GÖTEBORGS UNIVERSITET
HANDELSHÖGSKOLAN

Made with… AI?

The Impact of AI Disclosure on Ad Attitudes

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Master's thesis in Marketing and Consumption

Spring 2025

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Abstract

Artificial Intelligence (AI) is increasingly used in the advertising industry, enabling brands to generate content more efficiently. To ensure transparency, many companies include AI disclosure labels that act as cues signaling to consumers that an advertisement is AI-generated. This thesis aims to investigate how these labels influence consumer attitudes toward advertising, using the Stimulus-Organism-Response (S-O-R) framework as a theoretical foundation. An experimental design with 269 Swedish university students was conducted to explore the impact of AI disclosure on consumer attitudes with two mediators, source credibility and emotional engagement. The results reveal that AI disclosure does not directly influence ad attitudes, but does so indirectly. When tested individually, both source credibility and emotional engagement mediated the relationship between AI disclosure and ad attitudes, indicating a full mediation. However, in the joint mediation model, only source credibility was a significant mediator, suggesting that it plays a more significant role in shaping consumer responses toward AI-generated advertising. These findings contribute to the growing literature on consumer responses to the use of AI in advertising and offer practical insights for marketers trying to balance authenticity with transparency in modern advertising strategies.

Keywords

AI disclosure, AI-generated content, advertising, source credibility, emotional engagement, ad attitudes, S-O-R framework, synthetic advertising, labeling

1. Introduction

The development of Artificial Intelligence (AI) has brought a significant transformation to the advertising industry, creating a new era of artificially generated content. Synthetic advertisements are defined as those generated or altered through automated AI-enhanced tools that create or modify data to produce content (Campbell *et al*., 2021). Marketers are able to create highly personalized and visually appealing advertisements through AI-powered algorithms which increase creativity and innovation and lower production costs (Campbell *et al*., 2022). However, despite the creative and economic advantages of AI in advertising, concerns have emerged regarding how AI-generated content affects perceptions of emotional connection and trust toward the advertisement (Wortel, Ini Vanwesenbeeck and Tomas, 2024). These developments have raised debates concerning whether brands should disclose the use of AI in generating content and how these disclosures can impact consumer behavior (Kirkby, Baumgarth and Henseler, 2023).

AI disclosure labels have been proposed as a solution to these challenges, allowing companies to inform consumers that their content has been generated by AI technologies (Meta, 2024; TikTok, 2024). While the objective is to increase transparency, as previous

research suggests, AI disclosure may have mixed effects on consumers' perceptions. On the one hand, it can increase transparency and perceptions of honesty (Kim, Giroux and Lee, 2021; De Jans, Cauberghe and Hudders, 2018), but on the other, AI may lead to skepticism and reduce emotional engagement and credibility of the advertisement (Wortel, Ini Vanwesenbeeck and Tomas, 2024; Kirk and Givi, 2025).

This tension has become evident in recent real-world cases. In January 2025, Coop, the major Swedish grocery retailer, faced significant backlash on social media platforms for using AI-generated people in their latest campaign. Although the ad was not labeled as AI when posted on Instagram, users could identify it describing it as deceptive and out of character for the brand (Ericson, 2025). Similarly, in March 2023, Levi Strauss & Co (LS&Co), popularly known as Levi's, announced a partnership with Lalaland.ai, a digital fashion studio that creates personalized AI-generated models (LS&Co, 2023). Even though Levi's disclosed AI use, the company was criticized for replacing real models and the decision was perceived as inauthentic and exploitative, leading to the termination of the partnership (LS&Co, 2023; Maiolo, 2024). These examples illustrate how both non-disclosure and poorly managed disclosure of AI-generated content (AIGC) can affect brand authenticity and consumer trust.

Simultaneously, major social media platforms have begun to implement new transparency measures, reflecting an industry trend towards increased transparency regarding AI use. In 2024, Meta and TikTok introduced content labels to indicate AI-generated material, aiming to increase user awareness and uphold transparency (Meta, 2024; TikTok, 2024). Moreover, the European Union's Artificial Intelligence Act, which came into force in August 2024, mandates the clear labeling of AIGC across platforms by 2026, with non-compliance leading to penalties for companies (European Union, 2024). This regulation affects not only EU-based businesses but also global platforms that offer their services in the EU market that will need to adjust their practices to align with the new legislation.

Previous research has focused on the impact of AI-generated advertisements on consumer responses, particularly in terms of brand perception, ad effectiveness and trust (Baek, Kim and Kim, 2024; Grigsby, Michelsen and Zamudio, 2025). Some studies suggest that AI-generated ads can enhance ad efficiency through content personalization (Campbell *et al*., 2022), while others point out concerns regarding inauthenticity and reduced consumer trust (Wortel, Ini Vanwesenbeeck and Tomas, 2024, Wang *et al*., 2025). Despite the growing research on AI applications in the marketing field, limited attention has been given to the indirect psychological mechanisms through which AI disclosure affects consumer attitudes, particularly in the area of product advertising. Specifically, there is a lack of studies exploring how AI disclosure influences consumer perceptions through constructs such as source credibility and emotional engagement. Therefore, this research aims to address this gap by exploring how the presence or absence of AI disclosure labels affects consumer attitudes toward a specific advertisement.

The study applies the Stimulus-Organism-Response (SOR) framework by Mehrabian and Russell (1974) to guide the investigation. Through this framework, the research explores the

underlying psychological mechanisms that mediate the impact of AI disclosure on consumer attitudes, by explaining how external stimuli (AI disclosure), affect individuals' internal conditions (perceptions of source credibility and emotional engagement), eventually shaping their responses (attitudes toward the ad).

Theoretically, this study contributes to a deeper understanding of how transparency about AI involvement influences consumer attitudes in advertising, extending the application of the S-O-R framework into the context of AI marketing communications. From a practical perspective, the findings of this research provide guidelines to marketers and advertisers, helping them to balance the ethical challenges of AI transparency while maintaining source credibility and emotional engagement.

As such, this thesis is guided by the following research question:

- "*How does the AI disclosure in advertising impact consumer attitudes toward the ad?".*

The results of the experimental study show that there is no direct effect of AI disclosure on ad attitudes toward advertisements. Instead, this relationship is indirectly mediated mainly through source credibility and, on a smaller scale, emotional engagement. This suggests that consumer reactions to AI-generated advertisements aren't predetermined or instinctive but rather shaped by cognitive evaluations of advertisements. The following section presents the theoretical framework that guides the investigation, highlighting important concepts and relationships that shape consumer attitudes toward AI-generated advertisements. This is followed by the experimental design which describes the methodology used to test the hypotheses and examine causal relationships between the variables. The results and analysis present the empirical findings, followed by a discussion of theoretical and practical implications. Finally, the study concludes with an overview of the study's limitations, suggestions for future research and a summary of the key conclusions.

2. Theoretical framework

To understand how consumers respond to AI-disclosed advertising it is important to investigate the broader context of AI-generated content and its role in marketing. This provides a foundation for exploring how AI functions as a stimulus, shaping consumer attitudes. The S-O-R framework is applied to structure this understanding, highlighting how psychological factors like source credibility and emotional engagement influence ad attitudes. This framework also supports the study's hypothesis and conceptual model.

2.1. Artificial Intelligence in Advertising and AI-Generated Content (AIGC)

AI has brought about transformative change in different industries. It is commonly defined as the study of intelligent systems or agents that interpret information from their environment

and take actions to achieve specific goals based on those perceptions (Russell & Norvig, 2020). More specifically, AI refers to "a system's ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation" (Haenlein and Kaplan, 2019, p.17). As a result, an increasing number of companies are adopting AI technology as a way to optimize their marketing efforts, cut costs, and enhance efficiency (Martínez *et al*., 2024).

One of the most significant applications of AI in advertising is Artificial Intelligence Generated Content (AIGC). AIGC refers to material created by AI models that produce text, images, and video based on user input (Wu *et al*., 2024b). AIGC has emerged as an important transformation in content creation, giving the opportunity to companies to generate high-quality material, making it a promising tool for marketing and advertising (Wang, 2023).

AIGC is increasingly employed in advertising across different content formats. AI tools are commonly used to generate product descriptions, blogs and chatbot responses, thereby ensuring consistency with consumer preferences (Shafiq Obeidat, Nazmy and Rizvi, 2024). In contrast, traditional software tools rely on human input, creativity, and brainstorming to develop ideas and generate content (Lin *et al*., 2024). Compared to traditional approaches, AIGC tools offer faster and more efficient content generation and are often more accessible and user-friendly for creators (FG Newswire, 2025). This combination of efficiency and ease of use are key reasons for their growing adoption in the marketing practice.

There are multiple examples of AI in advertising. Some of these focus on the creation of visual content, where AI-enhanced tools create and modify images, logos and advertisements, making graphic design more efficient (Wu *et al*., 2024b). AI also contributes to audio production, enhancing brand communication, with synthetic speech, voice cloning and voice assistants, improving automated customer interactions (Wang, 2023). Gao *et al*. (2023) categorize AI's role in advertising content creation in three key areas: generating images and videos, copywriting, and content planning, highlighting its expanding influence in marketing strategies. A few applications of AI in advertising content include ChatGPT for generating written content, Dall-E and Midjourney for producing lifelike images and visual art, Steve AI for crafting videos and animations, and Boomy for composing music (Wahid, Mero and Ritala, 2023). This showcases the diverse ways in which AI is reshaping how advertising content is created and distributed across platforms.

This growing use of AI in creating content has led to the rise of synthetic advertisements, highly realistic commercial content that is generated by AI technologies (Campbell *et al*., 2021). While AIGC is applied across multiple advertising formats including text, audio and video, this study focuses on AI-generated images and their impact on consumer attitudes as they play an increasingly significant role in AI-driven communication.

In order to understand how AI disclosure in advertising affects consumer responses, it is important to apply a theoretical model that explains the psychological processes behind this

reaction. The Stimulus-Organism-Response (S-O-R) model provides a relevant framework that has been used to examine factors shaping consumer attitudes.

2.2. S-O-R Model

The S-O-R model is an environmental psychology model originally proposed by Mehrabian and Russell (1974), which expands on the earlier Stimulus-Response (S-R) theory developed by Watson (1913). In the traditional S-R theory, external stimuli (S) are assumed to directly trigger behavioral responses (R). In contrast, the S-O-R model introduces an intermediary stage, the organism (O), which represents the individual's internal emotional and cognitive stage. In this updated framework, environmental stimuli (S) influence emotional states (O), which then affect behavioral responses (R). This change acknowledges that environmental stimuli do not directly result in behavior, recognizing the influence of consumers' internal state in shaping their responses (Hussain *et al.*, 2022).

In this relationship, stimulus represents external environment attributes as perceived by an individual at a given moment (Jacoby, 2002). Changes in stimuli, whether by introducing novelty, unpredictability or complexity, can thus generate different outcomes (Vieira, 2012). The second component, the organism, is the combination of various internal factors, including past experiences, knowledge, and values (Jacoby, 2002). When a stimulus is activated, consumers evaluate that information in a way that helps them understand the environment (Islam and Rahman, 2017). This understanding allows them to make subsequent decisions or judgments (Loureiro *et al*., 2019). Lastly, response refers to an individual's reaction to the stimulus, which can be categorized as either approach (positive behavior) or avoidance (negative behavior) (Floh and Madlberger, 2013). Exposure to the same stimulus can evoke different reactions in individuals as each person perceives and interprets it through a unique lens (Anubha and Jain, 2022).

This framework has since been expanded and applied in consumer behavior research, namely to retail environments (Donovan and Rossiter, 1994; Chang *et al*., 2011), as well as in online shopping settings (Zhu *et al*, 2019; Kim and Lennon, 2013). More recently, several studies have applied the S-O-R model to understand consumer reactions to AI-generated advertising. Slaton, Sanjukta Pookulangara and Ratnam (2025) employed it to examine how luxury brands and AI-generated social media marketing influence consumer follow intentions, while Gu *et al*. (2024) explored how characteristics of AI-generated, such as verisimilitude, vitality, imagination, and synthesis, affect consumer acceptance.

In this study, the S-O-R model allows for a structured approach to understand the role of AI disclosure (S) in shaping consumers' cognitive and emotional states, analyzed through source credibility and emotional engagement (O), which, in turn, influence their behavioral response, reflected in ad attitudes (R). While attitudes toward the ad are not a direct behavioral action, they are used in advertising research to reflect how consumers respond and evaluate external stimuli. According to MacKenzie, Lutz and Belch (1986), ad attitudes influence brand attitudes and purchase intentions, making it a significant factor in understanding how consumers react to ads. Since the model suggests that external factors can

shape people's thoughts and emotions, ultimately affecting their behavior (Li *et al.*, 2023), it offers valuable insight into how individual consumers react to AI-generated ads in increasingly dynamic digital advertising landscapes.

2.3. Stimulus: AI Disclosure as Informational Cue

As AI continues to evolve in content creation, transparency about its integration becomes increasingly important (Wittenberg *et al*., 2024). AI disclosure refers to the process of revealing to the public the use of AI when developing content (Ali *et al*., 2024). According to the authors, this includes information about the role of AI, the data collection process, as well as decision-making practices. In advertising, AI disclosure creates transparency regarding the contribution of technology in generating content, helping consumers understand the origin of the advertisement (Semaan, Kocher and Gould, 2018).

AI disclosure labels have been proposed as a tool to reduce risks associated with Generative AI and educate the public about AIGC (Wittenberg *et al.*, 2024). Generative AI refers to artificial intelligence systems that can create seemingly new content, including text, images and audio, by learning patterns from existing data (Feuerriegel *et al.*, 2023). By offering clear evidence of AI involvement, disclosure labels assist consumers in understanding the type of content they come across, consequently influencing their perceptions of trust and reliability. These labels act as informational cues signaling to consumers that the advertisement was produced using AI technology (Wortel, Ini Vanwesenbeeck and Tomas, 2024).

Individuals often use AI disclosure labels as a heuristic, a mental shortcut, to be able to decide which sources to trust online, similar to how they rely on other cues like platform credibility or brand reputation (Altay and Gilardi, 2024). However, Jakesch, Hancock and Naaman (2023) suggest that without clear labeling, people rely on misleading cues like grammar or wording, reducing their ability to correctly identify AIGC. This highlights the importance of disclosure labels in providing more accurate consumer judgments. Moreover, Saeedi, Goodarzi and Abdullah (2024) argue that although heuristics support fast reasoning, they also result in systematic biases that impact decision-making. These flawed mental shortcuts might raise ethical concerns especially when consumers misinterpret AI-generated communication, showing the importance of disclosure strategies in advertising to enhance transparency and reduce misinterpretation (Saeedi, Goodarzi and Abdullah, 2024).

Insights from Epstein *et al.* (2023) further highlight how different AI disclosure labels signal different types of information. Thus, the terminology employed plays a significant role in both identifying how the content is created and how deceptive the content may be. In this study, terms like "AI Generated" and "Generated with an AI Tool" were interpreted as indicators of AI involvement in the creation process, without necessarily implying deception, whereas using a "Manipulated" or "Not Real" label triggered stronger negative reactions and higher levels of distrust, as it was more closely associated to deceptive content.

Both types of disclosure, "Made with AI" and non-disclosure, influence the way consumers perceive advertisements. Disclosure strategies are particularly important due to growing legislation and ethical requirements related to AI technologies (Cath, 2018). Given that AI

disclosure labels in advertising serve as external cues that can alter consumer perceptions and emotions, we categorize them as stimuli within the S-O-R model. Specifically, the presence or absence of a "Made with AI" label is expected to trigger cognitive and affective states, which then elicit either avoidance or approach responses towards the advertisement.

2.4. The Effect of AI Disclosure on Ad Attitudes

Attitudes toward advertisement (Aad) as a concept first drew significant research attention in the marketing field in the early 1980s (Shimp, 1981; Mitchell and Olson, 1981). These studies established Aad as a key factor in how consumers responded to advertisements, laying the foundation for future explorations of how consumer attitudes toward advertisements enhance brand attitudes and purchase intentions. MacKenzie, Lutz and Belch (1986) further identified Aad as a mediator between ad exposure and both brand attitudes and purchase intentions. Lutz (1985) defined Aad as an individual's tendency to react positively or negatively to a specific advertisement when exposed to it in a given situation.

Whereas early Aad research focused on traditional media such as television and print (De Pelsmacker and Van Den Bergh, 1996; Speck and Elliott, 1997), the 2010s shifted this attention towards social media advertising and influencer marketing (Evans *et al.*, 2017; Muk and Chung, 2015). As marketing efforts start to be increasingly more reliant on AIGC (Du, Zhang and Ge, 2023), it becomes crucial to understand how AI-generated ads influence Aad. As a result, recent experimental studies on AI disclosure have investigated its impact on ad attitudes (Baek, Kim and Kim, 2024; Yin, Ma and Pan, 2024).

In addition to disclosure effects, AI-generated advertising can introduce psychological discomfort, especially through the phenomenon known as uncanny valley, which can negatively affect how these ads are perceived by consumers. This concept, introduced by Mori, MacDorman and Kageki (2012), provides a framework for understanding the unease people feel when artificial beings resemble human characteristics but fail to be convincing, making them seem unnatural. Avdeeff (2019) describes works of AI as a balancing act between discomfort and fascination, where AI introduces novel creative possibilities but also challenges traditional human-centered ideas of creativity. Wu *et al.* (2024a) further examined uncanny valley effects evoked by AI news anchors, with results suggesting that they were unsuccessful in resonating emotionally with viewers, thereby eliciting discomfort. Thus, since the emotional connection is generally considered to be an important factor in ad effectiveness (Wiles and Cornwell; 1991; Poels and Dewitte, 2019) this phenomenon can present a challenge for advertising.

Moreover, consumers often hold negative biases against AI, expecting it to perform at higher standards than humans while being less forgiving of its mistakes (Luo *et al.*, 2019). Even with significant advancements in AI and its demonstrated capabilities, this critical attitude persists, influencing how individuals perceive and interact with AI systems.

By applying the S-O-R model, ad attitudes are categorized in the response dimension, thereby reflecting consumers' reactions to AI-disclosed advertisements. Specifically, AI disclosure can trigger a negative consumer reaction (Brüns and Meißner, 2024). In contrast, when content lacks an explicit AI disclosure, people are less likely to view it through the lens of AI skepticism (Altay and Gilardi, 2024). Building on the insights presented, the following hypothesis is formulated:

> H1: AI-disclosed advertisements will generate less favorable ad attitudes compared to those without labels.

2.5. Psychological and Cognitive Mediators

Based on the S-O-R framework, the study focuses on two psychological and cognitive factors that shape consumer responses toward AI-disclosed advertisements: source credibility and emotional engagement. These reflect how individuals process the advertisement internally before forming their evaluations. Both factors are discussed below.

2.5.1. Mediation Effects of Source Credibility

Source credibility refers to the extent to which people rely on past experiences and perceptions of a source's expertise and trustworthiness to evaluate the validity of new information from that source, often without reassessing its accuracy (Lucassen and Schraagen, 2012). Traditionally, source credibility has been linked to human endorsers such as celebrities and influencers (Schouten, Janssen and Verspaget, 2020), but in the context of AIGC, credibility perceptions may change due to concerns about algorithmic authenticity and trust (Jago, 2019).

When AI disclosure is absent in an advertisement, consumers attribute the message source to the brand itself, making the ad just as persuasive as a traditionally created one, whereas in cases of AI disclosure, AI is seen as a source of the message which influences how viewers perceive the ad's origin and credibility (Grigsby, Michelsen and Zamudio, 2025). This suggests that AI disclosure can introduce skepticism, namely when the audience perceives the AIGC as less authentic or inferior to human-made ads.

Moreover, authenticity is among the key factors that shape source credibility, albeit not in isolation. Perceived authenticity is the extent to which an advertisement appears true and genuine and enhances consumer trust (Beverland and Farrelly, 2009). However, AI-disclosed ads may be perceived as synthetic or impersonal since AIGC is often viewed as less authentic due to the lack of creativity and emotions associated with human creators (Wang *et al.*, 2025). This raises concerns not only regarding perceived authenticity, but also about the trustworthiness, accuracy, and expertise of the ad source. Hua (2025) notes that although AIGC benefits from large databases and powerful algorithms for analysis, its credibility is diminished due to inaccuracies, namely in the form of untrue or biased information stored in its training data. Similarly, Liu, Wang and Yu (2023) found that AIGC was perceived as less credible and lacking in expertise when compared to human-made content, suggesting that

people show hesitancy towards trusting AI as a reliable source of information. This effect is reinforced when AI disclosure is evident, as consumers may interpret the use of AI as compromising the trustworthiness and authenticity of the advertisement (Aljarah, Ibrahim and López, 2024).

Finally, when consumers perceive an ad's source as less credible, either due to reduced trust or diminished authenticity, they are likely to respond less favorably to the advertisement (Kim, Giroux and Lee, 2021), giving way to an avoidance response. Within the S-O-R model, source credibility aligns with the organism stage, representing how consumers process the AI disclosure stimulus. When AI-generated ads are labeled as such, doubts about credibility are expected to reinforce negative ad attitudes. Conversely, with a lack of labels, consumers are more likely to trust the ad as its creation is attributed to the brand, leading to more positive ad attitudes. Based on this reasoning the following hypothesis is proposed:

> H2: Source credibility mediates the relationship between AI disclosure and ad attitudes, such that "Made with AI" labels decrease perceived credibility, leading to less favorable ad attitudes, when compared to non-disclosure.

2.5.2. Mediation Effects of Emotional Engagement

Emotional engagement describes the feelings or connections that an advertisement evokes in consumers and can influence their attitudes toward the ad and the brand, as well as their purchase intentions (Holdbrook and Batra, 1987; Batra, Ahuvia and Bagozzi, 2017). Strong emotional responses can strengthen an ad's effectiveness, creating stronger relationships and increasing the possibility of positive consumer behavior (Becker, Wiegand and Reinartz, 2018).

However, when AI disclosure is evident, emotional engagement typically generated by ads may be reduced. Since AI lacks the ability to express real feelings, consumers may find it difficult to create a meaningful connection with AIGC, which can lead to skepticism about the ad's emotional depth (Kirk and Givi, 2025). This is especially evident in ads that are perceived as inauthentic due to their mechanistic and emotionless nature (Wang *et al.*, 2025; Campbell *et al.*, 2022). Arango, Singaraju and Niininen's (2023) study focusing on the impact of employing AI-generated faces on charity donation intentions, further suggests that consumers tend to feel less empathy when they are aware that an image was created by AI, making them less likely to donate.

The absence of human-like feelings creates a gap between consumer expectations and the ad's ability to trigger the desired emotional responses (Zhang and Patrick, 2021). As a result, when consumers are aware that a specific ad has been created by AI, the emotional connection expected from traditional advertising is often weakened, leading to discomfort and disengagement (Kirk and Givi, 2025). This can result in negative consumer attitudes toward the ad and brand, as emotionally charged content is important for building meaningful relationships and fostering trust (Becker, Wiegand and Reinartz, 2018).

While AI disclosure is expected to weaken consumers' emotional bond with a given ad, its absence may elicit a stronger emotional response, resulting in greater ad effectiveness. Therefore, emotional engagement serves as a mediator in understanding how both "Made with AI" labels and lack of disclosure influence consumers' attitudes and reactions toward advertisements. Based on the aforementioned relationship, emotional engagement can be classified as part of the organism stage within the S-O-R model. Thus, the following hypothesis is developed:

> H3: Emotional engagement mediates the relationship between AI disclosure and ad attitudes, such that "Made with AI" labels reduce emotional engagement, leading to less favorable ad attitudes, when compared to non-disclosure.

2.6. Conceptual Model

Figure 1 illustrates the conceptual model developed for this study, presenting the hypothesized relationships between AI disclosure, the mediators (source credibility and emotional engagement) and consumer attitudes toward the advertisement.

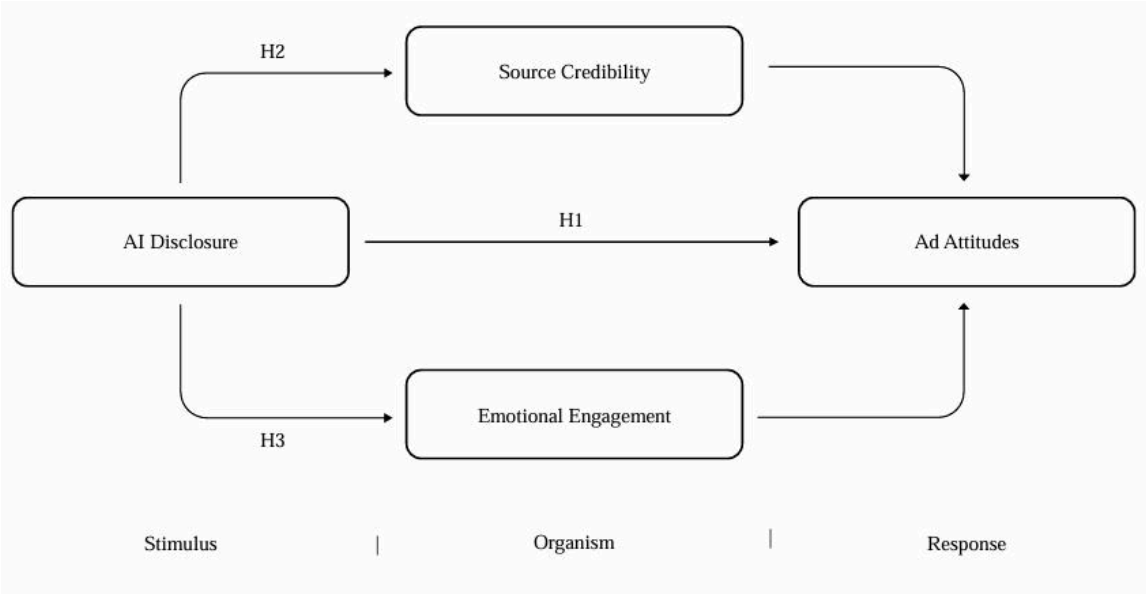

Figure 1. Conceptual Framework of the Impact of AI disclosure on consumer ad attitudes

3. Methodology

Building on this theoretical framework, the next section provides an overview of the experimental design employed to investigate the impact of AI disclosure on consumer attitudes toward advertisements. It highlights how the experiment was structured including the research setting, development of stimulus material, measurement tools, manipulation check and participant recruitment.

3.1. Experimental Design and Procedure

To measure the influence of AI disclosure on consumer attitudes, this study employs an experimental design. According to Malhotra, Birks and Nunan (2017), an experiment is a study in which one or more independent variables are deliberately manipulated to observe their effect on one or more dependent variables, while making sure that external factors are kept under control. As the independent variables are the only factors that change between the conditions, this level of control allows researchers to establish causal relationships (Malhotra, Birks and Nunan, 2017).

Similarly, Van der Stede (2014) suggests that experimental research enables the measurement of causality, determining how changes in one variable directly influence changes in another. In this study, the independent variable is AI disclosure ("Made with AI" label vs. no label) while the dependent variable is consumer attitudes toward the advertisement. Two mediators: source credibility and emotional engagement, are included to explore the mechanisms that shape the relationship between AI disclosure and consumer attitudes. By manipulating AI disclosure, this experiment aims to provide insights into how transparency regarding AI involvement affects consumer perceptions toward advertising.

In order to create a natural, yet controlled setting, this study targeted students as the primary demographic. This group was selected not only for accessibility but also because their lifestyle aligns with the consumption context of the product being advertised: a protein bar. Participants were recruited across multiple university campuses, in Gothenburg, Sweden, providing a familiar environment for the experiment. Although the advertisement was not presented in an actual point-of-sale environment, the setting aimed to reflect aspects of a typical consumer interaction, such as viewing a product advertisement in an everyday, familiar context. As noted by Morales, Amir and Lee (2017), realistic experiments involve participants who are aware that they are taking part in a study but are exposed to stimuli in settings that reflect natural consumption experiences.

A between-subjects experimental design was used, where participants were randomly assigned to only one experimental condition (Spilski, Gröppel-Klein and Gierl, 2018). This approach ensures that participants' evaluations are not influenced by previous exposure to multiple conditions and helps prevent respondent fatigue, which occurs when the same individual is tested multiple times (Geuens and De Pelsmacker, 2017).

Respondents accessed the experiment through a QR code, which directed them to an online survey. The survey was administered using the Qualtrics platform, which enabled random assignment to experimental conditions and helped maintain a consistent experience for every respondent. Although the survey was conducted digitally, participation took place in person, ensuring that the study was conducted in a controlled setting. Before being allocated to one of the two conditions, participants were first given information about the study and provided their informed consent. Then, in the AI-generated disclosure condition, participants viewed an advertisement for a chocolate protein bar (PeakBar) that included a label stating: "Made with AI". This particular wording was chosen based on AI disclosure labels introduced by

Meta in May 2024, which were used across Instagram and Facebook for approximately two months before being replaced with a more neutral and interactive "AI info" label (Weatherbed and Roth, 2024). However, this second label was considered too ambiguous for the purposes of this experiment, as it did not explicitly state that the content was created using AI. In the non-disclosure condition, participants viewed the same advertisement without any clarification regarding the ad's creation. The image, visuals and product messaging were the same in both conditions, ensuring that any variations in respondents' reactions were attributed only to the presence or absence of AI-disclosure. After their exposure to the ad, participants filled out a survey measuring overall attitudes toward the advertisement and perceptions of source credibility and emotional engagement.

3.2. Selection of Advertisement and Disclosure Manipulation

To examine the influence of AI disclosure on consumer attitudes toward advertisements, the selection of the advertisement and disclosure manipulation were carefully designed to ensure experimental validity. The product category and brand were chosen to maintain objectivity and avoid any potential pre-existing biases, ensuring that participants' evaluations were based only on the experiment's manipulation rather than on preconceived notions toward a familiar brand.

A protein bar was selected as the product depicted in the advertisement as it represents a neutral, low-involvement product category (Zaichkowsky, 1994), commonly used by modern consumers (Nielseniq, 2024). This neutrality minimizes the influence of strong brand attachments or personal preferences allowing participants to focus on the manipulated elements of the advertisement, namely the presence or absence of AI disclosure. In line with previous research, a fictitious brand, "PeakBar", was adopted to avoid the effects of brand familiarity or reputation. As Geuens and De Pelsmacker (2017) suggest, using a hypothetical brand helps isolate the experimental manipulation effect by eliminating the influence of existing consumer attitudes.

Initially, using a fully AI-generated image for the fictional advertisement was considered. However, during the selection process, it became evident that AI-generated visuals often exhibit noticeable characteristics that signal their synthetic nature, such as unnatural textures, distorted details, and an overall artificial appearance. This meant that participants in the non-disclosure condition might be able to recognize the ad as AI-generated, which could influence their responses, regardless of the presence or absence of an AI disclosure label. To maintain experimental control and to ensure that the label was the only variable manipulated, we opted to create the advertisement manually, using Canva, incorporating visual elements sourced from Freepik. The final ad design was inspired by real protein bar advertisements to enhance realism and remove unintended AI-related cues.

The image, product visuals and marketing message were held constant in both conditions, to maintain experimental control and validity (Malhotra, Birks and Nunan, 2017). Since the presence or absence of an AI disclosure label was the only variable that was altered, any

variations in consumer responses can be directly linked to its impact on consumer attitudes. The experimental conditions were designed as follows:

- AI-Generated Disclosure Condition: The advertisement featured a label at the top stating: “Made with AI”.

- Non-Disclosure Condition: The same advertisement was presented without any label and clarification regarding its source.

Both the advertisement layout and the AI disclosure manipulation were designed to reflect real-world scenarios, such as digital ads that commonly appear on social media and e-commerce platforms, where some brands disclose AI involvement in content creation while others do not.

3.3. Ensuring experimental validity

To ensure that the study accurately measures the effects of AI disclosure on consumer attitudes, particular attention was given to the validity of the experimental design. In experimental research, validity is categorized into internal and external (Campbell, 1957). According to Haghani (2023), internal validity establishes whether the observed effects are caused by experimental manipulation rather than external factors. External validity, on the other hand, evaluates the extent to which the results can be generalized in the real world, beyond the particular conditions of the experiment (Findley, Kikuta and Denly, 2021).

A key component for maintaining internal validity is random allocation to the conditions, which was applied in this study to eliminate systematic differences between respondents and prevent selection bias (Albright and Malloy, 2000). Additional methods for assessing validity include content and construct validity (Sireci, 1998). Content validity ensures that the study design contains appropriate measures to accurately evaluate the expected effects, reducing the likelihood of measurement errors (Mariel *et al.*, 2020). The in-person data collection method in the study enhances content validity by enabling participants to receive briefings and clarifications if necessary. This approach reduced inconsistencies and distraction which are common in online surveys, where researchers have limited control of participants' involvement (Geuens and De Pelsmacker, 2017).

Construct validity assesses whether the study measures the intended theoretical concepts effectively (Haghani, 2023). Construct validity is important, as poorly defined constructs can lead to misinterpretation of findings (Rossiter, 2002). Likert-scale measures were employed in this study, to evaluate source credibility and emotional engagement, ensuring consistency with previous research, while adapting the scales to meet the study’s objectives (Mariel *et al.*, 2020).

External validity was also evaluated to determine if the study’s findings could be applied beyond the controlled experimental setting (Campbell, 1957; Findley, Kikuta and Denly, 2021). External validity ensures that the observed effects of AI disclosure on consumer attitudes extend to broader consumer populations and real-world advertising contexts.

An important aspect of external validity is ecological validity, which refers to how well the study reflects real-world conditions (Schmuckler, 2001). In order to better reflect how consumers engage with advertisements in everyday life, the advertisements in this study were designed to be closely similar to the digital ones, commonly found on social media and e-commerce platforms. Moreover, by mirroring real-world labels that consumers have recently seen on Meta's platforms, this study enhances ecological validity and ensures that participants can easily interpret the label's meaning. The study reduced potential biases by ensuring that participants only focused on the AI disclosure effect, while the moderating variable of brand reputation was excluded.

3.4. Measures

To examine the effects of AI disclosure on consumer attitudes toward the advertisement, this study employed validated measurement scales (Table 1). The dependent variable, attitudes toward the ad (Aad), was measured using semantic differential scales adapted from MacKenzie, Lutz and Belch (1986) and updated to AIGC. Participants evaluated the advertisement through four adjective pairs "Unfavorable – Favorable", "Boring – Interesting", "Unappealing – Appealing", and "Unoriginal – Creative". Each pair was rated on a five-point semantic differential scale where 1 reflected stronger agreement with the negative adjective on the left, 3 reflected a Neutral position and, 5 reflected stronger agreement with the positive adjective on the right. Higher scores indicate more favorable ad attitudes.

Source credibility was evaluated using an adapted version of the scale proposed by Huschens *et al.* (2023), updated for the advertising context. Respondents assessed how well four descriptive words (Knowledgeable, Trustworthy, Accurate, Authentic) described the source of the advertisement, using a five-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). This allowed for the evaluation of the expertise and authenticity of the ad's creator.

Emotional engagement was measured using adapted scales from Stout and Leckenby (1986) and O'Brien and Toms (2008), which captured participants' emotional reactions to the advertisement. Participants rated their agreement with four statements: "The advertisement was visually appealing", "I felt personally connected to the ad's message", "The ad was emotionally expressive", and "The ad resonated with my personal experiences". These items were rated on a five-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree), where higher scores indicate greater emotional involvement in the advertisement.

In addition to the key experimental variables, the survey collected demographic characteristics of the respondents, such as age, gender and education level. These variables were not included in the current analysis, since the focus was specifically on examining the effects of AI-disclosure on ad attitudes. However, collecting this information contributed to the transparency of the study.

Construct	Items
Ad Attitudes (Aad) *Adapted from MacKenzie, Lutz and Belch (1986)*	Please rate the advertisement based on the following word pairs: Unfavorable – Favorable Boring – Interesting Unappealing – Appealing Unoriginal – Creative
Source Credibility *Adapted from Huschens et al. (2023)*	How well do the following words describe the creator of the advertisement you just saw? Knowledgeable Trustworthy Accurate Authentic
Emotional Engagement *Adapted from Stout and Leckenby (1986); O'Brien and Toms (2008)*	Please indicate the extent to which you agree with the following statements about how this advertisement made you feel. The advertisement was visually appealing. I felt personally connected to the ad's message. The ad was emotionally expressive. The ad resonated with my personal experiences.
Manipulation Check	Did the advertisement contain any mention of AI involvement? (Yes/No)
Demographic Variables	Age Gender Academic level

Table 1. Measured Constructs

3.5. Pretest and Manipulation Check

To ensure the effectiveness of experimental manipulation and the clarity of the questions, a pretest was conducted before the primary data collection. A small group of participants (N = 9) was exposed to one of the two conditions (either the AI-disclosure version or the non-disclosure version) and then filled out the survey assessing their attitudes regarding the advertisement, source credibility and emotional engagement.

The main goal of the pretest was to verify that participants viewed and correctly comprehended the AI-disclosure label. Originally, this was confirmed through two manipulation check questions but based on participant feedback, only the more direct question ("Did the advertisement contain any mention of AI involvement?") was chosen in the final survey to improve comprehension.

Furthermore, the pretest assessed the consistency of the questionnaire items. Feedback from participants indicated that some initial pairs of items were perceived as too similar. More specifically, "pleasant" and "likable" which measured ad attitudes and "trustworthy" and "honest" which assessed the source credibility of the advertisement creator, were considered overlapping. In response, the measurement scales were refined to improve clarity. For attitudes toward the advertisement, semantic differential points were reintroduced, including slider scales to better capture participant evaluations. For source credibility, the items were adapted into clearer five-point Likert statements focusing on different characteristics of the ad creator. Regarding emotional engagement, participants found the initial statements too direct and unnatural, as they did not fully capture the range of feelings evoked by the advertisement. Based on this, the items were revised to more experience-focused statements assessed on a five-point Likert scale to reflect both positive and negative emotional reactions to the advertisement.

Additionally, the pretest highlighted some areas where the study procedure could be improved. Based on participant feedback, a short text was added before displaying the advertisement to instruct participants to pay close attention, as the ad would only be shown once and would serve as the basis for all the subsequent questions. In general, participants found the survey easy to understand and quick to complete, which helped to keep them engaged and avoid fatigue during the study. Overall, the pretest provided valuable feedback and led to important adjustments, resulting in a clearer, more reliable questionnaire and a stronger foundation for the study.

3.6. Sample and Participant Recruitment

Following the recommendations of Fritz and MacKinnon (2007), this study recruited 269 participants, thereby ensuring adequate statistical power for detecting mediation effects of medium size. Participants were approached across several university campuses in Gothenburg, specifically in common areas such as cafeterias and corridors. All students who were available and willing were invited to take part in the experiment. Those who agreed to participate - 59% of people approached - were able to access the online survey through a QR code. Participants were then randomly assigned to one of the two experimental conditions (AI disclosure vs non-disclosure) through randomization features within the Qualtrics platform.

Respondents were presented with a consent form, explaining the purpose of the study, data usage and their right to withdraw, as participation was voluntary and anonymous. The questionnaire was formulated in English, which due to a high level of English proficiency in the target group, university students in Sweden, was considered both appropriate and unlikely to affect comprehension.

4. Results and Analysis

After the data collection, the analysis begins with data preparation and an outline of the sample characteristics, before moving on to the manipulation check, descriptive statistics and hypothesis testing.

4.1. Data Cleaning & Preparation

Following the data collection process between April 10th and April 20th, 269 responses were exported from Qualtrics to SPSS. Eight incomplete responses were removed due to having completed less than 50% of the survey, following Mirzaei *et al.*'s (2021) completion rate cutoff recommendation, in order to avoid biased results from insufficient data. After cleaning, the final sample consisted of 261 valid observations. Irrelevant columns (e.g. IP address, geolocation data, etc.) were excluded before the analysis to streamline the dataset and protect respondent anonymity. No outliers were removed based solely on extreme values, in accordance with Osborne and Overbay (2004), who caution against eliminating data that might represent valid population heterogeneity, since it risks reducing a study's ecological validity.

Following Qualtrics' randomizer: 133 participants were assigned to the control group and 128 to the AI disclosure group. This relatively balanced allocation (51%/49%) ensures the comparability of results between conditions and sufficient statistical power (Geuens and De Pelsmacker 2017). A sample of between 100-130 participants per group is generally considered sufficient for detecting medium-size effects at a power level of 0.80 (Brysbaert, 2019). For the analysis, all relevant variables were recoded into numerical values. Gender, for example, was coded as Male = 1, Female = 2, and Other = 3. Other variables such as age group, educational level, condition (Control = 0, AI disclosure = 1), and manipulation check (No = 0, Yes = 1) followed a similar recoding pattern.

4.2. Sample and Demographics

The study's valid sample (n = 261) consisted predominantly of female-identifying participants (60.9%), while 38.7% identified as male, and 0.4% selected "Other". Most participants were between 18 and 26 years old (80.8%), and the majority were bachelor's students (61.3%), followed by master's students (28.4%) and PhD students (1.5%). The remaining 8.8% of participants who reported not being students can be explained by the recruitment process itself, which took place not only within university buildings but also in the open areas surrounding them. Those who answered "non-applicable" likely include visitors, staff, or members of the general public. Since these participants reflect a real demographic that would naturally be exposed to student-targeted ads on campus, they were not deleted from the sample to preserve ecological validity.

Overall, the demographic composition of the sample closely aligns with national statistics on higher education students in Sweden (UKÄ, 2024), with a nearly identical gender distribution (61% female, 39% male), a comparable categorization by education level, and a slightly

younger age profile than the national average. In order to confirm the validity of the manipulated independent variable, participants were asked: "Did the advertisement contain any mention of AI involvement?" (response options: Yes/No). A Pearson Chi-square test examined if the association between condition and manipulation recognition was significant ($\chi^2(1) = 104.943$, $p < .001$), indicating a successful manipulation (Hair *et al.*, 2010). Specifically, 76.6% of participants in the AI condition recognized the manipulation, compared to 13.5% in the control condition. This suggests that the manipulation was perceived as intended and that the observed differences are not due to chance alone.

4.3. Descriptive Statistics and Scale Reliability

In this study, participant's attitudes toward the advertisement served as the dependent variable and AI disclosure/non-disclosure as the independent variable. Table 2 outlines the descriptive statistics and internal consistency measures for the study's three key constructs: source credibility, emotional engagement, and ad attitudes. The scales for each construct reflect acceptable to excellent internal reliability (Cronbach's alpha > 0.7) (Hair *et al.*, 2010), suggesting that the four items within each scale measured the intended construct consistently.

Participants evaluated each construct on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Ad attitudes were rated slightly below midpoint (M = 2.971, SD = 0.979), indicating a somewhat ambivalent or even slightly negative response toward the ad, in line with Field's (2018) interpretations of Likert scale means. Overall, the ad source was perceived as moderately credible (M = 3.272, SD = 0.710), suggesting a generally positive perception of source credibility across conditions. The advertisement also elicited a moderate, albeit slightly lower, level of emotional engagement (M = 3.077, SD = 0.928), showcasing a moderate emotional resonance.

Scale	**Mean**	**Standard Deviation**	**Cronbach's Alpha**
Ad Attitudes (4 items)	2.971	0.979	0.865
Source Credibility (4 items)	3.272	0.710	0.747
Emotional Engagement (4 items)	3.077	0.928	0.849

Table 2. Descriptive Statistics and Reliability measures for dependent variable and mediators

4.4. Hypothesis Testing

This section outlines the statistical methods employed to analyze the data. It covers direct effect analysis and mediation tests to understand how AI disclosure shapes consumer attitudes. Additionally, it includes a summary of whether each hypothesis was supported or

not, based on the findings. The discussion and implications of these results are explored in the following sections.

4.4.1. Procedure

All statistical analyses were conducted using IBM SPSS Statistics (Version 30.0). Hypothesis 1 was evaluated by an independent sample t-test, while hypotheses 2 and 3 were assessed using mediation analysis through PROCESS macro (Model 4) developed by Hayes (2013). To address potential issues with the normality of data, mediation effects were tested using the bootstrapping method, as suggested by Preacher and Hayes (2004) and Hayes (2017). Bootstrapping is a resampling technique that generates thousands of new samples from the original data to estimate standard errors and build confidence intervals, using the t-statistic (Lumley *et al.*, 2002; Abu-Bader and Jones, 2021). It requires fewer assumptions than traditional methods, lowers the risk of Type I error and increases statistical power (Hayes, 2004). In this study, 5000 bootstrap samples were generated, and mediation was considered significant if the bias-corrected 95% confidence interval for the indirect effect did not include zero.

In addition to individual mediation models, a joint mediation analysis was performed using PROCESS Model 4, including both source credibility and emotional engagement as parallel mediators. This approach helped clarify how each mediator, both individually and simultaneously, influenced the effect of AI disclosure on ad attitudes.

4.4.2. Direct effects of AI Disclosure on Ad attitudes (H1)

To test H1, an independent sample t-test was conducted to explore whether AI disclosure influences ad attitudes. As shown in Table 3, participants in the non-disclosure condition (M = 3.056, SD = 0.991) reported slightly more favorable attitudes toward the advertisement than those in the AI disclosure condition (M = 2.861, SD = 0.960). However, this difference was not statistically significant, t (259) = 1.615, p = 0.108. The 95% confidence interval for the mean difference [-0.043, 0.433], included zero, indicating weak evidence for a direct effect. The effect size was also small (Cohen's d = 0.200), reflecting a minor effect in the hypothesized direction. Overall, the findings do not provide support for H1, suggesting that AI disclosure alone does not have a significant impact on consumer attitudes toward the advertisement.

Condition	M	SD	t (259)	p	Mean Diff	Cohen's d
Non-disclosure	3.056	0.991	1.615	0.108	0.191	0.200
AI disclosure	2.861	0.960	1.615	0.108	0.191	0.200

Table 3. Means, standard deviations, and t-test results for the direct relationship between AI disclosure and ad attitudes.

4.4.3. Mediation through Source Credibility (H2)

A mediation analysis was performed with PROCESS model 4 (Hayes, 2013) to test whether source credibility mediated the relationship between AI disclosure and ad attitudes. The results showed a significant negative effect of AI disclosure on source credibility (B = -0.174, p = 0.048), suggesting that disclosing the use of AI in advertising reduced the perceived source credibility of that source. In turn, source credibility had a strong positive effect on ad attitudes (B = 0.935, p < 0.001).

To provide additional testing for H2, the bootstrapping technique was employed based on 5000 samples, which confirmed that the indirect effect was statistically significant (Table 4). As the confidence interval did not include zero (B = -0.162, 95% CI [-0.325, -0.003]), the mediation effect was statistically reliable, confirming that source credibility mediates the relationship between AI disclosure and ad attitudes. The model explained approximately 46% of the variance in ad attitudes (R^2 = 0.463), indicating a moderately strong predictive relationship. Although the indirect effect size is relatively modest, it suggests that source credibility plays an important role in shaping ad attitudes and explains how AI disclosure affects consumer responses. Therefore, H2 is supported, which means that source credibility significantly mediates the relationship between AI disclosure and ad attitudes.

	Source Credibility			**Ad Attitudes**		
	B	t	p-value	B	t	p-value
AI Disclosure	-0.174	-1.984	0.048	–	–	–
Source Credibility	–	–	–	0.935	14.759	0.000
Model fit: R-squared = 0.463; F(2, 258) = 111.306; p = 0.000						
Indirect effect: B = -0.162; 95% CI [-0.325, -0.003]						

Table 4. Regression analysis for the mediating effect of source credibility on ad attitudes (n = 261, 5000 bootstrap samples)

4.4.4. Mediation through Emotional Engagement (H3)

Following the same procedure, another mediation model was tested using PROCESS (Model 4) to evaluate whether emotional engagement mediated the relationship between AI disclosure and ad attitudes. The results showed that AI disclosure had a negative, but not statistically significant effect on emotional engagement (B = -0.200, p = 0.081), suggesting that AI disclosure slightly reduced emotional engagement with the ad, though the effect was

weak and not statistically significant. However, emotional engagement was found to have a significant positive effect on ad attitudes (B = 0.838, p < 0.001), indicating that higher emotional engagement was associated with more favorable attitudes toward the ad.

As shown in Table 5, bootstrapping showed that the indirect effect was statistically significant (B = -0.168, 95% CI [-0.352, -0.018]). The confidence interval did not include zero, demonstrating that emotional engagement significantly mediates the relationship between AI disclosure and ad attitudes. The model explained 63% of the variance in ad attitudes (R^2 = 0.634), suggesting a strong model fit. Although the effect size is moderate, it shows that emotional responses are a significant factor in how consumers evaluate AI-disclosed advertisements. Therefore, H3 is supported, which explains that emotional engagement significantly mediates the relationship between AI disclosure and ad attitudes.

	Emotional Engagement			**Ad Attitudes**		
	B	t	p-value	B	t	p-value
AI Disclosure	-0.200	-1.750	0.081	–	–	–
Emotional Engagement	–	–	–	0.838	20.976	0.000
Model fit: R-squared = 0.634; F(2, 258) = 223.502; p = 0.000						
Indirect effect: B = -0.168; 95% CI [-0.352, -0.018]						

Table 5. Regression analysis for the mediating effect of emotional engagement on ad attitudes (n = 261, 5000 bootstrap samples)

4.4.5. Joint Mediation

To further examine the underlying factors linking AI disclosure and ad attitudes, a joint mediation analysis was conducted using PROCESS Model 4 (Hayes, 2013), including both source credibility and emotional engagement as parallel mediators. This analysis provides a better understanding of how both psychological factors jointly influence the impact of AI disclosure.

The results showed that AI disclosure significantly reduced source credibility perceptions (B = -0.174, p = 0.048) and slightly decreased emotional engagement (B = -0.200, p = 0.081). Both mediators, source credibility (B = 0.417, p < 0.001) and emotional engagement (B = 0.642, p < 0.001) significantly predicted ad attitudes. However, when both mediators were

included in the model, the direct effect of AI disclosure on ad attitudes became non-significant (B = 0.005, p = 0.933), suggesting full mediation.

Bootstrapping revealed that the total indirect effect was significant (B = -0.200, 95% CI [-0.394, -0.011]), confirming the presence of mediation. Although the indirect effect through source credibility remained significant (B = -0.072, 95% CI [-0.149, -0.003]), the indirect path through emotional engagement was not statistically significant (B = -0.123, 95% CI [-0.276, 0.016]).

The overall model explained 68.98% of the variance in ad attitudes ($R^2 = 0.689$), indicating a strong model fit. These results suggest that the negative impact of AI disclosure on ad attitudes is mostly explained through reduced perceptions of source credibility, with emotional engagement playing a secondary role when both mediators are tested simultaneously. This highlights an increase in the explained variance compared to the individual mediation models ($R^2 = 0.015$, $R^2 = 0.012$), showcasing the added value of testing both mediators jointly.

4.4.6. Summary of the Results

To provide a clear summary of the statistical findings, Table 6 summarizes the regression results of all tested models, including direct and mediated relationships. It highlights the unstandardized coefficients (B), t-values and p-values for each predictor, showing the effects on each outcome and also model fit indicators such as R^2 and F-statistics.

Predictor	**Source Credibility**			**Emotional Engagement**			**Joint Effect**		
	B	**t**	**p**	**B**	**t**	**p**	**B**	**t**	**p**
AI Disclosure	-0.174	-1.984	0.048	-0.200	-1.750	0.081	0.005	0.083	0.933
Source Credibility	—	—	—	—	—	—	0.417	6.800	0.000
Emotional Engagement	—	—	—	—	—	—	0.642	13.704	0.000
Model Summary	$R^2 = 0.015$; F(1, 259) = 3.938; p = 0.048			$R^2 = 0.012$; F(1, 259) = 3.061; p = 0.081			$R^2 = 0.689$; F(3, 257) = 190.537, p = 0.000		

Table 6. Results of the Regression Model

Table 7 summarizes the hypothesis testing outcomes. As shown below, AI disclosure did not have a significant effect on ad attitudes (H1). However, both source credibility (H2) and emotional engagement (H3) significantly mediated this relationship when tested individually. Nevertheless, in the joint mediation model, only source credibility remained a significant mediator, suggesting that it plays a more important role in how AI disclosure shapes ad attitudes.

Hypothesis	Significance	Outcome	Key Finding
H1	$p = 0.108$	Unsupported	No significant effect of AI disclosure on ad attitudes
H2	$p < 0.05$ (individual) $p < 0.05$ (joint)	Supported	Source credibility mediates the relationship in both models
H3	$p < 0.05$ (individual) $p > 0.05$ (joint)	Partially Supported	Emotional engagement mediates the relationship only in the individual model

Table 7. Summary of Hypotheses and Outcomes

5. Discussion

This study explored how AI-disclosure labels in advertising affect consumer responses, focusing on source credibility, emotional engagement and ad attitudes. The results provided significant insights into how transparency about AI involvement influences consumer attitudes in marketing communication.

While individuals exposed to AI disclosure tended to evaluate the advertisement less favorably, the direct effect of AI disclosure on ad attitudes was not statistically significant (H1). This suggests that simply disclosing AI does not affect consumer attitudes in a meaningful way. However, mediation analyses indicated significant indirect effects through psychological mechanisms like source credibility and emotional engagement. Both mediators were negatively influenced by AI disclosure and, in turn, shaped overall ad attitudes. When participants saw the “Made with AI” label, they perceived the ad as less credible, which led to less favorable attitudes toward the advertisement. Similarly, they perceived the ad as less emotionally engaging, which also contributed to more negative evaluations.

Literature on mediation analysis supports that even in the absence of a direct effect, significant indirect effects can exist (Zhao, Lynch and Chen, 2010; Hayes, 2009). This indirect relationship is also explained by the Stimulus-Organism-Response framework, in which the influence of a stimulus (AI disclosure) operates through internal psychological factors, rather than through direct effect on outcomes (Mehrabian and Russell, 1974). The

mediation analysis further confirmed that source credibility and emotional engagement explain the relationship between AI disclosure and ad attitudes, suggesting the importance of these psychological constructs in shaping consumer perceptions of AI-generated advertising.

The source of the advertisement was evaluated as less credible by participants who were aware of the AI involvement, supporting the argument that human-created content is often perceived as more trustworthy and authentic (Wang *et al.*, 2025; Beverland and Farrelly, 2009). Emotional engagement was also reduced in the AI disclosure condition, explaining that the emotional appeal of the advertisement weakened when participants believed that the content was AI-generated. This aligns with earlier findings suggesting that consumers perceive machine-generated content as less capable of evoking strong emotional reactions (Zhang and Patrick, 2021; Kirk and Givi, 2025).

Moreover, the joint mediation analysis provided a better understanding by testing both mediators in the same model. When considered simultaneously, source credibility remained a significant mediator, while emotional engagement did not show a significant effect. These results showed that the influence of AI disclosure on ad attitudes is mainly explained by source credibility, while emotional engagement plays a secondary or overlapping role. This joint model explained also a higher proportion of the variance in ad attitudes, compared to the individual models, increasing its significance in using it to understand consumer attitudes.

The manipulation check results generally support the reliability of the findings. A clear majority (76.6%) of the participants in the AI-disclosure condition recognized the mention of AI, while only a small number (13.5%) in the control group did so. Although not all participants in the AI disclosure condition noticed the label, indicating some degree of imperfect manipulation, the difference between the conditions explains that the experimental manipulation was sufficiently effective to support valid conclusions. This strengthens the argument that the observed effects are not attributable to random variation (Hair *et al.*, 2010).

These results suggest that although AI disclosure is important for transparency, it may introduce unintended downsides related to advertising effectiveness. Consumers appear more skeptical and emotionally detached when faced with disclosure of AI involvement, affecting their evaluation of the advertisement. These findings highlight the dilemma companies face between ethical transparency and maintaining positive consumer perceptions when employing AI in consumer communications.

5.1. Theoretical Implications

The present research investigates the effect of AI disclosure labels on ad attitudes, and whether source credibility and emotional engagement mediated that effect. In doing so, this study contributes to a growing body of literature on how consumers process AI-generated advertising by grounding its hypotheses within Mehrabian and Russel's (1974) S-O-R framework. The resulting model, which was constructed and tested, allows for a more balanced perspective of how external stimuli, in this case, AI disclosure labels, trigger internal cognitive and emotional reactions, which in turn shape consumer responses.

Notably, the findings of this study do not support the direct relationship between AI disclosure and ad attitudes (H1). This contradicts some previous studies that found a direct negative effect of AI disclosure on consumer perceptions (Brüns and Meißner, 2024; Altay and Gilardi, 2024). However, the results show alignment with more recent research that suggests that AI disclosure does not always elicit strong reactions on its own (Lim and Schmälzle, 2024; Gu *et al.*, 2024), operating instead through multi-step mechanisms. This implies that disclosure alone does not inherently determine whether consumers react negatively or positively to an AI-generated advertisement.

In contrast, the results of this research provide support for both mediation hypotheses when tested individually. Specifically, source credibility significantly mediated the relationship between AI disclosure and ad attitudes (H2), as did emotional engagement (H3). However, the joint mediation analysis revealed that only source credibility had a significant mediating role. This suggests that source credibility is the main psychological mechanism through which AI disclosure affects ad attitudes, with emotional engagement having a complementary role. This provides theoretical support for the S-O-R framework by showing that consumer responses to AI-disclosed advertising are better understood as indirect and cognitively mediated instead of direct and purely emotional.

Moreover, this study expands the application of the S-O-R framework into the domain of AI-generated advertising. Previous marketing research employing the S-O-R model has focused mostly on stimuli such as in-store retail environment (Vieira, 2013; Groeppel-Klein, 2005), impulse buying (Chang *et al.*, 2011; Xu, 2007) or website elements (Kim and Lennon, 2013; Mummalaneni, 2005). More recent studies have applied the model in the context of e-commerce and online behavior (Al Nawas, Altarifi and Ghantous, 2021; Zhu *et al.*, 2019), even extending it to digital contexts involving AIGC (Gu *et al.*, 2024; Slaton, Sanjukta Pookulangara and Ratnam, 2025). By applying the S-O-R model to explore the effects of AI disclosure labels, this study highlights how it remains a useful tool for understanding the complex ways in which consumers process information, especially as AI-generated advertising becomes more common.

Beyond that, this study also contributes to the current research on AI in marketing. Much of the existing literature focuses on consumer reactions to AI as a service tool, employed as a Chatbot (Cheng *et al.*, 2022), or used as a recommendation tool (Liu *et al.*, 2023). This study addresses a critical segment of AI literature by focusing on AI as a content creator in advertising. Advertisement research has traditionally centered on how human sources, such as celebrities (Erdogan, 1999; Choi, Lee and Kim, 2005) and influencers (Lou, 2021; Janssen, Schouten and Croes, 2021) affect advertising effectiveness. The present study shifts the focus to AI-generated content, with the results suggesting that source credibility remains a meaningful construct even when the source is non-human. Therefore, our findings support a more expanded definition of what constitutes source credibility in today's advertising environment.

5.2. Practical Implications

The implications that arise from this research are important for marketers, advertisers and companies using AI-generated content in their campaigns. Based on the results, although AI disclosure has no significant direct effect on consumer attitudes, it does have a significant impact on internal psychological concepts like source credibility and, to a lesser extent, emotional engagement. This means that marketers should be careful when choosing how and whether to reveal AI involvement in content creation. From an ethical and regulatory perspective, transparency is crucial (European Union, 2024), but if AI involvement is explicitly revealed without strategic framing, it could reduce the advertisement's source credibility and emotional impact.

The findings also indicate that AI-generated labels should be carefully designed and thoughtfully integrated. Although "AI-generated" labels may not always create negative perceptions, wording that suggests manipulation can significantly harm credibility (Epstein *et al.*, 2023). This skepticism might be reduced by using softer and more neutral disclosure language like "co-created with AI assistance". To enhance consumer perceptions, AI information could be combined with mechanisms that increase trustworthiness like endorsements, user reviews or brand cues (Zhang, Xu and Wei, 2024). These strategies would also be beneficial for companies operating with smaller advertising budgets in order to integrate AI in a cost-effective way that still keeps consumer trust strong (Grigsby, Michelsen and Zamudio, 2025).

Furthermore, the mediation effects suggest that consideration should be given to consumer perceptions of source credibility which emerged as the primary concept through which AI disclosure influences ad attitudes. Although emotional engagement played a less significant role in the joint model, strategies that foster both source credibility and emotional connection remain relevant, especially when combined with trust-enhanced tools. Marketers could consider implementing marketing strategies that humanize AI content, such as highlighting personalization of the message and creativity of human creators or framing AI tools as supportive rather than autonomous. These approaches could enhance the emotional impact and perceived credibility of the ad, reducing the negative effect of openly disclosing AI involvement. Although this study offers insight into current consumer perceptions, familiarity with AI technology and consumer attitudes evolve over time. Therefore, companies should be flexible to adjust their marketing and disclosure strategies and continuously assess customer reactions toward AIGC.

As the use of AI in marketing grows and laws related to AI transparency become tighter, companies need to find the right balance. On the one hand, they must comply with legal requirements for AI disclosure to ensure transparency and enhance trust among consumers. On the other hand, they have to adapt their strategies in a way that does not influence the effectiveness and clarity of their communication. Achieving this balance is essential for keeping consumers engaged while meeting legal and ethical standards in the increasingly AI-driven marketing environment.

5.3. Limitations & future research

Although this study provides valuable insights into the effects of AI disclosure on consumer attitudes, specifically through the primary mediating role of source credibility and the secondary role of emotional engagement, it is not without limitations.

Firstly, the sample of this study was recruited from university campuses across Gothenburg. This approach was chosen for its accessibility and alignment with the product category. While student samples can differ from other consumer segments in terms of age, digital literacy and familiarity with AI systems (Joseph *et al.*, 2024), these characteristics also make them a relevant group for examining responses to AI-disclosed advertising. Research suggests that individuals who are more familiar with AI or more confident with technology may interpret and react to AI-related cues differently (Sundar *et al.*, 2015). As Liang and Ling (2017) highlight, younger age groups tend to show more favorable attitudes toward AI, when compared to older age groups. Future studies could explore whether these effects vary across demographic or cultural contexts, as factors such as age, digital experience, or media exposure may influence consumer reactions to AI disclosure in advertising.

Secondly, the experimental nature of this study relies on self-reported measures, which may have been influenced by social desirability bias, a phenomenon wherein participants respond in ways they believe are more socially acceptable rather than answering honestly (Grimm, 2010). This is described by Nederhof (1985) as one of the most common causes of error in experimental and survey research. Future research should consider complementing self-reported data with other more objective measures, such as eye tracking, click-through rates or biometric responses to reduce biased reporting.

It is also worth mentioning that 23.4% of participants in the AI condition did not notice AI disclosure, and 13.5% of participants in the control condition thought there was AI involvement, even though there wasn't. Although the manipulation check still proved significant, this discrepancy suggests that the manipulation could be more explicit in future studies. To enhance participant attention, researchers could ensure that the experiment's material remains visible or at least accessible throughout the survey or implement a mandatory minimum viewing time before proceeding with the questions.

Moreover, this study focused on a low-involvement product, a protein bar, which may have impacted the extent to which participants engaged with the advertisement. Zaichkowsky (1994) defines involvement as the perceived personal relevance of a product, connecting this construct directly to an individual's level of motivation to process advertising messages. Since low-involvement products typically result in less engaged and emotionally invested audiences, the consequences of AI-related cues in ads of this product group might be less evident due to the lack of engagement. In contrast, high-involvement products such as smartphones and luxury goods are more likely to evoke stronger cognitive reactions (Torres and Briggs, 2007), encouraging more detailed evaluations of advertising content, including AI disclosures and potentially leading to different AI disclosure responses. Therefore, future

research should examine whether the product involvement level moderates the observed effects.

Finally, future studies should investigate how different framings of AI disclosure affect consumer perceptions, thereby complementing early work on disclosure terminology and label design (Epstein *et al.*, 2023; Stuurman and Lachaud, 2022), and providing deeper practical findings into how word variations may enhance or decrease source credibility, emotional engagement, and ad attitudes.

6. Conclusion

The study explored the role of AI disclosure in influencing consumer attitudes toward advertising, focusing on the psychological mechanisms through which this effect occurs. By applying the S-O-R framework, it examined whether the presence or absence of an AI disclosure label ("Made with AI") shapes ad attitudes directly or indirectly through source credibility and emotional engagement.

The findings suggest that AI disclosure does not directly impact consumer attitudes toward the advertisement. However, it influences how credible the source is perceived to be and, to a lesser extent, how emotionally appealing the advertisement feels. Particularly, AI-disclosed ads were perceived as less credible and emotionally engaging, leading to less favorable consumer responses. On the other hand, when AI involvement was not disclosed, consumers associated the ad with human creators or the brand itself, leading to higher trust and emotional connection. By answering the research question: "*How does the AI disclosure in advertising impact consumer attitudes toward the ad?",* this thesis concludes that AI disclosure impacts ad attitudes indirectly, mostly driven by lower consumer perceptions about source credibility and, to a lower degree, supported by changes in emotional engagement, instead of a direct effect on consumer attitudes. These two mediating factors significantly affect how advertisements labeled as AI-generated are received by consumers.

This study offers theoretical and practical contributions, highlighting the importance of how AI disclosure is presented. Theoretically, it extends the application of the S-O-R model to AI-generated advertising, with source credibility as a key mediator in consumer attitudes. Practically, the findings highlight the importance of strategic disclosure framing to balance ethical transparency with advertising effectiveness. As AI transforms advertising, achieving this balance will be essential to maintain engaging consumer experiences.

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Appendix

Qualtrics Survey

Information and Consent

This survey is part of a master thesis project conducted at the University of Gothenburg that investigates how consumers respond to advertisements.

Your participation is entirely voluntary, and you can withdraw at any time. The survey will take approximately 5 minutes to complete.

The information collected in this study will consist only of your responses to survey questions. Your data will be handled with strict confidentiality and anonymity strictly for academic purposes. No personally identifiable information will be collected, and only the student and the project supervisor will have access to the data. All collected data will be securely deleted after the thesis project is completed.

If you have any further question, you may contact either Anastasia Tzara (gustzaran@student.gu.se) or Lisa Vecera (gusazevli@student.gu.se)

By clicking “I agree” below, you confirm that:

- I have read and understand the information above
- I voluntarily consent to participate in this study
- I consent to the processing of my personal data as described

☐ I Agree
☐ I do not agree

Information Message
You will now see an advertisement for a snack product. The ad features PeakBar, a protein bar brand designed for students. Please take a moment to view it carefully — you will only see it once, and all upcoming questions will refer to this ad.

Condition 1: No Label

Condition 2: AI Disclosure Label

How well do the following words describe the creator of the advertisement?
(Response scale: 1 = Strongly Disagree, 5 = Strongly Agree)

- Knowledgeable
- Trustworthy
- Accurate
- Authentic

Please indicate the extent to which you agree with the following statements about how this advertisement made you feel.
(Response scale: 1 = Strongly Disagree, 5 = Strongly Agree)

- The advertisement was visually appealing
- I felt personally connected to the ad's message
- The ad was emotionally expressive
- The ad resonated with my personal experiences

Participants responded using sliders (1–5) for the following:

- How favorable did you find the advertisement?
  (1 = Unfavorable, 5 = Favorable)
- How interesting was the advertisement to you?
  (1 = Boring, 5 = Interesting)
- How visually appealing did you find the advertisement?
  (1 = Unappealing, 5 = Appealing)
- How creative did the advertisement seem to you?
  (1 = Unoriginal, 5 = Creative)

Did the advertisement contain any mention of AI involvement?
☐ Yes
☐ No

Demographic Variables

Age
☐ 18–22
☐ 23–26
☐ 27–30
☐ 31 or older
☐ Prefer not to say

Gender
☐ Male
☐ Female
☐ Other

Current Academic Level
☐ Bachelor's Student

☐ Master's Student
☐ PhD Student
☐ Not applicable

Participant Recruitment Flyer