER 6. SUMMARY AND DISCUSSION	81
Summary of Findings	81
Theoretical Contributions	85
Practical Implications	88
Limitations and Suggestions for Future Research.....	89
References	92
APPENDIX A. EXPERIMENTAL STIMULI.....	107
APPENDIX B. QUESTIONNAIRE	110

List of Tables

Table 1. Likability Check of Female and Male SMI.....	45
Table 2. Randomization Check of Demographic Variables in Analysis 1 (Unbranded vs. Branded with the Same SMI's Photo).....	48
Table 3. Randomization Check of Potential Confounding Variables in Analysis 1 (Unbranded vs. Branded with the Same SMI's Photo).....	49
Table 4. Randomization Check of Demographic Variables in Analysis 2 (Unbranded vs. Branded with Product Image).....	51
Table 5. Randomization Check of Potential Confounding Variables in Analysis 2 (Unbranded vs. Branded with Product Image).....	52
Table 6. Descriptive Statistics of Attitude Toward the Ad in Analysis 1 (N = 207).....	53
Table 7. Regression Results Testing the Effects of Message Type and Disclosure on Attitude Toward the Ad, Controlling for Prior Exposure to Social Media Posts on Hyperhidrosis in Analysis 1	55
Table 8. Descriptive Statistics of Intention to Seek More Information on Hyperhidrosis in Analysis 1 (N = 207)	56
Table 9. Regression Results Testing the Effects of Message Type and Disclosure on Intention to Seek More Information on Hyperhidrosis, Controlling for Prior Exposure to Social Media Posts on Hyperhidrosis in Analysis 1.....	57
Table 10. Descriptive Statistics of Intention to See a Doctor in Analysis 1 (N = 207).....	58

Table 11. Regression Results Testing the Effects of Message Type and Disclosure on Intention to See a Doctor, Controlling for Prior Exposure to Social Media Posts on Hyperhidrosis in Analysis 1	59
Table 12. Two-Way ANOVA Results of Effects of Message Type and Disclosure on Persuasion Knowledge Activation in Analysis 1	60
Table 13. Descriptive Statistics of Attitude Toward the Ad in Analysis 2 (N = 195).....	68
Table 14. Regression Results Testing the Effects of Message Type and Disclosure on Attitude Toward the Ad, Controlling for Prior Exposure to Social Media Posts on Hyperhidrosis Treatment in Analysis 2	69
Table 15. Descriptive Statistics of Intention to Seek More Information on Hyperhidrosis in Analysis 2 (N = 195)	70
Table 16. Regression Results Testing the Effects of Message Type and Disclosure on Intention to Seek More Information on Hyperhidrosis, Controlling for Hyperhidrosis Symptom Experience and Prior Exposure to Social Media Posts on Hyperhidrosis in Analysis 2	71
Table 17. Descriptive Statistics of Intention to See a Doctor in Analysis 2 (N = 195).....	72
Table 18. Regression Results Testing the Effects of Message Type and Disclosure on Intention to See a Doctor, Controlling for Hyperhidrosis Symptom Experience and Prior Exposure to Social Media Posts on Hyperhidrosis in Analysis 2	73
Table 19. Two-Way ANOVA Results of Effects of Message Type and Disclosure on Persuasion Knowledge Activation in Analysis 2	74
Table 20. Summary of Results from Analysis 1 and Analysis 2.....	83

List of Figures

Figure 1. Interaction Plot Between Message Type and Disclosure in Analysis 1	61
Figure 2. Mediation Effects of Message type and PKA on Attitude Toward the Ad (Figure 2a), Intention to Seek More Information on Hyperhidrosis (Figure 2b), and Intention to See a Doctor (Figure 2c) in Analysis 1	63
Figure 3. Mediation Effect of Sponsorship Disclosure and PKA on Attitude Toward the Ad (Figure 3a), Intention to Seek More Information on Hyperhidrosis (Figure 3b), and Intention to See a Doctor (Figure 3c) in Analysis 1	66
Figure 4. Interaction Plot Between Message Type and Disclosure in Analysis 2.....	75
Figure 5. Mediation Effects of Message Type and PKA on Attitude Toward the Ad (Figure 5a), Intention to Seek More Information on Hyperhidrosis (Figure 5b), and Intention to See a Doctor (Figure 5c) in Analysis 2	77
Figure 6. Mediation Effects of Disclosure and PKA on Attitude Toward the Ad (Figure 6a), Intention to Seek More Information on Hyperhidrosis (Figure 6b), and Intention to See a Doctor (Figure 6c) in Analysis 2	79

CHAPTER 1. INTRODUCTION

With more than 50% of American adults looking for health information online and around one-third using social media to discuss health topics (Pew Research Center, 2013; PwC Health Research Institute, 2012), it is unsurprising that pharmaceutical companies started to use social media to promote their prescription drugs. Aside from conducting direct-to-consumer advertising (DTCA) through company-sponsored posts, pharmaceutical companies have collaborated with social media influencers (SMIs) to reach consumers. Since there is no regulation on who can promote a prescription drug in social media, pharmaceutical companies can work with a variety of SMI, including patients and health care professionals (Sheridan, 2018; Thomas, 2019).

Social media influencers (SMIs) are individuals who exhibit opinion leadership in one or several niches through self-branding and their online activities (De Veirman, Cauberghe, & Hudders, 2017; Dhanesh & Duthler, 2019; Khamis, Ang, & Welling, 2017). These individuals attract attention and draw a large number of followers (De Veirman et al., 2017; Khamis et al., 2017). Research has shown that SMIs can induce their followers to perform favorable behaviors, such as trusting their branded posts, increasing brand awareness (Lou & Yuan, 2019), generating more positive attitudes (Lu, Chang, & Chang, 2014), sharing content through electronic word-of-mouth (eWOM), and increasing purchase intention (Boerman, Willemsen, & Van Der Aa, 2017). Thus, collaborating with SMIs can offer an effective way for pharmaceutical companies to promote their drugs to their target consumers and increase sales than traditional advertising.

In addition to collaborating with SMIs to directly promote their drugs, recently pharmaceutical companies started to partner with SMIs who suffer from a particular disease in unbranded social media campaigns to generate awareness about such disease and encourage consumers to talk to their doctor. An example of this practice is Celgene's collaboration with Louise Roe, a journalist and SMI who shares her experiences living with psoriasis with her followers and drives them to Celgene's website to learn more about the disease and its treatment (Thomas, 2019). Another example is Galderma's campaign with Lex Gillies, a beauty blogger who posted pictures of her rosacea, a disease that causes facial skin redness in adults over 30 and is often misdiagnosed, to encourage others to share the challenges they face with this disease and seek treatment (PR Newswire, 2019; Rainer, Kang, & Chien, 2017). Yet another is Abbvie's sponsored partnership with Julianne Hough, a champion of *Dancing with the Stars*, using the hashtag #SpeakENDO, to raise awareness on and encourage women to talk to their doctor about endometriosis, an illness that affects 10% of women in reproductive age for which AbbVie markets the only approved treatment (Armstrong, 2011; PR Newswire, 2018). These sponsored social media posts gained significant attention of the followers and generated thousands of "likes" and numerous comments (Zuppello, 2019). Given these positive responses, we can expect this trend of using SMIs to raise disease awareness through unbranded social media campaigns to continue as more pharmaceutical companies trying to realize the benefits of collaborating with SMIs.

While increased disease awareness may lead to positive outcomes, such as early diagnosis which can improve consumers' health and reduce health care costs (Leifer,

2003; Richards, 2009), the practice of disease awareness advertising has drawn a number of criticism. Moynihan, Heath, and Henry (2002) asserted that disease awareness advertising may lead to disease mongering, defined as “extending the boundaries of treatable illness to expand markets for new products” (p. 886). Disease mongering can include medicalizing ordinary processes of life (e.g., baldness, menopause) as health problems, portraying mild symptoms as serious diseases (e.g., irritable bowel syndrome), or describing personal issues as medical ones (e.g., unhappiness, social phobia), which may result in overdiagnosis, overtreatment, and increased health care costs (Mintzes, 2006; Moynihan et al., 2002; Wolinsky, 2005). Others have argued that some of the social media sponsored posts may mislead consumers by giving the impression that these diseases can be easily treated with medications as in the case of Louise Roe who shows pictures of her clear skin in Instagram despite having psoriasis (Zuppello, 2019). Furthermore, there has been a lack of transparency in disclosing the promotional nature of the posts, which has caused ethical concerns (Thomas, 2019).

As a regulatory remedy to the rising concerns about sponsored SMI advertising, current FTC regulations require SMIs to include an appropriate, conspicuously displayed disclosure when posting sponsored content, such as sponsored disease awareness messages, to help consumers recognize the true nature of such content (FTC, 2017). While a growing number of recent studies have examined the effects of sponsorship disclosure in SMI advertising, demonstrating that disclosure led to increased ad recognition, which then affected consumers’ attitude toward the brand (Boerman et al., 2017; De Veirman & Hudders, 2019; Dhanesh & Duthler, 2019; Evans, Phua, Lim, &

Jun, 2017), most have focused primarily on branded content, which involves a product or brand name. Research that evaluates the effects of disclosure in unbranded SMI advertising, such as sponsored disease awareness campaigns, and their associated outcomes is currently lacking.

Research Purpose

Given the potentially negative outcomes of sponsored disease awareness advertising posted in social media, researchers and regulatory agencies need to better understand the effects of such content on consumers and the effectiveness of sponsorship disclosure in alerting consumers about the promotional nature of such content. This study seeks to evaluate the differential effects of SMI's unbranded and branded sponsored DTCA posts on consumers' attitudes toward the message and intention to seek more information and ask a doctor about the advertised disease. In addition, this study aims to investigate how the presence (vs. absence) of disclosure in sponsored unbranded vs. branded DTCA affects the effects of such message in influencing consumers' attitudes toward the message and information seeking intention. To understand the underlying mechanism, this study will use the Persuasion Knowledge Model (PKM) (Friestad & Wright, 1994) as the main theoretical framework to analyze consumers' persuasion knowledge activation and its outcomes after viewing each type of SMI's sponsored DTCA with or without disclosure.

Thesis Chapters and Organization

This thesis is structured into six chapters. Following the introduction chapter, Chapter 2 presents background information on different types of DTCA and regulations,

conducts a thorough review of research literature on SMI advertising and sponsorship disclosure, and discusses PKM as the study's main theoretical framework. Chapter 3 presents hypotheses developed based on the previous chapter's literature review and relevant theoretical and/or empirical justifications. Chapter 4 describes study methods, followed by Chapter 5 presenting the study results. Chapter 6 contains a summary of key findings, syntheses and discussions of study findings, as well as the implications, limitations, and suggestions for future research.

CHAPTER 2. LITERATURE REVIEW

Different Types of DTCA: Distinction of Branded vs. Unbranded DTCA

In the United States, pharmaceutical companies can advertise their prescription drugs directly to consumers through three types of DTCA: product-claim, reminder, and help-seeking DTCA (FDA, 2015). Product-claim DTCA is used to promote a prescription drug that can treat a particular disease and provides information about the benefits and risks of the advertised drug (FDA, 2015). Product-claim DTCA needs to include a brand name and a generic name (the name of the active ingredient of the drug) and is intended to drive consumers to request the advertised drug from their physician. Since product-claim DTCA contains a brand name, it is also often called branded DTCA. Similar to product-claim DTCA, reminder DTCA contains a drug's brand name, but it does not include information about the disease, benefits, and risks of the advertised drug because it is meant to remind consumers who are already familiar with the advertised drug (FDA, 2015). Reminder DTCA will not be the focus of this study.

Unlike product-claim DTCA, help-seeking DTCA only contains information about a disease without any information about a drug or treatment that can be used to treat the disease (FDA, 2015). Help-seeking DTCA is often used to raise consumers' awareness of a particular disease and encourage them to seek more information or see their physician if they experience symptoms of the advertised disease (DeLorme, Huh, Reid, & An, 2011; FDA, 2015). Since help-seeking DTCA does not mention any brand name of a prescription drug, it is often referred to as unbranded DTCA.

DTCA began to proliferate in the late 1980s when pharmaceutical companies promoted their prescription drugs mainly through print advertisements (Ventola, 2011). Print was the dominant medium for DTCA as it provided ample space that allows pharmaceutical companies to satisfy the FDA requirement of providing fair balance (information on the benefits and risks of a drug) and brief summary (information that includes all risks described in the drug's label) (Donohue, 2006; Ventola, 2011). In the late 1990s, the FDA relaxed the brief summary requirement and allowed companies to mention only the major risks of the drugs as long as the ads provide means to access the complete product information such as a website address or toll-free number (Ventola, 2011). This led to the increased number of DTCA using broadcast media such as television in which the required major risks information can be included within a reasonable amount of ad time (Ventola, 2011).

More recently, pharmaceutical companies began to use the internet to promote their drugs to consumers as access to the internet and the number of consumers looking online for health information continue to increase. Pharmaceutical companies now use electronic DTCA (eDTCA) as part of their promotional tactics, in which they place branded and unbranded DTCA on various internet-based platforms including websites and social media (Mackey, Cuomo, & Liang, 2015; Tyrawski & DeAndrea, 2015). Data collected from sources such as IMS Health and Kantar Media showed that advertising expenditures in the eDTCA category grew by more than 108% from 2005 to 2009, while expenditures in traditional DTCA such as television declined by about 13% during the same period (Mackey et al., 2015). Analysis of the number of promotional materials

submitted to the FDA reveals similar findings in which submissions for internet-based promotional materials for consumers continued to grow from 2011 to 2014 (Sullivan, Aikin, Chung-Davies, & Wade, 2016).

One particular internet-based platform used for eDTCA that has drawn significant amount of attention from researchers is social media in which companies can post content and directly interact with their consumers. Tyrawski and DeAndrea (2015) conducted two content analyses to evaluate social media activities of the top 15 pharmaceutical companies and the top 20 drugs with the highest US promotional spend in 2013. The results showed that 14 pharmaceutical companies had at least one social media account and the commonly used platforms included Twitter, Facebook, YouTube and LinkedIn. The most common form of eDTCA found on company-run Facebook, Twitter, and YouTube accounts was unbranded DTCA, which comprised 40% of the social media posts, while branded DTCA posts were rare (1.6% of the posts). The results also suggest that consumers interacted with posts on company-run social media sites by “liking,” “sharing,” or “commenting” on the posts (Tyrawski & DeAndrea, 2015). Most of consumers’ comments found on these company-run social media sites were positive and supportive of the company and its products (Tyrawski & DeAndrea, 2015).

In another content analysis reviewing pharmaceutical companies’ use of social media, Huhmann and Limbu (2016) revealed similar findings in which the majority of eDTCA posts created by pharmaceutical companies were unbranded DTCA about a particular disease or condition and only 8.1% were branded DTCA. Most of the unbranded DTCA posts appeared on Facebook, Twitter, and YouTube, while the branded

DTCA posts were more commonly found on company-sponsored blogs. This analysis also found that most of these DTCA posts adhered to the FDA requirements and guidelines (Huhmann & Limbu, 2016).

The above findings suggest that pharmaceutical companies continue to use DTCA as part of their promotional tools and have begun exploring the use of social media as a platform to directly reach and interact with consumers. As the media used to promote prescription drugs directly to consumers continue to evolve, the regulations on such promotion also evolve. The following section will review regulations on branded and unbranded DTCA, especially regulations concerning the use of interactive promotional media such as social media.

Regulations on Branded and Unbranded DTCA

The FDA has authority over prescription drugs labeling and advertising, and thus, it oversees and monitors branded DTCA, which contain prescription drug information. Unbranded DTCA that is properly done should not contain any information about prescription drugs or specific treatments, and therefore, the FDA does not oversee this type of ad. Instead, unbranded DTCA is regulated by the FTC which requires the ads to follow the truth-in-advertising rules, similar to other types of advertising (FDA, 2015; FTC, n.a.).

The FDA gained authority over branded DTCA when Congress passed the Kefauver-Harris Amendments to the Federal Food, Drug and Cosmetic Act in 1962 (Donohue, 2006). In general, the FDA requires branded DTCA to include the drug's name, at least one FDA-approved use of the drug, and the most significant risk of the

drug (FDA, 2015). Specifically, the 21 CFR §202.1 (n.a.) requires branded DTCA to include information on side effects, contraindications, and effectiveness of the drug in brief summary. If the ads contain information on how to access the complete product labeling, then they may include only the major side effects and contraindication of the drug (21 CFR §202.1, n.a.).

Similar to the FTC requirement for other types of ads, the FDA requires information presented in branded DTCA to be true and not misleading (FDA, 2015). The 21 CFR §202.1(e)(5) requires branded DTCA to present true and not misleading statements on the drug's side effects, contraindications, or effectiveness, and to present information of drug's effectiveness and its side effects and contraindications in a fair balance manner, which means the information needs to be presented in a comparable scope, depth, or detail. Furthermore, the 21CFR §202.1(e)(6) prohibits branded DTCA from overstating or exaggerating the drug's effectiveness or minimizing its side effects and safety profile than what has been demonstrated through substantial evidence or experience.

In recent years, pharmaceutical companies' interests in promoting their prescription drugs using social media have been increasing as consumers' use of social media has been steadily risen. Thus, the FDA released several draft guidelines to advise pharmaceutical companies on the appropriate use of social media for prescription drug promotion. The FDA draft guidance on interactive promotional media states that pharmaceutical companies are responsible for promotional content or communications placed on "sites that are owned, controlled, created, influenced, or operated by, or on

behalf of the firm” (FDA, 2014a), which include company-sponsored social networking sites such as a company’s Facebook page or an online forum within a brand’s website.

The FDA draft guidance on interactive promotional media also regulates content created by pharmaceutical companies that are posted on a third-party site. The guidance states that companies are responsible for promotional content on a third-party site if they exert control or influence on the third-party site. For example, a company that creates a firm-initiated post on social media such as a tweet or an Instagram post is responsible for the content of such post and needs to submit this post to the FDA. Companies are also responsible for content generated by their employees or agents who act on behalf of the company. This includes content generated by a SMI who creates sponsored posts to promote a prescription drug on behalf of the company (FDA, 2014a).

Additionally, since consumers can create content about prescription drugs on social media independently without the influence or collaboration of pharmaceutical companies, the FDA issued a draft guidance concerning third-party user-generated content posted on social media. The guidance mentions that, in general, pharmaceutical companies are “not responsible for a third-party user-generated content about their products when the content is truly independent of the firm (e.g., is not produced by, or on behalf of, or prompted by the firm in any particular way)” (FDA, 2014c, p. 4). The guidance advises companies that own or operate a platform to which consumers can post their content, such as a website or a blog, to provide “an overarching clear and conspicuous statement that the firm did not create or control the user-generated content” (FDA, 2014c, p. 5). This guidance does not apply when a company exerts control or

becomes involved with a third-party generated content such as when a company solicits a particular response from consumers. In this situation, the company can be held responsible for the user-generated response even if the response is posted on a third-party site (FDA, 2014c).

In the context of a company's or brand's posting of messages about prescription drugs on social media, the FDA requires pharmaceutical companies to ensure that the benefit and risk information of a prescription drug promoted via social media remains accurate and non-misleading, especially since some social media platforms such as Twitter have limited number of characters for each post (FDA, 2014b). The FDA mandates that companies include accurate and non-misleading benefit statements along with appropriate risk information, and recommends companies to provide a mechanism such as a hyperlink that consumers can use to get more information about the advertised drug's risks on their social media posts (FDA, 2014b). All of this information needs to fit within the post, even when there is character limitation on the social media platform (FDA, 2014b). These requirements also apply to SMI-generated sponsored posts of branded DTCA.

Previous Research on Differential Effects of Branded vs. Unbranded DTCA

Previous research investigating DTCA effects has been primarily focused on branded DTCA as the most common form of drug advertising. Researchers and public policy makers are also concerned that branded DTCA could lead to increased unnecessary prescriptions, increased use of more expensive drugs for diseases that can be treated with generic drugs or other nonpharmaceutical interventions, and increased

overall health care costs (Lexchin & Mintzes, 2002; Wilkes, 2000). These concerns are further elevated by findings from several studies which suggest that the content of branded DTCA often overemphasized its benefits and at times violated the FDA regulations (Kaphingst, Dejong, Rudd, & Daltroy, 2004; Lexchin & Mintzes, 2002).

Researchers have primarily used surveys (e.g., Bell, Kravitz, and Wilkes (1999), Deshpande, Menon, Perri III, and Zinkhan (2004) or experiments (Callaghan, Laraway, Snyckerski, & McGee, 2013) to evaluate the effects of branded DTCA among general consumers, consumers who use prescription drugs, or consumers who suffer from a disease that can be treated with the advertised drugs. These studies found that exposure to branded DTCA increased consumers' awareness and knowledge about the advertised drug (Bell et al., 1999; Callaghan et al., 2013; Wilkes, 2000), induced consumers to seek more information about the advertised drug (Chesnes & Jin, 2019; Deshpande et al., 2004), increased consumers' intention to see a physician (Huh & Becker, 2005), and increased intention to request for the advertised drug (Gilbody, Wilson, & Watt, 2005; Wilkes, 2000). Studies also found that consumers were not particularly skeptical toward branded DTCA (Delorme, Huh, & Reid, 2009) and generally considered branded DTCA as a useful tool in health care decision-making process (Deshpande et al., 2004).

Contrary to the large number of studies investigating the effects of branded DTCA, only a few studies have evaluated the effects of unbranded DTCA. A consumer survey conducted by Banerjee and Dash (2018) shows that the majority of consumers found unbranded DTCA to be believable and informative. Hall, Jones, and Iverson (2011) conducted an experiment among women older than 45 years old in Australia using

an unbranded DTCA with varying sponsors: pharmaceutical companies, non-profit, and both (co-sponsor). This study found that the majority of women who were exposed to the unbranded DTCA on osteopenia and fibromyalgia indicated that they would seek more information and talk to physician about the advertised disease and its treatment regardless of sponsorship type (Hall et al., 2011). To evaluate whether unbranded DTCA is associated with increase in the number of prescriptions written for a drug for the advertised disease, Jong, Stricker, and Sturkenboom (2004) examined the number of nail fungal prescriptions before and after an unbranded DTCA campaign on toe nail fungal infection in the Netherlands. These researchers found a significant increase in the number of nail fungal prescriptions after the campaign started (Jong et al., 2004). Taken together, these studies suggest that, despite the absence of any brand name, unbranded DTCA can influence consumers' intention to seek treatment and potentially increase the prescription of drugs indicated for the advertised disease.

Several studies compared the effects of branded vs. unbranded DTCA on consumers' attitudes toward the ad and behavioral intention (Hall & Jones, 2008; Lee-Wingate & Xie, 2010; Mendonca, McCaffrey, Banahan, Bentley, & Yang, 2011; Rollins, King, Zinkhan, & Perri, 2011; Rollins, King, Zinkhan, & Petri, 2010). Two studies that evaluated the effects of branded vs. unbranded DTCA on consumers' attitudes toward the ad found mixed results. In an experiment, Rollins et al. (2011) compared a set of branded and unbranded DTCA for an allergy medication and another set of DTCA for an oral contraceptive. These researchers revealed that consumers exhibited similarly favorable attitude toward branded and unbranded DTCA in both allergy and oral contraceptive

groups (Rollins et al., 2011). However, in another experiment evaluating branded and unbranded DTCA for Alzheimer's disease, Hall and Jones (2008) found that consumers had a more favorable attitude toward the unbranded version of the ad than the branded version.

To evaluate the differential effects of branded vs. unbranded DTCA on consumers' behavioral intention, Mendonca et al. (2011) performed a two-group posttest-only experiment with a sample of adult asthma patients who were presented with either a branded DTCA of an asthma drug or an unbranded DTCA about asthma. They found that patients who viewed the unbranded DTCA were more likely to look for information about a potential new treatment for asthma from their physician or family (Mendonca et al., 2011). In another study, Rollins et al. (2010) found that consumers who viewed the unbranded DTCA were more likely to discuss the disease and the corresponding treatment with their physician. Lee-Wingate and Xie (2010) also reported similar finding in their study: consumers who viewed the unbranded DTCA for migraine had higher intention to seek treatment than those who viewed the branded DTCA.

Taken together, previous studies show that unbranded DTCA in traditional media can be more effective than branded DTCA in increasing consumers' information seeking intention, and this differential effect occurs across various diseases. With the increased use of social media, pharmaceutical companies have found new ways to reach and interact with their consumers. Therefore, it is important for researchers and public policy makers to understand the effects of branded vs. unbranded DTCA posted in social media, particularly when such posts are created by a SMI in collaboration with a pharmaceutical

company. The next section will review extant research investigating the effects of using SMIs to post sponsored content on social media.

Previous Research on the Effects of SMI's Sponsored Content

Although no study involving SMI's sponsored posts in the context of DTCA has been conducted, studies examining sponsored SMI advertising in non-pharmaceutical contexts show that the use of SMIs can help attract consumers' attention and shape their attitudes and behaviors. In an online survey of social media users who follow at least one SMI, Lou and Yuan (2019) found that the information and entertainment values of SMI's post positively affected followers' trust in the SMI's posts, which then led to awareness and intention to purchase the brand mentioned in the SMI's posts. In an experiment comparing SMI-generated and firm-generated ad on YouTube, Hansen, Lee, and Lee (2014) found that SMI-generated ad resulted in higher source credibility than firm-generated ad. Consumers also had a more favorable attitude toward the SMI-generated ad than toward firm-generated ad (Hansen et al., 2014). Furthermore, one study suggests that the use of a SMI may result in a more favorable outcome than the use of a traditional celebrity. In the context of Instagram's SMI and traditional celebrities, Jin, Muqaddam, and Ryu (2019) found that consumers had a more favorable attitude toward the brand when the Instagram post was created by a SMI than by a traditional celebrity.

The extant research on the effects of using a SMI to advertise products on social media suggests that using a SMI can improve ad outcomes as SMIs can influence consumers' attitude toward the ad and purchase intention. Although we can expect similar effects to occur in the context of pharmaceutical advertising with a SMI, no

research has been conducted to fully examine such effects and their underlying mechanism. Specifically, the differential effects of unbranded and branded DTCA posted by a SMI on consumers' attitude toward the ad and behavioral intentions warrant further investigation.

Combining the findings from the DTCA and SMI lines of research, we can infer that SMI's sponsored unbranded DTCA would likely generate a more favorable attitude toward the ad and higher behavioral intention than SMI's sponsored branded DTCA. Although prior studies evaluating branded and unbranded DTCA were conducted in the context of traditional media, the FDA requires SMI's sponsored branded DTCA to include benefit and risk information similar to traditional branded DTCA. Thus, we believe that the types of media will not influence the differential effects between unbranded and branded DTCA. These differential effects can be explained by the persuasion knowledge model (PKM). The following section will discuss PKM and review research on the relationships between the presence of product name, sponsorship disclosure and persuasion knowledge activation.

Persuasion Knowledge Model as the Theoretical Framework

The essence of Persuasion Knowledge Model (PKM) concerns with the interaction between a persuasion agent (e.g., advertiser) and a persuasion target (e.g., consumers). In this interaction, the persuasion agent launches a persuasion attempt, which can come in various formats (e.g., ads, salesperson) and occur either as a one-time event or multiple events over a period of time. When exposed to a persuasion attempt, the

persuasion target will respond using some sort of coping mechanism to maintain control of the outcome(s) of the persuasion episode (Friestad & Wright, 1994).

The persuasion target's coping mechanism is built on three knowledge structures: persuasion knowledge, agent knowledge, and topic knowledge. Persuasion knowledge consists of beliefs about features, goals, effectiveness, and appropriateness of persuasion tactics used by a persuasion agent. Agent knowledge includes beliefs about features, competencies, and goals of a persuasion agent (e.g., advertiser), while topic knowledge includes beliefs about the topic of the persuasion attempt (e.g., product category). These knowledge structures are accumulated over time and continue to be refined through consumers' own experience, information from their social environment and the media, and observation of the persuasion agent's behaviors. As consumers' knowledge structures develop, their use of coping mechanism will also evolve, resulting in the changes on the effects of a persuasion attempt (Friestad & Wright, 1994).

Among the aforementioned knowledge structures, the persuasion knowledge has received the most attention from researchers. As Friestad and Wright (1994) suggests in their PKM framework, consumers can use their persuasion knowledge to recognize, evaluate, and remember a persuasion attempt such as an ad. In addition, consumers can also use their persuasion knowledge to infer the true motives (e.g., persuasive intent) of the agent, which then can help consumers choose the most appropriate tactic to cope with these persuasion attempts (Campbell & Kirmani, 2000; Friestad & Wright, 1994).

The activation of consumer's persuasion knowledge upon encountering different types of ads has been studied across various media, including TV (e.g., (Gillespie &

Joireman, 2016; Van Reijmersdal, Boerman, Buijzen, & Rozendaal, 2017), print (Attaran, Notarantonio, & Quigley, 2015), and social media (e.g., (Johnson, Potocki, & Veldhuis, 2019; Kim & Song, 2018; Mayrhofer, Matthes, Einwiller, & Naderer, 2020). In the context of product placement on TV shows, Gillespie and Joireman (2016) found that when viewing product placement with high level of intrusiveness, consumers became aware of the persuasive intent of this product placement, which suggests that consumers' persuasion knowledge was activated. Consumers' awareness of persuasive intent then led to low favorability of this particular advertising tactic (Gillespie & Joireman, 2016). Van Reijmersdal et al. (2017) found similar results when studying adolescents who watched a TV show that contained product placement with disclosure. These researchers found that product placement with disclosure increased adolescent's understanding of persuasive intent of the product placement (Van Reijmersdal et al., 2017).

In another study involving print medium, Attaran et al. (2015) evaluated the effects of advertisement, advertorial, and editorial on consumers' perceived selling intent and purchase intention. These researchers revealed that consumers who viewed advertisement and advertorial inferred higher selling intent, which suggests higher activation of persuasion knowledge, than those who viewed editorial content. Consumers who viewed advertisement also had lower purchase intention than those who viewed advertorial and editorial (Attaran et al., 2015).

Studies evaluating persuasion knowledge activation in social media context produced similar results to those evaluating persuasion knowledge activation in traditional media. A recent study conducted by Mayrhofer et al. (2020) in the context of

Facebook showed that ad with disclosure and brand-generated post resulted in higher persuasion knowledge activation than user-generated post. This persuasion knowledge activation then led to a negative affective reaction which then led to low purchase intention (Mayrhofer et al., 2020). In the context of Instagram, Johnson et al. (2019) found similar results in which brand-generated post resulted in higher ad recognition than user-generated post about the same brand. Lastly, in the context of Twitter, Kim and Song (2018) also found that sponsored user-generated content resulted in higher inference of manipulative intent than organic (unpaid) user-generated content, which then led to a lower attitude toward the brand and lower click intention. Taken together, these studies suggest that persuasion attempts in the form of an ad triggered the activation of consumers' persuasion knowledge, which could lead to less favorable ad outcomes.

Building on the concept of persuasion knowledge activation, Evans and Park (2015) proposed a conceptual model that integrates the PKM and schema theory. Evans and Park (2015) suggest that schema instantiation could serve as the antecedent of persuasion knowledge activation. When consumers are exposed to an ad, they will look for the variable constraints of the ad, such as a brand name or promotional claims, to instantiate the advertising schema, which is a generic concept of advertising stored in consumer's memory. After locating these variable constraints, consumers will process them and decide which schematic representation best fits these stimuli. If consumers decide that the advertising schema is the one that fits the best (consumers instantiate the advertising schema), their persuasion knowledge will be activated (Evans & Park, 2015).

In the context of SMI's sponsored branded vs. unbranded DTCA posts, we can expect that the presence of a brand name in a SMI's branded DTCA can serve as a variable constraint that directs consumers to instantiate the advertising schema and activate their persuasion knowledge. However, SMI's unbranded DTCA does not contain any brand name and, therefore, will be less likely to cause the advertising schema instantiation and activation of persuasion knowledge than the branded version. Additionally, since sponsored posts typically contain a disclosure to alert consumers on the promotional nature of the posts, the presence of disclosure can also serve as another variable constraint that leads to advertising schema instantiation and activation of persuasion knowledge.

The presence of a disclosure on a sponsored post can also make the ulterior motive of such post become more prominent to consumers, which then triggers the activation of persuasion knowledge. Campbell and Kirmani (2000) suggests that consumers' use of persuasion knowledge is influenced by the accessibility of the agent's ulterior motive in which a highly accessible ulterior motive will be more likely to activate consumers' persuasion knowledge. Furthermore, the accessibility of ulterior motive is influenced by the strength of association between the motive and the agent (Campbell & Kirmani, 2000). For example, a salesperson is widely known as someone who sells a product or service and highly associated with persuasion motive. Therefore, when consumers encounter a salesperson, they have high accessibility to the salesperson's ulterior motive and their persuasion knowledge will be more easily activated.

Contrary to a salesperson, SMIs engage in self-branding activities by creating stories about themselves and providing relevant information to their followers (Khamis et al., 2017), and therefore, are typically not associated with an ulterior motive. When consumers (the followers) interact with the SMI, the SMI's ulterior motive will be less accessible and consumers' persuasion knowledge is less likely to be activated. When SMI collaborate with an advertiser to promote a product using a sponsored post, the SMI and their sponsored posts now contain an ulterior motive that consumers cannot easily recognize, which leave consumers defenseless as their persuasion knowledge would not likely be activated.

The presence of a disclosure will strengthen the association between the SMI and the persuasion motive. This stronger association will make the SMI's persuasion motive more accessible to the consumers and consumers' persuasion knowledge will be more likely to be activated. When this occurs, consumers will be better equipped to cope with the persuasion attempt as they can recognize the ulterior motives of the posts and take the motives into consideration to control the outcome(s) of the persuasion episode. Previous research evaluating the relationships between sponsorship disclosure and persuasion knowledge activation will be reviewed in the following section.

Research on Sponsorship Disclosure and Persuasion Knowledge Activation

The use of SMIs to promote a particular product or service through sponsored posts has raised some concern among public policy makers. The concern stemmed from the fact that this practice can make ads which contain persuasive motives look similar to organic user-generated content which do not contain such motives, and therefore, may

deceive consumers (Cain, 2011). Consumers who usually become skeptical when they see an ad because they perceive it as a persuasion attempt may not be suspicious of a sponsored post created by a SMI and fail to infer the true intention of such post (Cain, 2011; Friestad & Wright, 1994; Rotfeld, 2008). In addition, there is a concern of exploitation because sponsored posts can be considered as a form of manipulation in which they manipulate the relationships of good nature between the SMI and their followers (Cain, 2011; Martin & Smith, 2008).

To address these concerns, the FTC has mandated that endorsements such as those performed by SMIs in their sponsored posts follow the principle of truth-in-advertising and required that “endorsements must be honest and not misleading” (FTC, 2017). SMIs should not promote a product that they have never tried or claim that they like a product when they don’t (FTC, 2017). SMIs also should not make any claims about a product that cannot be supported by evidence from the manufacturer of the product (FTC, 2017). If the SMIs receive compensation to promote certain products, then they need to inform their followers about the promotional nature of their posts using appropriate disclosure (FTC, 2017). This disclosure will allow the followers to recognize the true nature of the post and take it into their consideration.

The FTC does not have specific requirements on what to include in a disclosure, but recommends that the disclosure uses language that can be easily understood by layperson, such as “Sponsored” or “Ad” (FTC, 2017). In addition, the disclosure needs to be placed in a location that can be easily noticed and does not require clicking through multiple pages to find (FTC, 2017). When a disclosure is easy to find and easy to

understand, consumers can be more equipped to cope with the sponsored posts as a form of promotional content.

In order to examine the efficacy of the FTC's sponsorship disclosure guidelines, researchers have studied the effects of sponsorship disclosure on ad recognition and persuasion knowledge activation across various media, including print (Byrne, Guillory, Mathios, Avery, & Hart, 2012), TV (Boerman, Reijmersdal, & Neijens, 2012; Boerman, van Reijmersdal, & Neijens, 2015), and social media (Boerman et al., 2017; De Veirman & Hudders, 2019; Van Reijmersdal et al., 2016). Studies involving sponsorship disclosure in social media have been conducted across various platforms such as Facebook (Boerman et al., 2017), Instagram (De Veirman & Hudders, 2019; Evans et al., 2017), Twitter (Hayes, Golan, Britt, & Applequist, 2019), YouTube (Stubb, Nyström, & Colliander, 2019), and blogs (De Jans, Cauberghe, & Hudders, 2018; Van Reijmersdal et al., 2016).

The aforementioned studies that examined the effects of disclosure on persuasion knowledge activation in the context of social media have primarily used experiments in which consumers were exposed to social media posts promoting a particular brand with or without disclosure (e.g., Boerman et al., 2017). In general, these studies found that consumers who viewed a social media post with a disclosure had a higher level of persuasion knowledge activation than those who viewed the same post without disclosure (e.g., De Veirman & Hudders, 2019; Van Reijmersdal et al., 2016). This result seems to be consistent across different product types and social media platforms (Boerman et al., 2017; De Veirman & Hudders, 2019; Evans et al., 2017; Van Reijmersdal et al., 2016).

In the context of sponsored blogs, Van Reijmersdal et al. (2016) compared a blog post of a branded cooking mix with a disclosure stating that this post was paid by the cooking mix brand and the same post without the disclosure statement. These researchers found that blog post with disclosure generated higher persuasion knowledge activation than the same post without disclosure (Van Reijmersdal et al., 2016). In the context of Facebook, Boerman et al. (2017) found similar results when evaluating a fictitious Facebook ad of a coffee brand posted in the newsfeed with or without disclosure (“Sponsored”). These researchers revealed that Facebook ad with disclosure generated higher persuasion knowledge activation than the same ad without disclosure (Boerman et al., 2017).

To evaluate the effects of different types of disclosure, De Veirman and Hudders (2019) examined Instagram posts of energy bars created by a fictitious SMI that contained either a material compensation disclosure, a financial compensation disclosure, a non-sponsored disclosure (a statement that explained that the post was not sponsored), or no disclosure. The results showed that consumers who viewed the post with material compensation disclosure and those who viewed the post with financial compensation disclosure had higher ad recognition, which suggests higher activation of persuasion knowledge, than those who viewed the post with disclosure of non-sponsorship or those who viewed the post without any disclosure. There was no significant difference in ad recognition between consumers who viewed the post with material disclosure and those who viewed the post with financial disclosure (De Veirman & Hudders, 2019).

Lastly, Evans et al. (2017) evaluated the effects of different disclosure language (“Paid Ad,” “Sponsored,” “SP,” or no disclosure) on ad recognition using Instagram posts promoting a coffee brand. The findings showed that the posts with disclosure resulted in higher ad recognition than the post without disclosure. In addition, “Paid Ad” generated higher ad recognition than “Sponsored” or “SP,” but there was no difference in ad recognition between “Sponsored” and “SP” (Evans et al., 2017).

Taken together, the extant research on the effects of disclosure in the context of social media suggests that adding a disclosure on sponsored posts led to higher activation of consumers’ persuasion knowledge than no disclosure, and this differential effect was not influenced by disclosure language or social media platforms (De Veirman & Hudders, 2019; Evans et al., 2017). Despite the numerous studies investigating the effects of disclosure on persuasion knowledge activation in various types of social media posts, no study has been conducted in the context of DTCA in social media. Furthermore, previous studies examined the effects of disclosure only in the context of branded content (social media posts promoting a brand), while no study has evaluated the effects of disclosure on social media posts involving sponsored content without a brand (unbranded posts) such as unbranded DTCA posts promoting a disease. This study aimed to address this gap in the literature by evaluating the effects of disclosure on sponsored branded and unbranded DTCA posts in social media.

In the context of this study, we can expect that sponsored DTCA posts with disclosure will increase persuasion knowledge activation than the same posts without disclosure. As suggested by Friestad and Wright (1994), activation of persuasion

knowledge could cause consumers to scrutinize the persuasion attempts, which then influences the outcomes of the persuasion episode. The following section will review research evaluating the consequences of persuasion knowledge activation.

Consequences of Persuasion Knowledge Activation

When consumers perceive a persuasion agent's tactic as a persuasion attempt, their persuasion knowledge is activated and a process called "change of meaning" will occur (Friestad & Wright, 1994, p. 13). During the "change of meaning" process, consumers' perception of the agent's tactic shifts from attaching no meaning to the tactic to perceiving the tactic as a deliberate action created by the agent to persuade them. This can lead consumers to detach themselves from engaging in the topic presented in the persuasion attempt and shift their attention to evaluating the tactic instead (Friestad & Wright, 1994).

The "change of meaning" process can cause consumers to try to infer the agent's reasons for performing the persuasion tactic and evaluate the appropriateness and effectiveness of such tactic (Friestad & Wright, 1994). For example, consumers who see a perfect picture of a product on an ad may infer that the advertiser uses such picture to convince them that the product looks good when the product does not look as good in reality. The "change of meaning" can also make consumers evaluate the appropriateness and effectiveness of a particular persuasion tactic and use this evaluation to form their attitude toward the tactic and the agent. One potential outcome of this evaluation is an unfavorable attitude toward the message and the advertised product, particularly when

consumers perceive the agent's tactic to be unfair or off-putting (Friestad & Wright, 1994).

Studies evaluating consequences of persuasion knowledge activation in the context of social media have been conducted across different platforms, including Facebook (Boerman et al., 2017; Jung & Heo, 2019; Kim, Lee, & Lee, 2019; Mayrhofer et al., 2020), Instagram (Boerman, 2020; Evans et al., 2017), YouTube (Gobel, Meyer, Ramaseshan, & Bartsch, 2017) and blogs (De Jans et al., 2018; Van Reijmersdal et al., 2016). These studies primarily used experimental methods and triggered persuasion knowledge activation through the presence of disclosure (Boerman, 2020; Jung & Heo, 2019; Van Reijmersdal et al., 2016). The results revealed that activation of persuasion knowledge was associated with a less favorable attitude toward the ad (Gobel et al., 2017; Jung & Heo, 2019) and lower behavioral intentions, such as lower intention to click "like" or "share" the ad (Boerman et al., 2017; Kim et al., 2019) and lower purchase intention (De Jans et al., 2018; Van Reijmersdal et al., 2016).

To evaluate the effects of persuasion knowledge activation on consumers' attitude toward the ad, Jung and Heo (2019) conducted two experiments in which consumers were exposed to a Facebook native ad with or without disclosure. The results showed that consumers who recognized the ad as a form of advertisement, which suggests the activation of persuasion knowledge, had less favorable attitude toward the ad than those who did not recognize it as an ad (Jung & Heo, 2019). In a lab experiment involving YouTube videos promoting a beer brand, Gobel et al. (2017) found similar results. Consumers who viewed the YouTube video and received information about the

characteristics of a promotional video, which increased their persuasion knowledge activation, had a less favorable attitude toward the ad than those who did not receive such information (Gobel et al., 2017). Additionally, Hwang and Jeong (2016) conducted an experiment to examine the effects of disclosure on a sponsored blog post of a vacation destination and found that blog post with disclosure resulted in a lower attitude toward the message than blog post without disclosure.

Several studies have also examined the effects of persuasion knowledge activation on consumers' intention to engage in online behaviors such as "liking" or "sharing" the ad (Boerman, 2020; Boerman et al., 2017; Kim et al., 2019). In a lab experiment, Kim et al. (2019) evaluated the effects of Facebook brand pages on consumers' persuasion knowledge activation and subsequent intention to "like" the page. Consumers were shown Facebook brand pages with informative content or entertaining content and their persuasion knowledge activation and intention to "like" the page were measured (Kim et al., 2019). The results showed that consumers who viewed a Facebook brand page with entertaining content had a higher level of persuasion knowledge activation which then led to a lower intention to "like" the page (Kim et al., 2019).

In another experiment involving a Facebook ad, Boerman et al. (2017) exposed consumers to a Facebook ad with or without disclosure to trigger different levels of persuasion knowledge activation. These researchers found that consumers with a higher level of persuasion knowledge activation had lower intentions to "like," "share," and "comment" on the ad than those with a lower level of persuasion knowledge activation (Boerman et al., 2017). Boerman (2020) conducted a similar experiment in the context of

Instagram and found similar results in which consumers who recognized the Instagram post as an ad, which suggests higher activation of persuasion knowledge, had lower intentions to “share” and “comment” on the post than those who did not recognize the post as an ad.

Lastly, the effects of persuasion knowledge activation on purchase intention were examined by Van Reijmersdal et al. (2016) using two experiments. In these experiments, consumers were exposed to sponsored blog posts containing a cooking brand or a headphone brand presented with or without disclosure. The results showed that consumers who viewed the blog post with disclosure had a higher level of persuasion knowledge activation than those who viewed the post without disclosure, which then led to lower purchase intention (Van Reijmersdal et al., 2016).

Taken together, prior studies investigating the outcomes of persuasion knowledge activation suggest that a higher level of persuasion knowledge activation could lead to less favorable outcomes such as less favorable attitude toward the ad and lower behavioral intention. The presence of disclosure, which was commonly used to activate consumers’ persuasion knowledge, has been shown to have a direct (Hwang & Jeong, 2016) and an indirect effect on attitude toward the ad and behavioral intention, mediated by the activation of persuasion knowledge (e.g., Boerman et al., 2017; Jung & Heo, 2019). We can expect a similar phenomenon to occur in this study. Specifically, SMI’s sponsored DTCA with disclosure would likely result in a less favorable attitude toward the ad and lower behavioral intention than the same post without disclosure. These differential effects would likely be mediated by consumers’ persuasion knowledge

activation. The following chapter will summarize key findings relevant to the objectives of this study, leading to hypotheses generation.

CHAPTER 3. HYPOTHESES

Effects of SMI's Sponsored Unbranded vs. Branded DTCA on Consumers' Attitude Toward the Ad and Behavioral Intentions

As reviewed in the previous chapter, limited DTCA research literature suggests that unbranded DTCA would result in a more favorable attitude toward the ad and higher behavioral intentions than the branded version (Hall & Jones, 2008; Lee-Wingate & Xie, 2010; Mendonca et al., 2011; Rollins et al., 2010), as consumers tend to perceive the unbranded DTCA to be more informative with lower selling intent than the branded DTCA (Lee-Wingate & Xie, 2010). Research in the context of SMI reveals that sponsored posts created by a SMI tend to generate a more favorable attitude toward the ad and toward the brand than posts created by a company or a celebrity (Hansen et al., 2014; Jin & Muqaddam, 2019). Taken together, we can expect a similar phenomenon to occur when comparing SMI's sponsored unbranded and branded DTCA on social media. As the same FDA requirements apply to both traditional and social media DTCA, we do not expect the different media to change the relationships between DTCA types and ad outcomes, and, thus, the following hypothesis can be proposed:

H1: SMI's sponsored unbranded DTCA post will generate (a) a more favorable attitude toward the ad, (b) higher intention to seek more information about the advertised disease, and (c) higher intention to discuss the advertised disease with a physician than SMI's sponsored branded DTCA post.

Effects of SMI's Sponsored Unbranded vs. Branded DTCA on Persuasion

Knowledge Activation and Its Associated Outcomes

According to the PKM, exposure to ads can trigger the activation of consumers' persuasion knowledge (Friestad & Wright, 1994). This activation of persuasion knowledge can be induced by components of an ad, such as a product name and advertising claims, which direct consumers to instantiate the advertising schema (Evans & Park, 2015). Based on the PKM and related research findings reviewed in the previous chapter, we can expect that the presence of a product name in a SMI's sponsored branded DTCA post will make the post more likely to cause advertising schema instantiation and persuasion knowledge activation than the unbranded version which does not contain any product name. Thus, the following hypothesis is proposed:

H2: SMI's sponsored branded DTCA post will be more likely to activate consumers' persuasion knowledge than SMI's sponsored unbranded DTCA post.

When consumers' persuasion knowledge is activated, a "change of meaning" can occur, in which consumers detach themselves from the information presented on the ad and tend to focus more on the persuasive nature of the communication (Friestad & Wright, 1994). This can result in a less favorable attitude toward the ad and lower behavioral intention, as demonstrated in several previous PKM studies (Kirmani & Zhu, 2007; Van Reijmersdal, 2016). In the context of this study, based on the PKM and prior research, we can expect that consumers' persuasion knowledge activation resulting from exposure to a branded DTCA will induce a less favorable attitude toward the ad and

lower behavioral intention than exposure to an unbranded DTCA. Thus, we propose the following hypothesis:

H3: Consumers' persuasion knowledge activation will mediate the differential effects of SMI's sponsored unbranded vs. branded DTCA on their (a) attitude toward the ad, (b) intention to seek more information about the advertised disease, and (c) intention to discuss the advertised disease with a physician.

Effects of Sponsorship Disclosure on Persuasion Knowledge Activation

Prior research has found that the presence of sponsorship disclosure on social media posts created by a SMI tend to result in higher activation of persuasion knowledge and ad recognition than posts without disclosure (Boerman et al., 2017; De Veirman & Hudders, 2019; Evans et al., 2017; Van Reijmersdal et al., 2016). We expect a similar phenomenon will occur in the context of SMI's sponsored DTCA post and, therefore, the following hypothesis is proposed:

H4: SMI's sponsored DTCA post with disclosure will result in higher persuasion knowledge activation than the same post without disclosure.

The conceptual model of advertising schema instantiation and PKM suggests that consumers will be more likely to instantiate advertising schema and activate persuasion knowledge when they are exposed to ads with more variable constraints (e.g., a product name) than ads with less variable constraints (Evans & Park, 2015). Combining this model with the extant research on the effects of sponsorship disclosure, we can expect that SMI's sponsored branded DTCA post with disclosure will be more likely to lead consumers to instantiate advertising schema, resulting in the activation of persuasion

knowledge than SMI's sponsored unbranded DTCA post. Thus, the following hypothesis can be proposed:

H5: There will be an interaction effect between SMI's sponsored DTCA type and disclosure presence on persuasion knowledge activation.

Sponsorship Disclosure and Consequences of Persuasion Knowledge Activation

As discussed before, consumers may experience a "change of meaning" process upon persuasion knowledge activation resulting in lower attitudes toward the ad and lower behavioral intentions (Friestad & Wright, 1994; Kirmani & Zhu, 2007). In the context of sponsorship disclosure, research has shown that the presence of disclosure led to higher activation of persuasion knowledge, which then resulted in lower attitudes toward the ad (Hwang & Jeong, 2016; Van Reijmersdal et al., 2016) and lower behavioral intentions (Boerman et al., 2017; Van Reijmersdal et al., 2016). Based on the previous research, we expect that SMI's sponsored DTCA with disclosure will result in lower attitudes toward the ad and behavioral intentions than the same post without disclosure. We also expect that these effects will be mediated by persuasion knowledge activation. Therefore, the following hypotheses are proposed:

H6: SMI's sponsored DTCA post with disclosure will result in (a) a less favorable attitude toward the ad, (b) lower intention to seek more information about the advertised disease, and (c) lower intention to discuss the advertised disease with their physician than the same post without disclosure.

H7: The effect of disclosure of SMI's sponsored DTCA post on consumers' attitude toward the ad and behavioral intentions will be mediated by consumers' activation of persuasion knowledge.

CHAPTER 4. METHOD

Experimental Design

To test the aforementioned hypotheses, an online experiment was conducted using a 2 (sponsorship disclosure: with disclosure vs. no disclosure) x 2 (message type: unbranded SMI post with the SMI's photo but no product image vs. branded SMI post with the SMI's photo but no product image, or vs. branded SMI post with a product image) between-subject factorial design. Attitude toward the ad and behavioral intentions were measured as dependent variables. Persuasion knowledge activation was included as a mediator. This experiment was conducted in the context of Instagram post. Instagram was chosen as a social media platform because it is the platform most used by SMI (Statista, 2018) and it has been used by pharmaceutical companies for their SMI marketing campaigns (Thomas, 2019).

Stimuli

The experimental stimuli were developed using a disease called hyperhidrosis and a fictitious drug for hyperhidrosis. Hyperhidrosis is a type of skin disorder that causes excessive sweating beyond what is needed to maintain a normal body temperature (Doolittle, Walker, Mills, & Thurston, 2016). This disease affects around 15 million people in the United States with highest prevalence rate among adults 18-39 years old (Doolittle et al., 2016). This disease was chosen because sweating is common experience for everyone and, while excessive sweating is a medical condition, it is commonly misunderstood as a non-medical condition, which causes 51% of its sufferers to not discuss it with their physician (Doolittle et al., 2016). This fits the purpose of this study,

which aims to evaluate promotion of a disease that can be perceived as disease mongering. In addition, this disease and its treatment have not been heavily advertised in the media, which helped reduce the potential consumers' bias linked to their prior exposure, awareness, and attitude, and thus improve internal validity.

The stimuli were presented in the form of Instagram posts which were manipulated by message type and disclosure type. The unbranded version of the posts contained a picture of the SMI, a short paragraph that described the SMI experiencing excessive sweating and was diagnosed with hyperhidrosis, and a statement encouraging the audiences to ask their doctor about hyperhidrosis. Two branded versions of the post were developed: One contained a picture of a fictitious drug to treat hyperhidrosis and the other contained the same SMI picture used in the unbranded version. These two versions of branded post were similar to SMI's posts promoting a product in the real-world and thus, can help ensure ecological validity. Both of these branded posts contained a short paragraph describing the SMI experience with excessive sweating and being diagnosed with hyperhidrosis (similar to that in the unbranded version), a statement encouraging the audiences to see their doctor and ask about the fictitious drug, and brief summary statements of the indication and risks of the fictitious drug as required by the FDA. The fictitious drug's picture and safety information were modeled after a real product indicated for hyperhidrosis.

The disclosure version of the Instagram posts included a hashtag #Sponsored at the beginning of the posts. This hashtag was chosen because prior studies have shown that the word "Sponsored" led to a higher ad recognition than more vague words such as

“SP” or “Presented by [sponsor]” (Evans et al., 2017; Wojdyski & Evans, 2016). In addition, the use of #Sponsored is recommended by the FTC (FTC, 2017) and commonly used in Instagram. The experimental stimuli are presented in Appendix A.

SMI Selection

Studies evaluating the effects of a SMI have used either a real (Boerman, 2020; Hayes et al., 2019) or a fictitious SMI (De Veirman et al., 2017; De Veirman & Hudders, 2019; Van Reijmersdal et al., 2016). Using a fictitious SMI has been considered as a means to achieve higher internal validity, as suggested by De Veirman and Hudders (2019) and Boerman (2020), although using a real SMI may allow better measurement of parasocial interaction between the audience and the SMI. Since this study does not concern with parasocial interaction between the SMI and the followers, this study used a fictitious SMI to ensure higher internal validity.

Since the gender of the fictitious SMI would likely influence participants' perception on the likelihood of having the same disease as the one experienced by the SMI, this study used a fictitious male SMI for male participants and a fictitious female SMI for female participants. The likability level of each fictitious SMI was measured during the pilot phase to identify any significant likability differences between the male and female SMI. *Likability* (Cronbach's $\alpha = .94$) was measured using 4-item, 7-point semantic differential scales with adjective pairs of “cold/warm,” “unlikable/likable,” “insincere/sincere,” and “unfriendly/friendly,” adapted from Claudiu, Forehand, and Deshpandé (2003).

Participants

Participants for this study were recruited via Amazon MTurk and consisted of U.S. adults who used Instagram at least once in the past six months to ensure familiarity with the platform's format. Participants associated with pharmaceutical companies, advertising agencies, or market research companies were excluded. Participants were paid \$1.50 for their time.

Procedure

This study was presented to participants as a study to evaluate social media posts. Upon providing consent, participants who met the screening criteria were randomized into one of the six conditions and were shown a screen with an instruction to imagine that they were scrolling through their Instagram feed and saw a post from someone (SMI) that they followed. Then, participants were shown one of the six Instagram posts which they could view for as long as needed. Male participants were presented with the male version of the posts and female participants with the female version.

After the exposure to the experimental stimulus, participants were asked a series of questions that measured their attitude toward the ad, behavioral intentions, and persuasion knowledge activation. Participants were, then, asked if they remembered seeing a disclosure on the Instagram post and those with incorrect answer were removed from the full analysis. After answering these questions, participants in the unbranded and branded posts with the SMI photo groups were asked about the SMI's likability, which was measured using the same scale used in the pilot study. Additionally, as participants' frequency of social media use can influence their perception of the post (Cho, Li, Shen, & Cannon, 2019), we asked participants how often they used Instagram.

Furthermore, participants' perceived health status and prescription drug use have been shown to influence the effects of DTCA (Huh & Becker, 2005; Lee, King, & Reid, 2015), and thus, participants were asked to provide this information. Participants' prior experience with excessive sweating, prior exposure to social media posts on hyperhidrosis and its treatment, prior discussion on hyperhidrosis with their physician, and demographic information (age, sex, race, income, education) were also collected.

Measurements

This study adopted previously established measurements used in prior studies, but some of the wordings of the measurements were modified to fit the context of this study.

Attitude toward the ad (Cronbach's $\alpha = .94$) was operationalized as "predisposition to respond in a favorable or unfavorable manner to a particular advertising stimulus" (MacKenzie, Lutz, & Belch, 1986, p. 130). Attitude toward the ad was measured using 5-item, 7-point semantic differential scales of "bad/good," "dislike/like," "useless/useful," "uninformative/informative," and "unpleasant/pleasant," adopted from Claudiu et al. (2003). *Behavioral intention* was measured using two questions on 7-point scales: (1) "How likely will you be to seek more information about hyperhidrosis?" (2) "How likely will you be to see a doctor to discuss hyperhidrosis?" (1 = Very unlikely, 7 = Very likely). *Disclosure recognition* was measured by asking participants whether they saw a sponsorship disclosure (#Sponsored) in the post (0 = No, 1 = Yes).

Persuasion knowledge activation (Cronbach's $\alpha = .86$) was measured using 3-item, 7-point Likert scale measurement adapted from Van Reijmersdal et al. (2016). The

items ask participants to what extent they thought “the Instagram post is not advertising,” “the Instagram post is commercial,” and “the Instagram post contains advertising” (1 = Strongly disagree, 7 = Strongly agree). *Perceived persuasive intent* (Cronbach’s $\alpha = .92$) was measured using 4-item, 7-point Likert scale: “The aim of this Instagram post is to sell products,” “The aim of this Instagram post is to stimulate the sales of products,” “The aim of this Instagram post is to influence your opinion,” and “The aim of this Instagram post is to make people like certain products” (1 = Strongly disagree, 7 = Strongly agree), adapted from Rozendaal, Buijzen, and Valkenburg (2010). Persuasion knowledge activation and perceived persuasive intent were then combined to form an aggregated persuasion knowledge activation measure (Cronbach’s $\alpha = .94$).

Frequency of Instagram use was measured using one question from Boerman (2020): “How often do you use Instagram?” (1 = Yearly, 2 = Monthly, 3 = Weekly, 4 = Daily). *Perceived health status* was measured on a 7-point semantic differential scale of “How would you describe your overall health: extremely unhealthy/extremely healthy.” Participants were asked whether they are currently using any prescription drugs, whether they have experienced any excessive sweating, and whether they have heard about hyperhidrosis prior to this study. *Prior exposure to social media posts on hyperhidrosis and its treatment* was measured using two questions: “Have you seen social media posts on hyperhidrosis?” and “Have you seen social media posts on a treatment for hyperhidrosis?” (1 = Yes, 2 = No, 3 = Unsure). *Prior discussion on hyperhidrosis with physician* was measured using one question: “Have you ever discussed hyperhidrosis

with your doctor?" (1 = Yes, 2 = No, 3 = Unsure). The questionnaire can be found in Appendix B.

CHAPTER 5. DATA ANALYSIS AND RESULTS

Participant Characteristics

A total of 409 participants met the screening criteria and completed the questionnaire. Of these, 110 participants were removed from the full analyses due to attention check failure (6) or manipulation check failure (104). The remaining 299 participants had an average age of 36.52 years ($SD = 9.58$) with a range from 22 to 72 years old. Participants were slightly skewed toward male (59.20%), with the majority of participants identified as White (72.82%), followed by Black/African American (14.44%). Participants had a median average household income of \$50,000 - \$74,999 and a median education level of bachelor's degree. Majority of participants (59.87%) used Instagram daily.

SMI Likability Check

Participants were randomized into the unbranded group who viewed the unbranded version of the stimuli with a SMI's photo, the branded group who viewed the branded version with the same SMI's photo used in the unbranded version, and the branded group who viewed the branded version with a product image. In the first two groups, male participants were shown stimuli with a photo of a male SMI and female participants were shown stimuli with a photo of a female SMI. Potential differences in likability between the male and female SMI in each group were assessed using t-tests. Results showed that there were no significant differences in likability scores between the male and female SMI in all of the stimuli groups (Table 1), and thus, data from male and female participants in these groups were combined for data analysis.

Table 1*Likability Check of Female and Male SMI*

	Likability (mean)	
	Female SMI	Male SMI
U-N	5.96	6.06
U-D	5.49	5.46
BS-N	5.62	5.34
BS-D	5.16	5.06

Note: U-N=Unbranded SMI's photo with No disclosure, U-D=Unbranded SMI's photo with Disclosure, BS-N=Branded SMI's photo with No disclosure, BS-D=Branded SMI's photo with Disclosure.

U-N: $t(51) = -.39, p = .70$; U-D: $t(48) = .08, p = .94$; BS-N: $t(51) = .75, p = .46$; BS-D: $t(49) = .26, p = .80$.

Randomization Check

Since this study used two types of branded SMI post (branded SMI post with the SMI's photo but no product image and branded SMI post with a product image), two sets of analyses were performed to compare the effects of the unbranded SMI post with the effects of each type of the branded SMI posts. Analysis 1 compared the unbranded SMI post with the SMI's photo but no product image and the branded SMI post with the same SMI's photo, while Analysis 2 compared the unbranded SMI post with the SMI's photo but no product image and the branded SMI post with a product image.

Prior to both sets of analyses, randomization checks were conducted to make sure successful randomization and to examine any potential confounding variables. A between-group comparison for age was performed using one-way ANOVA, while randomization check for sex, race, income, and education were performed using Chi-

square tests. Before the Chi-square tests, the race variable was recoded to collapse categories with cell counts smaller than 5 into “White” and “Non-White.” For income, responses of income “less than \$25,000” and “\$25,000 - \$49,999” were combined into “\$49,999 and below” and responses of income of “\$75,000 - \$99,999” and “\$100,000 and above” were combined into “\$75,000 and above.” For education, responses of “high school degree or less,” “associate degree,” and “some college but no degree” were combined into “associate degree and below.”

Additional randomization checks were also performed on the potential confounding variables of frequency of Instagram use, perceived health, prescription drug use, hyperhidrosis symptom experience, hyperhidrosis awareness, prior exposure to social media posts on hyperhidrosis, prior exposure to social media posts on hyperhidrosis treatment, and prior discussion of hyperhidrosis with a doctor. For the frequency of Instagram use, responses of “weekly,” “monthly,” and “yearly” were combined into “Not daily” due to observed cell counts below 5. For hyperhidrosis symptom experience, hyperhidrosis awareness, prior exposure to social media posts on hyperhidrosis, prior exposure to social media posts on hyperhidrosis treatment, and prior discussion of hyperhidrosis with a doctor, responses of “no” and “unsure” were combined into “No or Unsure.” Chi-square tests were used to check randomization of frequency of Instagram use, prescription drug use, hyperhidrosis symptom experience, and hyperhidrosis awareness, while perceived health status was checked using a one-way ANOVA. Since several cells still contained values below 5, randomization checks of prior exposure to social media posts on hyperhidrosis, prior exposure to social media

posts on hyperhidrosis treatment, and prior discussion of hyperhidrosis with a doctor were performed using Fisher's exact test.

Analysis 1: Unbranded vs. Branded Message Conditions with the Same SMI Photo

The ANOVA test showed no significant difference in the age between the two groups ($F(3, 203) = .31, p = .82$). Similarly, the Chi-square tests showed no significant between-group differences in sex ($\chi^2 = .95, df = 3, p = .81$), race ($\chi^2 = 4.42, df = 3, p = .22$), income ($\chi^2 = 11.48, df = 6, p = .07$), and education ($\chi^2 = 2.67, df = 6, p = .85$). Thus, randomization in terms of demographic in Analysis 1 was successful. Table 2 presents descriptive statistics of the demographic variables across experimental conditions.

In terms of potential confounding variables, Chi-square tests showed no significant between-group differences in frequency of Instagram use ($\chi^2 = 3.72, df = 3, p = .29$), prescription drug use ($\chi^2 = .02, df = 3, p = 1.00$), hyperhidrosis symptom experience ($\chi^2 = 6.19, df = 3, p = .10$), and hyperhidrosis awareness ($\chi^2 = 1.83, df = 3, p = .61$). However, the ANOVA test of perceived health status showed a significant difference between the groups ($F(3, 203) = 3.79, p = .01$). Furthermore, the Fisher's exact test also showed significant between-group differences in prior exposure to social media posts on hyperhidrosis ($p < .01$), prior exposure to social media posts on hyperhidrosis treatment ($p < .01$), and prior discussion of hyperhidrosis with a doctor ($p < .01$). Thus, these variables were considered as covariates in hypotheses testing in Analysis 1. The descriptive statistics of the potential confounding variables are presented in Table 3.

Table 2

Descriptive Statistics of the Demographic Variables in Analysis 1 (Unbranded vs. Branded with the Same SMI's Photo)

Variables	U-N	U-D	BS-N	BS-D
N	53	50	53	51
Age (mean)	37.43	36.28	36.09	35.69
Sex (% male)	56.61	54.00	60.38	62.75
Race (% white)	79.25	66.00	67.93	80.39
Household income (median)	\$50,000 - \$74,999	\$50,000 - \$74,999	\$49,000 and below	\$50,000 - \$74,999
Education (median)	Bachelor's degree	Bachelor's degree	Bachelor's degree	Bachelor's degree

Note. U-N=Unbranded SMI's photo with No disclosure, U-D=Unbranded SMI's photo with Disclosure, BS-N=Branded SMI's photo with No disclosure, BS-D=Branded SMI's photo with Disclosure.

Table 3

Descriptive Statistics of Potential Confounding Variables in Analysis 1 (Unbranded vs. Branded with the Same SMI's Photo)

Variables	U-N	U-D	BS-N	BS-D
Frequency of Instagram use (% Daily)	67.92	60.00	52.83	68.63
Perceived health status (mean)	5.64	5.74	5.13 ^a	5.75
Prescription drug use (% Yes)	22.64	22.00	22.64	21.57
Hyperhidrosis symptom experience (% Yes)	18.87	34.00	15.09	27.45
Hyperhidrosis awareness (% Yes)	26.42	36.00	30.19	37.25
Prior exposure to social media posts on hyperhidrosis (% Yes)	0.00	16.00	3.77	11.76
Prior exposure to social media posts on hyperhidrosis treatment (% Yes)	0.00	14.00	0.00	9.80
Prior discussion on hyperhidrosis with doctor (% Yes)	0.00	12.00	0.00	13.73

Note. U-N=Unbranded SMI's photo with No disclosure, U-D=Unbranded SMI's photo with Disclosure, BS-N=Branded SMI's photo with No disclosure, BS-D=Branded SMI's photo with Disclosure.

Analysis 2: Unbranded vs. Branded Message Conditions with the Product Image

Results from randomization check of demographic variables between the unbranded message condition with SMI's photo but no product image and the branded message condition with a product image showed that there were no significant between-group differences in age ($F(3, 190) = .16, p = .92$), sex ($\chi^2 = 1.23, df = 3, p = .74$), race ($\chi^2 = 3.33, df = 3, p = .34$), income ($\chi^2 = 11.64, df = 6, p = .07$), and education ($\chi^2 = 12.46, df = 6, p = .05$). The descriptive statistics of the demographic variables are presented in Table 4.

Randomization check of potential confounding variables revealed that there were no significant between-group differences in frequency of Instagram use ($\chi^2 = 2.70, df = 3, p = .44$), perceived health status ($F(3, 191) = 1.28, p = .28$), prescription drug use ($\chi^2 = 1.87, df = 3, p = .60$), and hyperhidrosis awareness ($\chi^2 = 6.87, df = 3, p = .08$). However, significant between-group differences were found in hyperhidrosis symptom experience ($\chi^2 = 10.87, df = 3, p = .01$), prior exposure to social media posts on hyperhidrosis ($p < .01$), prior exposure to social media posts on hyperhidrosis treatment ($p < .01$), and prior discussion of hyperhidrosis with a doctor ($p < .01$). Thus, these four variables were considered as covariates in hypotheses testing. The descriptive statistics of these tested potential confounding variables are presented in Table 5.

Table 4

Descriptive Statistics of Demographic Variables in Analysis 2 (Unbranded vs. Branded with Product Image)

Variables	U-N	U-D	BP-N	BP-D
N	53	50	53	39
Age (mean)	37.43	36.28	37.13	36.42
Sex (% male)	56.61	54.00	64.15	56.41
Race (% white)	79.25	66.00	75.47	64.10
Household income (median)	\$50,000 - \$74,999	\$50,000 - \$74,999	\$50,000 - \$74,999	\$50,000 - \$74,999
Education (median)	Bachelor's degree	Bachelor's degree	Bachelor's degree	Bachelor's degree

Note. U-N=Unbranded SMI's photo with No disclosure, U-D=Unbranded SMI's photo with Disclosure, BP-N=Branded Product image with No disclosure, BP-D=Branded Product image with Disclosure.

Table 5

Descriptive Statistics of Potential Confounding Variables in Analysis 2 (Unbranded vs. Branded with Product Image)

Variables	U-N	U-D	BP-N	BP-D
Frequency of Instagram use (% Daily)	67.92	60.00	52.83	56.41
Perceived health status (mean)	5.64	5.74	5.49	5.92
Prescription drug use (% Yes)	22.64	22.00	18.87	30.77
Hyperhidrosis symptom experience (% Yes)	18.87	34.00	15.09	41.03
Hyperhidrosis awareness (% Yes)	26.42	36.00	22.64	46.15
Prior exposure to social media posts on hyperhidrosis (% Yes)	0.00	16.00	3.77	28.21
Prior exposure to social media posts on hyperhidrosis treatment (% Yes)	0.00	14.00	3.77	28.21
Prior discussion on hyperhidrosis with doctor (% Yes)	0.00	12.00	1.89	35.90

Note. U-N=Unbranded SMI's photo with No disclosure, U-D=Unbranded SMI's photo with Disclosure, BP-N=Branded Product image with No disclosure, BP-D=Branded Product image with Disclosure.

Hypotheses Testing Results: Analysis 1

Analysis 1 was conducted to compare the effects of the unbranded SMI post with the SMI's photo but no product image and the effects of the branded SMI post with the same SMI's photo but no product image.

H1a: Effects of message type on attitude toward the ad

H6a: Effects of sponsorship disclosure on attitude toward the ad

These hypotheses were tested using multiple linear regression with message type and sponsorship disclosure as the independent variables and attitude toward the ad as the dependent variable. The descriptive statistics of attitude toward the ad are presented in Table 6.

Table 6

Descriptive Statistics of Attitude Toward the Ad in Analysis 1 (N = 207)

	Attitude Toward the Ad	
	Mean	SD
U-N	5.34	1.05
U-D	5.16	1.30
BS-N	4.63	1.48
BS-D	4.38	1.74

Note: U-N=Unbranded SMI's photo with No disclosure, U-D=Unbranded SMI's photo with Disclosure, BS-N=Branded SMI's photo with No disclosure, BS-D=Branded SMI's photo with Disclosure.

To determine which potential covariate(s) to include in the hypotheses testing, a stepwise regression was performed to check the effects of potential covariates on the

dependent variable. All four potential covariates (perceived health status, prior exposure to social media posts on hyperhidrosis, prior exposure to social media posts on hyperhidrosis treatment, and prior discussion of hyperhidrosis with a doctor) were entered first, then one potential covariate with the highest p -value was removed from the block one at a time until there was only one potential covariate left in the model. The resulting nested models were compared using an F-test to identify the most parsimonious model.

Results from stepwise regression of the four potential covariates on attitude toward the ad showed that these potential covariates accounted for 7.59% of the variance in attitude toward the ad ($F(4, 202) = 4.15, p < .01$). After removing potential covariates with higher p -values one at a time, prior exposure to social media posts on hyperhidrosis was the only predictor left in the model, accounting for 6.93% of the variance in attitude toward the ad ($F(1, 205) = 15.25, p < .01$). Comparison between the resulting nested models suggests that the most parsimonious model was the model with prior exposure to social media posts on hyperhidrosis as the only predictor. Thus, prior exposure to social media posts hyperhidrosis was included as a covariate to test the aforementioned hypotheses.

The multiple linear regression analysis showed that message type, sponsorship disclosure, and prior exposure to social media posts on hyperhidrosis accounted for 15.32% of the variance in attitude toward the ad ($F(3, 203) = 12.24, p < .01$) (see Table 7). The results also revealed significant effects of message type and sponsorship disclosure after controlling for the effect of prior exposure to social media posts on

hyperhidrosis. Unbranded message resulted in a significantly higher attitude toward the ad than branded message with the same SMI picture ($M_{\text{UNBRANDED}} = 5.25$, $M_{\text{BRANDED_SMI}} = 4.51$, $\beta = -.74$, $p < .01$). Similarly, the absence of sponsorship disclosure resulted in a significantly higher attitude toward the ad than the presence of disclosure ($M_{\text{NO_DISCLOSURE}} = 4.99$, $M_{\text{DISCLOSURE}} = 4.77$, $\beta = -.41$, $p = .03$). Thus, **H1a and H6a of Analysis 1 were supported.**

Table 7

Regression Results Testing the Effects of Message Type and Disclosure on Attitude Toward the Ad, Controlling for Prior Exposure to Social Media Posts on Hyperhidrosis in Analysis 1

Factors	β	p
Message type (branded with SMI's photo)	-.74	< .01
Disclosure (presence)	-.41	.03
Prior exposure to social media posts on hyperhidrosis (yes)	1.60	< .01

H1b: *Effects of message type on intention to seek more information on hyperhidrosis*

H6b: *Effects of sponsorship disclosure on intention to seek more information on hyperhidrosis*

Similar approach was used to test H1b and H6b in which potential covariates were evaluated using stepwise regression and the hypotheses were tested using multiple linear regression. The descriptive statistics of intention to seek more information on hyperhidrosis are presented in Table 8.

Table 8

Descriptive Statistics of Intention to Seek More Information on Hyperhidrosis in Analysis 1 (N = 207)

	Intention to Seek More Information on Hyperhidrosis	
	Mean	SD
U-N	3.58	2.12
U-D	3.58	2.05
BS-N	3.09	2.07
BS-D	3.57	2.23

Note: U-N=Unbranded SMI's photo with No disclosure, U-D=Unbranded SMI's photo with Disclosure, BS-N=Branded SMI's photo with No disclosure, BS-D=Branded SMI's photo with Disclosure.

The results from stepwise regression of the four potential covariates on intention to seek information about hyperhidrosis and the nested model's comparison showed that the most parsimonious model was the model with prior exposure to social media posts on hyperhidrosis as the only predictor. Thus, the multiple linear regression was performed using message type and sponsorship disclosure as the independent variables, intention to seek more information on hyperhidrosis as the dependent variable, and prior exposure to social media posts on hyperhidrosis as the covariate.

The multiple linear regression model accounted for 9.79% of the variance in intention to seek more information on hyperhidrosis ($F(3, 203) = 7.34, p < .01$) (see Table 9). After controlling for prior exposure to social media posts on hyperhidrosis, there were no significant effects of message type or sponsorship disclosure on intention to seek information on hyperhidrosis. Put another way, the difference in intention to seek

more information on hyperhidrosis between the unbranded and branded with SMI's photo groups was not significant ($M_{\text{UNBRANDED}} = 3.58$, $M_{\text{BRANDED_SMI}} = 3.33$, $\beta = -.25$, $p = .37$). Similarly, there was no significant difference in intention to seek more information on hyperhidrosis between the two disclosure groups ($M_{\text{NO_DISCLOSURE}} = 3.34$, $M_{\text{DISCLOSURE}} = 3.57$, $\beta = -.06$, $p = .84$). Thus, **H1b and H6b of Analysis 1 were not supported.**

Table 9

Regression Results Testing the Effects of Message Type and Disclosure on Intention to Seek More Information on Hyperhidrosis, Controlling for Prior Exposure to Social Media Posts on Hyperhidrosis in Analysis 1

Factors	β	p
Message type (branded with SMI's photo)	-.25	.37
Disclosure (presence)	-.06	.84
Prior exposure to social media posts on hyperhidrosis (yes)	2.44	< .01

H1c: Effects of message type on intention to see a doctor

H6c: Effects of sponsorship disclosure on intention to see a doctor

Using a similar statistical approach, multiple linear regression model was used to predict intention to see a doctor based on message type and sponsorship disclosure, controlling for prior exposure to social media posts on hyperhidrosis. The descriptive statistics of intention to see a doctor are presented in Table 10.

Table 10*Descriptive Statistics of Intention to See a Doctor in Analysis 1 (N = 207)*

	Intention to see a doctor	
	Mean	SD
U-N	2.98	2.06
U-D	3.12	2.10
BS-N	2.74	2.20
BS-D	2.94	2.17

Note: U-N=Unbranded SMI's photo with No disclosure, U-D=Unbranded SMI's photo with Disclosure, BS-N=Branded SMI's photo with No disclosure, BS-D=Branded SMI's photo with Disclosure.

The regression model accounted for 15.21% of the variance on intention to see a doctor ($F(3,203) = 12.13, p < .01$) (see Table 11). After controlling for prior exposure to social media posts on hyperhidrosis, no significant effects of message type or sponsorship disclosure on intention to see a doctor were found. The difference in intention to see a doctor between the unbranded and branded with SMI's photo groups was not significant ($M_{\text{UNBRANDED}} = 3.05, M_{\text{BRANDED_SMI}} = 2.84, \beta = -.21, p = 0.45$) and the absence and presence of sponsorship disclosure also resulted in no significant difference in intention to see a doctor ($M_{\text{NO_DISCLOSURE}} = 2.86, M_{\text{DISCLOSURE}} = 3.03, \beta = -.20, p = 0.47$), **failing to support H1c and H6c of Analysis 1.**

Table 11

Regression Results Testing the Effects of Message Type and Disclosure on Intention to See a Doctor, Controlling for Prior Exposure to Social Media Posts on Hyperhidrosis in Analysis 1

Factors	β	p
Message type (branded with SMI's photo)	-.21	.45
Disclosure (presence)	-.20	.47
Prior exposure to social media posts on hyperhidrosis (yes)	3.13	< .01

H2: Main effects of message type on persuasion knowledge activation (PKA)

H4: Main effects of sponsorship disclosure on PKA

H5: Interaction effect of message type and sponsorship disclosure on PKA

To determine whether any of the potential covariates should be included in the regression model to test H2, H4, and H5, similar stepwise regressions were performed to check the effects of the potential covariates on PKA. The results showed that all four potential covariates did not have significant effects on PKA. Thus, none of the potential covariates was included in the PKA analyses.

To test H2, H4, and H5, a two-way ANOVA was conducted with message type and sponsorship disclosure as the independent variables and PKA as the dependent variable. The results revealed that there were significant main effects and interaction effect of message type and sponsorship disclosure (Table 12). The unbranded message resulted in significantly lower PKA than the branded message with the same SMI's photo ($M_{\text{UNBRANDED}} = 3.99$, $M_{\text{BRANDED_SMI}} = 6.02$, $F = 151.61$, $p < .01$) and similarly, the absence of sponsorship disclosure had significantly lower PKA than the presence of

disclosure ($M_{\text{NO_DISCLOSURE}} = 4.49$, $M_{\text{DISCLOSURE}} = 5.55$, $F = 42.51$, $p < .01$). In addition, the interaction effect of message type and sponsorship disclosure was significant ($F = 35.32$, $p < .01$) Thus, **H2, H4, and H5 of Analysis 1 were supported.**

Table 12

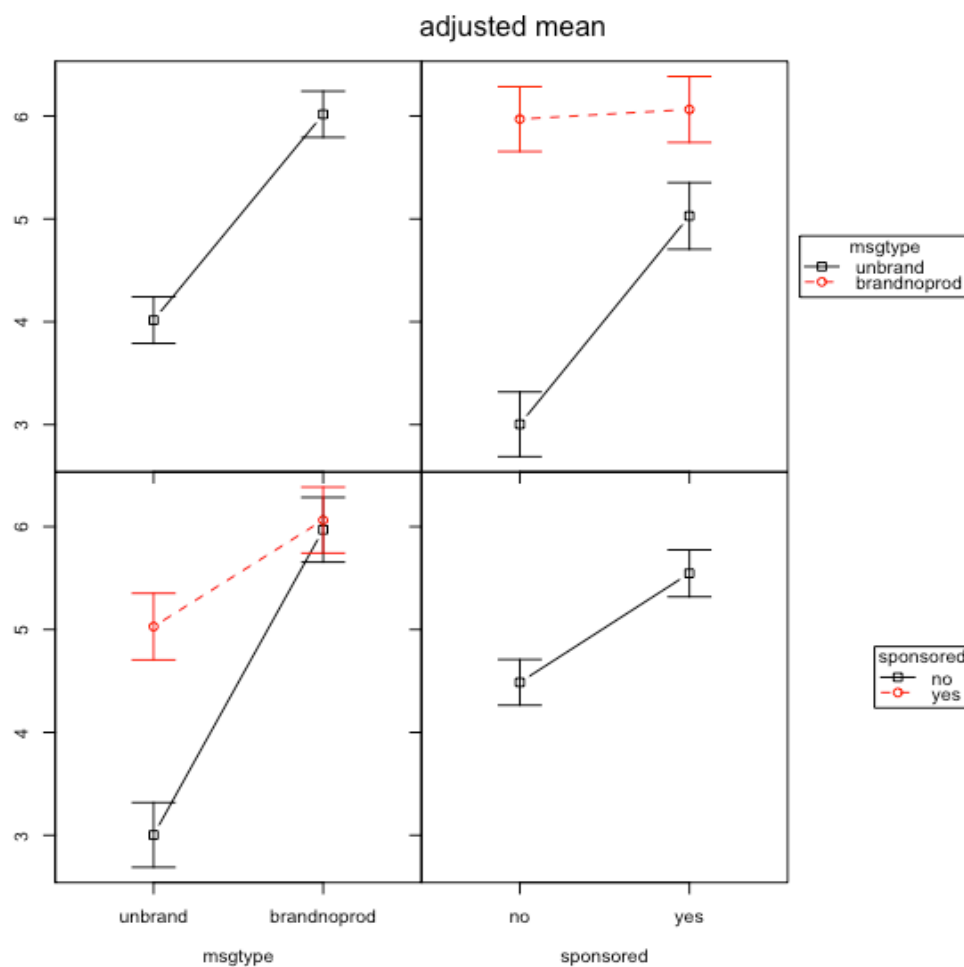
Two-Way ANOVA Results of Effects of Message Type and Disclosure on Persuasion Knowledge Activation in Analysis 1

Predictors	<i>df</i>	MS	<i>F</i>	<i>p</i>	η^2
Message type	1	207.07	151.61	<.01	.34
Disclosure	1	58.06	42.51	<.01	.10
Message type x Disclosure	1	48.24	35.32	<.01	.08
Residuals	203	1.37			
Total	206				

Post-hoc simple effect analysis was performed to evaluate the nature of the interaction effect between message type and sponsorship disclosure. The presence of disclosure significantly increased PKA in the unbranded group ($F(1, 203) = 77.28$, $p < .01$), while disclosure did not significantly increase PKA in the branded with the same SMI's photo group ($F(1, 203) = .17$, $p = .68$). Finally, the presence of brand name significantly increased PKA in both with and without disclosure groups ($F(1, 203) = 19.81$, $p < .01$; $F(1, 203) = 170.78$, $p < .01$, respectively). The interaction plot of message type and sponsorship disclosure of Analysis 1 can be found in Figure 1 below.

Figure 1

Interaction Plot Between Message Type and Disclosure in Analysis 1



H3: Mediation effect of PKA and message type on (a) attitude toward the ad, (b) intention to seek more information on hyperhidrosis, and (c) intention to see a doctor

A series of simple mediation analysis with mediation package in R (bootstrap = 5,000; 95% confidence interval) was used to test H3a-c. For H3a, message type was

entered as the independent variable, PKA as the mediator, and attitude toward the ad as the dependent variable. Sponsorship disclosure and prior exposure to social media posts on hyperhidrosis were included as covariates for the effects of message type on attitude toward the ad. The results showed no significant direct effects of message type on attitude toward the ad ($b = -.07, p = .78$). However, there was a significant indirect effect of message type on attitude toward the ad (indirect effect = $-.67, CI [-1.02, -.39], p < .01$), which was mediated by the effect of message type on PKA ($b = 2.03, p < .01$), which resulted in a less favorable attitude toward the ad ($b = -.33, p < .01$), **supporting H3a of Analysis 1.**

Mediation analyses on intention to seek more information on hyperhidrosis (H3b) and intention to see a doctor (H3c) yielded similar results. No significant direct effects of message type were found on intention to seek more information on hyperhidrosis ($b = .53, p = .12$) and intention to see a doctor ($b = .44, p = .21$). The significant indirect effect of message type on intention to seek more information on hyperhidrosis (indirect effect = $-.79, CI [-1.29, -.31], p < .01$) was mediated by the effects of message type on PKA ($b = 2.03, p < .01$), which resulted in lower intention to seek information on hyperhidrosis ($b = -.39, p < .01$). Similarly, there was a significant indirect effect of message type on intention to see a doctor (indirect effect = $-.66, CI [-1.16, -.18], p < .01$), and this effect was mediated by the effects of message type on PKA ($b = 2.03, p < .01$), which resulted in lower intention to see a doctor ($b = -.32, p < .01$). Thus, **H3b and H3c of Analysis 1 were supported.** The mediation effects of PKA on the dependent variables are presented in Figure 2a-c.

Figure 2

Mediation Effects of Message type and PKA on Attitude Toward the Ad (Figure 2a), Intention to Seek More Information on Hyperhidrosis (Figure 2b), and Intention to See a Doctor (Figure 2c) in Analysis 1

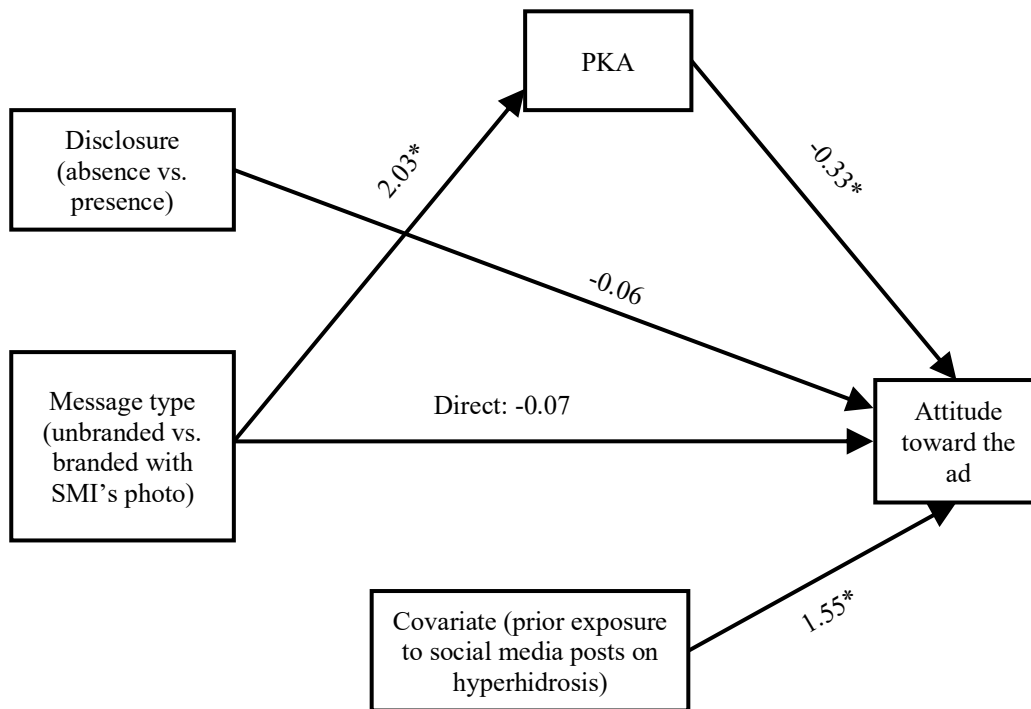


Figure 2a

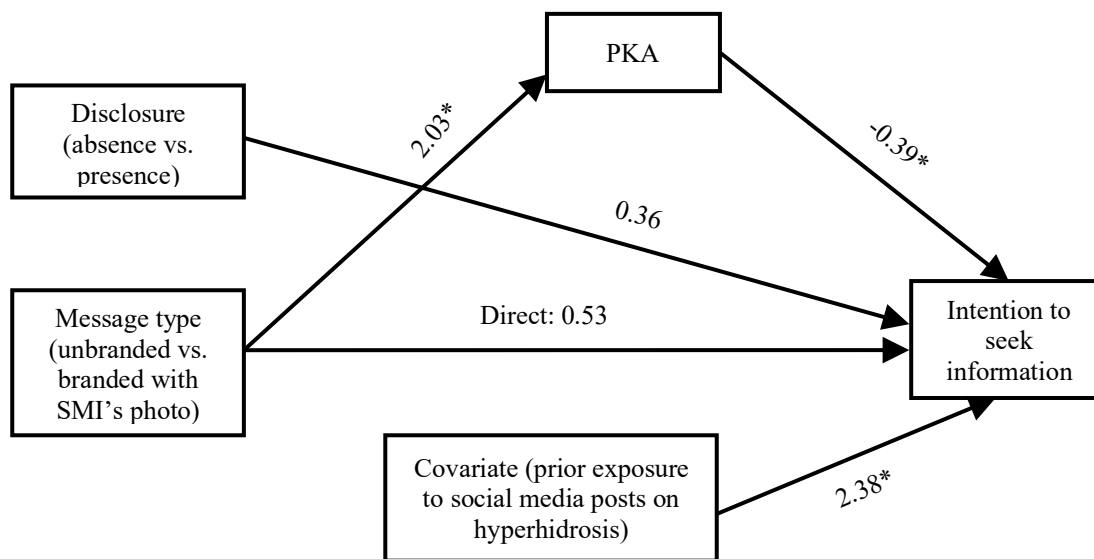


Figure 2b

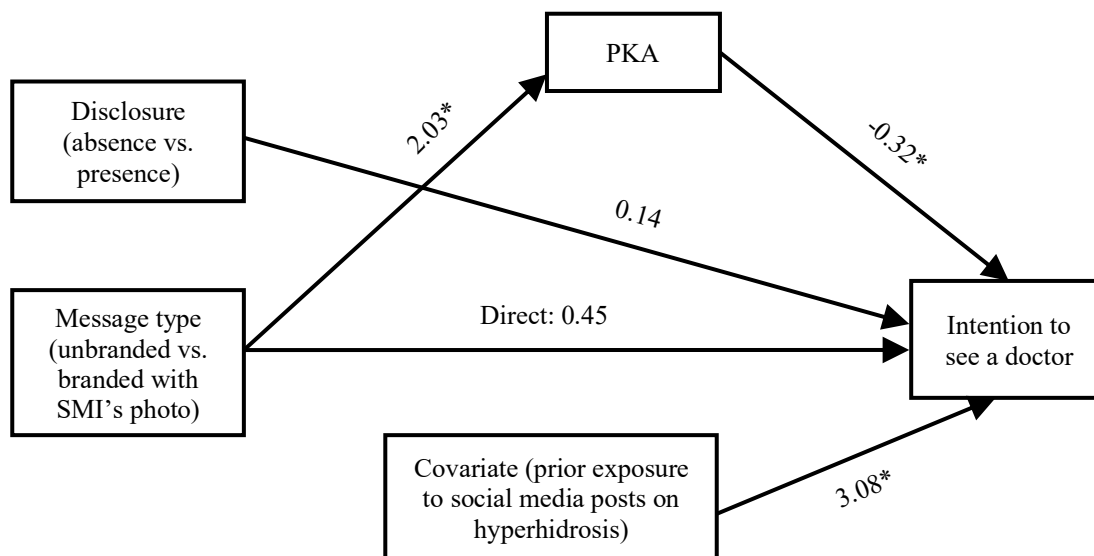


Figure 2c

H7: Mediation effect of PKA and sponsorship disclosure on (a) attitude toward the ad, (b) intention to seek more information on hyperhidrosis, and (c) intention to see a doctor

Similar mediation analyses were performed to test H7a-c. For H7a, sponsorship disclosure was entered as the independent variable, PKA as the mediator, and attitude toward the ad as the dependent variable. Message type and prior exposure to social media posts on hyperhidrosis were included as covariates for the effects of sponsorship disclosure on attitude toward the ad. The results revealed no significant direct effect of sponsorship disclosure on attitude toward the ad ($b = -.06, p = .80$), but a significant indirect effect of sponsorship disclosure on attitude toward the ad (indirect effect = $-.35$, CI $[-.62, -.18]$, $p < .01$). This indirect effect was mediated by the effects of sponsorship disclosure on PKA ($b = 1.06, p < .01$), which resulted in a lower attitude toward the ad ($b = -.33, p < .01$), **supporting H7a of Analysis 1**.

Mediation analyses on H7b and H7c revealed similar results: No significant direct effects of sponsorship disclosure on intention to seek more information on hyperhidrosis ($b = .36, p = .26$) and intention to see a doctor ($b = .14, p = .64$), but a significant indirect effect of sponsorship disclosure on intention to seek more information on hyperhidrosis (indirect effect = $-.41$, CI $[-.74, -.17]$, $p < .01$) and a significant indirect effect of sponsorship disclosure on intention to see a doctor (indirect effect = $-.34$, CI $[-.66, -.10]$, $p < .01$). The indirect effect of sponsorship disclosure on intention to seek more information on hyperhidrosis was mediated by the effect of sponsorship disclosure on PKA ($b = 1.06, p < .01$), which then resulted in lower intention to seek more information on hyperhidrosis ($b = -.39, p < .01$). Similarly, the indirect effect of sponsorship

disclosure on intention to see a doctor was mediated by the effect of sponsorship disclosure on PKA ($b = 1.06, p < .01$), which then resulted in lower intention to see a doctor ($b = -.32, p < .01$). Thus, **H3a-c of Analysis 1 were supported**. The mediation effects are described in Figure 3a-c.

Figure 3

Mediation Effect of Sponsorship Disclosure and PKA on Attitude Toward the Ad (Figure 3a), Intention to Seek More Information on Hyperhidrosis (Figure 3b), and Intention to See a Doctor (Figure 3c) in Analysis 1

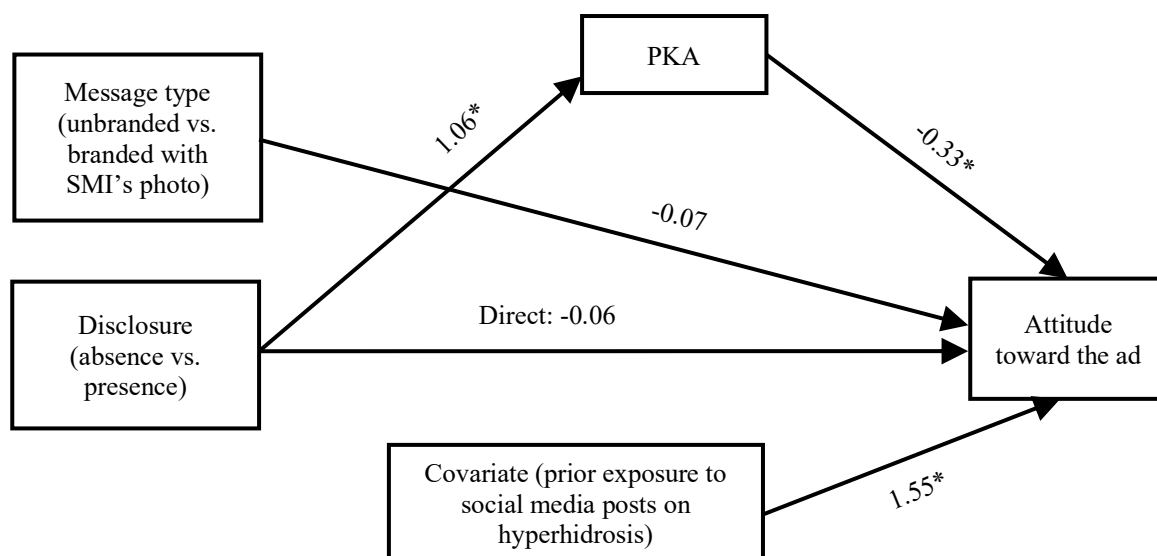


Figure 3a

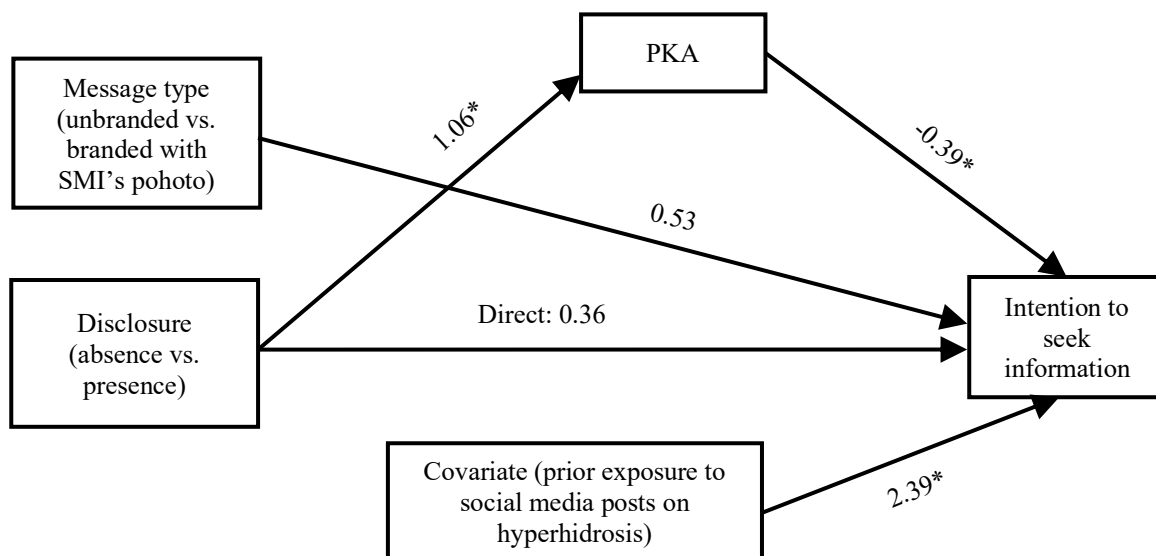


Figure 3b

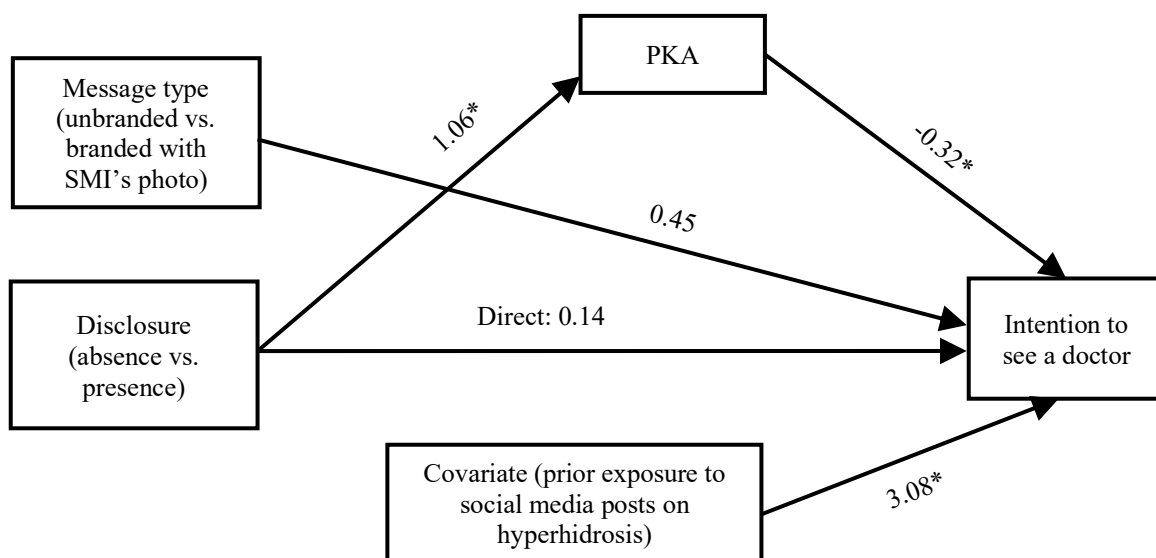


Figure 3c

Hypotheses Testing Results: Analysis 2

Analysis 2 was conducted to compare the effects of the unbranded SMI post with the SMI's photo but no product image with the effects of the branded SMI post with product image.

H1a: Effects of message type on attitude toward the ad

H6a: Effects of sponsorship disclosure on attitude toward the ad

Similar statistical approaches used in Analysis 1 were used to identify the covariate(s) and test the hypotheses in Analysis 2. To test H1a and H6a in Analysis 2, a multiple linear regression was performed with message type and sponsorship disclosure as the independent variables, prior exposure to social media posts on hyperhidrosis treatment as the covariate, and attitude toward the ad as the dependent variable. The descriptive statistics of attitude toward the ad are presented on Table 13.

Table 13

Descriptive Statistics of Attitude Toward the Ad in Analysis 2 (N = 195)

	Attitude Toward the Ad	
	Mean	SD
U-N	5.34	1.05
U-D	5.16	1.30
BP-N	4.16	1.44
BP-D	5.11	1.76

Note: U-N=Unbranded SMI's photo with No disclosure, U-D=Unbranded SMI's photo with Disclosure, BP-N=Branded Product image with No disclosure, BP-D=Branded Product image with Disclosure.

The regression results showed that this model accounted for 19.02% of the variance in attitude toward the ad ($F(3, 191) = 14.96, p < .01$) (see Table 14). After controlling for prior exposure to social media posts on hyperhidrosis treatment, there were significant effects of message type on attitude toward the ad ($M_{\text{UNBRANDED}} = 5.25, M_{\text{BRANDED_PRODUCT}} = 4.56, \beta = -.82, p < .01$), **supporting H1a of Analysis 2**. However, no significant effects of sponsorship disclosure on attitude toward the ad were found ($M_{\text{NO_DISCLOSURE}} = 4.75, M_{\text{DISCLOSURE}} = 5.14, \beta = .01, p = .96$), **failing to support H6a of Analysis 2**.

Table 14

Regression Results Testing the Effects of Message Type and Disclosure on Attitude Toward the Ad, Controlling for Prior Exposure to Social Media Posts on Hyperhidrosis Treatment in Analysis 2

Factors	β	p
Message type (branded with product image)	-.82	< .01
Disclosure (presence)	.01	.96
Prior exposure to social media posts on hyperhidrosis treatment (yes)	1.75	< .01

H1b: *Effects of message type on intention to seek more information on hyperhidrosis*

H6b: *Effects of sponsorship disclosure on intention to seek more information on hyperhidrosis*

Results from stepwise regression of the four potential covariates on intention to seek more information on hyperhidrosis and the nested models comparison revealed that the model with hyperhidrosis symptom experience and prior exposure to social media posts on hyperhidrosis as predictors were the most parsimonious model and thus, these

two variables were included as covariates in the hypotheses testing. The descriptive statistics of intention to seek more information on hyperhidrosis are presented in Table 15.

Table 15

Descriptive Statistics of Intention to Seek More Information on Hyperhidrosis in Analysis 2 (N = 195)

	Intention to Seek More Information on Hyperhidrosis	
	Mean	SD
U-N	3.58	2.12
U-D	3.58	2.05
BP-N	2.58	1.88
BP-D	4.33	2.52

Note: U-N=Unbranded SMI's photo with No disclosure, U-D=Unbranded SMI's photo with Disclosure, BP-N=Branded Product image with No disclosure, BP-D=Branded Product image with Disclosure.

Results of hypotheses testing using multiple linear regression showed that the model accounted for 21.73% of variance in intention to seek more information on hyperhidrosis ($F(4, 190) = 13.19, p < .01$) (see Table 16). There were no significant effects of message type ($M_{\text{UNBRANDED}} = 3.58, M_{\text{BRANDED_PRODUCT}} = 3.33, \beta = -.35, p = .21$) or sponsorship disclosure ($M_{\text{NO_DISCLOSURE}} = 3.06, M_{\text{DISCLOSURE}} = 3.91, \beta = .17, p = .56$) on intention to seek more information on hyperhidrosis, after controlling for hyperhidrosis symptom experience and prior exposure to social media posts on hyperhidrosis. Thus, **H1b and H6b of Analysis 2 were not supported.**

Table 16

Regression Results Testing the Effects of Message Type and Disclosure on Intention to Seek More Information on Hyperhidrosis, Controlling for Hyperhidrosis Symptom Experience and Prior Exposure to Social Media Posts on Hyperhidrosis in Analysis 2

Factors	β	p
Message type (branded with product image)	-.35	.21
Disclosure (presence)	.17	.56
Hyperhidrosis symptom experience (yes)	1.45	< .01
Prior exposure to social media posts on hyperhidrosis (yes)	1.74	< .01

H1c: Effects of message type on intention to see a doctor

H6c: Effects of sponsorship disclosure on intention to see a doctor

The model with hyperhidrosis symptom experience and prior exposure to social media posts on hyperhidrosis as predictors of intention to see a doctor was found as the most parsimonious model and thus, the multiple linear regression to test H1c and H6c of Analysis 2 was performed using these variables as covariates. The descriptive statistics of intention to see a doctor are presented in Table 17.

Table 17*Descriptive Statistics of Intention to See a Doctor in Analysis 2 (N = 195)*

	Intention to see a doctor	
	Mean	SD
U-N	2.98	2.06
U-D	3.12	2.10
BP-N	2.19	1.73
BP-D	3.85	2.39

Note: U-N=Unbranded SMI's photo with No disclosure, U-D=Unbranded SMI's photo with Disclosure, BP-N=Branded Product image with No disclosure, BS-D=Branded Product image with Disclosure.

Regression analysis results showed that the regression model accounted for 29.95% of variance in intention to see a doctor ($F(4, 190) = 20.30, p < .01$) (see Table 18). However, there were no significant effects of message type ($M_{\text{UNBRANDED}} = 3.05, M_{\text{BRANDED_PRODUCT}} = 2.89, \beta = -.28, p = .29$) or sponsorship disclosure ($M_{\text{NO_DISCLOSURE}} = 2.59, M_{\text{DISCLOSURE}} = 3.44, \beta = .11, p = .70$) on intention to see a doctor, after controlling for hyperhidrosis symptom experience and prior exposure to social media posts on hyperhidrosis. Thus, **H1c and H6c of Analysis 2 were also not supported.**

Table 18

Regression Results Testing the Effects of Message Type and Disclosure on Intention to See a Doctor, Controlling for Hyperhidrosis Symptom Experience and Prior Exposure to Social Media Posts on Hyperhidrosis in Analysis 2

Factors	β	p
Message type (branded with product image)	-.28	.29
Disclosure (presence)	.11	.70
Hyperhidrosis symptom experience (yes)	1.67	< .01
Prior exposure to social media posts on hyperhidrosis (yes)	2.02	< .01

H2: Main effects of message type on PKA

H4: Main effects of sponsorship disclosure on PKA

H5: Interaction effect of message type and sponsorship disclosure on PKA

Similar to the results from Analysis 1, the four potential covariates identified in Analysis 2 did not have significant effects on PKA. Thus, none of these variables were included in the hypotheses testing of H2, H4, and H5 in Analysis 2, and a two-way ANOVA was conducted to test these hypotheses.

Results from the two-way ANOVA revealed significant main effects and significant interaction effect of message type and sponsorship disclosure on PKA (Table 19). The unbranded message generated a significantly lower PKA than the branded message with product image ($M_{\text{UNBRANDED}} = 3.99$, $M_{\text{BRANDED_SMI}} = 6.00$, $F = 129.23$, $p < .01$), **supporting H2 of Analysis 2**. The absence of sponsorship disclosure also generated a significantly lower PKA than the presence of disclosure ($M_{\text{NO_DISCLOSURE}} = 4.55$,

$M_{\text{DISCLOSURE}} = 5.39$, $F = 26.71$, $p < .01$), **supporting H4 of Analysis 2**. The interaction effect was also significant ($F = 61.51$, $p < .01$), **supporting H5 of Analysis 2**.

Table 19

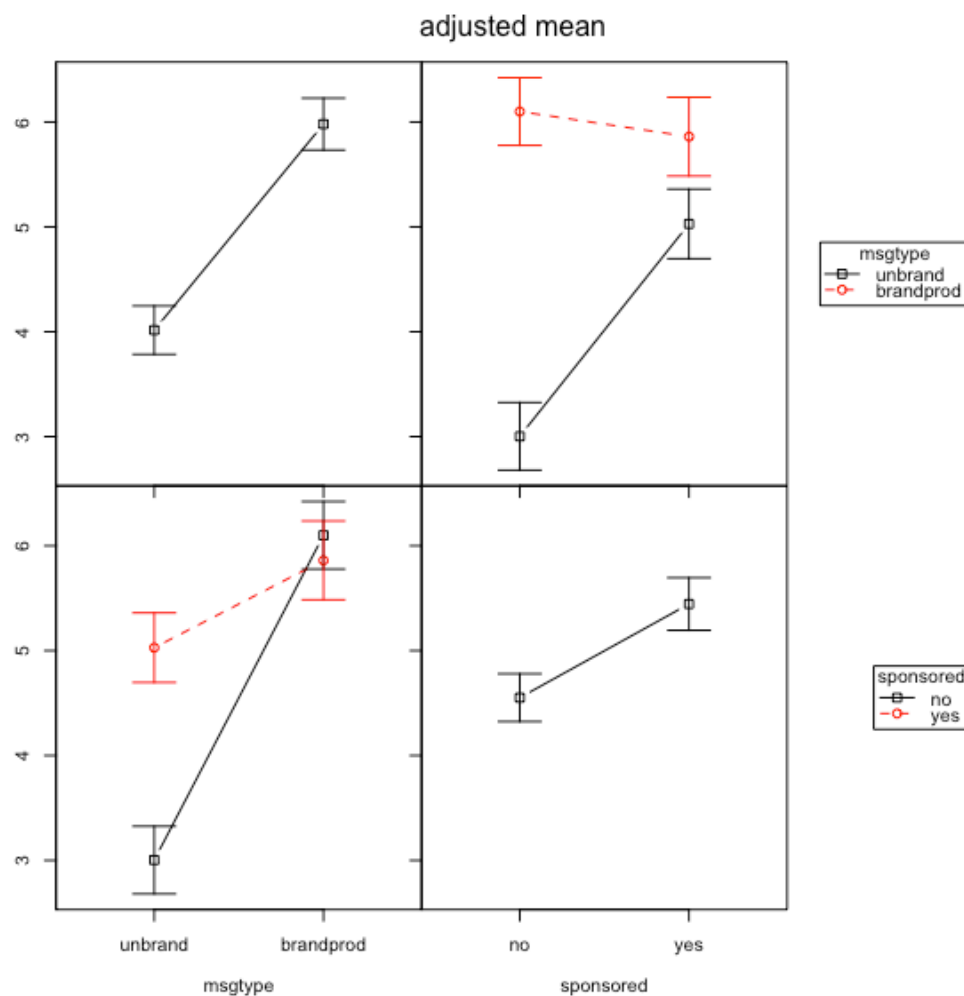
Two-Way ANOVA Results of Effects of Message Type and Disclosure on Persuasion Knowledge Activation in Analysis 2

Predictors	<i>df</i>	MS	<i>F</i>	<i>p</i>	η^2
Message type	1	185.14	129.23	<.01	.32
Disclosure	1	38.26	26.71	<.01	.07
Message type x Disclosure	1	61.51	42.93	<.01	.11
Residuals	191	1.43			
Total	194				

Results from a post-hoc simple effect analysis showed that the presence of disclosure significantly increased PKA only in the unbranded group ($F(1, 191) = 73.67$, $p < .01$), but did not have significant effect on PKA in the branded with product image group ($F(1, 191) = .90$, $p = .34$). Similar to results from Analysis 1, the presence of a brand name significantly increased PKA in both message conditions with and without disclosure ($F(1, 191) = 10.59$, $p < .01$; $F(1, 191) = 177.38$, $p < .01$, respectively). The interaction plot of message type and sponsorship disclosure of Analysis 2 is described in Figure 4.

Figure 4

Interaction Plot Between Message Type and Disclosure in Analysis 2



H3: Mediation effect of PKA and message type on (a) attitude toward the ad, (b) intention to seek more information on hyperhidrosis, and (c) intention to see a doctor

A series of simple mediation analysis similar to those performed in Analysis 1 was performed to test H3a-c in Analysis 2. Results showed no significant direct effect of message type on attitude toward the ad ($b = -.14, p = .58$), intention to seek more

information on hyperhidrosis ($b = .48, p = .16$), or intention to see a doctor ($b = .36, p = .30$). However, there was a significant indirect effect of message type on attitude toward the ad (indirect effect = $-.64$, CI $[-1.00, -.36]$, $p < .01$), which was mediated by the effect of message type on PKA ($b = 2.01, p < .01$), which resulted in a lower attitude toward the ad ($b = -.32, p < .01$), **supporting H3a of Analysis 2**.

Similarly, there was a significant indirect effect of message type on intention to seek more information on hyperhidrosis (indirect effect = $-.81$, CI $[-1.29, -.37]$, $p < .01$), which was mediated by the effect of message type on PKA ($b = 2.01, p < .01$), which resulted in lower intention to seek information ($b = -.40, p < .01$). A significant indirect effect of message type on intention to see a doctor was also found (indirect effect = $-.61$, CI $[-1.06, -.20]$, $p < .01$). This indirect effect was mediated by the effect of message type on PKA ($b = 2.01, p < .01$), which resulted in lower intention to see a doctor ($b = -.30, p < .01$). Thus, **H3b and H3c of Analysis 2 were also supported**. The mediation effects are presented in Figure 5a-c.

Figure 5

Mediation Effects of Message Type and PKA on Attitude Toward the Ad (Figure 5a), Intention to Seek More Information on Hyperhidrosis (Figure 5b), and Intention to See a Doctor (Figure 5c) in Analysis 2

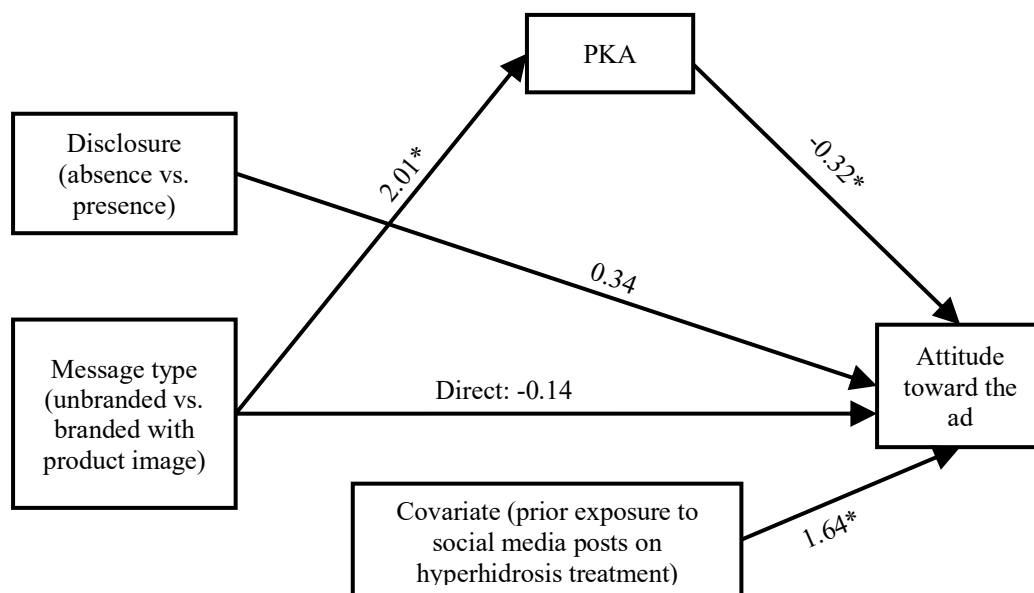


Figure 5a

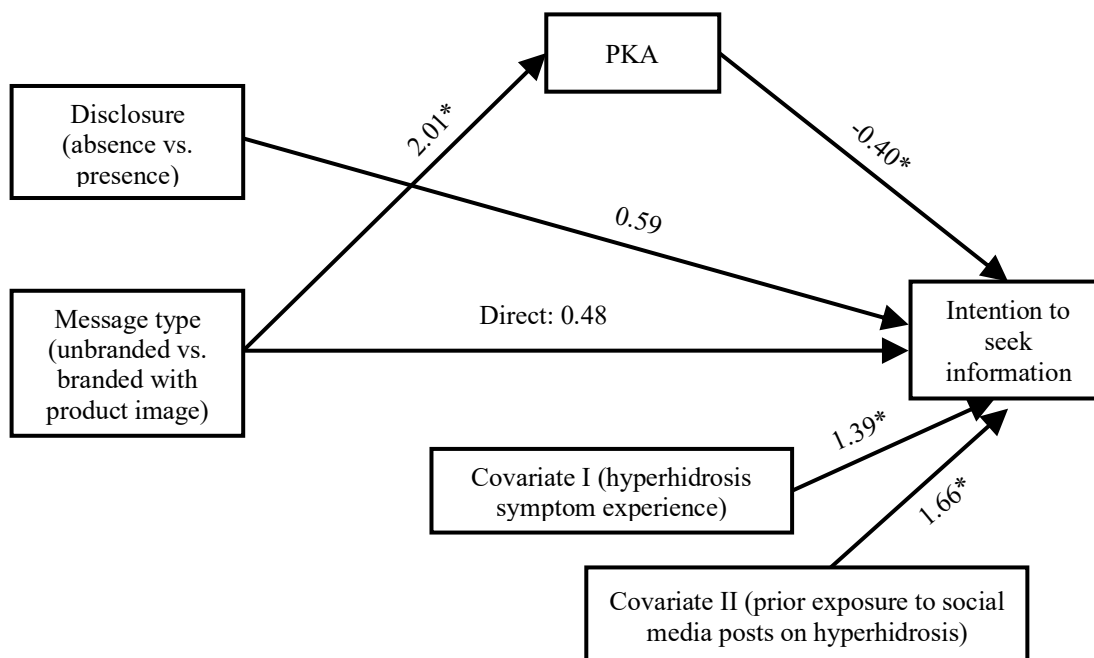


Figure 5b

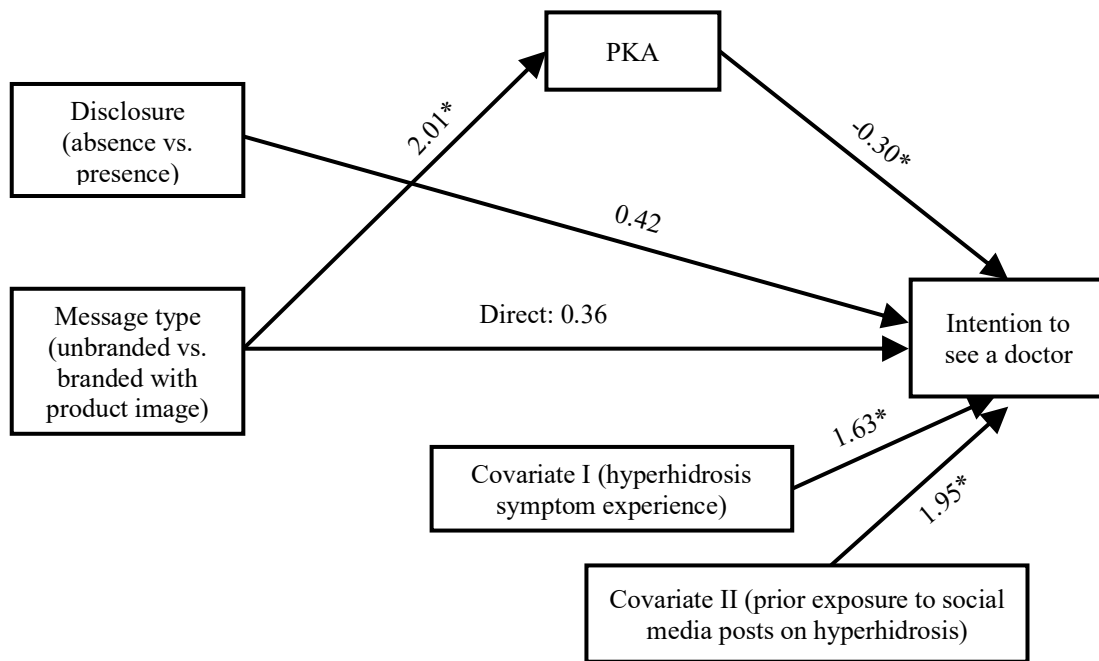


Figure 5c

H7: Mediation effect of PKA and sponsorship disclosure on (a) attitude toward the ad, (b) intention to seek more information on hyperhidrosis, and (c) intention to see a doctor

A series of simple mediation analyses was conducted to test H7 and the results showed no significant direct effects of sponsorship disclosure on attitude toward the ad ($b = .34, p = .12$), intention to seek more information about hyperhidrosis ($b = .59, p = .08$), or intention to see a doctor ($b = .42, p = .17$). However, a significant indirect effect of sponsorship disclosure on attitude toward the ad was found (indirect effect = $-.27$, CI [$-.49, -.11$], $p < .01$), and this effect was mediated by the effect of disclosure on PKA ($b = .84, p < .01$), which resulted in a lower attitude toward the ad ($b = -.32, p < .01$), **supporting H7a of Analysis 2.**

A significant indirect effect of sponsorship disclosure was also found on intention to seek more information about hyperhidrosis (indirect effect = $-.34$, CI $[-.65, -.13]$, $p < .01$), and this effect was mediated by the effect of disclosure on PKA ($b = .84$, $p < .01$), which resulted in lower intention to seek more information about hyperhidrosis ($b = -.40$, $p < .01$), **supporting H7b of Analysis 2**. Similarly, there was a significant indirect effect of disclosure on intention to see a doctor (indirect effect = $-.25$, CI $[-.54, -.09]$, $p < .01$), which was mediated by the effect of disclosure on PKA ($b = .84$, $p < .01$), which then resulted in lower intention to see a doctor ($b = -.30$, $p < .01$), **supporting H7c of Analysis 2**. The mediation effects are described in Figure 6a-c.

Figure 6

Mediation Effects of Disclosure and PKA on Attitude Toward the Ad (Figure 6a), Intention to Seek More Information on Hyperhidrosis (Figure 6b), and Intention to See a Doctor (Figure 6c) in Analysis 2

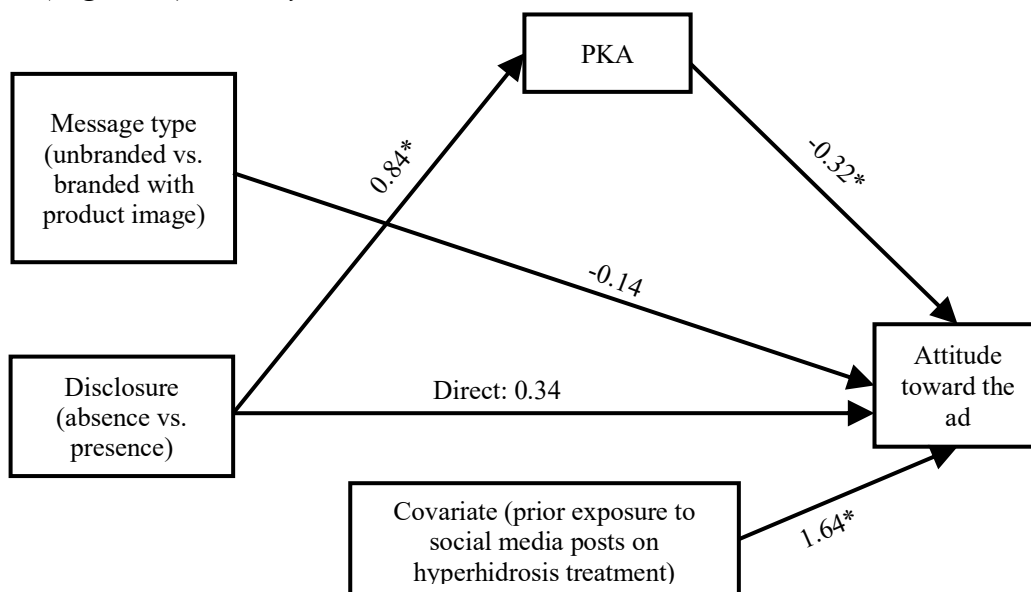


Figure 6a

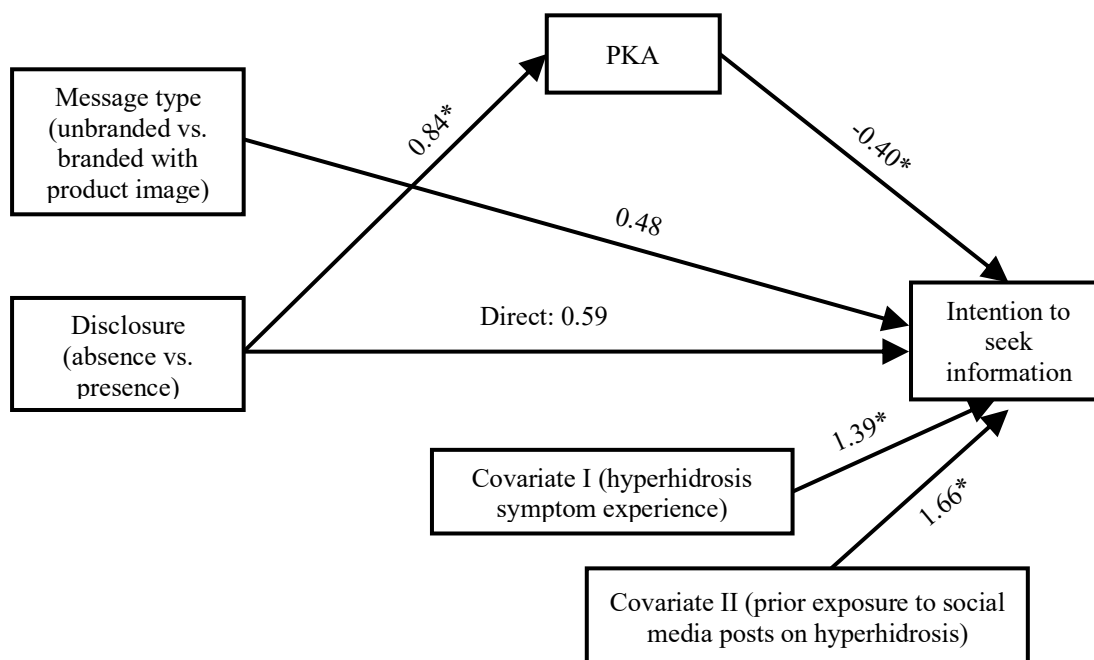


Figure 6b

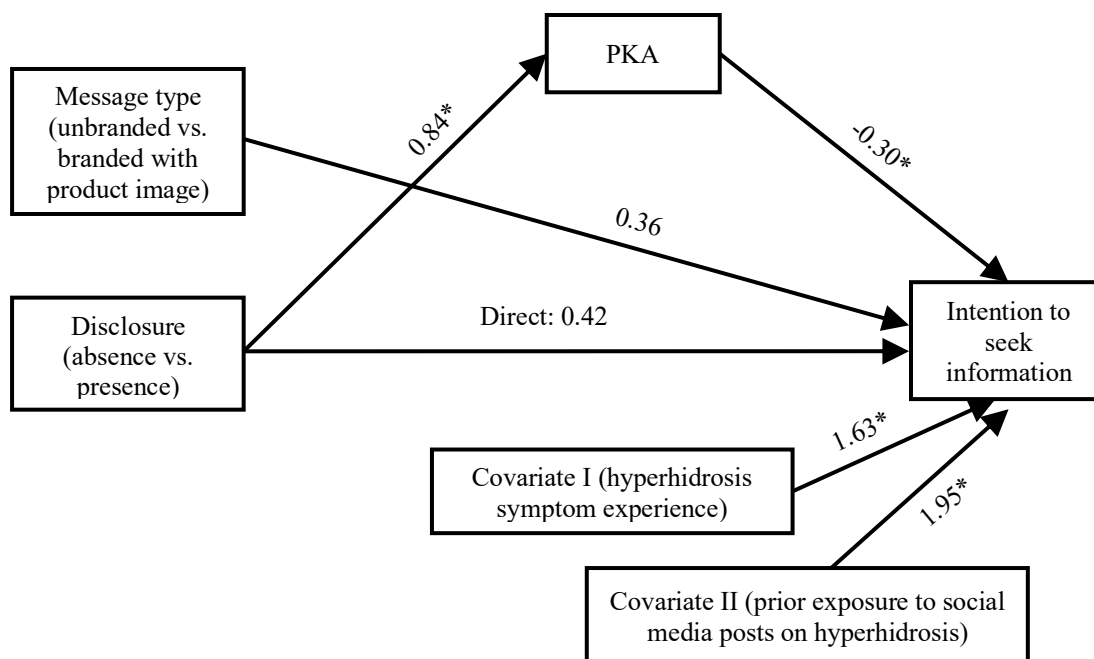


Figure 6c

CHAPTER 6. SUMMARY AND DISCUSSION

Summary of Findings

This study examined the recent DTCA practices in social media in which pharmaceutical companies collaborate with SMIs to promote a disease that can be treated with their drug using unbranded posts or to directly promote the drug to consumers using branded posts. Specifically, this study evaluated the differential effects of unbranded and branded DTCA posts, as well as the effects of sponsorship disclosure used in these posts on consumers' attitude toward the ad and behavioral intentions. This study also investigated the underlying mechanism of these effects by measuring consumers' persuasion knowledge activation and its associated outcomes after exposure to these posts.

To increase ecological validity, the experimental design included two types of branded posts that reflect the types of post used by SMI to promote a product in the real world: (1) branded posts with the same SMI's photo as that used in the unbranded version, and (2) branded posts with a product picture. Accordingly, two sets of analyses were conducted: Analysis 1 compared the unbranded post with the branded post using the same SMI's photo and Analysis 2 compared the unbranded post with the branded post using a product picture.

The results showed that in both analyses, message type significantly influenced consumers' attitude toward the ad, in which the unbranded DTCA post generated a significantly more favorable attitude toward the ad than the branded versions. The effects of message type on attitude toward the ad were mediated by the activation of consumers'

persuasion knowledge. The unbranded sponsored DTCA post resulted in lower persuasion knowledge activation than the branded versions, leading to a more favorable attitude toward the ad. In terms of behavioral intentions, message type did not directly affect intention to seek more information about the advertised disease nor intention to see a doctor. However, there were significant indirect effects of message type on both behavioral intentions, and these effects were mediated by persuasion knowledge activation.

In this study, the presence of sponsorship disclosure resulted in a significantly lower attitude toward the ad than the absence of disclosure in Analysis 1, but no significant differences in attitude toward the ad were observed in Analysis 2. The presence of sponsorship disclosure did not have a direct effect on behavioral intentions in either of the analyses. Despite the lack of direct effects of disclosure on the main ad outcomes, indirect effects of disclosure were observed: Disclosure presence significantly increased the activation of persuasion knowledge, resulting in a lower attitude toward the ad and lower behavioral intentions than in the no disclosure conditions.

This study also revealed that there were significant interaction effects between message type and sponsorship disclosure on persuasion knowledge activation. Compared with no disclosure, the presence of disclosure significantly increased persuasion knowledge activation in consumers who viewed the unbranded post, but not in consumers who viewed the branded versions. Furthermore, the branded versions resulted in a significantly higher persuasion knowledge activation regardless of the disclosure conditions. The summary of results can be found in Table 20.

Table 20*Summary of Results from Analysis 1 and Analysis 2*

	Analysis 1	Analysis 2
Groups	Unbranded vs. branded with the same SMI's photo	Unbranded vs. branded with a product picture
<u>Effects on attitude toward the ad</u>		
H1a	Supported M _{UNBRANDED} = 5.25, M _{BRANDED_SMI} = 4.51, $\beta = -.74, p < .01$	Supported M _{UNBRANDED} = 5.25, M _{BRANDED_PRODUCT} = 4.56, $\beta = -.82, p < .01$
H6a	Supported M _{NO_DISCLOSURE} = 4.99, M _{DISCLOSURE} = 4.77, $\beta = -.41, p = .03$	Not supported M _{NO_DISCLOSURE} = 4.75, M _{DISCLOSURE} = 5.14, $\beta = .01, p = .96$
<u>Effects on intention to seek more information about hyperhidrosis</u>		
H1b	Not supported M _{UNBRANDED} = 3.58, M _{BRANDED_SMI} = 3.33, $\beta = -.25, p = .37$	Not supported M _{UNBRANDED} = 3.58, M _{BRANDED_PRODUCT} = 3.33, $\beta = -.35, p = .21$
H6b	Not supported M _{NO_DISCLOSURE} = 3.34, M _{DISCLOSURE} = 3.57, $\beta = -.06, p = .84$	Not supported M _{NO_DISCLOSURE} = 3.06, M _{DISCLOSURE} = 3.92, $\beta = .17, p = .56$
<u>Effects on intention to see a doctor</u>		
H1c	Not supported M _{UNBRANDED} = 3.05, M _{BRANDED_SMI} = 2.84, $\beta = -.21, p = .45$	Not supported M _{UNBRANDED} = 3.05, M _{BRANDED_PRODUCT} = 2.89, $\beta = -.28, p = .29$
H6c	Not supported M _{NO_DISCLOSURE} = 2.86, M _{DISCLOSURE} = 3.03, $\beta = -.20, p = .47$	Not supported M _{NO_DISCLOSURE} = 2.59, M _{DISCLOSURE} = 3.44, $\beta = .11, p = .70$

Table 20*Summary of Results from Analysis 1 and Analysis 2 (cont.')*

	Analysis 1	Analysis 2
<u>Main effect on PKA</u>		
H2	Supported M _{UNBRANDED} = 3.99, M _{BRANDED_SMI} = 6.02, F = 151.61, $p < .01$	Supported M _{UNBRANDED} = 3.99, M _{BRANDED_PRODUCT} = 6.00, F = 129.23, $p < .01$
H4	Supported M _{NO_DISCLOSURE} = 4.49, M _{DISCLOSURE} = 5.55, F = 42.51, $p < .01$	Supported M _{NO_DISCLOSURE} = 4.55, M _{DISCLOSURE} = 5.39, F = 26.71, $p < .01$
<u>Interaction effect on PKA</u>		
H5	Supported (F = 35.32, $p < .01$)	Supported (F = 61.51, $p < .01$)
<u>Mediation effect of message type on dependent variables via PKA</u>		
H3a (attitude toward the ad)	Supported Indirect: $b = -.67, p < .01$	Supported Indirect: $b = -.65, p < .01$
H3b (intention to seek more information)	Supported Indirect: $b = -.79, p < .01$	Supported Indirect: $b = -.81, p < .01$
H3c (intention to see a doctor)	Supported Indirect: $b = -.66, p < .01$	Supported Indirect: $b = -.61, p < .01$
<u>Mediation effect of sponsorship disclosure on dependent variables via PKA</u>		
H7a (attitude toward the ad)	Supported Indirect: $b = -.35, p < .01$	Supported Indirect: $b = -.27, p < .01$
H7b (intention to seek more information)	Supported Indirect: $b = -.41, p < .01$	Supported Indirect: $b = -.34, p < .01$
H7c (intention to see a doctor)	Supported Indirect: $b = -.34, p < .01$	Supported Indirect: $b = -.26, p < .01$

Theoretical Contributions

This study found that the unbranded DTCA post resulted in a significantly more favorable attitude toward the ad than the branded versions. This finding is similar to that of previous study by Hall and Jones (2008), but not consistent with the findings from Rollins et al. (2011). Since the extant research evaluating the effects of unbranded vs. branded DTCA on consumers' attitude toward the ad is limited, these conflicting findings prompt the need for more studies to fully assess these differences.

Furthermore, this study found no significant differences in behavioral intentions between consumers who viewed the unbranded post and those who viewed the branded versions, which contradicts findings from previous DTCA research conducted in the context of traditional media (Lee-Wingate & Xie, 2010; Mendonca et al., 2011; Rollins et al., 2010). These conflicting results may be due to the different types of disease used in these studies. Previous studies evaluated unbranded vs. branded DTCA in the context of more serious diseases such as asthma (Mendonca et al., 2011), migraine (Lee-Wingate & Xie, 2010), and allergy (Rollins et al., 2010), while this study evaluated DTCA of hyperhidrosis, which is a less serious disease that is often perceived as a non-medical condition. It is plausible that in this study, consumers viewed hyperhidrosis as a disease that did not warrant medical attention, resulting in similarly low behavioral intentions in both the unbranded and branded groups.

In examining the underlying mechanism, this study found that message type significantly influenced persuasion knowledge activation in which the unbranded SMI DTCA resulted in lower persuasion knowledge activation than the branded version. The

lower persuasion knowledge activation suggests that consumers were less likely to recognize the unbranded SMI DTCA as a form of advertising than the branded one. This may be due to the absence of variable constraints, such as a brand name, in the unbranded post, which are needed to instantiate advertising schema. Since the brand name was absent in the unbranded SMI DTCA, consumers may perceive this post as a regular health information without ulterior motives, resulting in lower activation of persuasion knowledge, which then led to a more favorable attitude toward the ad and higher behavioral intentions, consistent with the mechanism proposed by the PKM (Friestad & Wright, 1994).

The significant indirect effects of message type on attitude toward the ad and behavioral intentions found in this study also contributed to our understanding of the differential effects between unbranded and branded DTCA and may help explain the mixed results from prior research. Although this study did not find significant direct effects of message type on behavioral intentions, the significant indirect effect suggests that consumers' behavioral intentions may still be influenced by message type through the activation of persuasion knowledge.

The findings of this study contribute to the sponsorship disclosure literature by extending our understanding of the sponsorship disclosure's effects on ad outcomes to the SMI DTCA context. The lack of direct effects of disclosure on most of the ad outcomes found in this study were consistent with findings from prior research conducted in the context of traditional media (Boerman et al., 2012) and social media (Hayes et al., 2019; Jung & Heo, 2019). Consistent with findings in Analysis 2 of this study, Boerman et al.

(2012) revealed that disclosure presented on a TV show that contained product placement did not directly affect consumers' attitude toward the ad. Similarly, Jung and Heo (2019) as well as Hayes et al. (2019) found no direct effect of disclosure on behavioral intentions in the context of native ads on Facebook and promoted tweets on Twitter.

This study revealed that the presence of sponsorship disclosure on DTCA posts resulted in a higher activation of persuasion knowledge than in the no-disclosure conditions. This finding suggests that a disclosure could increase the accessibility of the SMI's ulterior motives as proposed by Campbell and Kirmani (2000), which then led consumers to recognize the SMI's post as a type of advertisement and activate their persuasion knowledge. The activation of persuasion knowledge then led to a lower attitude toward the ad and lower behavioral intentions, which is consistent with the PKM's premises (Friestad & Wright, 1994) and with the results from prior research in the context of disclosure on social media posts (Boerman et al., 2017; De Veirman & Hudders, 2019; Van Reijmersdal et al., 2016).

The most important finding and the main contribution of this study is the nature of the interaction effect between message type and sponsorship disclosure on persuasion knowledge activation. This study showed that message type had a bigger effect on persuasion knowledge activation than the presence of sponsorship disclosure (Analysis 1: $\eta^2_{\text{MESSAGE TYPE}} = .35$, $\eta^2_{\text{DISCLOSURE}} = .10$; Analysis 2: $\eta^2_{\text{MESSAGE TYPE}} = .32$, $\eta^2_{\text{DISCLOSURE}} = .07$). Furthermore, the interaction effect revealed that the presence of a brand name in the branded SMI DTCA significantly increased persuasion knowledge activation in both disclosure conditions, while the presence of disclosure significantly increased persuasion

knowledge activation only in the unbranded condition. This finding suggests that, when consumers saw a brand name on a post, they recognized the post as a form of advertisement, and adding a disclosure on a branded post did not further increase persuasion knowledge activation. This may also suggest that a brand name might be a more important variable constraint required to instantiate advertising schema and to recognize the post as a form of advertisement than a disclosure. Further investigation on the interaction effects between message type and disclosure in the broader advertising context is warranted.

Practical Implications

This study suggests that the benefits of promoting a particular disease using unbranded DTCA from the advertiser's perspective can be extended to the social media context, particularly using SMI's sponsored DTCA posts. Pharmaceutical companies' collaboration with a SMI to promote disease awareness using unbranded SMI DTCA in social media could result in favorable outcomes as consumers may have a lower activation of persuasion knowledge when viewing these unbranded posts than when viewing the branded posts. This study also found that using a disclosure on unbranded SMI DTCA could help consumers recognize the post as an ad, which prompted the activation of persuasion knowledge as a defense mechanism to infer the true motive of the ad. Thus, pharmaceutical companies should consider placing a prominent disclosure on their unbranded SMI DTCA posts to alert consumers of the promotional nature of the posts and create a more ethical disease awareness campaign.

For regulatory authorities and public policy makers, the conflicting results on the differential effects between unbranded and branded DTCA on ad outcomes warrant further investigations. Specifically, regulatory authorities and public policy makers should further examine the effects of unbranded and branded DTCA across different types of disease (e.g., different disease severity) to gain a more comprehensive understanding and potentially formulate specific regulations for specific types of disease. More studies evaluating the effects of unbranded DTCA vs. branded DTCA in the context of less severe diseases that can be perceived as a non-medical condition are needed to better understand the impact of these DTCA on consumers and identify the optimal regulations that can be used to help address the concern of disease mongering.

The insight that sponsorship disclosure increased consumers' persuasion knowledge activation, particularly on unbranded SMI DTCA posts, suggests the necessity of monitoring and enforcing the sponsorship disclosure requirements on such posts. Adding a disclosure on unbranded SMI DTCA posts can help consumers to be better equipped to cope with these persuasion attempts through the activation of persuasion knowledge. This could help shield consumers from potentially negative influences of these posts, particularly the unbranded SMI DTCA posts promoting a less serious disease which can lead to disease mongering.

Limitations and Suggestions for Future Research

This study has several limitations that should be considered when interpreting the results. First, this study used fictitious SMIs in the stimuli and asked participants to pretend that they followed these SMI on social media. Although using a fictitious SMI

increased this study's internal validity, this limits its generalizability as this study did not account for parasocial interaction between the SMI and their followers which could affect the results. Second, this study was conducted in the context of social media post using picture and text which limits its generalizability to social media posts with similar format. Social media posts using other formats such as video may produce different results. Third, this study used behavioral intentions to measure ad outcomes which may differ from consumers' actual behaviors after seeing the ad. Lastly, this study used Amazon MTurk as participant pool which may not represent the general consumer population who views SMI's DTCA posts on social media and limits the study's generalizability.

To address the limitations presented in this study, future research should evaluate the effects of DTCA posts on social media using a real SMI and assess the effects of parasocial interaction on ad outcomes and consumers' persuasion knowledge activation. Since pharmaceutical companies can collaborate with a variety of SMIs, the effects of different types of SMI (e.g., doctors, celebrities, ordinary people) needs to be investigated. Future research should examine the differential effects of unbranded vs. branded DTCA and the underlying mechanism across different types of diseases (e.g., common vs. rare, severe vs. mild) to better understand the mixed results found in the previous studies and address concerns related to disease mongering. Future research should also consider including consumers' perception of disease severity as a potential factor that can influence ad outcomes across different disease types. Additionally, it may be worthwhile to evaluate the effects of SMI's DTCA posts and disclosure in formats

beyond text and picture to help formulate optimal regulatory guidance across different social media platforms.

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APPENDIX A. EXPERIMENTAL STIMULI

Unbranded with No disclosure – Female SMI



jensmith

4,261 likes

jensmith I used to sweat a lot, I couldn't exercise for 5 minutes without getting drenched. Turns out I have hyperhidrosis, a condition that cause a lot of sweating even when I'm not exercising or when it's not hot outside.

If you have excessive sweating, go see your doctor and ask about hyperhidrosis.

2 hours ago

Unbranded with Disclosure – Female SMI



jensmith


4,261 likes

jensmith #Sponsored I used to sweat a lot, I couldn't exercise for 5 minutes without getting drenched. Turns out I have hyperhidrosis, a condition that cause a lot of sweating even when I'm not exercising or when it's not hot outside.

If you have excessive sweating, go see your doctor and ask about hyperhidrosis.

2 hours ago

Branded with No disclosure – Female SMI



jensmith

4,261 likes

jensmith I used to sweat a lot, I couldn't exercise for 5 minutes without getting drenched. Turns out I have hyperhidrosis, a condition that cause a lot of sweating even when I'm not exercising or when it's not hot outside.

If you have excessive sweating, go see your doctor and ask about XYRAN (glycopyrronium) for hyperhidrosis.

-

XYRAN is a prescription medication used on the skin to treat excessive underarm sweating (primary axillary hyperhidrosis).

-


Important Safety Information:
Do not use XYRAN if you have certain medical conditions that can be made worse by taking an anticholinergic medicine such as glaucoma, severe ulcerative colitis (UC) or other serious bowel problems associated with UC.

The most common side effects of XYRAN include dry mouth, dilation of the pupils, sore throat, skin redness, burning/stinging in the underarm area, headache, problem with urination, blurred vision, and constipation. These are not all the possible side effects of XYRAN. Call your healthcare provider for medical advice about side effects.

Additional safety information can be found at www.xyran.com. You are encouraged to report negative side effects of prescription drugs to the FDA. Visit www.fda.gov/medwatch or call 1-800-FDA-1088. For US residents only.

2 hours ago

Branded with Disclosure – Female SMI



jensmith

4,261 likes

jensmith #Sponsored I used to sweat a lot, I couldn't exercise for 5 minutes without getting drenched. Turns out I have hyperhidrosis, a condition that cause a lot of sweating even when I'm not exercising or when it's not hot outside.

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2 hours ago

APPENDIX A. EXPERIMENTAL STIMULI (CONT.)

Unbranded with No disclosure – Male SMI



jonsmith

4,261 likes

jonsmith I used to sweat a lot, I couldn't exercise for 5 minutes without getting drenched. Turns out I have hyperhidrosis, a condition that cause a lot of sweating even when I'm not exercising or when it's not hot outside.

If you have excessive sweating, go see your doctor and ask about hyperhidrosis.

2 hours ago

Unbranded with Disclosure – Male SMI



jonsmith

4,261 likes

jonsmith #Sponsored I used to sweat a lot, I couldn't exercise for 5 minutes without getting drenched. Turns out I have hyperhidrosis, a condition that cause a lot of sweating even when I'm not exercising or when it's not hot outside.

If you have excessive sweating, go see your doctor and ask about hyperhidrosis.

2 hours ago

Branded with No disclosure – Male SMI



jonsmith

4,261 likes

jonsmith I used to sweat a lot, I couldn't exercise for 5 minutes without getting drenched. Turns out I have hyperhidrosis, a condition that cause a lot of sweating even when I'm not exercising or when it's not hot outside.

If you have excessive sweating, go see your doctor and ask about XYRAN (glycopyrronium) for hyperhidrosis.

- XYRAN is a prescription medication used on the skin to treat excessive underarm sweating (primary axillary hyperhidrosis).

- Important Safety Information: Do not use XYRAN if you have certain medical conditions that can be made worse by taking an anticholinergic medicine such as glaucoma, severe ulcerative colitis (UC) or other serious bowel problems associated with UC.

The most common side effects of XYRAN include dry mouth, dilation of the pupils, sore throat, skin redness, burning/stinging in the underarm area, headache, problem with urination, blurred vision, and constipation. These are not all the possible side effects of XYRAN. Call your healthcare provider for medical advice about side effects.

Additional safety information can be found at www.xyran.com. You are encouraged to report negative side effects of prescription drugs to the FDA. Visit www.fda.gov/medwatch or call 1-800-FDA-1088. For US residents only.

2 hours ago

Branded with Disclosure – Male SMI



jonsmith

4,261 likes

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2 hours ago

APPENDIX A. EXPERIMENTAL STIMULI (CONT.)

Branded with No disclosure
– Product Image

Branded with Disclosure –
Product Image



4,261 likes

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2 hours ago



APPENDIX B. QUESTIONNAIRE

INTRODUCTION

Thank you for your interest in this study! We want to hear your opinions on social media posts. There are no right or wrong answers in this survey, so please provide your answers without thinking too much about it.

Your answers are private and will be grouped with those of other participants. Your answers will also be anonymous and we will never ask for your name.

Click “Next” to begin.

SCREENING

S1 Are you at least 18 years old or older?

- Yes (1)
- No (2)

S2 What is your gender?

- Male (1)
- Female (2)
- Other (3)

S3 Do you currently reside in the U.S.?

- Yes (1)
- No (2)

S4 Have you used any of these social media in the past six months?

Select all that applies.

- Facebook (1)
- Instagram (2)
- Snapchat (3)
- YouTube (4)
- LinkedIn (5)

S5 Do you or someone you know work for any of the following types of company:

- Advertising agency (1)
- Market research agency (2)
- Pharmaceutical or medical device company (3)
- None of the above (4)

MAIN QUESTIONNAIRE

In the next screen, you will be presented with an Instagram post. Review the post in the same manner as if you were browsing through your Instagram feed and pretend that this post is from someone you follow.

Click "Next" once you finish reviewing the Instagram post. We will then ask you a few questions about the post.

Click "Next" when you are ready.

Q1 Overall, the Instagram post I just saw is:

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	
Bad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Good
Useless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Useful
Not informative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Informative
Dislike	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Like
Unpleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Pleasant

Q2 How likely will you be to seek more information about hyperhidrosis?

- Extremely unlikely (1)
- Moderately unlikely (2)
- Slightly unlikely (3)
- Neither likely nor unlikely (4)
- Slightly likely (5)
- Moderately likely (6)
- Extremely likely (7)

Q3 How likely will you be to seek more information about the treatment for hyperhidrosis?

- Extremely unlikely (1)
- Moderately unlikely (2)
- Slightly unlikely (3)
- Neither likely nor unlikely (4)
- Slightly likely (5)
- Moderately likely (6)
- Extremely likely (7)

Q4 How likely will you be to see a doctor to discuss hyperhidrosis?

- Extremely unlikely (1)
- Moderately unlikely (2)
- Slightly unlikely (3)
- Neither likely nor unlikely (4)
- Slightly likely (5)
- Moderately likely (6)
- Extremely likely (7)

Q5 How much do you agree or disagree with the following statements (see Q5a – Q5g):

Q5a The Instagram post I just saw is not advertising

- Strongly disagree (1)
- Disagree (2)
- Somewhat disagree (3)
- Neither agree nor disagree (4)
- Somewhat agree (5)
- Agree (6)
- Strongly agree (7)

Q5b The Instagram post I just saw is commercial

- Strongly disagree (1)
- Disagree (2)
- Somewhat disagree (3)
- Neither agree nor disagree (4)
- Somewhat agree (5)
- Agree (6)
- Strongly agree (7)

Q5c The Instagram post I just saw contains advertising

- Strongly disagree (1)
- Disagree (2)
- Somewhat disagree (3)
- Neither agree nor disagree (4)
- Somewhat agree (5)
- Agree (6)
- Strongly agree (7)

Q5d The aim of this Instagram post is to sell products

- Strongly disagree (1)
- Disagree (2)
- Somewhat disagree (3)
- Neither agree nor disagree (4)
- Somewhat agree (5)
- Agree (6)
- Strongly agree (7)

Q5e The aim of this Instagram post is to stimulate the sales of products

- Strongly disagree (1)
- Disagree (2)
- Somewhat disagree (3)
- Neither agree nor disagree (4)
- Somewhat agree (5)
- Agree (6)
- Strongly agree (7)

QXC Please select "Somewhat agree" for this question

- Strongly disagree (1)
- Disagree (2)
- Somewhat disagree (3)
- Neither agree nor disagree (4)
- Somewhat agree (5)
- Agree (6)
- Strongly agree (7)

Q5f The aim of this Instagram post is to influence your opinion

- Strongly disagree (1)
- Disagree (2)
- Somewhat disagree (3)
- Neither agree nor disagree (4)
- Somewhat agree (5)
- Agree (6)
- Strongly agree (7)

Q5g The aim of this Instagram post is to make people like certain products

- Strongly disagree (1)
- Disagree (2)
- Somewhat disagree (3)
- Neither agree nor disagree (4)
- Somewhat agree (5)
- Agree (6)
- Strongly agree (7)

Q6 Do you recall seeing a sponsorship disclosure (#Sponsored) in the Instagram post?

- Yes (1)
- No (2)

Q7 The person in the Instagram post I just saw seems to be:

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	
Cold	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Warm
Unlikable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Likable
Insincere	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Sincere
Unfriendly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Friendly

Q8 How often do you use Instagram?

- Yearly (1)
- Monthly (2)
- Weekly (3)
- Daily (4)

Q9 How would you describe your overall health:

- Extremely unhealthy (1)
- Unhealthy (2)
- Somewhat unhealthy (3)
- Neither healthy or unhealthy (4)
- Somewhat healthy (5)
- Healthy (6)
- Extremely healthy (7)

Q10 Do you currently use any prescription drug(s)?

- Yes (1)
- No (2)

H1 Prior to this study participation, have you heard about hyperhidrosis?

- Yes (1)
- No (2)
- Unsure (3)

H2 Have you experienced any excessive sweating on your armpits, hands, or feet?

- Yes (1)
- No (2)
- Unsure (3)

H3 Prior to this study participation, have you seen any posts about hyperhidrosis in social media?

- Yes (1)
- No (2)
- Unsure (3)

H4 Prior to this study participation, have you seen any posts about treatment for hyperhidrosis in social media?

- Yes (1)
- No (2)
- Unsure (3)

H5 Have you ever discussed hyperhidrosis with your doctor?

- Yes (1)
- No (2)
- Unsure (3)

DEMOGRAPHIC

D1 What is your age?

D2 Which of the following best describes your racial or ethnic background?

- White/Caucasian (1)
- Black/African American (2)
- Hispanic/Latinx (3)
- Asian (4)
- American Indian/Alaskan Native (5)
- Native Hawaiian/Pacific Islander (6)
- Other (7)

D3 What is your annual household income?

- Below \$10,000 (1)
- \$10,000 - \$24,999 (2)
- \$25,000 - \$49,999 (3)
- \$50,000 - \$74,999 (4)
- \$75,000 - \$99,999 (5)
- \$100,000 - \$125,000 (6)
- Above \$125,000 (7)

D4 What is the highest level of school you have completed or the highest degree you have received?

- Less than high school degree (1)
- High school graduate (high school diploma or equivalent including GED) (2)
- Some college but no degree (3)
- Associate degree in college (2-year) (4)
- Bachelor's degree in college (4-year) (5)
- Graduate degree (Master's degree, Doctoral degree) (6)

DEBRIEF

Thank you for participating in this study. We hope you enjoyed the experience. We would like to provide background about our research to help you learn more about why we are doing this study.

You were told that the purpose of this study was to get your opinions about social media posts.

In actuality, we were interested in learning consumers' perceptions about disease awareness advertising (advertising that describes a disease and is intended to persuade consumers to talk to their doctor about the disease). To protect the integrity of this research, we could not fully divulge all the details of this study at the start of the survey. We are interested in your true opinions and divulging the study details may result in unnatural and skewed responses.

In this study, you may have been presented with a fictitious Instagram post of XYRAN, which is a fictitious drug for hyperhidrosis. To learn more about hyperhidrosis and its available treatment, please visit the International Hyperhidrosis Society website (<https://www.sweathelp.org/>). If you have any questions about hyperhidrosis or its treatment, please consult with your health care provider.

Thank you again for your participation.

Please indicate whether you want your answers to be used in this study:

- Yes, I want my answers to be used in this study (1)
- No, I do not want my answers to be used in this study (2)