



Persuasive or Pressuring? Effects of Urgency and Credibility Claims on Cognitive Information Processing and Ethical Evaluations in Online Advertising

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Abstract

Title: Persuasive or Pressuring? Effects of Urgency and Credibility Claims on Information Processing and Ethical Evaluations in Online Advertising

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Advertising claims in online environments are widely used as persuasive message elements to influence consumer decision making. This thesis investigates how urgency-based and credibility-based claims shape the dominant mode of information processing and how these processing modes relate to perceived ethicality, psychological reactance, and advertising outcomes. A quantitative online experiment with a between-subjects design was conducted using three conditions (urgency, credibility, control). Across the experimental stimuli, three key informational cues were systematically adapted to the respective condition, while product characteristics, visual design, and overall advertisement structure remained constant. Data from 181 valid participants were analysed using variance-based and regression-based statistical techniques. The results indicate clear differences between the claim types. Urgency-based claims foster heuristic processing, whereas credibility-based claims promote systematic processing. In line with this distinction, advertisements containing credibility claims are perceived as more ethical, while urgency-based advertisements trigger higher psychological reactance. Systematic processing emerges as a significant positive predictor of perceived ethicality, whereas heuristic processing shows no significant relationship with ethical evaluations. Although urgency-based claims increase psychological reactance, reactance does not significantly affect attitude toward the advertisement or purchase intention. Product involvement has been shown to increase overall processing intensity. However, this effect does not moderate the influence of claim type on processing mode. Taken together, the findings demonstrate that persuasive claim design systematically shapes the dominant mode of information processing in online advertising and that credibility-based persuasion aligns more closely with ethical evaluations than urgency-based persuasion.

Keywords: Online advertising environment; persuasive advertising claims; urgency claims; credibility claims; heuristic processing; systematic processing; perceived ethicality; psychological reactance.

Resumo

Título: Persuasivo ou pressionador? Efeitos da urgência e das alegações de credibilidade no processamento de informações e nas avaliações éticas na publicidade online

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As alegações publicitárias em ambientes online são amplamente utilizadas como elementos persuasivos para influenciar a tomada de decisão dos consumidores. Esta dissertação analisa como alegações baseadas na urgência e na credibilidade influenciam o modo dominante de processamento da informação e a sua relação com a eticidade percebida, a reatância psicológica e os resultados publicitários. Foi realizado um experimento quantitativo online com desenho entre sujeitos, incluindo três condições (urgência, credibilidade e controlo). Três pistas informativas centrais foram adaptadas a cada condição, mantendo constantes as características do produto, o design visual e a estrutura do anúncio. Os dados de 181 participantes válidos foram analisados por meio de técnicas estatísticas baseadas em variância e regressão. Os resultados indicam diferenças claras entre os tipos de alegações. Alegações baseadas na urgência promovem o processamento heurístico, enquanto alegações baseadas na credibilidade favorecem o processamento sistemático. Anúncios com alegações de credibilidade são percebidos como mais éticos, enquanto anúncios baseados na urgência geram maior reatância psicológica. O processamento sistemático prediz positivamente a eticidade percebida, enquanto o processamento heurístico não apresenta relação significativa. A reatância psicológica não afeta significativamente a atitude em relação ao anúncio nem a intenção de compra. O envolvimento com o produto intensifica o processamento geral, mas não modera o efeito do tipo de alegação. Em síntese, os resultados mostram que a persuasão baseada na credibilidade se alinha mais com avaliações éticas do que a persuasão baseada na urgência.

Palavras-chave: Ambiente de publicidade online; alegações publicitárias persuasivas; alegações de urgência; alegações de credibilidade; processamento heurístico; processamento sistemático; ética percebida; reatância psicológica.

List of Figures

Table 1 Scales Reliability Test Results	23
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Glossary

α Cronbach's Index of Reliability

β Standardized Coefficient

b Unstandardized Coefficient

& And

ANOVA Analysis of Variance

df Degrees of Freedom

ELM Elaboration Likelihood Model

F F Distribution, Fishers F Ratio

H Hypothesis

HSM Heuristic Systematic Model

M Mean

N Total Number of Cases

p P Value

RQ Research Question

SD Standard Deviation

SE Standard Error

Table of Content

Abstract	i
Resumo	ii
List of Figures	iii
Glossary	iv
1. Introduction.....	1
1.1 Relevance of the Topic and Problem Statement	2
1.2 Structure.....	3
2. Literature Review	4
2.1 Different Types of Claims	4
2.2 Dual Process Model	4
2.2.1 Heuristic Systematic Model.....	5
2.2.2 Elaboration Likelihood Model.....	6
2.2.3 Cognitive Constraints in Online Advertisement.....	8
2.2.4 Persuasion Theory	8
2.2.5 Product Involvement as a Moderator.....	10
2.3 Characteristics of Consumer Decision Making	11
2.4 Information Processing Mode.....	12
2.5 Nudge Theory	13
2.6 Physiological Reactance	13
2.7 Ethical Perception in Context of Ad Evaluation.....	15
2.8 Literature Gap	16
3. Methodology	17
3.1 Research Design.....	17
3.2 Participants.....	18
3.3 Procedure	18
3.4 Variable Measurement	19
3.4.1 Independent Variables	19
3.4.2 Process Measures.....	20
3.4.3 Dependent Variables.....	20

3.4.4	Moderator	21
4.	Data Analysis and Results.....	22
4.1	Data Preparation.....	22
4.2	Scale Reliability	22
4.3	Descriptive Data Analysis.....	23
4.4	Hypothesis Testing.....	24
4.4.1	Effect of Claim Type on Information Processing Mode (H1).....	24
4.4.2	Moderating Effect of Product Involvement on Information Processing (H2).....	25
4.4.3	Relationship between Psychological Reactance and Advertising Effectiveness (H3)	27
4.4.4	Influence of Information Processing on Perceived Ad Ethicality (H4).....	27
5.	Discussion	28
5.1	Summary of Key Findings	28
5.2	Connection to the Existing Literature	29
5.3	Implications.....	30
5.4	Limitations	31
5.5	Objectives for Future Studies.....	31
5.6	Conclusion	32
6.	References.....	34
7.	Appendix.....	41
A	Experimental Survey	41
B	Study Demographic Characteristics.....	56
C	Descriptive Statistics	57
D	Hypothesis Testing	58

1. Introduction

„Consumer decision making is often influenced by how information is organized and presented, as consumers tend to focus on the information that is explicitly displayed and use it in the form that it is displayed“ (Yang & Carmon, 2010). This statement highlights a key observation in modern consumer research. According to this insight, decision-making is not an isolated process. Instead, decisions are made in digital environments that structure, weigh and display information. In these settings, consumers act as active decision-makers, forming evaluations and purchase intentions based on the information presented to them at the time of decision-making. In online context, the presented cues of advertising messages significantly influence this dynamic. Product information, visual design and advertising claims determine what consumers focus their attention on and what conclusions they draw. Claims that products are 'Only a few available' or 'Top rated' have become an integral part of the digital shopping experience. They are intended to provide guidance, reduce uncertainty and speed up decision-making. For retailers, they are therefore a strategic tool that must be effective within seconds. For consumers, they act as a filter, reducing complex information and facilitating decisions. Nevertheless, the very same claims that offer guidance can also give cause to new challenges. Research indicates that references to scarcity and urgency can stimulate immediate, heuristic decision-making processes, while references to credibility support more systematic evaluation (Chaiken, 1980; Petty & Cacioppo, 1986). In the present age, the evaluation of advertising is not only determined by its persuasiveness, but also subject to an assessment of its perceived fairness and ethical acceptability (Brunk, 2010; Shabbir et al., 2019). Digital claims have the potential to manifest as beneficial guides or manipulative interventions in the context of freedom of choice. Should consumers feel their autonomy is restricted, this can trigger psychological reactance, potentially reversing the effect of the advertising (Steindl et al., 2015; Kivetz, 2005). This tension highlights the importance of this topic for both research and practice. For consumers, the question arises: How do claims really influence me? For advertisers, the question is: How can advertising be designed to support decision-making without violating trust and ethical expectations? Despite the central role of claims in digital decision-making environments, little is known about how different types of claims, especially those relating to urgency and credibility, work in direct comparison. However, the influence of these claims on the processing of information, perceived ethical acceptability, the emergence of reactance, and ultimately attitudes and purchase intentions is unclear. This is precisely where

this study comes in. In an experimental e-commerce setting, it examines how different claims influence decisions and the psychological mechanisms involved in this process.

The following section outlines the scientific and practical importance of the topic and presents the problem statement and research questions of the study.

1.1 Relevance of the Topic and Problem Statement

Digital advertising exerts a profound influence on the decisions made by millions of consumers on a consistent, daily basis. Consumers are now the principal decision-makers, rapidly selecting, evaluating and interpreting information. Claims have been identified as playing a crucial role in this process. They also function as a core element in the strategic communication framework employed by companies. Marketers can utilise claims as an effective strategy to reduce barriers to purchase and to attract attention in crowded information environments. Therefore, the impact of these campaigns extends well beyond the immediate scope of a single advertising banner.

From a scientific perspective, the subject combines several significant strands of research. As demonstrated in the seminal work of Chaiken (1980) and Petty and Cacioppo (1986), dual-process models serve to clarify how consumers employ heuristic or systematic processing methods when engaging with information. Research on digital choice architecture demonstrates how even the most subtle design elements can influence decisions (Weinmann et al., 2016; Häubl & Trifts, 2000). It is evident from the extant literature on advertising ethics that decisions are not only rational but also morally influenced (Brunk, 2010; Martinez & Jaeger, 2016). Should advertising be perceived as manipulative or unfair, reactance may be provoked, which has the potential to reduce or even reverse the intended advertising effect (Steindl et al., 2015; Mukherjee et al., 2017). Despite the considerable research that has been dedicated to this field, a significant gap remains in the extant research literature. There is an insufficient level of integration in the understanding of how diverse claim categories influence key decision-making processes. It is evident that preceding studies have frequently been inclined to contemplate claims in an isolated manner or to concentrate on individual outcome variables. The impact of urgency and credibility claims on processing pathways, ethical evaluation, and possible reactance, as well as their influence on attitudes and purchase intentions, remains to be fully explored (Warner et al., 2024; Sobolev & Lešić, 2022).

The central objective of this study is to examine the extent to which different categories of claims influence consumers' decision-making processes in e-commerce and the consequences this has for perceived fairness, reactance, and purchasing behaviour.

This question is of relevance to both research and practice. From a scientific perspective, it contributes to the exploration of the mechanisms of action of digital claims in the context of information processing, ethics, and reactance. For marketing practice, it provides insights into the design of claims with the aim of supporting decisions, building trust, and at the same time meeting ethical requirements. The present study gives direction to the following research questions.

Research Questions:

RQ 1 To what extent do urgency-based and credibility-based advertising claims differ in their effects on heuristic versus systematic information processing in online advertising?

RQ 2 How is heuristic versus systematic information processing associated with perceived ethicality of online advertising claims?

RQ 3 How does psychological reactance influence consumers' attitude toward the ad and purchase intention?

RQ 4 Does product involvement moderate the effect of urgency-based and credibility-based advertising claims on heuristic versus systematic information processing?

1.2 Structure

The thesis is organised into five chapters. The first chapter introduces the context of the research, outlining the practical and academic relevance of the topic and specifying the research objective and guiding questions. Chapter two builds on that foundation by reviewing key concepts of consumer decision-making in digital environments and positioning urgency and credibility claims within established persuasion and dual-process frameworks. The chapter provides a review of the most relevant research on consumer information processing and behavioural responses in digital advertising environments. It concludes by identifying the research gap and developing the hypotheses that are addressed in this study. Chapter 3 describes the empirical approach and provides sufficient methodological detail to ensure transparency and replicability. It presents the experimental research design, recruitment and sample characteristics, the study procedure and the operationalisation of all variables used in the analyses. The next chapter reports on the preparation of the data and the statistical analyses, including the calculation of descriptive statistics, the performance of reliability checks, and the testing of the proposed hypotheses and moderation effects. Finally, Chapter 5 discusses the findings in relation to existing literature, outlines implications for research and practice, and reflects on limitations and directions for future research.

2. Literature Review

2.1 Different Types of Claims

Advertising claims are a key part of persuasive communication. They are the explicit or implicit statements used in advertisements to convey information, suggestions or cues that are intended to influence consumers' judgements and decisions. Previous studies have shown that the effectiveness of advertising is greatly affected by how such claims are formulated and presented, as different types of claims draw attention to different aspects of an offer and influence consumers' interpretations in different ways (Huang & Liu, 2022). Literature on advertising and persuasion distinguishes between various types of claims based on their content and communicative intent. Common classifications include factual versus opinion-based, informational versus persuasive, and subtle versus assertive claims, as well as calls to action (Darley & Smith, 1993). In digital advertising environments in particular, claims are often designed to function as clear signals that enable consumers to assess an advertising message quickly under conditions of limited attention and high information load (Kivertz, 2005). Building on these classification approaches, prior studies emphasise the importance of claims that create a sense of urgency or signal credibility. Urgency-based claims highlight time pressure or scarcity, for example limited availability or time-bound offers ("Just do it!", "Buy now!"), whereas credibility-based claims aim to enhance trust by referencing expertise, reliability or social validation (Certified Brand, Highly ranked) (Zemack-Rugar et al., 2017). These types of claims are particularly common in online advertising and represent different ways of influencing consumer choice. That is why these two types of claims form the basis of the experimental manipulation of this work and provide a structured framework for examining differences in consumer responses to online advertising claims.

2.2 Dual Process Model

Research in the fields of persuasion and decision-making behaviour is increasingly moving away from the assumption that people process information in a uniformly rational manner. Instead, it is now assumed that people shift between different processing modes. Dual-process models describe this phenomenon by distinguishing between complex, analytical processing and fast, heuristic methods. These models are particularly significant in the context of digital advertising, as online environments are frequently characterised by information overload, time constraints, and uncertainty. The choice of processing mode is systematically influenced by the combination of these factors.

The contemporary understanding of heuristics has evolved from a narrow interpretation as simply cognitive biases to a more expansive perspective that acknowledges them as adaptive decision-making strategies. These strategies facilitate rapid and frequently satisfactory judgments in uncertain conditions (Artinger et al., 2015). At the same time, studies on online credibility show that users in information-rich environments often rely on simple cues. These cues include design, social proof, or labels. Users often do not systematically examine arguments (Metzger et al., 2010). Dual-process approaches are therefore a useful framework for understanding how different types of claims in online advertising, including urgency signals and credibility labels, activate different processing pathways and influence attitudes and decisions.

2.2.1 Heuristic Systematic Model

Chaiken's (1980) Heuristic Systematic Model (HSM) distinguishes between two types of information processing: systematic and heuristic. Systematic processing involves recipients consciously examining arguments, weighing up counterarguments and integrating new information with existing knowledge structures. This approach is time-consuming and requires motivation and the ability to process information in a detailed manner. It also tends to lead to stable, resilient attitudes. In contrast, heuristic processing is based on simple decision rules and easily accessible cues. Rather than analysing the content of the arguments, people rely on characteristics of the source, formal message characteristics or contextual cues. Examples of heuristic processing include the beliefs that 'experts are usually right' and 'if many people agree, it is probably correct' (Chaiken, 1980; Eagly & Chaiken, 1993). In online environments, these cues include prominent labels, concise slogans, social proof elements and visual highlights, for example. Heuristic processing is cognitively more economical, but it can lead to superficial or distorted judgements if the cues are unreliable. The HSM also assumes that both modes can be active simultaneously. According to the 'sufficiency principle', people only expend as much cognitive effort as is necessary to achieve a subjective sense of certainty in their judgement (Eagly & Chaiken, 1993). If the impression that a label is trustworthy is sufficient, processing remains heuristic. However, if uncertainty or ambiguity arises, this can trigger systematic processing. Empirical applications of HSM in health and risk contexts demonstrate that systematic processing is linked to more in-depth consideration, greater counter argumentation and polarised attitudes. Meanwhile, heuristic processing is more susceptible to simple stimuli and the perception of ambiguity (Katz et al., 2018; Griffin et al., 2002). In the context of digital

advertising, this suggests that claim designs emphasising clear message. Urgency or simplified signals are more likely to appeal to heuristic processing strategies, whereas argumentatively justified and consistent information promotes systematic processing. Furthermore, the model explains how knowledge and motivation influence the processing of advertising claims (medical certifications or organic labels). In this context, limited knowledge often leads to heuristic processing, while more detailed knowledge supports systematic processing (Lanero et al., 2020). Dual-process models suggest that different message characteristics activate specific processing paths. Signals that indicate time constraints or limited decision-making scope encourage heuristic processing especially if the exposure is connected to pressure and insecurities (Lee & Hong, 2021). Information that is structured and credibility-oriented, on the other hand, supports in-depth systematic cognitive engagement and increases confidence in purchasing decisions (Chen & Chaiken, 1999). This theoretical assumption forms the basis for the following hypotheses.

H1a: Ads containing urgency-based claims (“limited-time offer”) lead to significantly higher heuristic processing than ads containing credibility claims or no specific claims.

H1b: Ads containing credibility-based claims (“certified brand / top seller”) result in higher systematic processing compared to urgency-based claims or no claims.

Although heuristic and systematic processing are theoretically conceptualized as non-exclusive and potentially co-occurring processes, empirical research often focuses on dominant processing tendencies, depending on situational and motivational conditions. It is important to note that this study will not assume mutually exclusive processing modes rather measures heuristic and systematic processing separately in order to identify dominant processing tendencies, as distinct from simultaneous cognitive activation.

2.2.2 Elaboration Likelihood Model

While the HSM distinguishes between heuristic and systematic routes, its underlying assumption that consumers select processing strategies according to motivation and cognitive resources is similar to the logic of the Elaboration Likelihood Model. The ELM extends this perspective by presenting processing depth as a continuum and explaining how product involvement influences the persuasion process. Since the 1980s it has formed a central theoretical framework for understanding persuasive communication. While early concepts

assumed that decision-makers are completely rational (von Neumann & Morgenstern, 1944), concepts of Kahneman & Tversky (1979) proved that decisions in complex situations are influenced by cognitive constraints, limited attention, and heuristic judgment processes (Copeland, 1945; Bazerman, 1984).

The ELM builds on these findings and describes how individuals process persuasive messages differently depending on their motivation and ability (Petty & Cacioppo, 1986). The model distinguishes between a central route of elaboration, in which information is carefully and critically examined, and a peripheral route, in which judgments are based on simple cues like attractiveness, social proof, or emotional signals. The choice of path depends on the relevance of the message, personal involvement, and the cognitive effort that people are willing to invest. If motivation and cognitive resources are sufficiently available, the message is systematically analysed, and strong arguments lead to stable, behaviour-relevant attitudes. However, if motivation or ability is lacking, peripheral processing dominates. In this case, superficial cues have a stronger effect, and attitudes are more fleeting and less stable (Petty & Cacioppo, 1986). Recent work highlights that these processing pathways are particularly relevant in digital environments. Online contexts are characterized by high information intensity, rapid stimuli, and short attention spans. This reinforces the use of peripheral cues. Studies show that credibility-related elements, like certifications or clear information structures, activate the central route, as they signal the quality of the arguments and promote cognitive engagement (Metzger et al., 2010). In contrast, urgency signals or visual highlights act as peripheral, heuristic cues that accelerate decisions but make them weaker (Wang et al., 2020). According to the ELM, central and peripheral cues can occur in parallel in digital media, rather than separately from each other. Depending on the situational context and the structure of the message, consumers often integrate quick, intuitive impressions with more reflective evaluations (Sanusi et al., 2025). This expanded perspective is particularly relevant for analysing specific claim designs in online advertising. It highlights that different types of claims activate different processing routes and can therefore trigger different attitudinal and behavioural responses. Within this framework, the ELM provides a clear theoretical basis for the expectation that claims indicating credible information or expertise are more likely to lead to systematic elaboration, whereas time-critical or pressure-inducing cues favour peripheral, heuristic processing.

2.2.3 Cognitive Constraints in Online Advertisement

How effective different modes of information processing are in advertising depends on the situational conditions under which consumer decisions are made. In online advertising environments, these conditions are characterised by limited attention, high information density and increasing time pressure. Consequently, consumers often encounter cognitive limitations that limit their capacity to thoroughly evaluate advertising messages (Bazerman, 1984).

Previous studies on judgement and decision-making indicate that, when faced with such constraints, individuals tend to simplify complex decision-making situations by focusing on salient and easily accessible cues rather than processing all available information in depth. This tendency is further reinforced in digital contexts, where advertisements compete for attention and are frequently embedded in fast-paced, cluttered environments full of information (Häubl & Trifts, 2000). Consequently, consumers are more likely to rely on prominent signals within advertisements that facilitate orientation and reduce cognitive effort.

In online advertising, these signals are often conveyed through advertising claims that highlight specific aspects of an offer, like urgency or credibility. The presence of cognitive constraints therefore provides an important contextual explanation for why certain characteristics of claims become particularly influential in shaping consumer responses. Rather than introducing additional processing mechanisms, this perspective highlights the situational factors that make cue-based responses in online advertising especially likely, thus complementing the theoretical framework outlined above (Lurie & Mason, 2007).

2.2.4 Persuasion Theory

The Persuasion Knowledge Model (PKM), developed by Friestad and Wright (1994), shapes our understanding of how consumers respond to marketing attempts at persuasion. Rather than being passive recipients, consumers develop their own "persuasion knowledge" through continuous experience. This includes knowledge about companies' goals, strategies and tactics. This knowledge is acquired through constant contact with advertising, social and cultural experiences. The PKM emphasises that consumers evaluate advertising messages in terms of both content, which refers to topic knowledge, as well as the underlying intentions and psychological techniques, which are defined as agent knowledge (Kirmani & Campbell, 2009). Recognising those tactics can change perception and often leads to defensive reactions, including scepticism and counterarguments ('change-of-meaning principle'). Personal experience, age and socialisation significantly influence the development of persuasion

knowledge (Voorveld, Meppelink & Boerman, 2024). The more aware consumers are of these mechanisms, the more targeted their response to advertising can be. For research and practice, this means taking greater account of individual and social differences, as well as changes in the way persuasion is handled. The PKM combines traditional persuasion theories and modern, consumer-oriented approaches. It demonstrates the importance of transparent and respectful communication for achieving long-term marketing success, particularly in the context of digital nudges and manipulative advertising messages that influence decision-making in e-commerce, spanning the spectrum from heuristic to systematic processing (Friestadt & Wright, 1994, Zarouali et al., 2018). Research often assumes that persuasion knowledge is a barrier to advertising effectiveness, but recent studies show that activating it does not necessarily lead to mistrust. Advertising tactics that are comprehensible and transparent can increase the credibility of claims, especially when it comes to persuasion knowledge. Consumers therefore evaluate advertising messages in a differentiated manner, with different messages having different effects depending on the consumer and the context (Isaac & Grayson, 2016). While manipulative or striking tactics can cause scepticism, credibly communicated information can strengthen trust in the message and the advertising brand. This demonstrates that the assumption that recognisable advertising always damages credibility is too generalised (Isaac & Grayson, 2016).

In order to illustrate the effect of these processes in the context of online advertising, findings from research on green advertising can be usefully employed. While the focus of this paper is not on sustainability, the example provided by Luo et al. (2020) offers a clear illustration of how consumers can respond to persuasive messages. Research has indicated that social media users frequently exhibit a degree of scepticism regarding claims concerning to environmental sustainability made by companies. This scepticism results in the persuasive intention being identified with greater efficiency, consequently activating persuasion knowledge. This mechanism is also relevant for conventional online advertising. It has been demonstrated that consumers are able to identify the intention behind an advertising claim, and that this results in a more critical examination of the statements and a reduced reliance on simple, heuristic cues (Muhammad et al., 2021). The evaluation process is being modified to adopt a more systematic approach. These factors serve to reduce the perceived credibility and relevance of the claims within the decision-making process. The persuasive effect is correspondingly decreased, and the probability that advertising messages will influence the purchase decision is weakened. The practical example illustrates how scepticism towards digital advertising messages triggers cognitive defence mechanisms and influences the way in which information is processed (Luo

et al., 2020; Lee & Cheong, 2024). This highlights the significance of the Persuasion Knowledge Model in comprehending the varying degrees of intensity with which online advertising is processed, depending on its perceived credibility, and the subsequent influence on the effectiveness of persuasive claims.

2.2.5 Product Involvement as a Moderator

Product involvement represents a fundamental motivational boundary condition within dual-process models of information processing. It is a concept that has been the subject of extensive examination within the domain of persuasion and advertising research. Within the HSM involvement does not represent a processing mode in itself but rather determines the extent to which individuals are motivated to engage in systematic versus heuristic processing when exposed to persuasive messages (Chaiken, 1980). Consequently, involvement exerts an influence on the cognitive approach and evaluation of message characteristics, rather than directly impacting evaluative outcomes. As Johnson and Eagly (1989) conceptualise, persuasion research commonly assumes that involvement is a motivational state arising when an issue is perceived as personally relevant. Outcome-relevant involvement has been demonstrated to enhance individuals' motivation to critically evaluate persuasive messages, thereby improving systematic processing and sensitivity to argument quality. In conditions of reduced involvement, individuals are less inclined to allocate cognitive resources to message evaluation and are therefore more likely to rely on heuristic cues. From the standpoint of human-centred design involvement is regarded as a contextual factor that modulates the dominance between heuristic and systematic processing, as compared to the implementation of a designated processing strategy. In the context of advertising, product involvement is defined as the perceived relevance of the advertised product for the consumer, and the associated level of attentional engagement during exposure to the advertisement (Kim et al., 2018). As indicated by previous studies, the degree to which consumers are involved with a product has been indicated as a primary factor in the way information is processed. This is determined by the extent to which consumers absorb and evaluate advertising information (Amsl et al., 2023). That explains why highly involved consumers tend to invest greater cognitive and behavioural effort in information search and decision-making, which increases the need for high-quality and information-rich advertising content to reduce uncertainty and enable informed purchase decisions (Zhu et al., 2019). Of particular significance is the frequent utilisation of involvement as a moderator in advertising research, a practice which serves to illuminate the reasons why

identical message characteristics can give cause to divergent processing responses amongst consumers. Evidence from digital and online advertising contexts lends further support to the role of involvement as a boundary condition for message processing. Research examining the distinction between informational and heuristic cues in online environments suggests that the effectiveness of those cues is related to the level of involvement of the consumers. The influence of systematic cues increases when motivation to process information is high (Tan & Gen, 2021). Although most of these studies focus on downstream outcomes, particularly brand-related responses, they consistently highlight involvement as a factor that shapes how advertising content is cognitively processed in digitally mediated settings. It is evident from a review of the extant literature that product involvement has a moderating effect on the extent to which advertising claim characteristics influence dominant information processing tendencies. In the context of the present study, involvement is therefore expected to function as a limiting factor that alters how urgency-based and credibility-based claims are cognitively approached, rather than exerting an identical effect on processing across all consumers.

H2: Product involvement moderates the relationship between advertising claim type and information processing mode, such that higher levels of involvement are associated with more systematic processing, whereas lower levels of involvement are associated with greater reliance on heuristic processing depending on claim type.

2.3 Characteristics of Consumer Decision Making

Consumer behaviour in the purchasing decision-making process is characterized by a broad range of individual and social factors. In traditional models, the decision-making process is described as a series of stages, from perceiving a problem to searching for information and evaluating alternatives to the actual purchase decision and subsequent behaviour (Stankevich, 2017). However, recent research shows that consumer decisions are not always linear and purely rational. Habits, emotions, and situational influences like the social environment and the increasing digital penetration of everyday life often play an important role. With increasing digitalization and the development of new communication channels, particularly social media and online marketing platforms, the way consumers perceive, and process information is changing. The Interactive Advertising Model illustrates that the intention and motivation of users, combined with digital stimuli and interactive advertising formats, are crucial for the perception and processing of advertising (Rodgers & Thorson, 2000). Aspects of interactivity, individual control during information perception, and the ability to change motives depending

on the situation have a direct impact on the complexity and dynamics of the decision-making process. Existing literature illustrates that today's consumers are significantly more active in their decision-making. They are increasingly self-determined in their search for information and evaluation of alternatives, utilizing numerous digital sources to define their needs and confirm their decisions. Consequently, theoretical models must be continuously adapted to reflect the diverse influencing factors and processes in a contemporary manner (Stankevich, 2017; Rodgers & Thorson, 2000).

2.4 Information Processing Mode

Existing research illustrates that how consumers process online advertising depends heavily on their motivation, attention and cognitive capacity. According to the model developed by MacInnis and Jaworski (1989), the cognitive processing of advertising content is either systematic or heuristic. Systematic processing requires sufficient cognitive capacity and a high level of involvement. If these conditions are not met, consumers resort to simple cues, like emotional or superficial characteristics. This distinction is also evident in empirical studies. Guo et al. (2020) investigated how consumers process emotional and non-emotional content in online reviews, and the type of information processing triggered by different types of content. This is evident in their definition: 'Systematic information processing was described as considering all relevant information, elaborating on it, and forming an opinion based on these elaborations.' Heuristic information processing, on the other hand, is defined as considering fewer pieces of information, or even just one, and forming an opinion based on these few pieces of information (Guo et al., 2020, p. 3). Emotions therefore influence both the initial reaction and the depth of subsequent processing. This understanding forms the basis for how stimuli are received and evaluated in digital communication environments. The literature also addresses the question of how different processing modes interact with advertising formats. Thompson and Hamilton (2006) demonstrate that advertisements are particularly effective when their structure aligns with the processing type. Comparative ads favour analytical thinking, while visual formats are more effective for intuitive processing. This illustrates the importance of considering digital advertising in the context of the respective processing situation. Digital advertising is also absorbed across different touchpoints. While initial touchpoints tend to capture attention and evoke emotion, subsequent touchpoints provide more detailed information, facilitating more systematic processing (Batra & Keller, 2016). Mobile use reinforces these patterns, as content is often consumed in short, distracting situations. This

increases the likelihood of heuristic decisions and reinforces the importance of personal relevance (Smith, 2019).

2.5 Nudge Theory

According to nudge theory, subtle forms of influence can be understood in the context of consumer decision-making. It focuses on how behaviour can be guided through the design of the decision-making environment, while still allowing individuals to make their own choices (Leonard, 2008). In this framework, influence occurs by making certain information or options more visible, rather than by imposing direct pressure.

In the context of online advertising, advertising claims can be understood as elements that shape how consumers perceive and evaluate the available options. By emphasising specific aspects of an offer, claims direct focus and structure the decision-making process. This form of influence can help consumers navigate complex, information-dense environments.

However, the use of this type of cue raises questions about the boundary between supportive guidance and improper influence. When advertising claims are perceived as overly directive or manipulative, tension arises between the advertiser's persuasive intent and the consumer's sense of autonomy (Häubl & Trifts, 2000). Nudge theory helps frame this tension by highlighting the conflict between effective influence and perceived appropriateness.

This conceptual perspective provides the basis for examining how consumers respond to advertising claims when those boundaries are perceived to be challenged. The following sections explore this conflict in more detail through the concepts of psychological reactance and the perceived ethics of advertising claims.

2.6 Physiological Reactance

Psychological reactance is a key concept in psychological research, describing how people respond to perceived limitations on their behavioural freedom. According to Steindl et al. (2015), reactance arises whenever individuals feel deprived of an important decision-making right. This causes a negative state of mind where you feel angry and think of arguments to reject what they are saying, and you also start to think that they are not worth listening to. The study shows that controlling or manipulative advertising messages reinforce the feeling of reactance. In this case, attitudes towards advertising and purchase intent decline significantly. The effect of reactance is evident on three levels: emotional (rejection and anger), cognitive (questioning and counterarguments), and behavioural (reduction in purchase intention). The authors

emphasise that reactance can be experienced as a short-term state but can also be a personality trait varying in intensity. Various scales have been developed to measure reactance, focusing either on feelings of restriction or on the tendency to resist (Steindl et al., 2015). Recent studies show that the nature and aggressive tone of advertising messages are particularly important. Assertive messages such as 'You must... (act now)' are perceived as a threat to freedom. This can lead to anger and negative thoughts, which ultimately reduce attitudes towards advertising and purchase intent (Freudenreich & Penz, 2025). The effect depends heavily on individual value orientations. For instance, hedonically oriented individuals are particularly sensitive to restrictions, whereas individuals with strong environmental values perceive sustainable messages as less threatening. This emphasizes the importance of targeted communication (Freudenreich & Penz, 2025). Advertising that relies on reward incentives like promotions or loyalty programmes, can also trigger psychological reactance. This effect is particularly strong when consumers perceive the required effort as externally determined and disproportionate to the reward offered. Those with a high level of reactance prefer rewards that are proportional to their own effort, as this emphasises their autonomy (Kivetz, 2005). People are more likely to resist promotions if they feel like they are being used to control their behaviour. This is even more likely if the conditions seem unclear or unfair. Studies also show that so-called 'promotional favours', such as discounts in exchange for reviews, are less effective than traditional price reductions. The discrepancy between the required performance and the reward strengthens the sense of external control and consequently reactance. Consumers who perceive such conditions as unfair, or who are already prone to strong reactance, will reject the promotion, reducing its effectiveness (Bertini & Aydinli, 2020). Limited time offers are a common advertising strategy intended to promote sales by creating a sense of urgency. However, studies show that this time restriction can actually increase psychological reactance if consumers perceive the limited flexibility as an unpleasant loss of freedom. Those who are generally sensitive to restrictions on freedom are particularly affected. In such cases, time pressure, rigid conditions or a lack of flexibility can lead to the offer being rejected and thus have a lower advertising impact. When it comes to research, this finding shows how important it is to think about reactance. Not just in statements that control what's being said, but also in tight time limits and other restrictions, and to adapt the promotional strategy to fit that (Mukherjee, Lee & Gershoff, 2025).

H3: Higher levels of psychological reactance are associated with less favourable attitudes toward the advertisement and lower purchase intention.

2.7 Ethical Perception in Context of Ad Evaluation

The ethical evaluation of digital advertising is central to current literature. Consumers judge advertising not only by its informational function, but also by the extent to which it is perceived as fair, truthful, and respectful. The term “perceived ethicality” describes this moral evaluation and encompasses several dimensions that relate to different stakeholder groups (Shabbir et al., 2019). Brunk (2010) demonstrates that this type of evaluation is significantly influenced by marketing practices, especially when they are considered misleading, exploitative, or non-transparent. Positive ethical perceptions promote trust and willingness to buy, while unethical practices can lead to rejection (Brunk, 2010). As Shabbir et al. (2019) demonstrate, this understanding is expanded on through the utilisation of an ethnocentric model that shows how consumers structure advertising along bipolar ethical dimensions, such as informativeness versus deception or respect versus exploitation. At the core of unethical perceptions are manipulative elements including exaggerated claims and artificially created pressure to decide. These types of designs are seen as a violation of moral expectations and can lead to complaints or reactance (Shabbir et al., 2019). Digital advertising contexts amplify these effects. Recent studies show that users experience online advertising as ambivalent (Sutrisna, 2025). On the one hand, digital advertising is perceived as effective, but on the other hand, there is increased sensitivity to non-transparent data use, intrusive formats, and manipulative targeting strategies. This study deals with the critical evaluation of digital claims by users. The analysis shows that claims that restrict users' freedom of choice or lack clarity are considered particularly problematic. Research on moral psychology explores why unethical claims can trigger those strong reactions therefore Martinez and Jaeger (2016) demonstrate that moral awareness heightens the perception of moral implications in decision-making. This, in turn, leads to stronger moral judgements and emotions like guilt or outrage, which can reduce the intention to buy. In the context of digital advertising, claims that are perceived as manipulative can activate moral reactions, thereby influencing attitudes towards advertising and brands (Martinez & Jaeger, 2016). The nature of these reactions depends heavily on the type of information processing. Dual-process models distinguish between heuristic and systematic processing and Warner et al. (2024) argue in their review on the categorization of the factors influencing dual-process models of ethical decision making, that both modes can lead to ethical or unethical evaluations. Heuristic processing activates spontaneous moral intuitions, like the feeling that a claim is 'not right'. In contrast, systematic processing enables a thorough examination of the claim's content, revealing potential inconsistencies. Whether a claim is evaluated as ethical or unethical, therefore, depends on both the claim itself and the mode of processing (Warner et al.,

2024). However, existing research tends to consider these perspectives separately. While research on advertising ethics analyses the ethical perception of advertising in general, studies of nudges and decision architectures examine cognitive and behavioural economic processes. Nevertheless, only few studies have examined how specific claim designs in digital advertising combine these processes and influence processing and ethical evaluation. This study addresses this gap by examining how different types of claims are perceived, and the effect these perceptions have on advertising evaluation and purchase intent.

H4: Systematic information processing is positively associated with perceived ethicality of the advertisement, whereas heuristic information processing is negatively associated with perceived ethicality.

2.8 Literature Gap

Despite the recent increased focus on digital persuasion in research, there remains a clear gap in understanding how claim-based persuasive cues in online advertising influence the cognitive mechanisms that guide consumer decision-making. Studies in this area often examine heuristic and systematic information processing separately from research on digital nudges in e-commerce. However, there is a notable gap in research addressing the dynamics between these elements in the context of online product advertising. The current state of research offers limited insight into how specific claim types influence, simplify or distort cognitive processing when consumers evaluate digital advertising. Another gap concerns the ethical implications of claim framing. Digital nudges are frequently described as supportive tools that help consumers make better choices. However, the distinction between supportive message design and manipulative claim framing in online advertising is not yet clearly defined. The point at which urgency or credibility cues begin to impact informed judgment, creating perceived pressure or restricting autonomy in decision-making remains unclear. This lack of clarity limits both the ethical assessment of persuasive techniques and the development of guidelines for responsible advertising practices. Furthermore, there is limited integration across the fields that investigate cognitive processing and the impact ethical or reactance-related responses have on online advertising. Research in these areas is still largely conducted independently. However, understanding how these perspectives relate to each other is essential for explaining how consumers interpret and evaluate persuasive messages in digital environments. A more connected approach would help clarify how claim-based nudges influence cognitive processing,

trigger reactance and shape evaluative outcomes like attitudes and purchase intentions. Addressing these gaps will enable a more comprehensive understanding of persuasive mechanisms in claim-based nudges within online product advertising. An integrated perspective provides a foundation for evaluating when persuasive claims contribute to consumer decision-making and at what point they might compromise autonomy, trust, and ethical standards.

3. Methodology

The purpose of this chapter is to describe the methodological approach of this study and to provide sufficient detail to ensure transparency and replicability. The methodological decisions are derived from the theoretical framework presented in the previous chapter, which is grounded in the Heuristic–Systematic Model and the broader literature on persuasive advertising claims in digital contexts. Building on this foundation, the study examines whether and to what extent urgency-based and credibility-based claim cues influence information processing and related consumer evaluations in an online advertising setting. The chapter covers the research design, participant sample and procedure, and proposes the measurement of all study variables.

3.1 Research Design

A quantitative online experiment with a between-subjects design was employed for this study. The objective was to examine whether urgency- or credibility-based claim cues in online advertising influence consumers' information processing and subsequent responses compared to a neutral control condition. Participants were randomly assigned to one of three conditions: urgency, credibility, or control. The three key informational claim cues were systematically adapted across the experimental stimuli according to the respective condition. However, the product characteristics, visual design, and overall advertisement structure remained constant. Depending on the experimental condition, urgency-related cues, credibility-related cues, or no additional claims were presented. This manipulation was implemented exclusively through textual claim cues embedded in the advertisement to ensure that any observed effects could be attributed to the manipulated message elements rather than to differences in visual or product-related features.

Data collection was conducted online in a standardised, self-administered setting, ensuring identical presentation of the experimental stimuli across participants. Participants viewed the advertisement corresponding to their condition and then completed a structured questionnaire in a predetermined order. Random assignment and strict standardization of the stimulus

materials enabled causal inference regarding the effects of urgency and credibility mechanisms in online advertising under controlled conditions (Petty & Cacioppo, 1986; Sobolev & Lešić, 2022).

3.2 Participants

To participate in the online experiment, individuals aged 18 years or older with access to online resources were recruited via personal networks and social media channels. Participation was voluntary and anonymous, and no compensation was provided.

A total of 198 responses were recorded. Among these, 187 were considered complete. Responses were excluded if participants did not finish the questionnaire or failed the predefined manipulation check. After applying these exclusion criteria, 181 valid responses remained and were included in the final analysis.

3.3 Procedure

The study was conducted as a web-based experiment using a standardized, self-administered questionnaire that took approximately five to seven minutes to complete. Participants were recruited using Qualtrics. After receiving introductory information about the study's purpose, duration, and participation requirements, participants were randomly assigned to one of three conditions: urgency, credibility, or control. Participants were then exposed to the corresponding advertisement. The advertisements differed only in the claim cues embedded. The urgency condition included references to time pressure and limited availability. The credibility condition incorporated expert- and popularity-based cues and the control condition presented the advertisement without any additional claims. All other visual and textual elements remained consistent across conditions.

After viewing the advertisement, participants completed the questionnaire in a predetermined order. First, a manipulation check was administered, followed by measures of initial purchase intention and general perceptions of the advertisement. Additional sections assessed systematic and heuristic information processing, perceived ethicality, psychological reactance, and attitudes toward the advertisement. Then, measures of product involvement, general attitudes toward online advertising, and purchase intention were presented. Finally, participants provided demographic information and were acknowledged for their participation. For the full detailed version of the questionnaire, please refer to Appendix A.

3.4 Variable Measurement

Different advertising claim types were selected to capture their effects on information processing and subsequent evaluative and behavioural responses. All constructs were measured using multi-item scales included in the Qualtrics questionnaire. Unless otherwise stated, responses were recorded on 7-point scales. For all multi-item constructs, mean indices were computed. Negatively worded items were reverse coded prior to index construction.

3.4.1 Independent Variables

Claim Type: The claim type was operationalized as a three-level, between-subjects experimental factor: Urgency, credibility, and control. Participants were randomly assigned to one of the conditions and exposed to a single advertisement image. The stimuli differed only with respect to the embedded claim cues; the product characteristics, visual design, and overall advertisement structure remained constant across conditions.

In the urgency condition, the advertisement contained three commonly used urgency cues. A time pressure message indicating that the offer would soon expire and a scarcity message combined with a special price offer emphasising the limited availability of the product. Common studies acknowledged that time pressure and scarcity are well-established digital nudges that have been proven to reduce available cognitive resources and accelerate decision-making (Suri & Monroe, 2003; Lynn, 1991). These types of cues typically increase the likelihood of heuristic information processing due to shortened evaluation time and elevated perceived pressure.

Within the credibility condition, two cues were present in the advertisement concurrently. An certification label, emphasizing the products popularity through Award Wins and certified top seller rankings. The combination of expertise and social proof reflects common strategies for enhancing credibility in digital advertising. These cues typically promote a more systematic elaboration of the message (Hudders et al., 2020).

The control condition presented the original version of the advertisement without additional statements. This baseline was essential to distinguish the effects of the manipulated statements from the general perception of the advertisement. By comparing the urgency and credibility conditions with a neutral statement-free advertisement, the design allowed for a clear assessment of how persuasive cues modify information processing, reactance, and ethical evaluations beyond the effects of the standard advertisement. Moreover, the incorporation of a control group is in accordance with dual-process theories of persuasion. These theories

necessitate a cue-free reference point to ascertain whether peripheral cues prompt consumers to engage in heuristic or systematic processing (Petty & Cacioppo, 1986).

A manipulation check asked participants to identify the main message of the advertisement (Q2). Responses indicating that participants could not recall the message or selected "Other" were treated as failed manipulation checks and excluded from the final dataset.

3.4.2 Process Measures

Systematic Processing was measured using five items (Q5), which assessed the extent to which participants carefully and thoroughly evaluated the information presented in the advertisement (e.g., "I carefully examined all the information in the ad"). All items were rated on seven-point scales, and a mean index was computed. Higher values indicate higher levels of systematic processing.

Heuristic Processing was measured using five items (Q6), which captured cue-based and low-effort information processing (e.g., "I relied on simple cues to judge the ad"). Items were rated on seven-point scales, and a mean index was computed, with higher values indicating a greater reliance on heuristic processing.

3.4.3 Dependent Variables

Psychological Reactance: The variable psychological reactance was collected to capture perceived restrictions on freedom of choice and the resulting negative reactions to the advertisement. This was measured using five items (Q8) reflecting aspects such as feelings of pressure, perceived pressure and emotional rejection (e.g. anger and annoyance). A mean score was also calculated here. Including this variable is intended to reveal potential resistance reactions to the different ways of cognitive processing (Mukherjee et al., 2025).

Perceived Ethicality: In order to capture the perceived moral acceptability of advertising measures, perceived ethicality was included in the study as one of the dependent variables. Previous research on marketing ethics shows that consumers perceive advertising content as unethical when they feel that their freedom of choice has been violated or their judgment has been deliberately influenced (Brunk, 2010). A seven-point Likert scale was used to measure the level of perceived ethicality. Participants rated items like "The advertisement is ethically acceptable," or "The message feels morally unproblematic" (Q7) and a mean index was computed with higher values reflecting higher levels of perceived ethicality.

Attitude towards the Ad: In this study, Attitude towards the Ad (Aad) was measured using a semantic differential scale (question block Q9). Participants rated the ad based on four bipolar adjective pairs. For example: negative - positive and unattractive - attractive. All items were recorded on a seven-point scale, with higher values indicating a more positive evaluation of the ad. For the analysis, a mean index was formed from all the items. This scale corresponds to established measurement approaches in advertising psychology, allowing for a valid recording of the affective and evaluative responses to the stimulus (Lin et al., 2024).

Purchase Intention: Purchase intention was included in order to capture the behavioural intention of the participants and to test whether cognitive biases and ethical evaluations also influenced the actual purchase intentions. In advertising and consumer research, purchase intention is considered the most important predictor of effective purchase behaviour (Pavlou & Fygenon, 2006). Research findings show that persuasive advertising tactics can increase purchase intention in the short term, even if consumers perceive the message as manipulative or unethical (Darke & Ritchie, 2007). Measuring this variable therefore made it possible to test the behavioural relevance of the experimental manipulations. The variable was measured using five items reflecting behavioural intention in an online shopping context (Q11). Responses were recorded on 7-point Likert scales ranging from strongly disagree to strongly agree and included items like “I would purchase this product” and “I would add the product to my shopping cart”.

3.4.4 Moderator

Product Involvement: The inclusion of product involvement as a moderator allows for the examination of interaction effects between involvement and the experimental conditions, capturing individual differences in information processing depending on the personal relevance of the advertised product (Liu et al., 2020). In advertising research, involvement is understood as the perceived importance and meaning a product holds for an individual and is known to influence the depth of information processing (Zhai et al., 2022). Product involvement was measured using a five-item semantic differential scale assessing the personal relevance of the advertised product (Q10). Participants evaluated the product using bipolar adjective pairs such as unimportant–important and irrelevant–relevant. All items were rated on 7-point scales, and a mean index was computed, with higher values indicating higher product involvement.

4. Data Analysis and Results

4.1 Data Preparation

All steps of data preparation were carried out using IBM SPSS Statistics and were based on common standards in social science and the field of marketing research.

Once the data collection process was terminated, the initial phase of the study involved the refinement of the dataset. It was determined that all incomplete cases would be excluded from the study, as were all participants who had not correctly completed the manipulation check. This ensured that only valid and carefully processed cases were included in the evaluation. In the next step, negatively worded items were recoded so that all statements could be interpreted in the same way in terms of content. For all multidimensional constructs, mean indices were then formed, provided that the reliability of the scales was proven by satisfactory Cronbach's alpha values. This approach ensured a compact and statistically significant representation of the theoretical constructs. The independent variable "claim type" was dummy coded in preparation for the inferential statistical analyses to enable comparison between the three experimental conditions (urgency, credibility, control) in the following models (e.g., ANOVA, regression).

4.2 Scale Reliability

Cronbach's alpha coefficients were calculated to evaluate the internal consistency of the scales being utilised. The calculations were performed across samples, as all participants worked on the same items, and the reliability test aimed to assess the basic measurement quality of the scales independently of experimental conditions. This approach is considered to be both methodologically standard and appropriate, provided that no systematic differences in item interpretation between the groups are to be expected.

The results indicate that there is satisfactory internal consistency across all scales, being display in Table 1. Following the exclusion of one item based on its counterargument, the Systematic Processing scale demonstrated a satisfactory Cronbach's alpha of .818, thereby confirming the high consistency of the remaining four items.

Table 1 Scales Reliability Test Results

Scale	Number of Items	Excluded Items	Cronbach's Alpha
Systematic Processing	4	I considered counter arguments ...	.818
Heuristic Processing	5	-	.705
Ethicality	5	-	.771
Psychological Reactance	5	-	.852
Involvement	5	-	.923
Attitude toward Ad	4	-	.808
Purchase Intention	5	-	.904

4.3 Descriptive Data Analysis

Sample Characteristics: The demographic characteristics of the participants were collected in order to provide a description of the sample. A total of 187 volunteers participated in the study. The mean age of the participants was 28.12 years (SD = 7.43), with the age range extending from 19 to 63 years. The gender distribution was reasonably balanced, with 54.0% of participants identifying as female and 46.0% as male. The evaluation of the study demonstrated that the majority of respondents were German citizens (75.4%), followed by Portuguese (10.7%) and Spanish (4.3%). Representation was also observed at the national level, with individuals from Italy, France, and Norway in attendance. The current living situation is indicative of the distribution: The data indicates that 66.3% of respondents reside in Germany, while 19.3% are located in Portugal. With respect to the highest level of education achieved, 49.2% of the population held a bachelor's degree, 30.5% possessed a master's degree, 11.8% had obtained a high school diploma, and 4.8% had attained a doctorate. The remaining 3.7% of respondents selected the option entitled "Other." The distribution of employment status is characterised by heterogeneity. The survey revealed that 41.2% of respondents were students, 40.6% were employed full-time, 9.6% were employed part-time, 6.4% were self-employed, and only a small proportion were unemployed (1.1%). These descriptive data permit a differentiated assessment of the sample composition, which is documented in detail in the Appendix B (Table 2-7).

Central Variables: For an initial assessment of the constructs collected, mean values and standard deviations were calculated for all central variables across the entire sample (see Appendix B, Table 8). Overall, the scales showed values in line with expectations: systematic processing was rated on average at $M = 4.39$ (SD = 0.91) and heuristic processing at $M = 4.85$ (SD = 0.90). The perceived ethical content of the advertising was rated relatively high with a

mean value of $M = 6.26$ ($SD = 0.60$), as was product involvement ($M = 4.71$; $SD = 1.30$) and the advertising impact measured by attitude toward the ad ($M = 4.88$; $SD = 1.03$) and purchase intention ($M = 4.09$; $SD = 1.33$). These values provide a basic orientation regarding the distribution and dispersion of the variables, independent of the experimental conditions.

Manipulation and group-specific descriptive values: To assess whether participants had distinguished between the intended advertising messages, a manipulation check was conducted based on their perceived main message (Question 2). This perception-based approach is consistent with the study's focus on decision-making processes, since following analyses rely on participants' cognitive interpretation of the advertising message.

The results indicate that participants identified distinct message types. In particular, 33.7% of respondents perceived the advertisement as emphasising a limited-time offer or scarcity, while 32.6% identified a certified brand or top-seller message. A further 30.5% reported that no specific offer or certification was highlighted. Only a small proportion of participants (3.2%) indicated that they did not remember or notice a specific message.

Participants who did not remember a clear perception of the advertising message were excluded from any further analysis, ensuring that all hypothesis tests were based on conscious, interpretable perception of the advertising message. For more detailed information, please refer to Appendix B Table 9.

4.4 Hypothesis Testing

4.4.1 Effect of Claim Type on Information Processing Mode (H1)

In order to investigate how different types of advertising claims affect cognitive processing, participants were randomly assigned to one of three experimental conditions in the online survey. Each condition was designed to activate a different persuasive strategy. The independent variable "Claim Type" was operationalized as a categorical factor with three experimental conditions:

Urgency (coded as 1) Credibility (coded as 2) and the Control condition (coded as 3). To measure heuristic and systematic processing, participants rated their perception with four items for systematic processing (e.g., "I thought deeply about the content") and five items for heuristic processing (e.g., "I made up my mind without much consideration"), each on a 7-point Likert scale.

For all constructs, a scale index was computed by averaging the respective items (Systematic: $\alpha = .82$; Heuristic: $\alpha = .71$). To test these assumptions, two separate one-way ANOVAs were

conducted with claim type as the independent variable and heuristic or systematic processing as the dependent variables.

A one-way ANOVA revealed a significant effect of claim type on heuristic processing, $F(2, 178) = 9.63, p < .001, \eta^2 = .098$. Participants exposed to urgency-based claims ($M = 5.21, SD = 0.82$) reported significantly more heuristic processing than those in the credibility ($M = 4.54, SD = 1.04, p < .001$) and control ($M = 4.76, SD = 0.68, p = .014$) conditions.

Similarly, a second ANOVA showed a significant effect of claim type on systematic processing,

$F(2, 178) = 8.38, p < .001, \eta^2 = .086$. Participants in the credibility condition ($M = 4.79, SD = 0.85$) reported significantly more systematic processing than those in the urgency ($M = 4.24, SD = 0.75, p = .001$) and control ($M = 4.25, SD = 0.94, p = .002$) conditions. These results provide support for both H1a and H1b, indicating differences in cognitive processing patterns across perceived claim types.

In addition to the ANOVA analyses of processing style by claim type, I examined whether subjective perceptions from the ad evaluation (Q4) aligned with the respective processing indices.

Participants who reported stronger feelings of time pressure also showed higher heuristic processing. Conversely, higher perceived informativeness and support of the claims correlated with increased systematic processing. These findings provide converging evidence for the conceptual validity of the two processing styles in the context of advertising messages. A significant positive correlation was found between perceived time pressure and heuristic processing ($r = .32, p < .001$), indicating that participants who felt more urgency to act tended to rely more on heuristic cues. Similarly, a significant positive correlation emerged between perceived trustworthiness and support of the ad claims and systematic processing ($r = .32, p < .001$). While both correlations yielded identical coefficients, this is a statistical coincidence and does not imply redundancy. The findings provide converging evidence for the validity of the two processing styles within the advertising context. For more detailed information, see Appendix D Table 10-13.

4.4.2 Moderating Effect of Product Involvement on Information Processing (H2)

Hypothesis 2 proposed that product involvement moderates the relationship between claim type (urgency-based, credibility-based, or control) and the depth of information processing. Specifically, it suggested that highly involved participants would process information more

systematically, while low-involvement participants would rely more on heuristic cues depending on the type of claim presented. To test this hypothesis, a Multivariate Analysis of Variance (MANOVA) was conducted. The independent variable was *claim_type*, and the moderator was product involvement, which had been recoded into a binary variable (low vs. high involvement) using a median split of the previously computed index. The dependent variables were the two processing styles: heuristic processing and systematic processing, each represented by multi-item indices derived from relevant scale items (e.g., “I felt I should act quickly” and “I felt a strong sense of time pressure” for heuristic; “The claims appeared well-supported” and “The ad seemed trustworthy” for systematic). As a first step, the MANOVA tested for an overall effect on information processing. The results showed significant main effects of both *claim_type* (Wilks’ Lambda = .850, $F(4, 348) = 7.364$, $p < .001$) and product involvement (Wilks’ Lambda = .949, $F(2, 174) = 4.634$, $p = .011$). However, the interaction between claim type and involvement was not significant at the multivariate level (Wilks’ Lambda = .970, $F(4, 348) = 1.336$, $p = .256$). Given that the MANOVA indicated a significant overall effect, the next step was to examine which type of processing (heuristic, systematic, or both) was affected. To do so, two separate univariate ANOVAs were conducted.

The first ANOVA, with heuristic processing as the dependent variable, showed a significant main effect of *claim_type* ($F(2, 178) = 9.63$, $p < .001$, $\eta^2 = .098$), but no significant main effect of product involvement ($p = .433$) and no interaction effect ($p = .259$). Bonferroni post hoc tests revealed that heuristic processing was significantly higher in the urgency condition compared to both the credibility and control conditions ($p < .001$ and $p = .014$, respectively). The second ANOVA, focusing on systematic processing, also revealed a significant effect of *claim_type* ($F(2, 178) = 8.38$, $p < .001$, $\eta^2 = .086$) and a significant main effect of involvement ($F(1, 178) = 7.76$, $p = .006$). Participants in the credibility condition reported significantly higher systematic processing than those in the urgency and control groups (all $p < .01$). However, again, the interaction effect between *claim_type* and product involvement was not significant ($p = .202$), indicating that the effect of claim type on processing did not differ depending on involvement level. In summary, the MANOVA results confirmed that the manipulated variables had an overall effect on information processing. The follow-up ANOVAs clarified that both heuristic and systematic processing were significantly influenced by claim type. Additionally, systematic processing was affected by involvement level, but no moderation effect was found. Therefore, Hypothesis 2 was not supported, as the expected interaction between claim type and involvement on information processing did not occur. For a detailed overview, see Appendix D Table 14-17.

4.4.3 Relationship between Psychological Reactance and Advertising Effectiveness (H3)

To examine whether psychological reactance affects ad effectiveness, the relationship between psychological reactance and purchase intention was tested. Hypothesis 3 proposed that higher psychological reactance would be associated with a more negative attitude toward the ad and lower purchase intention.

To test this hypothesis, the index Psychological Reactance was used as an independent variable. This index was composed of five items from the reactance scale (e.g., “The ad felt like something was being forced on me”, “The ad restricted my freedom to decide for myself”), measured on 7-point Likert scales, and demonstrated high reliability (Cronbach’s $\alpha = .85$). The two dependent variables were the indices Attitude toward the Ad (e.g. evaluation from boring to interesting, unappealing to appealing) and Purchase Intention (e.g., „I would purchase this product“, „I would click buy now“), each derived from 4–5 items ($\alpha = .81$ and $\alpha = .90$, respectively).

Two separate linear regressions were conducted, entering psychological reactance as the predictor variable. The first model examined whether reactance predicted attitude toward the ad. Results showed that the regression was not statistically significant, $F(1, 185) = 1.75, p = .188$, and the predictor was not significant ($\beta = -.10, t = -1.32, p = .188$). The explained variance was minimal ($R^2 = .009$). The second regression model tested the effect of reactance on the purchase intention. Again, the model was not significant, $F(1, 185) = 0.02, p = .892$, and the predictor did not reach significance ($\beta = .01, t = 0.14, p = .892$), with virtually no explained variance ($R^2 < .001$).

These results indicate that psychological reactance did not significantly predict either outcome, and therefore, Hypothesis 2 was not supported. For more detailed information, see Appendix D Table 18 & 19.

4.4.4 Influence of Information Processing on Perceived Ad Ethicality (H4)

The assumption is that consumers engaging in systematic processing (i.e., deeper cognitive engagement with message content) will see the ad as more ethical, whereas heuristic processing (i.e., superficial or cue-driven processing) may relate to lower ethical evaluations. To test these statements, a multiple linear regression analysis was performed with ethicality as

the dependent variable. The Index Ethicality comprised five items (e.g., “The ad seemed ethically acceptable”, “The message feels morally unproblematic”), measured on 7-point Likert scales. The scale showed acceptable internal consistency (Cronbach’s $\alpha = .77$). The two information processing indices were entered simultaneously as predictors: Systematic Processing Index (4 items, $\alpha = .82$) and Heuristic Processing Index (5 items, $\alpha = .71$). The regression model was statistically significant, $F(2, 184) = 14.18, p < .001$, with an adjusted R^2 of .124, indicating that these two types of processing explained 12.4% of the variance in ethicality perception. When examining the individual predictors, systematic processing emerged as a significant positive predictor of ethicality ($\beta = .373, t = 5.318, p < .001$), supporting the first part of the Hypothesis that systematic information processing is positively associated with perceived ethicality. In contrast, heuristic processing was not significantly related to ethicality ($\beta = .058, t = 0.824, p = .411$), so the second part could not be considered. These results suggest that only systematic processing significantly contributes to positive ethical perceptions of the ad and align with theoretical assumptions that deeper message elaboration leads to more favourable, thoughtful evaluations. To examine more detailed information, see Appendix D Table 20 & 21.

5. Discussion

5.1 Summary of Key Findings

The present study investigated how different advertising claim types influence consumers' dominant processing tendencies and how these processing modes relate to ethical evaluations and advertising outcomes. Utilising a controlled experimental design, the claim type was systematically manipulated while all other elements of the advertising stimulus remained constant. The findings suggest a positive correlation between perceived time pressure and heuristic processing, thereby validating the first hypothesis that urgency-based claims are associated with less sophisticated cognitive processing. In contrast, credibility-based claims were associated with higher levels of detailed information processing. These effects were further confirmed by separate analyses showing that urgency claims significantly increased heuristic processing, whereas credibility claims significantly enhanced systematic processing. With a focus on psychological reactance, no considerable impacts were identified on attitudes towards the advertisement or purchase intention. Consequently, the proposed negative correlation between reactance and advertising acceptance was not supported by the data. Furthermore, a significant positive relationship was identified between systematic processing and the perceived ethicality of advertising. Participants who demonstrated a more active

engagement with the advertising content exhibited a higher level of ethical evaluation. Nevertheless, the findings revealed no significant correlation between heuristic processing and ethical evaluations. As a final point, while the claim type exerted a significant effect on both heuristic and systematic processing, the expected moderating effect of product involvement was not supported, as no significant interaction between claim type and involvement emerged.

5.2 Connection to the Existing Literature

The findings of the present study can be interpreted in light of established dual-process theories of persuasion and prior research on ethical evaluations and psychological reactance in advertising contexts. Firstly, the observed relationship between the type of advertising claims and dominant processing tendencies is consistent with the core assumptions of dual-process models, particularly the HSM (Chaiken, 1980) and the ELM (Petty & Cacioppo, 1986). The results suggest that urgency-based claims encourage heuristic processing. This is consistent with previous studies indicating that time constraints reduce cognitive capacity and motivation for detailed consideration (Lee & Hong, 2021). Under these conditions, people are more likely to rely on simple cues than engage in systematic evaluation.

It is further demonstrated that the positive relationship between systematic processing and perceived ethicality extends existing research on moral evaluation in persuasion contexts. Brunk (2012) posits that existing literature conceptualises ethicality as a cognitively demanding judgement that goes beyond superficial message attributes. The present findings suggest that ethical evaluations are more likely to emerge when consumers engage in deeper, more systematic processing of advertising content.

On the other hand, heuristic processing was not significantly associated with ethical perceptions, indicating that moral judgements may require a minimum level of cognitive elaboration. This finding is consistent with research on persuasion knowledge, which proposes that ethical assessments are influenced by consumers' evaluations of persuasive intent and message substance rather than by peripheral cues alone (Zarouali et al., 2018).

In relation to the concept of psychological reactance, the results appear to deviate from prior research that has identified reactance as a key mechanism driving resistance to persuasive attempts (Steindl et al., 2015; Freudenreich & Penz, 2025). One potential interpretation of these deviations is that the advertising stimuli utilised in the present study did not elicit a sufficiently robust perception of threat to activate reactance responses. This finding indicates that not all urgency-based cues necessarily trigger reactance, emphasising the significance of contextual intensity and perceived intrusiveness in reactance research.

Furthermore, the role of product involvement as a boundary condition merits further discussion. While involvement exhibited a significant main effect on processing intensity, it did not moderate the relationship between claim type and processing mode as hypothesised. This finding is at variance with prior research emphasising involvement as a central determinant of elaboration likelihood (Johnson & Eagly, 1989). One potential explanation for this discrepancy lies in the operationalisation of involvement, or the use of categorical grouping, which may have limited the detection of more nuanced interaction effects. Nevertheless, the results indicate that claim-based message characteristics have a significant impact across different levels of involvement. This finding indicates that situational message cues have the capacity to influence dominant processing tendencies, regardless of consumers' motivational states. The level of involvement experienced by consumers appears to impact the overall depth of processing, as compared to the effect on cognitive responses to specific claim types. This interpretation aligns with dual-process perspectives that conceptualise motivation and message cues as interacting yet distinct influences on information processing (Chaiken, 1980).

5.3 Implications

Academic Implications: The present study suggests that research on persuasive communication in online advertising may benefit from placing greater emphasis on message-level design features as situational drivers of information processing. Rather than treating cognitive processing primarily as a function of stable consumer characteristics, the findings highlight the relevance of claim-based cues in shaping how advertising messages are approached cognitively. This perspective contributes to a more differentiated understanding of dual-process models by underscoring that processing dominance can be influenced through relatively subtle variations in message framing, even within digitally mediated environments. More broadly, the study points to the importance of integrating normative dimensions into persuasion research. By linking information processing tendencies to ethical evaluations of advertising, the findings indicate that cognitive engagement is not only relevant for persuasion effectiveness but also for how advertising is morally assessed. This suggests that ethical perceptions constitute an integral, rather than peripheral, component of how persuasive messages are processed and evaluated.

Managerial Implications: From a managerial position, the findings indicate that advertising effectiveness cannot be understood solely in terms of attention capture or short-term response metrics. The way advertising claims are formulated appears to influence not only how quickly and detailed consumers process information, but also how reflective and evaluative that

processing becomes. This implies that claim design decisions may carry implications beyond immediate persuasion outcomes. In practice, it suggests that advertisers should consider the broader cognitive and ethical consequences of claim-based message strategies. While urgency-oriented approaches may be effective in stimulating rapid engagement, incorporating credibility-oriented elements may support more deliberate consumer evaluation and contribute to more *favourable* perceptions of advertising practices. Such considerations may be particularly relevant in contexts where consumer trust and long-term brand relationships are of strategic importance.

5.4 Limitations

Despite the careful design and implementation of the study, various limitations should be taken into account when interpreting the results. A first limitation concerns the measurement of information processing: although the Heuristic–Systematic Model understands heuristic and systematic processing as non-mutually exclusive and potentially simultaneous processes, the measurement instruments used in this study only capture the dominant form of processing in each case. Therefore, it is not possible to make any statements regarding the simultaneous activation of both processing modes.

It is evident that limitations also arise at the methodological level. Product involvement was operationalised using median split to enable group-based moderation analyses. While this methodological approach permitted the investigation of interaction effects, it may have reduced the variance within the groups and made it more difficult to identify differentiated moderation patterns. Furthermore, all constructs were collected via self-report, which means that they reflect subjectively perceived rather than objectively observable processing behaviour and are therefore vulnerable to individual interpretations. It is evident that the controlled experimental setting does not fully reflect all the situational characteristics of real digital environments. These include interface design, device choice and contextual multitasking, which have the capacity to influence information processing. It is important to note that the participants in this study were recruited via online channels, which may limit the generalizability of the results.

5.5 Objectives for Future Studies

Based on the limitations identified above, several avenues for future research can be identified. For example, the theoretical complexity of information processing indicates that methodological approaches are required to capture both heuristic and systematic processing as

potentially co-occurring processes. Future studies could therefore employ process-oriented methods, like eye tracking or reaction time measurements, or mixed-method designs that go beyond self-reported assessments, to allow for a more detailed analysis of cognitive processing dynamics (Bigné et al., 2021). Acknowledging the situational characteristics of digital advertising environments is also crucial for enhancing external validity. Factors including multitasking, mobile usage, feed dynamics and cross-platform exposure have been shown to influence information processing, potentially acting as moderating conditions in the effectiveness of advertising claims (Angell et al., 2016). Examining the effects of claims within more naturalistic and context-rich settings would therefore provide a more comprehensive understanding of consumer processing behaviour. Additionally, future studies might benefit from a more varied consideration of individual-level characteristics. Rather than relying on binary groupings, continuous moderation approaches could be employed to capture subtle differences in engagement and related traits. Variables like advertising scepticism, sensitivity to data privacy concerns or the need for cognitive closure may further qualify how consumers respond to different claim types (Ruiz-Mafe et al., 2018). Finally, the increasing use of artificial intelligence in advertising represents a key area for future research. AI-generated and algorithmically personalized advertising messages create new heuristic cues, including the perceived authority of algorithms or increased relevance, while simultaneously influencing perceptions of credibility, transparency, and ethical acceptability (Hardcastle et al., 2025). Future studies should examine how consumers process AI-based claims and whether these shift the balance between heuristic and systematic processing. Psychological reactance, the perception of manipulation, authenticity, and ethical concerns are particularly important research questions in this context (Rodgers, Nguyen, 2022). Given the rapid development of digital advertising practices and the growing importance of AI, exploring these areas is essential for designing responsible and effective advertising strategies for the future.

5.6 Conclusion

When evaluating persuasive advertising claims in online advertising contexts, it is essential to consider not only whether they influence consumer responses, but also how they shape the underlying mode of information processing. This thesis shows that urgency-based and credibility-based claims guide consumers toward different processing routes, which in turn is associated with how advertising messages are ethically evaluated.

Urgency-based claims tend to accelerate decision making by encouraging heuristic processing and creating a sense of pressure. Credibility-based claims, in contrast, foster more systematic

processing and allow consumers to engage more deliberately with message content and persuasive intent. These differences in processing are meaningful, because ethical evaluations are more favourable when consumers rely on systematic rather than heuristic processing. Psychological reactance emerges more strongly in response to urgency-based persuasion, yet this resistance does not necessarily translate into less favourable attitudes toward the advertisement or lower purchase intentions.

Taken together, the findings suggest that the ethical perception of advertising is closely linked to the way persuasive intent is processed, rather than to persuasion outcomes alone. Thus, when designing persuasive messages in online advertising, it is important to consider not only effectiveness, but also how claim strategies shape cognitive engagement and perceived fairness. This perspective helps to clarify the boundary between supportive persuasion and perceived pressure in digital advertising environments.

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7. Appendix

A Experimental Survey

Instruction: Dear Participant,

Thank you for participating in this survey!

My name is **Lena Sebastian**, and I am currently writing my **Master's thesis at Católica Lisbon** on the **consumer decision-making process** in online advertising. You will now view a short online advertisement and answer a few questions about your **impressions**. Please look at it carefully and respond to the questions to the best of your knowledge. There are **no right or wrong answers**, so please answer **honestly**. The survey takes about **5 minutes**. Your responses are anonymous and will be used for academic research purposes only. If you have any questions, feel free to contact me at: s-lsebastian@ucp.pt

Q1 Thank you for taking the time to participate in my study. Please imagine the following scenario: You are browsing an online shop on your electronic device, comparing different products. While scrolling, you come across the following product advertisement. Please view it as you normally would when online shopping. You will be asked a few questions afterwards.



Q1 Thank you for taking the time to participate in my study. Please imagine the following scenario: You are browsing an online shop on your electronic device, comparing different

products. While scrolling, you come across the following product advertisement. Please view it as you normally would when online shopping. You will be asked a few questions afterwards.



Q1 Thank you for taking the time to participate in my study. Please imagine the following scenario: You are browsing an online shop on your electronic device, comparing different

products. While scrolling, you come across the following product advertisement. Please view it as you normally would when online shopping. You will be asked a few questions afterwards.



Q2 What was the main message of the ad you just saw?

- ☐ Limited-time offer / few items left
- ☐ Certified brand / Top-seller
- ☐ No specific offer or certification was highlighted
- ☐ I don't remember / didn't notice a specific message
- ☐ Other

Q3 Based on your first impression, how likely would you be to purchase the product shown in the ad you just saw?

☐ 1= Very unlikely

☐ 2

☐ 3

☐ 4= Neutral

☐ 5

☐ 6

☐ 7= Very likely

Q4 Please describe your feeling after seeing the ad.

	1= Strongly disagree	2	3	4= Neutral	5	6	7= Strongly agree
I felt a strong sense of time pressure	☐	☐	☐	☐	☐	☐	☐
I felt I should act quickly	☐	☐	☐	☐	☐	☐	☐
The ad seemed trustworthy	☐	☐	☐	☐	☐	☐	☐
The claims appeared well-supported	☐	☐	☐	☐	☐	☐	☐
The ad felt realistic to me	☐	☐	☐	☐	☐	☐	☐

Q5 Please indicate how you processed the ad you just saw.

	1= Strongly disagree	2	3	4= Neutral	5	6	7= Strongly agree
I carefully examined all the information	☐	☐	☐	☐	☐	☐	☐
I evaluated whether the arguments made sense	☐	☐	☐	☐	☐	☐	☐
I thought deeply about the content	☐	☐	☐	☐	☐	☐	☐
I formed my opinion based on the information provided	☐	☐	☐	☐	☐	☐	☐
I considered counter arguments before judging the ad	☐	☐	☐	☐	☐	☐	☐

Q6 Please indicate how you processed the ad you just saw.

	1= Strongly disagree	2	3	4= Neutral	5	6	7= Strongly agree
I relied on simple cues (e.g. labels, short phrases) to judge the ad	☐		☐	☐	☐	☐	☐
I made up my mind without much consideration	☐		☐	☐	☐	☐	☐
Signals like urgency or credibility were important for me	☐		☐	☐	☐	☐	☐
My impression was based more on quick rules-of-thumb than analysis	☐		☐	☐	☐	☐	☐
I skimmed information rather than processing details	☐		☐	☐	☐	☐	☐

Q7 Please indicate how you perceived the ad.

	1= Strongly disagree	2	3	4= Neutral	5	6	7= Strongly agree
It is ethically acceptable	☐	☐	☐	☐	☐	☐	☐
The ad is fair to consumers	☐	☐	☐	☐	☐	☐	☐
The ad contains misleading elements	☐	☐	☐	☐	☐	☐	☐
The message feels morally unproblematic	☐	☐	☐	☐	☐	☐	☐
The ad is transparent and honest	☐	☐	☐	☐	☐	☐	☐

Q8 Please indicate how you perceived the ad.

	1= Strongly disagree	2	3	4= Neutral	5	6	7= Strongly agree
The ad felt like something was being forced on me	☐	☐	☐	☐	☐	☐	☐
I felt pressured by the ad	☐	☐	☐	☐	☐	☐	☐
The ad restricted my freedom to decide for myself	☐	☐	☐	☐	☐	☐	☐
I felt annoyed by the ad	☐	☐	☐	☐	☐	☐	☐
I felt angry at the ad	☐	☐	☐	☐	☐	☐	☐

Q9 Overall, how do you evaluate the ad?

	1	2	3	4 Neutral	5	6	7	
negative	☐	☐	☐	☐	☐	☐	☐	positive
unappealing	☐	☐	☐	☐	☐	☐	☐	appealing
unlikeable	☐	☐	☐	☐	☐	☐	☐	likeable
boring	☐	☐	☐	☐	☐	☐	☐	interesting

Q10 Thinking about the products shown in the ad, how would you describe their personal relevance to you?

	1	2	3	4 Neutral	5	6	7	
unimportant	☐	☐	☐	☐	☐	☐	☐	important
uninteresting	☐	☐	☐	☐	☐	☐	☐	interesting
irrelevant	☐	☐	☐	☐	☐	☐	☐	relevant
uninvolving	☐	☐	☐	☐	☐	☐	☐	involving
meaningless	☐	☐	☐	☐	☐	☐	☐	meaningfull

Q11 Please indicate your level of agreement with the following statements about this product.

	1= Strongly disagree	2	3	4= Neutral	5	6	7= Strongly agree
I would purchase this product	☐	☐	☐	☐	☐	☐	☐
The likelihood that I will buy this product is high	☐	☐	☐	☐	☐	☐	☐
I intend to buy this product when possible	☐	☐	☐	☐	☐	☐	☐
I would add the product to my shopping cart	☐	☐	☐	☐	☐	☐	☐
I would click "buy now" on this ad	☐	☐	☐	☐	☐	☐	☐

Q12 Please evaluate the following statements regarding your general attitude towards online advertising.

	1= Strongly disagree	2	3	4= Neutral	5	6	7= Strongly agree
Advertisement often exaggerates	☐	☐	☐	☐	☐	☐	☐
I do not trust online ads easily	☐	☐	☐	☐	☐	☐	☐
I tend to think carefully about claims used in ads	☐	☐	☐	☐	☐	☐	☐

Q13 Please indicate your gender.

- ☐ Female
- ☐ Male
- ☐ Non-binary/ Third Gender
- ☐ Prefer not to say

Q14 Please indicate your age.

Q15 Please specify your nationality.

☐ German

☐ Portugese

☐ Italian

☐ Spanish

☐ French

☐ Norwegian

☐ Other _____

Q16 Please specify the country you currently live in.

☐ Germany

☐ Portugal

☐ Italy

☐ Spain

☐ France

☐ Norway

☐ Other

Q17 Please indicate your highest completed level of education.

☐ High School

☐ Bachelor's degree

☐ Master's degree

☐ PhD

☐ Other

Q18 Please indicate your current employment status.

- ☐ Student
- ☐ Employed full-time
- ☐ Employed part-time
- ☐ Self-employed
- ☐ Unemployed
- ☐ Retired
- ☐ Other

B Study Demographic Characteristics

Table 2 - Mean Age and SD recorded

	N	Minimum	Maximum	Mean	Std. Deviation
Age_numeric	187	19.0	63.0	28.12	7.426128
Valid N (listwise)	187				

Table 3 - Sample Demographic Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	101	54.0	54.0	54.0
	Male	86	46.0	46.0	100.0
	Total	187	100.0	100.0	

Table 4 - Sample Nationality Distribution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	German	141	75.4	75.4	75.4
	Portugese	20	10.7	10.7	86.1
	Italian	4	2.1	2.1	88.2
	Spanish	8	4.3	4.3	92.5
	French	1	.5	.5	93.0
	Norwegian	1	.5	.5	93.6
	Other	12	6.4	6.4	100.0
	Total	187	100.0	100.0	

Table 5 - Sample Country of Residence Distribution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Germany	124	66.3	66.3	66.3
	Portugal	36	19.3	19.3	85.6
	Italy	3	1.6	1.6	87.2

Spain	5	2.7	2.7	89.8
France	4	2.1	2.1	92.0
Other	15	8.0	8.0	100.0
Total	187	100.0	100.0	

Table 6 - Sample Education Level distribution

Please indicate your highest completed level of education. - Selected Choice

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High School	22	11.8	11.8	11.8
	Bachelor's degree	92	49.2	49.2	61.0
	Master's degree	57	30.5	30.5	91.4
	PhD	9	4.8	4.8	96.3
	Other	7	3.7	3.7	100.0
	Total	187	100.0	100.0	

Table 7 - Sample Current Employment Status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Student	77	41.2	41.2	41.2
	Employed full-time	76	40.6	40.6	81.8
	Employed part-time	18	9.6	9.6	91.4
	Self-employed	12	6.4	6.4	97.9
	Unemployed	2	1.1	1.1	98.9
	Other	2	1.1	1.1	100.0
	Total	187	100.0	100.0	

C Descriptive Statistics

Table 8 - Descriptive Statistics for all Items (Index)

	N	Minimum	Maximum	Mean	Std. Deviation
Index: Systematic Processing	187	2.000	6.750	4.39171	.913591

Index: Heuristic Processing	187	2.200	6.600	4.85455	.903647
Index: Ethicality	187	3.400	6.800	4.82246	.601547
Index: Psychological Reactance	187	1.000	5.600	2.26524	.819533
Index: Product involvement	187	1.000	7.000	4.70802	1.299830
Index: Attitude towards Ad	187	2.000	7.000	4.84492	1.028172
Index: Purchase Intention	187	1.000	6.800	4.08877	1.333131
Valid N (listwise)	187				

Table 9 - Frequencies, Perceived Message of the Ad (Manipulation Check)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Limited-time offer / few items left	63	33.7	33.7	33.7
	Certified brand / Top-seller	61	32.6	32.6	66.3
	No specific offer or certification was highlighted	57	30.5	30.5	96.8
	I don't remember / didn't notice a specific message	6	3.2	3.2	100.0
	Total	187	100.0	100.0	

D Hypothesis Testing

Table 10 - H1 ANOVA, Index: Heuristic Processing

Index: Heuristic Processing

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	14.467	2	7.234	9.627	<.001
Within Groups	133.739	178	.751		
Total	148.206	180			

Table 11- H1 ANOVA, Index: Systematic Processing

Index: Systematic Processing

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12.027	2	6.013	8.378	<.001
Within Groups	127.763	178	.718		
Total	139.789	180			

Table 12 - H1 Correlation Pressure and Heuristic Processing

		Index: I felt pressure (time, action)	Index: Heuristic Processing
Index: I felt pressure (time, action)	Pearson Correlation	1	.321**
	Sig. (2-tailed)		<.001
	N	187	187
Index: Heuristic Processing	Pearson Correlation	.32110**	1
	Sig. (2-tailed)	<.001	
	N	187	187

**. Correlation is significant at the 0.01 level (2-tailed).

Table 13 - H1 Correlation Trustworthiness and Systematic Processing

		Index: Ad seemed trustworthy & claims appeared well supported	Index: Systematic Processing
Index: Ad seemed trustworthy & claims appeared well supported	Pearson Correlation	1	.321**
	Sig. (2-tailed)		<.001
	N	187	187
Index: Systematic Processing	Pearson Correlation	.32105**	1
	Sig. (2-tailed)	<.001	

N	187	187
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**. Correlation is significant at the 0.01 level (2-tailed).

Table 14 - H2 Moderator Effect of Product Involvement Between-Subject Factors

		Value Label	N
Claim Type based on Condition	1.000	Urgency	63
	2.000	Credibility	61
	3.000	Control	57
Product Involvement: low vs. high	1.000		99
	2.000		82

Table 15 - H2 Tests of Between-Subjects Effects

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	Index: Systematic Processing	19.304 ^a	5	3.861	5.608	<.001
	Index: Heuristic Processing	17.115 ^b	5	3.423	4.569	<.001
Intercept	Index: Systematic Processing	3373.344	1	3373.344	4899.635	<.001
	Index: Heuristic Processing	3998.365	1	3998.365	5337.597	<.001
claim_type	Index: Systematic Processing	8.519	2	4.260	6.187	.003
	Index: Heuristic Processing	16.233	2	8.116	10.835	<.001
involvement_mediator	Index: Systematic Processing	5.341	1	5.341	7.758	.006
	Index: Heuristic Processing	.462	1	.462	.617	.433
claim_type * involvement_mediator	Index: Systematic Processing	2.221	2	1.110	1.613	.202
	Index: Heuristic Processing	2.039	2	1.019	1.361	.259
Error	Index: Systematic Processing	120.486	175	.688		
	Index: Heuristic Processing	131.092	175	.749		
Total	Index: Systematic Processing	3691.188	181			
	Index: Heuristic Processing	4395.600	181			
Corrected Total	Index: Systematic Processing	139.789	180			
	Index: Heuristic Processing	148.206	180			

a. R Squared = ,138 (Adjusted R Squared = ,113)

b. R Squared = ,115 (Adjusted R Squared = ,090)

Table 16 - H2 Moderator Effect of Product Involvement on Heuristic Processing

Multiple Comparison

Dependent Variable: Index: Heuristic Processing

Bonferroni

(I) Claim Type based on Condition	(J) Claim Type based on Condition	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Urgency	Credibility	.668436*	.155702	<.001	.29213	1.04474
	Control	.454804*	.158454	.014	.07185	.83776
Credibility	Urgency	-.668436*	.155702	<.001	-1.04474	-.29213
	Control	-.213632	.159683	.548	-.59956	.17229
Control	Urgency	-.454804*	.158454	.014	-.83776	-.07185
	Credibility	.213632	.159683	.548	-.17229	.59956

*. The mean difference is significant at the 0.05 level.

Table 17 - H2 Moderator Effect of Product Involvement on Systematic Processing

Multiple Comparison

Dependent Variable: Index: Systematic Processing

Bonferroni

(I) Claim Type based on Condition	(J) Claim Type based on Condition	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Urgency	Credibility	-.552888*	.152183	.001	-.92069	-.18509
	Control	-.016291	.154873	1.000	-.39059	.35801
Credibility	Urgency	.552888*	.152183	.001	.18509	.92069
	Control	.536598*	.156074	.002	.15940	.91380
Control	Urgency	.016291	.154873	1.000	-.35801	.39059
	Credibility	-.536598*	.156074	.002	-.91380	-.15940

*. The mean difference is significant at the 0.05 level.

Table 18 - H3 Coefficiency Psychological Reactance with Attitude towards the Ad

Coefficientsa

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	5.120	.221		23.157	<.001
	Index: Psychological Reactance	-.121	.092	-.097	-1.322	.188

a. Dependent Variable: Index: Attitude towards Ad

Table 19 - H3 Coefficients Psychological Reactance with Purchase Intention

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	4.052	.288		14.069	<.001
	Index: Psychological Reactance	.016	.120	.010	.136	.892

a. Dependent Variable: Index: Purchase Intention

Table 20 - H4 Perceived Ethicality under Heuristic and Systematic Processing Mode ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.988	2	4.494	14.180	<.001 ^b
	Residual	58.317	184	.317		
	Total	67.306	186			

a. Dependent Variable: Index: Ethicality

b. Predictors: (Constant), Index: Heuristic Processing, Index: Systematic Processing

Table 21 - H4 Coefficients of Perceived Ethicality within the Processing Mode

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.557	.337		10.565	<.001
	Index: Systematic Processing	.246	.046	.373	5.318	<.001
	Index: Heuristic Processing	.038	.047	.058	.824	.411

a. Dependent Variable: Index: Ethicality