Is digital advertising effective under conditions of low attention?

The impact of low attention processing on consumer brand consideration and choice

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Abstract

A crucial task for digital advertising is to influence choice despite consumers' lack of attention. Although lack of attention can reduce advertising effectiveness, recent research suggests that incidental exposure to ads while accessing digital content can lead to some outcome for the exposed ads. This evidence prompts four critical questions: (1) is digital advertising effective if processed at low attention; (2) can low attention processing increase brand consideration and choice; (3) what specific brand/product characteristics embedded in the ads are likely to influence the effect; and (4) what measures are appropriate to capture the low attention effects.

To address the questions, three experimental studies ($n = 1,423$) were conducted in laboratory and online settings. The research manipulates two conditions for low attention processing, namely divided attention and incidental attention. The results show that, at least in the Twitter environment, advertising is effective even under conditions of low attention. Although focused attention still drives the greatest impact, low attention significantly increases the likelihood of target brands being included in the brand consideration and selected as preferred brand choice more than 'no exposure'. The low attention effects were obtained without subsequent correct respondent recognition. This shows that brand consideration and choice measures were capable of capturing the low attention effects that the recognition measure failed to do. However, the results for source factors – factors that can moderate the effect of stimuli on the outcome – are more nuanced. Brand familiarity, utilitarian/hedonic products, rational/emotional appeals, and (mis)matching between appeals and brands affect the results in some unexpected ways when they interact with low attention.

The thesis makes substantive contributions to the application of attention theory in advertising research, testing methodology for ads that are not actively processed, and design of advertising that can work at low attention. The findings are particularly relevant to address current phenomena such as multitasking, multiscreening, and ad avoidance behaviour. Unless advertisers understand how to make advertising work at low attention, the practice of bombarding consumers with attention-grabbing ads will continue to rise, and ad avoidance will accelerate, which in turn, will put advertising at greater risk of being wasted.

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List of Publications from the Thesis

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List of Abbreviations

AIDA	Attention, Interest, Desire and Action
ANOVA	Analysis of Variance
ATR	Awareness – Trial – Reinforcement
ARF	Advertising Research Foundation
AVOC	Audible and Visible on Complete
CFA	Confirmatory Factor Analysis
CPCV	Cost Per Completed View
DA	Divided Attention
EFA	Exploratory Factor Analysis
EEG	Electroencephalography
ELM	Elaboration Likelihood Model
FA	Focused Attention
fMRI	Functional Magnetic Resonance Imaging
HED/UT	Hedonic/Utilitarian
HSD	Honest Significant Difference
IA	Incidental Attention
IFPT	The Integrative Framework of Persuasion Theories
KMO	Kaiser-Meyer-Olkin
LAP	Low Attention Processing
MEE	Mere Exposure Effect
SSTS	Situation-Specific Thinking Style
UK	United Kingdom
US	United States
USP	Unique Selling Proposition

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CHAPTER 1: INTRODUCTION

This chapter provides contextual information on the present gap in understanding advertising effectiveness, the circumstances where low attention processing of advertising potentially occurs, and the challenges low attention processing causes for the effectiveness of advertising. In particular, the chapter discusses the impact of low attention processing on consumer brand consideration and brand choice. It then briefly introduces the research questions, key constructs, and the implications of research for the development of marketing theory and practice. Finally, an overview of the thesis structure is presented.

1.1. Background

Advertising effectiveness has been a primary concern among advertising scholars and practitioners for decades. For advertising to work, one of the major challenges is to gain consumers' attention. Attention to advertising is defined as "the ability to focus on advertising and also suppress attention to other things in the environment" (Bellman, Nenycz-Thiel, Kennedy, Hartnett, & Varan, 2019, p. 295). Given the dynamics of advertising landscape and consumer behaviour (Dahlén & Rosengren, 2016), an increasing effort has been put into the development of advertising testing methodology. One such effort is a rethinking about consumer attention to advertising and how it relates to effectiveness. Recent findings have revealed that advertising on digital media relies on a different type of attention than traditional media (Rosengren, 2016). However, the literature on newer concepts of advertising attention, such as the Low Attention Processing (LAP) model (Heath, 2007), has predominantly focused on traditional media (television). Moreover, much focus has been directed towards

overcoming the problem of inattention rather than accepting it, despite the evidence that positive low-attention advertising effects do occur (Heath, Brandt, & Nairn, 2006). Low attention to advertising may, therefore, not be a problem it is assumed to be. Thus, the focus should not be on overcoming the problem of inattention, but rather on understanding, measuring, and managing it.

The review of the literature has identified several gaps. Research has offered some new insights into the ways that we acquire and store knowledge of the world around us, and the impact of these on our decision-making process. For example, ninety-five percent of our thinking process is unconscious (Zaltman, 2003), and most of our judgements and decisions are intuitive rather than rational (Kahneman, 2003). These insights have dramatically improved our understanding of how advertising is processed, yet they are not fully assimilated into the methods for evaluating advertising effectiveness.

There is an acceptance that attention forms the base of how advertising 'works' (Davenport & Beck, 2000; Nelson-Field, 2020; Stipp, 2016; Venkatraman et al., 2015). Consistent with this, Wright (2016) considers *attention* as a key element in his model of advertising processing. Here, attention can have conscious (e.g. the brand is remembered) as well as unconscious resultant effects (e.g. mild emotional attachments to the brand). Likewise, most advertising research has focused its investigations on a set of core constructs, namely *attention, affect, memory,* and *desirability* (Venkatraman et al., 2015). These constructs can affect advertising effectiveness independently or in combination. Although attention has been recognised as an important factor for advertising effectiveness, there are competing theories to explain how attention to advertising works: the Strong theory, the Weak theory, and affective processing.

The first theory regards advertising as a *strong force* with aggressive intentions (Jones, 1990). Corresponding with this approach is the AIDA model, denoting that advertising persuades people to go through the stages of *Attention*, *Interest*, *Desire* and *Action* (Strong, 1925). Gaining attention is, therefore, the first and most critical step to advertising effectiveness, and what people remember about the ad or the brand is the test of advertising effectiveness. Following this reasoning, advertising would be effective if it can successfully hold attention. Attention is important because brand learning occurs more readily when people pay attention to the advertisement.

The second theory regards advertising as a *weak force*. Advertising nudges through repetitions to create brand awareness in a sequence of ATR- Awareness, Trial, and Reinforcement (Ehrenberg, 2000). Most advertising is processed at lower attention, and advertising works without having to be recalled (Heath, 2007; Krugman, 1986). Thus, it is legitimate to enquire if what people remember consciously or unconsciously is the test for advertising effectiveness.

More recent research and theory has taken a different avenue by focusing on affective reactions as opposed to purely cognitive reactions (Hasford, Hardesty, & Kidwell, 2015) and on the role of emotion in advertising (Poels & Dewitte, 2019). For example, Heath (2012) argues that advertising does not work through a cognitive process, but through an automatic affective process called *subconscious seduction*. Similarly, advertising works by changing the way consumers feel about the brand (Cramphorn, 2004) or by developing mild emotional attachments to the brand (Wright, 2016). These emotional attachments help make the brand become salient and increase the probability that the brand will be considered for purchase in a buying situation (Romaniuk & Sharp,

2004). The overall changes in brand feeling and salience will establish a *brand-person relationship* effect (Cramphorn, 2004) that indicates the effectiveness of advertising.

However, there are some questions marks concerning such an approach. *First*, it is not clear whether advertising needs to gain active attention in order to be effective. In prior research, low attention to advertising is associated with low sales response (Bellman et al., 2017) or low recall and recognition (Angell, Gorton, Sauer, Bottomley, & White, 2016). The 'limited capacity framework' frequently used to examine low attention (e.g. Bellman, Rossiter, Schweda, & Varan, 2012; Jeong & Hwang, 2012; Lang, 2000) proposes that humans have limited attentional capacity to process information and low attention inhibits the processing and storage of that information. However, other theorists provide a different account, with Krugman (1986) considering that learning takes place "even if by quick looks, short attention, and unrecalled exposure or perception" (p. 79). Thus, there is some possibility that advertising can be effective despite low attention.

Second, as the purpose of advertising is to establish a brand-person relationship through emotional reactions, there is still a debate about whether emotive advertising works more effectively at lower or higher levels of attention. Heath et al. (2006) argue that emotive advertising will be more effectively processed at lower levels of attention. In contrast, Du Plessis (2005) holds that the main role of emotional appeal in advertising is to attract attention, therefore "it is unlikely that the more emotional an advertisement is, the more it will become low-attention processed" (p. 141).

Third, Wright (2016) proposes that the overall testing of advertising effectiveness should cover the whole process: *opportunity to see* (exposure), *attention*, *activation*,

and *retrieval*. However, advertising processing consists of a set of mental processes, some operating at an unconscious level, so the difficulty concerns methodology for evaluating those processes and the effects that occur. Tellis and Ambler (2007) hold that advertising effects are generally weak, difficult to observe, and easily lost and biased by the use of inappropriate measurement. The problem of weak effects will be exacerbated in the context of low attention and raises an interesting question as to whether the behavioural diagnostic measures of brand consideration and choice (Nedungadi, 1990; Trinh, 2015) are capable of capturing the subtle effects from low attention advertising on consumer behaviour.

1.2. Statement of the problem

Theories and models currently used to evaluate advertising effectiveness have not provided a plausible explanation for how advertising might work effectively. At one end, advertising is believed to work by grabbing our attention and persuading us to remember why a brand is the best. At another end, advertising is thought to establish emotional connections with a brand that can influence our attitudes, decisions, and behaviours in ways we cannot consciously detect. In this view, high attention to advertising itself does not support this process, and may actually inhibit it.

The competing theoretical approaches above yield some managerial concerns. First, advertisers are unsure whether to design 'attention-grabbing' or 'low-attention' advertising. Second, while much of advertising may be processed at lower attention, particularly in the context of digital media, the academic literature provides little guidance on how to improve advertising effectiveness under such conditions. Specifically, whether there are factors associated with brand/product characteristics, such as brand familiarity and utilitarian/hedonic choices, that should be considered.

Third, various measurements for advertising effectiveness have been established but no validated measurement is available for the effects under conditions of low attention. Brand consideration and choice have been proposed as alternative measures for advertising effectiveness (Wright, 2016) but have not been tested for low attention effects.

1.3. Research objective

The objective of the current research is to investigate

(i) whether digital advertising is effective if it is processed at low attention,

(ii) the effect of this type of processing on consumer decisions,

(iii) what variables are likely to influence the effect, and importantly,

(iv) how to measure the effects in a meaningful way.

Therefore, the overarching research question is:

Is digital advertising effective under the conditions of low attention?

Although a general understanding of low attention processing is useful, the expected benefits of low attention in enhancing advertising effectiveness depend on specific conditions; that is, the contextual factors associated with particular brand/product characteristics, advertising properties, and the measurement used to determine the effect. Advertisers need to know these conditions to ensure the success of their advertising.

1.4. Research questions

The digital landscape is vast and digital advertising is broadly defined as "advertising utilising digital media" (Lee & Cho, 2019, p. 3). To limit the scope of research, the current research investigates the low attention processing of branded tweets. The reasons why Twitter provides an appropriate context for this research are detailed in Chapter 4. While many refer to branded messages on Twitter as social media advertising, several authors highlight the significant differences among the platforms and advocate the term 'digital advertising' instead of 'social media advertising (Rodgers & Thorson, 2017; Voorveld, Noort, Muntinga, & Bronner, 2018). Rodgers and Thorson (2018) describe 'digital advertising' as a variety of forms of branded content, including any branded content that appears in social media contexts, messages from companies in the form of blogs, tweets, Facebook posts, and comments that consumers make about brands in digital contexts.

The overarching question is operationalised as follows:

> *RQ1: Do digital advertisements increase the likelihood of the advertised brand being included in the consideration set and being selected as brand choice under conditions of low attention?*

Advertising can subconsciously trigger emotions such as some sort of familiarity with the brand, which can increase preferences for the advertised brand (Heath, 2007). However, there is a more fundamental reason to investigate brand familiarity. Digital media provide unprecedented opportunities for new/small/unfamiliar brands with limited budget and resources to level out the 'playing field' and to advertise side-by-side with some of the biggest brands in the world. Thus, it is interesting to know

whether advertising for familiar or unfamiliar brands will gain more advantages at low attention.

In addition, consumers may undertake different processing strategies when evaluating advertising regarding *hedonic* versus *utilitarian* products. For utilitarian products, the inherent product features are important (Mittal, 1989), therefore, information processing is likely to be highly elaborative (Dhar & Wertenbroch, 2000). Alternatively, for hedonic products, consumers are more likely to rely on psychological interpretations, including ego gratification, social acceptance, and sensory stimulation (Mittal, 1989). As such, it can be assumed that ads for hedonic products may be more effective under low attention conditions than those for utilitarian products that require deliberation to process factual information. Thus, RQ2 is posed:

RQ2:   Do brand familiarity and product type enhance the effectiveness of digital advertisements under conditions of low attention?

The literature highlights a controversy surrounding emotive advertising (Du Plessis, 2005; Heath, 2007), in particular, whether emotional appeal can be effectively processed at low attention. To help resolve this issue, RQ3 is posed:

RQ3:   Does emotional (rational) appeal enhance the effectiveness of digital advertisements under conditions of low attention?

A commonly held conception is that marketing communication, including advertising, should strive for consistency in their messages (Bhat & Reddy, 1998 ; Park, MacInnis, Priester, Eisingerich, & Iacobucci, 2010), that is, using rational appeal for a utilitarian brand, and emotional appeal for a hedonic brand (Johar & Sirgy, 1991; Shavitt, 1992).

However, there is also evidence that incongruity can lead to better outcomes (Klein & Melnyk, 2016; Lange & Dahlén, 2003). The *in-salience hypothesis* (Guido, 2001) posits that incongruent stimuli attract more attention and lead to greater awareness of the information. Attempting to resolve the controversy, RQ4 is posed.

> *RQ4:   Does the matching (mismatching) between appeal and brand type enhance the effectiveness of digital advertisements under conditions of low attention?*

It is tempting to think that low attention processing may increase the probability of the brand being considered or chosen when the rational, deliberative choice process is rejected in favour of an intuitive, automatic process. However, the empirical support for this argument is lacking. The theoretical core corresponds to the dual-process theories of information processing described as System (type) 1 and System (type) 2 processing (Kahneman, 2003). Therefore, RQ5 is posed to address the issue.

> *RQ5:   Does attention in the processing of digital advertisements affect the likelihood of people making rational versus intuitive judgements?*

1.5. Research design

Experimental research on attention has often been criticised as being unrealistic and having little relevance to address real-life issues (Morales, Amir, & Lee, 2017; Romaniuk & Nguyen, 2017). The current research adopts a naturalistic, quantitative approach with a classic experimental design, which allows for manipulation of attention and measurement for the corresponding effects. The research design allows the natural variability of attention and a realistic state of distraction from the environment to be integrated into the experiments, with the aim to increase (1) the

ecological validity of the research (Bryman & Bell, 2015), that is, how much the processes appearing in the experiment reflect the real-world situations, and (2) the relevance of the findings to address the managerial problem concerning declining advertising effectiveness due to inattention to advertising.

Study 1 investigates the main and interaction effects of brand familiarity (familiar versus unfamiliar brands) and product categories (utilitarian versus hedonic products) on consideration set and brand choice under low attention conditions (divided and incidental attention) and compares that to control (RQ1 and RQ2)

Study 2 examines the main and interaction effects of advertising appeals (emotional versus rational) on consideration set and brand choice under low attention conditions (divided and incidental attention) and compares that to high attention condition (focused attention) and control (RQ1, RQ3, and RQ5).

Study 3 explores the main and interaction effects of matching versus mismatching between advertising appeals (emotional versus rational) and brand types (rational versus hedonic) on consideration set and brand choice under low attention conditions (divided and incidental attention) and compares that to high attention condition (focused attention) and control (RQ1, RQ4, and RQ5).

1.6. Key constructs

The key constructs in the current research are *low attention, brand consideration set,* and *brand choice*. A general description of each of these constructs is presented here, while more detailed description will be presented in subsequent chapters.

1.6.1. Low attention

Attention is described as a brain mechanism that selects a small subset of inputs available in our environment to be further processed while ignoring others (Davenport & Beck, 2013). Attention mediates the processing of, the response to, and the effects of advertising on consumer choice (Chandon, Hutchinson, Bradlow, & Young, 2009; Janiszewski, Kuo, & Tavassoli, 2013; Pieters & Wedel, 2004). Therefore, attention is a vital consideration in any consumer research (Romaniuk & Nguyen, 2017), in particular, advertising research.

Low attention describes a condition where attention is not fully directed at the stimulus and thereby less deliberate processing takes place. Low attention conditions may occur as a result of the subjects' lack of motivation to process the information, dual-task performance (doing multiple tasks simultaneously), or perceptual blindness (failure to perceive a stimulus because it is irrelevant to the current task). In the current research, low attention is operationalised as *divided attention* (Spataro, Cestari, & Rossi-Arnaud, 2011), where participants are exposed to different information and have to process the information simultaneously; and as *incidental attention* (Shapiro, MacInnis, & Heckler, 1997), in which the target information is not the focus of attention. The delineation of divided and incidental attention provides greater conceptual clarity than the umbrella term of 'low attention. While prior research has looked at the low attention phenomenon as a 'strategy to avoid advertising', the current research diverges from such an approach and considers low attention as a unique 'strategy to approach advertising' in digital media.

1.6.2. Brand consideration set

A brand consideration set refers to a set of all available brands which the consumer thinks of on a particular choice occasion (Roberts & Nedungadi, 1995). Brand consideration may be seen as a process of narrowing down alternatives in a specific consumption situation, with the set typically ranging from one to seven brands (Trinh, 2015). Wright (2016) proposes that brand consideration and choice measures may be sensitive to the conscious as well as subconscious effects of attention and, therefore, are better alternatives for measuring advertising effectiveness than sales, given sales data can be confounded by variables other than advertising. Brand consideration set has been considered as a measure for a combination of consumers' cognitive, affective and behavioural responses to brand messages (Franzen, 1999). Consequently, methods of preference measurement such as attitude towards the brand and purchase intention may produce misleading results if brand consideration set is not taken into account (Bremer, Heitmann, & Schreiner, 2017, citing Gilbride and Allenby, 2004).

1.6.3. Brand choice

Given limited cognitive resources, incorporating consideration sets into the choice process better explains the decisions made by the consumers (Kardes, Kalyanaram, Chandrashekaran, & Dornoff, 1993; Shocker, Ben-Akiva, Boccara, & Nedungadi, 1991). A rational view to brand choice submits that brand evaluation is a function of brand utility, and people make a choice based on the attributes that are considered important (Nedungadi, 1990), and the choice decisions are often made based on combined inputs: inputs available in the environment as well as information retrieved from memory (A. Y. Lee, 2002). These inputs serve as retrieval cues for the brand by

increasing the strength of activation of the brand node in memory (Anderson & Bower, 1974). In this view, the consumer deliberates about the brands in the consideration set to arrive at a final choice (Shocker et al., 1991). An alternative account known as the *affect-as-information* theory posits that people tend to rely on their feelings as a source of judgement-relevant information when cognitive resources are limited (Schwarz, Bless, & Bohner, 1991). In addition, Kahneman (2003) argues that most of our decisions are made intuitively based on simple decision rules (heuristics). Thus, in the context of low attention processing in which encoding of brand information is restricted and brand cognitions are lacking, the consumers will more likely rely on their affect or heuristics rather than brand cognitions to arrive at a final choice.

1.7. Significance of research

The current research has substantive implications in terms of theory, methodology, and practice, and should be of great importance to advertisers and researchers alike.

1.7.1. Theoretical implications

First, the current research contributes to advertising research on attention. It advances an understanding of advertising effectiveness that reduced attention to advertising is not always detrimental. A significant contribution is to show how advertising effectiveness changes with the amount of attention paid to process the advertisements. While prior research has shown that processing multiple ads or ignoring ads are detrimental to advertising effects, the current research finds positive effects of advertising in such circumstances. Although FA still drives the greatest increase in brand consideration and choice, the findings show that actively ignoring advertising has a greater effect than processing multiple ads simultaneously at a given time.

Additionally, exposure to advertising at low attention, even with few repetitions and different ads, significantly has a higher effect compared to the 'no attention' condition where there is no exposure. Importantly, the effects occur despite a lack of recognition of the exposed ads, supportive of the notion that advertising can work through affective processing without the need to activate working memory (Cramphorn, 2004; Wright, 2016). The findings particularly challenge the role of memory theory in advertising effectiveness measurement. Furthermore, specific brand/product characteristics, such as brand familiarity and hedonic versus utilitarian product/brand type, and ad properties, such as rational versus emotional appeals, and the (mis) matching between appeals and brand types, moderate the effect of low attention on brand consideration and choice in unexpected ways than what has been studied previously.

Second, the current research contributes to understanding the attention theory in psychology and neuroscience. The Spotlight theory and the Gradient Model explaining how visual attention works are compared to determine which theory provides a better prediction for the low attention effects. The findings suggest that the Gradient model of attention offers a better explanation for the low attention effects, with a greater effect found in the focused attention where the stimuli are the centre of attention, and a weaker effect in the divided and incidental attention.

Third, the current research makes an important contribution to the application of attention theory in advertising. The findings suggest that attention is allocated to the object and not necessarily to the location. It advances an understanding of 'banner blindness' (Hervet, Guérard, Tremblay, & Chtourou, 2011) and 'looking without seeing' (Mack, 2003) that we rarely see what we are looking at unless attention is directed to it. As such, the current research concerns the fate of advertising that is seen,

yet not fully attended, and postulates that a certain level of processing occurs for these ads although many details of this processing fail to register into consciousness. Overall, the research contributes to the advertising effectiveness theories as well as to the understanding of the role of visual attention in advertising processing and decision-making.

1.7.2. Methodological implications

This study offers a novel testing methodology capable of capturing the effects of advertising that is processed at a low level of attention. Evaluating the effectiveness of advertising is particularly challenging because the low-attention effects are subtle, easily lost or biased by the use of the wrong analysis or measurement method, and the effects can occur immediately or at a later time (Tellis, 2004). Importantly, the proposed methodology properly predicts the effects of advertising under natural conditions. It incorporates the natural variability of consumer attention and realistic environmental distractions (Romaniuk & Nguyen, 2017), thereby increasing the relevance of research to address current issues surrounding consumer inattention and resistance to advertising. The simplicity of the method allows for easy replication by both researchers and practitioners.

1.7.3. Practical implications

The findings provide insights into capitalising the low attention processing and leveraging advertising effectiveness. First, the study offers a practical tool for assessing the effectiveness of advertising which can be used for pretesting or testing the on-going advertising. Brand consideration and brand choice measures can be alternative measures for advertising effectiveness as they are sensitive to the subtle low attention

effects. Second, it offers insights into the issue of declining advertising effectiveness due to consumer inattention and resistance to advertising. Unless advertisers understand that specific ads can work at low attention, the practice of bombarding consumers with 'attention-grabbing advertisements' will continue to rise, and so advertising avoidance will accelerate. Third, several source factors that have been investigated provide specific guidelines for designing an ad and media planning. For example, the results suggest that ads for unfamiliar (new) brands might be more effective if they are published in high rather than low cluttered media; whereas ads for well-established utilitarian brands might be more effective if targeted to high multitaskers.

1.8. Structure of thesis

The thesis has nine chapters which are organised as follows:

Chapter 1 introduces the research topic and describes the impetus and rationale behind it.

Chapters 2, 3, and 4 present the literature review pertinent to the research. The review is organised under three titles (i) Understanding advertising effectiveness, (ii) Low attention advertising processing, and (iii) Contextual factors and specific hypotheses in this research.

Chapter 5 outlines the methodological approach. The choice for a realistic methodological approach (Romaniuk & Nguyen, 2017) is briefly explained. Other decisions made in relation to the research method, experimental procedure, data collection and analysis are justified.

Chapters 6, 7, and 8 detail Study 1, Study 2, and Study 3 respectively, including the method, analysis, results, discussions, and limitations.

Chapter 9 discusses key findings, draws general conclusions of the findings, and presents the theoretical, methodological, and practical implications, limitations of the current research and recommendations for future research.

CHAPTER 2: UNDERSTANDING ADVERTISING EFFECTIVENESS

2.1. Introduction

Advertising is a huge industry with spending growing rapidly, surpassing 560 billion U.S. dollars in 2019 (Enberg, 2019), but many criticisms of advertising are about its effectiveness. Lack of visual attention has been cited as the main reason why advertising is less effective than expected (Liu-Thompkins, 2019). The problem of attention was seriously discussed at the 2016 Cannes Advertising Festival and the *Wall Street Journal* wrote, "One of the biggest topics at Cannes this week has been how to win consumers' attention amid a swiftly changing technology landscape and backlash against a perceived overload of advertising" (Perlberg, 2016). While advertisers have always been concerned with how to capture and keep attention focused on advertising, given the level of distraction on digital media, most advertising is, arguably, processed at lower attention as consumers largely ignore and avoid advertising (Cho & Cheon, 2004; Duff & Lutchyn, 2017; Heath, 2007). Currently, there is no clear evidence whether advertising is effective under low attention conditions. This chapter reviews theories, models, and measurements pertinent to evaluating advertising effectiveness, with a specific focus on effectiveness under low attention conditions. To better understand the advertising concepts, it is necessary to first examine a historical perspective on advertising and how the formats, media, contents, and definitions have evolved over the years.

2.2. A brief history of advertising

2.2.1. The development of advertising formats and media

McDonald and Scott (2007) describe the development of traditional advertising in four periods: the earliest commerce, the industrial revolution and mass marketing, the mid-19th century, and post-World War II. Then, Rodgers and Thorson (2017) describe the development of modern advertising on digital media.

The earliest form of commerce. The earliest form of advertising known as 'outdoor advertising' was used as tradesman's signs and tavern signs in the ancient civilisations of Egypt, Mesopotamia, Greece, and Rome, as well as political advertising-thought graffiti found on stone walls in Rome as early as 4000 BC.

The industrial revolution and mass marketing. Between 1760 and 1830, the industrial revolution prompted the development in printing, allowing for mass distribution of advertising through handbills, posters, and later, newspapers. One important contribution of advertising in this era was the creation of *brand,* defined as a label that designates an individual product and differentiates it from its competitors. Advertising generated selective consumers that would specifically ask for the brands they knew, leading retailers to stock products of the brands more than those of non-brands.

The mid-19th century. This period was characterised by the introduction of the concept of Unique Selling Proposition (USP), a summary statement used to meaningfully differentiate the brand from the competition. Print media became more established, and the advertising's role for branding became more prominent, due to the range of products competing for consumers. Each product was branded with a unique name and

consumers asked for a particular product by mentioning the brand. The brand, the packaging, and the unique features (USP) were communicated to the consumers through advertising. The function of advertising evolved from selling to persuading, creating demands for the brand. In addition to printed ads, radio advertising started to emerge in the U.S in the 1920s, marking the era of broadcast advertising.

The post-World War II. After World War II, advertising was in high demand for developing new brands and introducing new products. In the 1940s, the introduction of television made it possible for advertising to reach a larger number and different kinds of audiences. The use of radio and television as advertising media has dramatically changed the nature and focus of advertising by blurring the lines between entertainment and advertising, a strategy used to increase the receptivity of the message by the audience (Ducoffe & Curlo, 2000).

Modern advertising. Since 1994, the Internet has become an attractive medium for advertising (Rodgers & Thorson, 2017). Internet advertising later evolved into digital advertising by utilising mobile devices and digital signage as advertising media. Digital ads take interactive formats such as advergames, search, banners, pop-ups, and social media ads (Dahlén & Rosengren, 2016). Among a variety of digital channels, advertisers have particularly recognised social media for its capacity to disseminate branded-content fast to a large audience, to increase brand awareness and brand recall, and to build brand loyalty (Goncalves et al., 2016). The competition for consumers' attention is more severe in digital media than in the traditional media as consumers have more control over their attention and exposure to advertising and they can easily move away at the click of a mouse or the touch of a finger on mobile devices (Rodgers & Thorson, 2000). Thus, the greatest challenge of today's advertising is to cope with

the consumer's limited attention and to design content that can favourably influence consumers despite limited attention.

2.2.2. The development of advertising content

Advertising content can broadly be categorised into rational, informational ads and emotional, transformational ads.

Rational, informational ads*. From the 1800s to the early 20th century, advertising served as an information provider in which ads were mostly text-based, classified, and informational, and directly told the consumers what was for sale, how much it cost, and where it was sold (McDonald & Scott, 2007). Later, advertising included some persuasive information (reason-why), known as the 'salesman in print' approach. This approach was the key principle in the AIDA model - *Attention, Interest, Desire*, and *Action* (Strong, 1925) and other 'hierarchy of effect' models . According to the models, ads must first introduce the brand name, then arouse consumer's interest toward the brand by describing the physical characteristics, and then convince the consumer that the brand is worth purchasing (Weilbacher, 2001). These models are not without criticism. The concept of hierarchical (temporal sequence) effects of advertising upon which the model is based cannot be empirically supported (Vakratsas & Ambler, 1999), and the models are regarded as an intuitive, non-validated explanation of how advertising works (Weilbacher, 2001).

Emotional, transformational ads*. In the mid-1900s, researchers started to believe that emotion played an important role in decision-making and more artistic ads with enhanced originality and creativity known as 'soft-shell' advertising (Armstrong, Lukeman, & Patnaik, 2010) were proposed to appeal to emotion. In this respect,

advertisers believe that the audience would respond more positively to emotional appeals than logical arguments. For this reason, ads were primarily designed for entertainment rather than explicitly selling (McDonald & Scott, 2007). Moreover, Heath et al. (2006) propose that emotional content of advertising is more effective if processed at lower attention; conversely, Du Plessis (2005) argues that emotional content serves to attract attention, so it will be unlikely that it is processed at lower attention.

While content can be an important moderator for advertising effectiveness (Gavilanes, Flatten, & Brettel, 2018), the content itself does not determine the advertising outcomes. Rather, the subsequent cognitive, affective, or behavioural reactions resulting from the interaction between ad content and the processing variables, namely attention, activation, and retrieval (Wright, 2016), modify effectiveness.

2.2.3. The development of advertising concepts and definitions

Traditionally, advertising was defined as "a paid, mediated form of communication from an identifiable source, designed to persuade the receiver to take some action, now or in the future" (Dahlén & Rosengren, 2016, p. 334). The primary purpose of advertising was to help communicate the brand to target consumers, with specific objectives to inform, persuade or remind the consumers about the brand. Recently, to address the rapid shifting of advertising resources from traditional to digital channels, Dahlén and Rosengren (2016) provide an updated definition of advertising as "brand-initiated communication intent on impacting people" (p. 334). This definition has broadened the objectives of advertising: in addition to informing and persuading, advertising aims to create consumer-brand connection, involving all the cognitive and

affective associations and behavioural reactions to the brand (Cramphorn, 2004). Thus, successful advertising modifies the way people relate to the brand so that people will think more favourably about the brand after viewing the ads. This new definition is particularly relevant to address the nature of digital advertising. In particular, it eliminates the word 'paid' from the previous definition, suggesting that advertising can be organic, non-paid, or paid (Fulgoni, 2015). Organic ads are delivered via the company's own website or the brand's fan page in social media, and include not only brand-sponsored messages, but also messages posted by the consumers, such as comments about particular brands (Rodgers & Thorson, 2018). Consumers can interact with the brands, exhibit their enthusiasm for the brands, and convince others that the brands are worth purchasing (Kwon, Kim, Sung, & Yoo, 2014). However, due to the algorithmic settings of digital media that favour paid over organic content, advertisers still rely on paid advertising for higher reach and better targeting (Fulgoni, 2015).

Overall, the definitional differences above imply that advertising can now appear in different media channels and in many different formats. Advertising can be published by brands, but can also be created, co-created, and distributed by and among the consumers, which is sometimes beyond the control of the advertisers. As the current research is situated in the context of advertising effectiveness, it is necessary to examine relevant theories and models in advertising.

2.3. How advertising works: Current status of theory

Despite decades of research in advertising, the *Advertising Research Foundation* (ARF) has recently commissioned a major research project entitled 'How advertising works' (Stipp, 2016), suggesting that it remains an important subject of inquiry to date.

2.3.1. The controversy of advertising theories

There are competing theoretical considerations about how advertising might work: (1) advertising is a strong force working through *persuasion and conversion* as suggested by 'the Strong theory', and (2) advertising is a weak force working through *nudging* as suggested by 'the Weak theory or through *subconscious seduction* as proposed by the LAP model.

2.3.1.1. The Strong versus Weak theories

The Strong theory

The Strong theory assumes that advertising is a *strong force* with aggressive intentions – to boost sales, to attack competitors and increase market share, or to drive loyalty (Jones, 1990). Successful advertising needs to attract attention and present compelling brand-related arguments which will be encoded and stored in memory for later retrieval in a purchasing context. This process assumes strong engagement and interest with the ads, namely, attentiveness. Consistent with this theory is the sequential models of advertising, the *hierarchy of effects* models. The most popular, the AIDA model, denotes that advertising persuades people to go through the stages of *Attention*, *Interest*, *Desire* and *Action* (Strong, 1925). Gaining attention is, therefore, the first and most critical step to advertising effectiveness. Similar assumptions can be found in more recent assessments of advertising effects. For example, in their seminal book, *Persuasive Advertising: Evidence-based Principles*, Armstrong et al (2010) propose that advertising should, "ask customers to remember the brand name and arguments, especially when customers' actions are likely to occur much later" (p. 137). The assumption is that if the consumer remembers the brand, the brand will be more likely considered for purchase in a buying situation. Therefore, at the heart of the Strong

theory is the view that advertising is a process of active learning (Heath, 2007), which is essentially effortful, and advertising that does not receive much attention and does not change attitudes will, therefore, be less effective.

Endorsing the Strong theory, advertisers incorporate novelty and creativity in ads to capture and hold attention (Pieters, Warlop, & Wedel, 2002; Underwood & Everatt, 1996). If the Strong theory were right, repetitive advertising would not be effective as it lacks novelty and would fail to attract attention. In contrast, Ehrenberg (2000) asserts that advertising effects are generally weak and are built through repetitions. According to this stance, even if advertising seems ineffective initially, time and repetitions will ensure its ultimate success. The Weak theory provides an explanation for this process.

The Weak theory

According to the Weak theory, advertising works in subtle ways through a process called *nudging*, or *passive learning*. Specifically, advertising nudges through repetitions over time to reinforce brand awareness, in a sequence of *ATR – Awareness-Trial-Reinforcement* (Ehrenberg, 2000). The theory assumes that the consumer's mind is not a blank sheet, but already contains some memories of the brand/product purchasing, usage, and advertisements. The main role of advertising is, therefore, to reinforce associations with these memories so that the brand becomes salient in a purchase situation (Romaniuk & Sharp, 2004). This process of reinforcing memories is called 'activation' (Wright, 2016). In this view, consumers absorb a great deal of advertising information without actively searching for it or consciously evaluating it. As such, advertising works through a weak mechanism that does not require much attentional resource (Barnard & Ehrenberg, 1997). After purchase and use, attitude may or may not be reinforced, but it changes as a result of brand experience rather than as a

direct result of the advertising effect. Briefly, advertising works to create brand awareness, then the consumer trials the product; if they like it, they may continue to purchase and advertising can reinforce the attitude.

Although the notion of repetitive advertising seems plausible, the amount of repetition is another issue of debate. Ehrenberg (2000) argues that the small, weak effects of advertising persist and will be visible following many repetitions; whereas others suggest that very few (two or three) exposures are more effective (Jones, 1998; Krugman, 1984; Tellis, 1997). More exposures can produce *wear-out* effects so that advertising can lose its effectiveness and produce a negative impact (Schmidt & Eisend, 2015). In addition, repetitive advertising can also activate counter-argument, scepticism, and annoyance (Grunert, 1996), leading to a negative attitude toward the brand. One criticism about the Weak theory is that this theory focuses on the cognitive process to build brand-related memory and largely ignores the importance of emotions such that repetitions can generate boredom.

2.3.1.2. The Elaboration Likelihood Model of Persuasion

The differences between the strong and weak theories are reconciled in the Elaboration Likelihood Model (ELM) (Petty, Cacioppo, & Schumann, 1983), which is assumed to be the process of advertising persuasion and is a highly influential framework used by advertising researchers (Kitchen, Kerr, Schultz, McColl, & Pals, 2014). The basic tenet of the ELM model is the presence of two persuasion routes: the *central* and *peripheral* routes. The central route applies the principle of the Strong theory; while the peripheral route applies the notion of the Weak theory that allows superficial attitude change under conditions of low engagement (Petty & Cacioppo, 1986). The route that an individual takes called the elaboration likelihood depends on the nature and amount of critical

thinking that the individual gives to the persuasive message (i.e. advertisement). The more thinking is given, the better the individual can be influenced and persuaded by the message, and thus the more effective the message is. Attention is the mechanism that facilitates thinking, and therefore enhances elaboration, which in turn, improves the persuasiveness of advertising (Berger, Wagner, & Schwand, 2012). However, arguably, the ELM cannot really be called a reconciliation model between the Strong and Weak theories, as the effects of the peripheral route are implicitly considered inferior to the central route (e.g. the attitude change is not enduring).

2.3.1.3. The Integrative Framework of Persuasion Theories

Meyers-Levy and Malaviya (1999) introduced the Integrative Framework of Persuasion Theories (IFPT) as an extension to the ELM. Their model considers *three levels* of processing. The first two, systematic and heuristic, share similar properties to the central and peripheral routes in the ELM. The third level is *experiential processing*, in which the amount of cognitive resource (attention) that people devote to this processing is so meagre that only scant information processing occurs. Although they admit that this type of processing plays very little role in the current information processing theory, the IFPT provides initial support to the notion that there is another type of processing besides effortful (high attention) processing.

In summary, although less constrained than the Strong theory, the ELM and IFPT both advocate principles of the Strong theory for the most effective advertising. A key limitation of the Strong and Weak theories is likely to stem from the assumption that most of our thinking process (learning about brands) takes place in our conscious minds (cognition). The Strong theory suggests high attention, while the Weak theory proposes low but repetitive attention. Likewise, the ELM implies that the attitude change through

central versus peripheral routes results from active thinking, which demands a high level of cognitive resources. However, these theories are silent about the role of affect (emotion) in advertising.

2.3.1.4. The Low Attention Processing Model

Heath et al. (2006) questioned the assumption of the Strong models, in particular, the focus on cognitive informational learning and the assumption that high attention drives advertising effectiveness. In particular, for the most part, our thinking process takes place in our unconscious minds – all those memories, emotions, thoughts, and other processes that we are not aware of or that we cannot articulate (Zaltman, 2003), and most of our decisions are intuitive rather than rational (Kahneman, 2003). The LAP model posits that advertising works through passive or implicit learning without demanding active attention to process (Heath, 2007). The main distinction between LAP and previous models is that LAP emphasises processing at lower attention levels, while the previous models endorse high-attention processing for advertising effectiveness. A detailed description of the model is presented in Chapter 3.

2.3.2. The controversy of cognitive versus affective processing in advertising

In addition to the controversy whether advertising is a strong or weak force, another question that has bothered researchers for years is *does advertising have more impact on consumers' thoughts or feelings?* The attempts to answer this question have led to an ongoing debate whether cognition or affect is more predictive of consumer behaviour, and to the dissociation between cognitive and affective processing (Morris, Woo, Geason, & Kim, 2002). The debate has a parallel in cognitive psychology concerning whether cognition dominates affect, and thus mediates the impact of affect

on decision-making (Lazarus, 1982), or whether affect precedes and is independent of cognition, and therefore, influences decision-making differently from cognition (Zajonc & Markus, 1982).

2.3.2.1. Cognitive reactions to advertising challenged

For many years, the analysis of advertising effects has been dominated by the cognitive models of information processing (Bettman, 1979; Grunert, 1996), favouring conscious, effortful processes and recall metrics to assess the processes. In this view, affective reactions to advertising are always mediated by cognition (Greenwald & Leavitt, 1984; Morris et al., 2002).

Cognitive models are commonly used to explain ad processing and consumer decisions. Cognition is particularly important due to the potential interval between ad exposure and purchase behavior, so advertising is required to change the long-term memory (Ambler & Burne, 1999). One way of changing the memory content is through repetitive exposure. Repetitive advertising will increase brand awareness (Ehrenberg, 2000) by rehearsing neural network related to the advertised brand in memory many times, and so strengthening the network and making the brand more memorable and more easily retrieved. As exposure to advertising increases, the cumulative temporary effects that occur at each exposure eventually build into a substantial effect, namely attitude change. Therefore, cognitive reactions to advertising are often reflected in the constructs such as attitude towards the ad (Biehal, Stephens, & Curio, 1992; Brown & Stayman, 1992) or attitude towards the brand (Spears & Singh, 2004). In this context, attitude is considered a function of cognitive beliefs which are a predictive intention of behaviour (Fishbein & Ajzen, 1977). Cognitive models have been applied not only to

ad processing but also to consumer decision-making. In these models, the various information gathered from ads is integrated to help a consumer to make a choice, and the choice process is usually described as the process of comparing attributes of the alternative brands and then trading off those attributes according to their importance or relevance to the individual's goals (Bettman, 1979).

From quite a different perspective, Zajonc (1980) argued that affect could directly influence behaviour without involving cognition. Similarly, Schwarz, Bless, and Bohner (1991) introduced the *affect-as-information* framework suggesting that feelings may serve as affective feedback that guides judgement, decision-making, and information processing. In this respect, people perceive feelings as containing valuable information to help them make a good judgement. Furthermore, Pham (1998) has suggested that many choice decisions are based on a *'How-do-I-feel-about-it? heuristic'* which involves examining feelings to a stimulus representation in the mind, so even if the stimulus is not physically present, people can still perform their evaluations. These developments signal the importance of affect in information processing, including ad processing, and foster the emergence of affective models in advertising.

2.3.2.2. A renewed interest in affective reactions to advertising

The influential work of Damasio, Everitt, and Bishop (1996) reveals that decision-making process is primarily associated with the brain region that deals with emotion rather than cognition, leading to the concept that emotion is an essential element for rational thinking and behaviour. People's first reaction to an object would be an instinctively positive or negative emotion known as a 'somatic marker' (Damasio et al., 1996). Somatic marker is some sort of feeling that is formed by an experience that gets

connected to specific events. If the marker has a negative emotional tone, it acts as an alarm that a negative outcome will occur, leading to avoidance behaviour. Conversely, if the marker has a positive tone, it acts as a motivator for pursuing an action (an approach behaviour). Thus, the somatic markers are implicit emotional triggers which are retrieved from memory fast and involuntarily and lead people to react to an event as 'good' or 'bad' without conscious thought. As such, it is tempting to think that affect rather than cognition is key to advertising effectiveness.

In line with the 'somatic marker' hypothesis, Zajonc (1980) argues that affective processing can bypass cognitive processing and affect may separate from content but still remain. Thus, the feelings that the consumer has about the brand when viewing the ads are often readily accessible although the consumer may have forgotten the ad or the exposure. This is because the consumer has formed an attitude linked to the brand that is congruent with the positive feelings (Hasford et al., 2015). At the point-of-purchase, these feelings can serve as cues that facilitate the salience of the brand. The important consideration is that ad-induced emotion will still play an important role in influencing consumer choice, even when the consumer may have forgotten the ad or even when the ad is not physically present. However, the feelings may become negative if people pay more attention, because deliberative processing can trigger counter-arguments (Heath et al., 2006; Segijn, Voorveld, & Smit, 2016), which can decrease brand attitude. Obviously, emotion plays an important role in advertising.

2.3.2.3. Emotion and advertising responses

Damasio et al. (1996) distinguished emotions (body state) from feelings (mental state); whereas Cohen, Pham, and Andrade (2008) described affect as genuine subjective

feelings or moods (e.g. I'm sad), rather than evaluative thoughts about an object or event (e.g. I like this ad). To avoid confusion, the thesis uses the terms emotion, feeling, and affect interchangeably, but in contrast with cognition.

There are numerous definitions of emotion; however, the most comprehensive one is summarised by Kleinginna and Kleinginna (1981):

> Emotion is a complex set of interactions among **subjective and objective factors**, mediated by **neural/hormonal systems**, which can (a) give rise to affective **feelings** of arousal, pleasure/displeasure; (b) generate **cognitive processes** such as emotionally relevant perceptual effects, appraisals, labeling processes; (c) activate widespread **physiological adjustments** to the arousing conditions; and (d) lead to **behavior** that is often, but not always, expressive, goal-directed, and adaptive. (p. 355).

Based on the definition, emotion has three key functions: (1) the discrete, sub-conscious, unevaluated response to a stimulus; (2) an automatic activator or driver of behaviour; and (3) as an appraisal (feeling-based evaluation) that highlights the significance of an event or stimulus and connects cognitive and behavioural tendencies. In general, the term emotion can refer to two things: (1) the emotional quality of the stimulus, or (2) the emotional state of the individual. Applied to advertising, the first denotes the emotive content; while the second represents the effect of advertising on the audiences, namely any feeling, association, or memory about the brand.

Types of emotions. Advertising can elicit different types of emotion: integral, incidental, lower-order, and higher-order.

Integral emotion refers to a specific emotional appeal used in an ad that is deliberately selected by advertisers to induce specific feelings to the audiences, such as fear, guilt, or anger; while *incidental emotion* refers to non-specific emotions (e.g. good or bad)

that are evoked by unrelated sources or events but have the potential to influence decisions (Poels & Dewitte, 2019).

Advancing cognitive accounts to emotion, Shiv and Fedorikhin (1999) distinguish *lower-order emotions* that involve automatic, spontaneous, largely unconscious and involuntary reactions to a stimulus; and *higher-order emotions* which require some deliberation and cognitive processing and reinforce action tendencies. Looking back to the key functions of emotion, lower-order emotions induce subconscious, unevaluated responses to advertising which can be a driver for 'intuitive' behaviour (e.g. implusive buying); whereas higher-order emotions reflect the cognitive evaluation or interpretation of an advertising stimulus. In marketing, lower-order emotions occur when affective cues (e.g. background music in a store) influence shopper behaviour. For example, French music led to French wines outselling German ones; whereas, German music led to more sales for German wines (North, Hargreaves, & McKendrick, 1999). In contrast, higher-order emotions can be defined by the perception of future events in relation to the cognitive appraisal of the current situation (Lerner & Keltner, 2000). Chang and Pham (2013) found that people rely on their feelings when outcomes are proximate, but discount them for more distant outcomes. The types of emotions that are most relevant to the low-attention processing in the current research are the *incidental* and *lower-order emotions*, so the following discussion will focus on these types.

The role of emotions in advertising. Emotive advertising can induce emotions that will have subsequent consequences on advertising outcomes (Vakratsas & Ambler, 1999), and emotional reactions to advertising are a strong predictor of purchase intention and brand attitude (Morris et al., 2002). Poels and Dewitte (2006) reported an interesting

relationship between ad exposure and ad or brand familiarity such that previously seen ads lead to more positive emotional reactions (pleasantness and less boredom) compared to unfamiliar, first-seen ads. Moreover, the effect of ad-evoked emotions was found stronger for unfamiliar than familiar brands. They explain that attitude toward a familiar brand is already established in the consumer's mind so it is not strongly affected by ad exposure. In other words, emotion-based advertising would be more effective for unfamiliar than familiar brands.

How does emotive advertising work? Ohme (2009) uses the term 'unconscious affect' to suggest that advertising can tap into the unconscious mind to create a desire for the brand/product that spurs consumers into purchase-related behaviour. In other words, advertising can trigger a behavioural drive to approach the brand/product and eventually grab it from the shelf. To do so, advertising can utilise subtle cues, such as sound, music, or an image that is largely ignored by the conscious mind/attention during exposure, but can subconciously influence consumers to want the brand/ product, even if they cannot explain rationally why they want it. Ohme (2009) provides an example in which Sony used 'the frog scene' displaying the moment when a frog jumped out from a rain pipe in their ads for Sony Bavaria television. When this scene was discarded from the ad, the preferences for the brand/product significantly decreased, showing that 'the frog' was instrumental in evoking favourability. This supports the notion of low-attention, affect-based processing because 'the frog' that has no logical/rational connection with the brand/product has a significant impact on brand favourability. Also, more recent advertising research found a higher brand attitude under low rather than under high attention (Goodrich, 2014). The discussion points to an important consideration that ad-evoked emotions will more likely occur if low rather than high attention is given to the ads.

2.3.3. A rethinking of attention

The notion that attention is closely linked to emotion is not new as Davenport and Beck (2000) note, "One of the most important factors for gaining and sustaining attention is engaging people's emotions" (p. 123). Moreover, advertising equity (Rosengren & Dahlén, 2015) holds that prior experience with advertising influences willingness to approach future advertising. If the consumer has a positive experience with the brand's ads initially, he/she would be more willing to pay attention to its future ads. Attentiveness to advertising also increases when consumers like the brand or plan to buy it (Rosengren & Dahlén, 2015). This shows that attention can be directed by consumers based on their motivation and interest. However, advertising research has focused more on perceptual features of ads that capture attention during incidental exposure (Wedel & Pieters, 2012), thus little is known about factors that lead consumers to increase their attention and exposure to advertising messages, particularly those that can generate a positive experience with advertising. The notion that consumers may *voluntarily* approach advertising is particularly relevant to delineate the possible interplay between attention, emotion, and memory, but the more fundamental question is: how can advertising leverage the interplay to influence brand choice?

2.3.4. Attention, emotion, and memory

As the main goal of advertising is to influence consumer choice, emotive advertising appears to have particular advantages:

- Emotional content captures attention and increases ad viewability as it presents interesting, surprising, or engaging ideas.

- Emotional messages can be processed automatically using lower levels of attention (Heath et al., 2006) so placing a lower cognitive load and increasing the processing fluency (Winkielman, Schwarz, Fazendeiro, & Reber, 2003), but the memory of emotional messages is more vivid, so those messages will be better remembered (Poels & Dewitte, 2019).

- Emotive advertising can create emotional attachments to the brand that make the brand more salient at the point-of-purchase (Wright, 2016).

Du Plessis (2005) summarises the complex relationship between emotion, selective attention, and memory as follows:

Emotional properties of brand memory guide intuition that determines attention.

While our senses constantly monitor the various things in the environment, due to the limited capacity in our brain, most of those things are processed intuitively and only a small subset will be processed consciously by devoting our attention to it. The monitoring process continuously references existing memories because those memories are automatically triggered by what is happening at that moment. It is the emotional properties of those memories that guide our intuition which subsequently determines whether attention should be paid. The more intense and positive the emotional charge to the associated memories, the higher the level of attention will be. Thus, advertising needs to elicit positive emotions first before attention is given, which is consistent with the 'somatic marker hypothesis' (Damasio et al., 1996). Consequently, advertising that creates a positive emotional reaction has a better chance to hold attention and is generally more effective (e.g. better liked, better recalled) than one which does not.

Attention determines the depth of advertising processing.

As previously discussed, if the processing of advertising is tagged with positive emotions, people will be more likely to pay attention to advertising the next time they encounter it (Rosengren & Dahlén, 2015). The more attention people pay to an ad, the more deliberate the processing of brand-related information, and the more associations and memories in relation to the brand can be established or strengthened. If these associations and memories are positive, people's attitude toward the brand will also become more positive. In contrast, other scholars have argued that, if more attention is paid to the ads, some negative consequences, such as counter-argument (Greenberg, 2012; Heath, 2007), activation of persuasion knowledge (Friestad & Wright, 1994), perceived intrusiveness (Truong & Simmons, 2010), and advertising avoidance (Cho & Cheon, 2004), can occur and diminish the persuasiveness of advertising. These studies indirectly suggest that advertising might have better outcomes if less attention is given.

Depth of processing and repetition determine the establishment of new memories and feelings about the brand.

As noted earlier, much brand learning is passive and incidental, and advertising can work through repetition to reinforce existing memory (Ehrenberg, 2000). Advertising will elicit positive emotions if it is compatible/ congruent with our existing memories about the brand. Conversely, if the memory is incompatible/incongruent with the associations already established for the brand, it elicits negative emotions, and so active learning is required to resolve the discrepancy before the new memory can be established. In this case, people must pay attention to and process the ads deliberately

in order to make sense of the incongruency. Du Plessis (2005) observes that, although the interplay of emotion and attention is dynamic, the emotional content in advertising can attract initial attention and then hold attention if the content is relevant. Likewise, Yiend (2010) asserts that emotional content in advertising is highly salient information, and the main role of such content is to attract attention so that deeper processing of that information can take place and memory of it can be established. However, there is also evidence that attention to the emotional content of advertising reduces the resources available for the cognitive processing, leading to a decrease in brand memory (Dahlén & Bergendahl, 2001).

In summary, while it is generally agreed that emotive advertising can attract initial attention, what is less clear is the degree to which we pay attention to emotive advertising in the presence of high clutter and cognitive load, and whether paying attention to the emotional content increases advertising effectiveness. Study 2 in the current research is designed to address this important issue.

2.3.5. Theoretical advancement based on memory theory

An understanding of the interplay of attention, emotion, and memory has stimulated the development of new concepts in advertising, such as brand cloud (Cramphorn, 2004), mild emotional attachments (Wright, 2016), and brand salience (Romaniuk & Sharp, 2004). These concepts are particularly relevant to delineate the possible mechanisms and the effect of low attention processing of advertisements.

2.3.5.1. Brand cloud (brand as a neural network of memory)

It is widely accepted that brands exist in consumers' minds as associative memory structures (Anderson & Bower, 1974). Bits of ideas and experiences about a brand form a network of memories, including thoughts and feelings, that an individual has about the brand. These memories (some are explicit, and thereby retrievable, while others are implicit, operating at a non-conscious level) are stored as a disorganised, sometimes interconnected network of information, called *brand clouds* (Cramphorn, 2004).

How do ads establish brand clouds in consumer memory? According to Cramphorn (2004), when a person is exposed to an ad stimulus, some ideas (clouds) become interrelated and are brought to working memory. If information in the ad evokes a negative feeling, the information will either be unconsciously discarded, or it will be adjusted to fit with or support the pre-existing brand clouds. Even if the information seems to be unconsciously discarded, so that the person does not have any recollection of it, some information might have been processed and formed a new cloud in memory. For example, when a consumer actively ignores ads during his/her online navigation, some information in the ads might have been processed (however briefly) and formed brand associations. Krugman (1986) believes that, in order to reject ads, consumers would have to process them initially, a pre-attentive process called perception; and when the brain perceives, learning takes place (Parasuraman, 1998). Moreover, the brand identity (brand name, logo, colour, or packaging) that the consumers encounter at the point-of-purchase can be the trigger to that memory (Du Plessis, 2005). Thus, the person's response to an ad is actually a synonym of brand representation in memory, with the brand name functioning as the label of representation (Franzen, 1999).

2.3.5.2. Mild emotional attachments

Somatic markers are implicit emotional triggers which are retrieved from memory fast and involuntarily and lead people to react to an event as 'good' or 'bad' without conscious thought (Damasio et al., 1996). Applying the notion of somatic marker to advertising, Wright (2016) proposes that successful advertising builds a positive emotion that subsequently creates *mild emotional attachments* to the advertised brand. According to Wright (2016), mild emotional attachments are special feelings about the advertised brand that are automatically evoked when the consumer thinks about or encounters cues related to the brand in a buying situation. The cues subconsciously activate this feeling which may influence the perception of the brand, the reasoning strategies selected, and the brand decision itself. As such, the mild emotional attachments are likely to drive brand choice, but people may not have access to or may have an incomplete account of, the source of their decision. Thus, the mild emotional attachments can be viewed as a process of establishing a brand's salience by emotion through advertising exposures.

Wright (2016) draws on associative network memory theory, particularly as it has been developed in marketing, to treat brand information as a network of associations between conceptual memory nodes (Anderson & Bower, 1974; Keller, 1993; Romaniuk, 2013). The processing of environmental cues leads to a cascade of spreading influence when the retrieval of concepts (memory nodes) reaches a threshold level of memory activation. As associations between concepts are strengthened by the mere act of spreading activation, Wright suggests that a stimulus can still strengthen associations even if the ads have not been noticed consciously or have already been forgotten. At a later stage, these strengthened associations promote concept retrieval

by increasing the memory activation around the relevant brand concept in response to the stimulus, thus, slightly increasing the probability of remembering the brand. As such, advertisements are capable of having conscious and subconscious impacts on brand salience.

2.3.5.3. Brand salience

Romaniuk and Sharp (2004) define brand salience as "the propensity of the brand to be thought of by buyers (i.e. stand out from memory) in buying situations" (p. 328). It means that a brand gets a prominent position in a person's memory at a given moment. A brand is salient if the consumer is "aware of it, has it in their active brand repertoire, and/or has it in the consideration set (i.e. the brands they might buy)" (Ehrenberg, Barnard, & Scriven, 1997, p. 9). Traditionally, salience was thought to reflect brand awareness. In this respect, salience referred to the brand that first came to mind, known as *top of mind* (TOM) (Romaniuk & Sharp, 2004). It should be noted that although the person is aware of the brand, this awareness is not necessarily accompanied by the ability to consciously articulate the brand (Jacoby, Woloshyn, & Kelley, 1989). This is because most of our mental processing, including brand salience development, is unconscious (Zaltman, 2003). In other words, a brand can be salient although the consumer may not be able to consciously recall it. However, salience makes the brand more accessible, and therefore, more retrievable, and increases the brand's probability to be considered in a buying situation. Specifically, salience is important because at any given time, consumers can only think of a few brands due to the limited capacity of working memory and has little motivation to go beyond what is easily retrieved (Romaniuk & Sharp, 2004).

Nedungadi (1990) suggests three factors that can facilitate brand salience: (1) the strength of activation of the brand node in memory which is a function of frequency and recency of brand usage or ads; (2) the strength of association between the brand node and other related nodes. For example, advertising cues that help the consumer retrieve a target brand could simultaneously increase the possibility of considering other (similar) competing brands; and (3) the availability of retrieval cues such as product category, brand name, and brand attributes observed in an advertisement. In this respect, the cues serve as tools to retrieve the brand from memory. However, this concept of brand salience follows a purely cognitive perspective where salience is closely related to activation of cognitive units (i.e. the consequence of deliberate ad processing) in memory, and does not account for emotions arising from perceiving an ad. Considering emotion is crucial as Damasio et al. (1996) have highlighted that human decision-making is a highly integrative process, predominantly emotion-based rather than reason-based, and Wright (2016) has argued that brand salience can result from a subconscious development of mild emotional attachments during ad processing. Moreover, the establishment of brand salience is instrumental due to the potential elapsed time between advertising exposure and a purchase situation (Ambler, Braeutigam, Stins, Rose, & Swithenby, 2004). Thus, the main task of advertising is to establish brand salience which can be done through conscious activation of cognition or subconscious activation of emotion. Yet, despite all theories and conceptualisations, there is no solid knowledge about what effects advertising causes or how advertising produces the effects.

2.4. Evaluating advertising

Evaluating advertising is critical to address the criticisms about advertising

effectiveness. The variables involved in evaluating advertising effectiveness are numerous and diverse. Three problems are presented here due to their relevance to the current research, namely the theoretical controversy, the nature of advertising effects, and the methodology for evaluating those effects.

2.4.1. Problems in evaluating advertising effectiveness

First, despite a gradual improvement in the understanding of how advertising works, advertising effectiveness under conditions of low attention remains poorly understood. As discussed earlier, the Strong theorists advocate that consumers need to be paying attention before they can be affected by the ads; whereas the Weak theorists believe that advertising nudges through a weak mechanism that does not require much attention. Still, other theorists believe advertising works through subconscious, affective processing that may be independent of attention. With these various theoretical assumptions, it is hard to develop rational coherence and a reference point against which advertising effectiveness is evaluated.

Second, determining the effectiveness of advertising can be problematic. Advertising effects tend to be fragile, generally weak, difficult to observe, and easily lost or biased by the use of the inappropriate analysis and method (Tellis, 2004). If advertising is processed at low attention, memory measures such as recall or recognition may not be able to capture the effect as the effect occurs outside of awareness, and so alternative measures that are less subject to memory are needed.

Third, advertising effects can occur at different stages of consumer decision-making process: exposure, attention, activation, and retrieval (Wright, 2016). As the processing of advertising is a set of mental processes, some operating at an unconscious

level, the main difficulty concerns methodology for evaluating the effects. In particular, recognition rates, salience metrics, brand consideration, brand preference (choice), and then the actual purchase may all give separate insights into advertising effects at different stages of consumer decision-making process.

To help mitigate the problems in evaluating advertising effectiveness, Tellis (2004) proposes three major components to consider: the concept of effectiveness, the measures to assess effectiveness, and the theory to relate the concept and the measures.

2.4.2. Conceptualising advertising effectiveness

As Tellis (2004) proposes, the first component in advertising evaluation is the concept of effectiveness. Advertising effectiveness can be defined as the ability of advertising to deliver against its strategic objectives (Cramphorn, 2004). Specifically, effectiveness is determined by the extent to which advertising is able to modify people-brand connections in such a way that people would feel more favourably about the brand after being exposed to advertising. In the current research, effectiveness is observed if advertising exposure can increase the probability of the advertised brand being included in the consideration set or selected as a brand choice in a purchase situation.

The model used to evaluate advertising in the current research draws on the work of Wright (2016) which comprises four key elements: *opportunity to see*, *attention*, *activation*, and *retrieval*. *Opportunity to see* requires advertising to be present in the media used by the consumers. In the context of digital advertising, it is referred to as 'ad viewability' (Nelson-Field, 2020). However, in a broader context, opportunity to see can include all situational factors that can facilitate ad processing (Chandy, Tellis, MacInnis, & Thaivanich, 2001) such as the time of exposure or the presence of

competing ads. *Attention* draws sensory systems to the ad and prompts an encoding process that triggers either conscious or subconscious presence in consumer memory. *Activation* is the brain's processing of matching the new information from advertising to related information in the long-term memory. Activation may result from the deliberation of advertising content, stimulation of memory associations, or development of mild emotional attachments to the advertised brand. Crucially, this process allows an ad to impact consumer behaviour even when attention to the ad is low. Finally, *retrieval* is the process of recalling information from the long-term memory (either consciously or subconsciously) as the result of encountering some brand-related cues in a purchase situation. The resultant effects of ad processing can be observed in behavioural measures such as brand consideration and brand choice (purchase intent).

Wright's (2016) conception of advertising effectiveness has several implications. First, an opportunity to see requires that the exposure to advertising should be above the threshold of awareness. Consequently, it excludes the controversial notion of *subliminal advertising*, the embedding of advertising material that cannot be consciously perceived (Moore, 1982). Thus, an ad should be seen or heard in order to have an effect on the consumers. Second, attention is thought to be capable of having a conscious or subconscious impact on memory. This implies that attention to advertising need not to be active nor conscious. Third, activation can be triggered by a cognitive process (the deliberation of advertising content) or by an affective process (*mild emotional attachments* to the advertised brand). Wright (2016) notes that there may be two types of advertising effects that influence a consumer: the cognitive effects from memory activation (possibly involving deliberative thoughts) and/or the affective effects from the mild emotional attachments generated by low attention processing.

Finally, the results of ad processing are evoked through a retrieval process at the point-of-purchase, which can impact brand consideration and brand choice. Prior research has identified a number of variables that potentially facilitate ad processing; however, there is still limited knowledge of how previous experience with advertising affects memory retrieval, which subsequently affects brand consideration and choice.

To conclude, advertising effectiveness in this research is observed if low attention exposure to digital advertisements increases the likelihood that the brand is included in the consideration set and is selected as the brand choice. Drawing from the literature, the process that generates this effect might be in a sequence of *opportunity to see → attention → activation → retrieval → brand consideration → brand choice*. Given consumers are actively avoiding ads (Cho & Cheon, 2004), the current research concerns the effectiveness of advertising that is not given active attention or is ignored by the consumers. The underlying assumption rests on the possibility that the ads might have been perceived and briefly processed, prior to being ignored by the consumers. Although advertising may not be the primary reason consumers access digital content, exposure to ads while concentrating on other content can lead to some outcome for the exposed ads. To arrive at some relevant information, the consumer has to filter out the irrelevant information, and in so doing, the irrelevant information can be processed subconsciously and can have some impact on the consumer.

2.4.3. Measures of advertising effectiveness

The second component necessary for advertising evaluation is measurement (Tellis, 2004). Two types of measurement for advertising effectiveness are diagnostic and evaluative metrics (McAlister, Srinivasan, Jindal, & Cannella, 2016). The ***diagnostic***

metrics include brand awareness, preference, purchase intent, customer satisfaction, or loyalty and are often used to fine-tune individual advertisements during pre-testing in order to optimise the effectiveness of advertising (Pieters & Wedel, 2007). The *evaluative metrics* include sales, market share, advertising elasticity, profits, return on investment, or firm value and are used to provide a justification for advertising expenditure by directly comparing advertising expenditure to its financial impact on the firm. Although the evaluative metrics can be influenced by factors other than advertising, and therefore they may not be a good proxy for advertising effectiveness (Wright, 2016), the association between advertising expenditure and sales impact has been consistently supported (Dinner, Van Heerde, & Neslin, 2014; McAlister et al., 2016; Sethuraman, Tellis, & Briesch, 2011). The two approaches have generated a variety of ad testing methods which can be broadly categorised into traditional and neurophysiological methods.

2.4.3.1. Traditional methods

Traditional methods rest on a fundamental distinction between explicit memory that accounts for the effects of prior experience on current behaviour and is accompanied by conscious awareness and implicit memory that accounts for the effects in the absence of conscious awareness (Graf & Schacter, 1985). Both explicit and implicit measures have been used extensively in advertising research to register consumers' reactions to advertising, perhaps because they are versatile, easy to administer, relatively simple to analyse, and inexpensive (Berger et al., 2012). It should be noted, however, they are fundamentally different.

Explicit measures

Explicit measures assume that subjects have conscious access to their memory and can report back their subjective experience (Dimofte & Yalch, 2011). They measure recall of advertising messages or the subjective feelings expressed by individuals towards a brand or product following ad exposure. There are different types of recall measures. Spontaneous recall was first introduced as a measure of print ad effectiveness in which people were asked to say the brand or product following ad exposure (Heath & Nairn, 2005). The 'day-after-recall', accounting for variations in the elapsed time between ad exposure and purchase of the product, is considered a better measure for television ads effectiveness (Heath & Nairn, 2005). The measure indicates that the information must have been stored in the long-term memory, which could also be retrieved at a later time (e.g. at the point-of-purchase). A later development modifies the recall metrics into an 'awareness index', presenting a list of brands to the participants and asking, *"Which of these brands have you seen advertised recently?"* This method is also known as 'aided recall' (Heath & Nairn, 2005).

Yet, the usefulness of recall measures for advertising effectiveness has been challenged. Krugman (1986) reported low recall of ad messages but high recognition of the brand. He submitted that "recall measures do indeed pick up traces of advertising impact, but this high degree of attention is the rarer and increasingly less common condition of advertising" (p. 79). In other words, attention would impact effectiveness under certain conditions, but high attention may not be a necessary condition for advertising effectiveness. Similarly, Lodish et al. (1995) found "no significant relationship between any measure of recall and sales impact" (p. 135). However, sales may not be directly related to advertising effectiveness because sales data may have been confounded by factors other than advertising (Wright, 2016). Although recall is often used as a proxy for attention which is an important determinant for ad

effectiveness (Raghubir & Valenzuela, 2006; Shaw, Bergen, Brown, & Gallagher, 2000), as Krugman (1986) suggests, recall only captures instances of high attention and does not account for the effect generated by brief exposures of advertising, which is the typical advertising phenomenon today. Therefore, recall may not be an appropriate measure for ads which are not given full attention by the consumers.

Later, researchers recognise the role of emotion in advertising. Another form of explicit measures is the self-report method which measures the subjective feelings expressed by the individuals following ad exposure (Poels & Dewitte, 2006). There are three types of self-report methods: verbal self-report, visual self-report, and moment-to-moment MTM) ratings (Poels & Dewitte, 2006). In the verbal self-report, individuals are asked to express their attitude verbally in open-ended questions. In addition, their responses are often registered in a semantic differential scale in which two opposing adjectives are placed in both ends of the scale (e.g. good/bad) or in a Likert scale, in which subjects select numerical values to indicate their feelings, attitudes, or plans to engage in a specific behaviour (Dimofte & Yalch, 2011). The Self-Assessment Manikin (SAM) scale (Bradley & Lang, 1994) is the most frequently used visual measure of emotion in advertising research (Poels & Dewitte, 2006). In MTM, respondents are asked to indicate their emotional state at different points in time while they are being exposed to an ad (Poels & Dewitte, 2006). MTM is useful in revealing the path of how an ad evokes feelings. For example, it was found that humour could enhance ad effectiveness only if a sequential transformation from surprise to humour occurred (Woltman, Mukherjee, & Hoyer, 2004).

Although providing useful insights, explicit measures may be inherently inaccurate. While people may be able to state their preferences, they are not able to articulate the

unconscious impressions that stimulate their preferences (Varan, Lang, Barwise, Weber, & Bellman, 2015). In fact, people are not fully aware of a lot of things that they like or do in daily life, but rather, they process information automatically and behave spontaneously on many occasions (Bargh, 2002; Chartrand, Huber, Shiv, & Tanner, 2008; Dijksterhuis, Smith, Van Baaren, & Wigboldus, 2005). In addition, people are sometimes unwilling to reveal their true opinions (Brunel, Tietje, & Greenwald, 2004). Recently, there has been an increasing interest in implicit measures. These measures can capture automatic affective reactions to advertising that explicit measures often fail to detect (Brunel et al., 2004).

Implicit measures

Few studies have demonstrated that explicit and implicit memory tap into different constructs and are independent of each other. These studies showed that unconscious effects were as large when subjects were not aware of the previously exposed stimulus as when they were aware of it (e.g. Bowers & Schacter, 1990). However, a study examining memory of brand names from advertisements reported that priming effects emerged only when brand names were the focus of attention at advertising exposure (Krishnan & Shapiro, 1996). In this case, attention is the source of processing differences that can generate variable effects on consumer responses to advertising, even under a non-conscious (priming) condition. Since attention is basically mental processing that often occurs outside of awareness, it requires implicit measures to observe it.

The Implicit Association Test (IAT) from Greenwald, McGhee, and Schwartz (1998) is a popular implicit measure for prediction of attitude and behaviour, particularly when

consumers are either unwilling or unable to identify the sources of their responses to advertising. The IAT measures the relative strength of automatic association between concepts in memory based on the associative network theory (Anderson, 1983). The method involves asking the respondents to sort stimuli into four different categories: (a) two opposing concept categories (e.g. black versus white spokespersons); and (b) two contrasted attribute categories (e.g. pleasant versus unpleasant words). However, IAT is subject to language distortion. Other implicit measures aim to eliminate verbal/language distortion by measuring autonomic (bodily) reactions using the neurophysiological instruments such as eye-tracking, electroencephalogram (EEG), or functional magnetic resonance imaging (fMRI).

2.4.3.2. Contemporary advertising testing methodology

Neurophysiological methods in advertising research apply the tools and theories from neuroscience to better understand consumer responses to advertising (Deitz, Royne, Peasley, Jianping, & Coleman, 2016; Matukin, Ohme, & Boshoff, 2016; Plassmann, Venkatraman, Huettel, & Yoon, 2015; F. Shen & Morris, 2016; Venkatraman et al., 2015; Wedel & Pieters, 2008). The use of neurophysiological tools provides insights into the unconscious and emotional processes. It is argued that measures of affective processes should be relieved from cognitive biases (e.g. comprehension and language distortion) that traditional methods are often plagued with (Vakratsas & Ambler, 1999).

Plassmann et al. (2015) outline the applications of neurophysiological measures to advertising research:

1. Neuroimaging measures such as EEG and fMRI can provide an understanding of how an advertising stimulus is processed in the brain, but not necessarily predict consumer behaviour.

2. Neurophysiological measures can provide information about the implicit processes that may be difficult to access using other approaches. For example, Plassmann, O'Doherty, Shiv, and Rangel (2008) studied why most people express a preference for expensive over cheap wine. They scanned participants' brains while they consumed the same wine but with different price tags and found that higher prices enhanced the actual taste experience as larger neural activations were coded in the brain for expensive versus cheap wine.

3. Neuroimaging can demonstrate dissociations between different psychological processes underlying consumer choice. For example, Venkatraman, Payne, Bettman, Luce, and Huettel (2009) used fMRI to determine the parts of the brain associated with heuristic and deliberative choices and found that heuristic choices activated the higher-order, cognitive systems; while deliberative choices activated the lower-order, emotional systems. This finding was surprisingly contradictory to the literature of dual-process theories (Evans, 2008, 2010; Kahneman, 2003). However, the finding should be interpreted with caution because heuristic and deliberation involve a combination of psychological processes (e.g. attention, affect, memory), so when a particular brain region is activated, it provides weak evidence of the psychological process associated with heuristic or deliberation.

The next section details several neurophysiological measures used in contemporary advertising research to examine attention as a key construct for advertising effectiveness.

Eye-tracking

The development in technology of the infrared eye-tracking device has enabled eye movement recording with a large number of ad stimuli, at high precision, easy to use, and low cost (Pieters & Wedel, 2008). Eye-tracking research rests on the assumption that attention can only process a small subset of information at a time, so in order to fully process a specific advertisement, consumers have to shift their attention by moving the eyes. The method records eye movements in terms of fixations and saccades. A saccade indicates the part of an ad that captures attention; whereas a fixation informs how that part is processed, such that a longer fixation assumes deeper processing (Pieters & Wedel, 2008).

Pieters and Wedel (2008) note two important principles of the eye-tracking method:

1. Eye movements are tightly coupled with attention. Although it is true that covert attention – the focus of the *internal eye* – and overt attention – the focus of the *external eye* – can be dissociated, during a normal vision task, the eyes closely follow attention, and attention follows the eyes.

2. Attention is central to ad processing. Attention not only selects an object and a location for deeper processing but also improves the speed, accuracy, and maintenance of the processing.

The eye-tracking record is often used as a proxy of consumer attention to advertising (Wedel & Pieters, 2008), but this method only provides a partial description of attention. While attention has two aspects: direction and intensity (Kahneman, 1973), the eye movements only capture the direction of attention, but not the intensity. They inform what features of advertising stimuli capture the eyes, which in turn, tell where

the consumers direct their attention, but they do not inform how much attention has been devoted to the processing. As such, eye movements only detect *overt* but not *covert* attention (Carrasco, 2011), because attention can be allocated by moving one's eyes toward a location (overt attention) or by attending to an area in the periphery without actually directing eyes toward it (covert attention). While attention can be deployed in parallel (to more than one location), eye movements are sequential, directed to one location at a given time (Nakayama & Martini, 2011). Therefore, despite its high utility, the eye-tracking method may not fully explain consumer attention to advertising.

Biometrics

Biometrics measure automatic bodily reactions to an external stimulus (Venkatraman et al., 2015). Common reactions include heart rate and skin conductance. Lang, Bolls, Potter, and Kawahara (1999) found that increased attention to an external stimulus (e.g. a television commercial) results in a significant deceleration of the heart rate. Thus, the heart rate can provide an independent measure of attention. Skin conductance response (SCR), also known as galvanic skin response (GSR) or electro-dermal response, occurs when the skin becomes an electrical conductor following exposure to a certain emotional stimulus (Nourbakhsh, Chen, Wang, & Calvo, 2017). SCR is commonly used in the detection of emotion and cognitive load. It was found that SCR accurately detected multiple cognitive load levels, and thus providing an indirect measure of attentional regulation (Nourbakhsh et al., 2017). One important limitation is that biometric measures are sensitive to differences in individual-level variables, such as age, gender, health condition, body size, and emotions, and thus provide weak evidence of the effect of the stimulus.

Electroencephalography

The EEG records variations in the electrical activity of the cortical brain regions in response to an internal or external stimulus (Venkatraman et al., 2015). Electrodes are placed on the scalp to record several types of brain-wave activity that reflects the different psychological processes, such as when an individual focuses attention on some cognitive task or is in a relaxed mental state (Nevid, 1984). Like other biometric measures, EEG measures are sensitive to individual-level variables and EEG research tends to have a small sample size. As a result, the validity of the EEG method needs to be demonstrated on the basis of examining the correlation between EEG measures and traditional measures of advertising effectiveness, such as recall and purchase intent (Nevid, 1984).

Functional Magnetic Resonance Imaging

The fMRI can be used to assess the brain's response to advertising in the form of a blood oxygenation level-dependent (BOLD) measurement (Couwenberg et al., 2017). BOLD is taken as a proxy for neural activation in response to advertising. This activation can be used as a direct measure of attention for both exogenous (stimulus-driven) and endogenous (goal-driven) attention (Venkatraman et al., 2015). Moreover, fMRI is an appropriate measure for brand memory which is a function of the intensity of attention during the ad exposure, with greater activation shown for stimuli that were attended versus ignored (Venkatraman et al., 2015). Some fMRI research has reported interesting findings. Brand familiarity activates different regions of the brain because familiarity can result from previously presented stimuli or the content of long term memory (Horn et al., 2016). Also, liking is found to activate both cognitive and

affective processing (Venkatraman et al., 2015). Therefore, it seems plausible that the resultant effects of cognitive and affective processing of advertising can be reflected in brand choice behaviour (Wright, 2016).

Limitations of neurophysiological methods. Although the neurophysiological methods provide insightful measures of instantaneous, subconscious emotional, and/or cognitive responses—free of the memory and social desirability biases that can be associated with self-reporting—and are potentially more predictive of advertising effectiveness than traditional measures, Varan et al. (2015) demonstrated that the results from these measures greatly varied by vendors, indicating a lack of reliability and validity. To better explain the results, neurophysiological measures need cross-validating with traditional measures (Varan et al., 2015). Other limitations include the sensitivity of these measures to individual variables such as health conditions and age, high cost to operate, and relatively small sample sizes (F. Shen & Morris, 2016). Also, it is difficult to ensure the ecological validity of research because the measures have to be administered in a laboratory setting, employing a rigid protocol that may cause psychological discomfort to subjects (F. Shen & Morris, 2016). For these reasons, the current research does not use neurophysiological methods.

Market response modelling

Unlike the previous methods that provide diagnostic metrics of advertising effectiveness, market response modelling provides the evaluative metrics by using data of aggregate effects at a market level, such as turnover, market share, profit margin, or advertising elasticity (Franzen, 1999). Advertising elasticity refers to the percentage change in sales due to a one percent change in the advertising expenditures

(Sethuraman et al., 2011). A meta-analytical study on advertising elasticities by Sethuraman et al. (2011) reported that the average short-term advertising elasticity is 0.12, which was lower than the previous finding of 0.22 in 1984; whereas the average long-term advertising elasticities was reported to be 0.24, which was also much lower than in the previous study of 0.41. The results suggest that there has been a significant decline in advertising elasticities over time. However, market response may not be a plausible measure to determine advertising effectiveness because advertising indirectly relates to sales, and sales data might have been confounded by variables other than advertising (Wright, 2016).

In conclusion, the development of advertising methodology has significantly advanced our understanding of the underlying mechanism of the consumer responses to advertising. However, each of those methods seems to provide only a partial description of the effectiveness of advertising when they are mapped against the key components of advertising effectiveness : *opportunity to see*, *attention*, *activation*, and *retrieval* (Wright, 2016). For example, the eye-tracking method informs the opportunity to see but not necessarily attention; whereas the EEG and fMRI provide direct measures for attention and activation but not the resultant effects of that activation. In addition, recall and self-report measures are effective for detecting a conscious brand retrieval, but much of brand retrieval is implicit and nonconscious (Heath, 2007).

2.4.4. Advertising testing methodology used in the current research

Brand consideration and *brand choice* are proposed as alternative measures for advertising effectiveness which will be used in this research. These measures allow for

observations of both conscious and subconscious effects of attention as well as the cognitive or affective resultant effects of advertising (Wright, 2016). In this context, brand consideration and choice may reflect the ability of advertising to establish a people-brand connection (Cramphorn, 2004), which is a useful predictor of advertising effectiveness.

Brand consideration set. Brand consideration set refers to a small set of brands which consumers consider in a particular choice occasion (Trinh, 2015). Brand consideration set can differ by product category, usually ranging from one to seven brands (Trinh, 2015). From this set, consumers subsequently choose one of these brands for purchase (Nedungadi, 1990; Shocker et al., 1991; Suh, 2009). Thus, the inclusion of the brand in a consideration set is a necessary condition for brand choice. According to Nedungadi (1990), there are at least two benefits of the inclusion of consideration stage in a choice modelling: (1) it provides a more realistic representation of the actual choice process experienced by the consumer, and (2) it leads to improved predictions and a better explanation of consumer purchase decisions. Therefore, it is not sufficient for effective advertising to only enhance brand awareness. In order to be purchased, the brand should be included in the consideration set.

Numerous studies have examined different aspects of consideration sets (Barone, Fedorikhin, & Hansen, 2017; Hauser & Wernerfelt, 1989; Kardes et al., 1993; Mitra, 1995; Stocchi, Banelis, & Wright, 2016; Suh, 2009; Trinh, 2015), but very few have modelled the consideration set as a function of advertising effectiveness. Mitra (1995) found that advertising influenced the stability of consideration sets by causing consumers to see larger differences among brands. Consideration sets were smaller under 'advertising' condition and more diverse under 'no-advertising' condition. The

study made a preliminary claim that advertising effectiveness could be observed through consideration set; however, it did not control for attention variability of the consumers, which might potentially influence ad processing (i.e. encoding of information) and thus the inclusion of brands in the consideration set.

Types of brand consideration set. Lynch and Srull (1982) noted the distinction between stimulus-based and memory-based consideration sets. A pure stimulus-based set presents people with all necessary information to make decisions; while in a pure memory-based setting, none of the relevant information is physically present, and people must rely exclusively on information stored in memory. However, many of ecologically relevant decisions that consumers make are not a pure stimulus-based nor memory-based, but are 'mixed' judgements, in which consumers may only see the brand names and must retrieve previously learned relevant information from memory (including brand feelings or information encoded during ad exposure).

Brand consideration set in the current research. The current research employs the ecologically stimulus-based consideration sets. Each set presents six brand names and logos without any additional information. By limiting information to brand names and logos, the current research ensures that 'retroactive interference' in which later learning inhibits the retrieval of previously acquired information (Tulving & Psotka, 1971) does not occur. Thus, in the context of current research, the inclusion of target brands in the consideration set can be attributed to the 'available' information that is retrieved when the participants see the brand names/logos. In this case, the brand names and logos serve as the 'retrieval cues' (Tulving & Psotka, 1971). If a brand is included in the consideration set, it becomes more readily 'accessible' for brand evaluation, and has the potential to be chosen as the preferred choice. To understand the effects of low-

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attention advertising, it is crucial to examine how brand names/logos activate the brand retrieval process in which brand information previously processed at low attention is retrieved for making a particular decision.

Brand choice. Nedungadi (1990) proposes two stages in the brand choice model: the consideration stage and the brand evaluation stage. The brand retrieval process occurs in the consideration stage; while the brand evaluation process occurs when the consumer deliberates the brands in the consideration set to arrive at a final choice. Brand choice is often measured in terms of purchase intent defined as "an intervening psychological variable between attitude and actual behaviour" (Miniard, Obermiller, & Page, 1983, p. 207). A meta-analytic study examining the correlation between purchase intent and actual purchase reported an average of 0.53 (Morwitz, 2001). Later, Chandon, Morwitz, and Reinartz (2005) found that the true association between intention and behaviour varies between 0.7 for automobile and 0.26 for groceries. These findings show that intention can predict the actual behaviour, however, the predictive ability varies greatly by product category. Moreover, the intention-behaviour gap has been shown to correlate with situational contexts or environmental factors that act as barriers or facilitators to the translation of intent into actual behaviour (Carrington, Neville, & Whitwell, 2010). To minimise confounds, the current research considers product category (Studies 1 and 2) and situational contexts such as shopping for others and shopping for oneself (Study 3) as control variables in the models.

Brand choice in the current research. Following Nedungadi (1990), the current research employs a two-stage process in which the brand consideration precedes the brand choice. Given a hypothetical shopping scenario, participants have to choose three brands that they would consider buying out of the six brands presented in the

consideration set. The three brands that the participants select at this stage represent the brands in their consideration set. Then, the participants have to rank the selected brands 1st, 2nd, and 3rd. Rank 1st is for the brand they would most likely buy. This brand represents the brand choice.

2.4.5. Summary of methods and measures of advertising effectiveness

As shown in Table 2.1., the advertising measures discussed in the preceding section are mapped against the key components of advertising processing (Wright, 2016).

Table 2.1 *Methods, measures, and key components of advertising processing*

	Components of advertising processing			
	Opportunity to see	*Attention*	*Activation*	*Retrieval*
Methods & Measures				
Traditional methods				
Spontaneous recall				✓
Day-after-recall			✓	✓
Verbal self-report			✓	✓
Visual self-report			✓	✓
Moment-to-moment		✓	✓	✓
IAT			✓	
Neurophysiological methods				
Eye-tracking	✓	✓		
Biometrics		✓		
EEG		✓	✓	
fMRI		✓	✓	
Brand behavioural measures				
Brand consideration set			✓	✓
Brand choice (purchase			✓	✓

As Table 2.1 shows, advertising measures can provide useful insights into different stages of advertising effects. However, brand consideration set and brand choice may be better alternatives as they directly measure *activation* and *retrieval* while indirectly measuring *opportunity to see* (exposure) and *attention* (processing effort). Importantly, these measures reflect the behavioural responses to advertising which have close

proximity to actual behaviour. Therefore, brand consideration and choice are used as the dependent measures of advertising effectiveness in the current research.

2.5. Chapter summary

Despite many years of research, there are a variety of theoretical assumptions about how advertising works. Consequently, it is hard to develop rational coherence for evaluating advertising effectiveness. Three problems pertinent to the current research are discussed: the theoretical controversy, the nature of advertising effects, and the methodology for evaluating those effects. The current research adopts an approach to evaluating advertising effectiveness from Wright (2016) who outlines a model of advertising processing with four key components: *opportunity to see*, *attention, retrieval* and *activation.*

A variety of methods are available for evaluating advertising effects: explicit measures (e.g. self-report and recall), implicit measures (e.g. SAM, IAT, MTM) and neurophysiological measures (e.g. eye-tracking, EEG, and fMRI). These measures record consumer responses to advertising in different contexts. However, they tend to look at the responses which are generated when active attention is directed to process an ad. This is consistent with the premise from the Strong theory (Jones, 1990) and the ELM (Petty et al., 1983) that advertising is more effective if it gains higher attention. Recently, this premise has been challenged, with low attention effects also reported (Goodrich, 2014; Heath et al., 2006). Theoretically, low-attention effects may result from the ad-evoked affect that develops into mild emotional attachments to the brand (Wright, 2016). This affect can serve as a retrieval cue, making the brand more salient and accessible (Romaniuk & Sharp, 2004) for consideration and choice. Thus, a crucial

task of advertising is to trigger such emotional attachments, despite low attention being given to the ads.

CHAPTER 3: LOW ATTENTION ADVERTISING PROCESSING

3.1. Introduction

In the cluttered digital landscape, ad exposures are typically incidental as consumers face scarce cognitive resource to process ads, so ad processing mostly takes place at lower levels of attention (Heath, 2007). This type of processing may be capable of creating brand associations (Cramphorn, 2004) and mild emotional attachments to the brand (Wright, 2016) even if the ads are not remembered. These associations can make the brand more salient in a purchase situation (Romaniuk & Sharp, 2004) and exert a substantial influence on brand choice. A number of theoretical considerations provide explanations for the different routes by which advertising create effects under conditions of low attention, namely, intuitive processing (Kahneman, 2003), mere exposures (Zajonc & Markus, 1982), processing fluency (Schwarz, 2004), and hedonic marking (Reber, Schwarz, & Winkielman, 2004; Winkielman et al., 2003). This chapter details each of these theories and integrates the relevant assumptions to conceptualise the low attention advertising processing model in the current research. Prior to conceptualisation of low-attention processing, it is necessary to first look at the general concept of attention.

3.2. Attention

Attention is central to advertising processing as it selects objects and locations for more detailed processing, and coordinates and improves the speed and accuracy of the processes (Pieters & Wedel, 2008). A widely cited definition of attention in the literature was given by James (1890) who defined attention as

…the taking of possession by the mind, in clear and vivid form, of one of what seems several simultaneously possible objects or trains of thought. Focalisation, concentration, of consciousness are of its essence. It implies withdrawal from some things in order to deal effectively with others (p. 403-404).

For James, *focus* is the core of attention as he further said that "my experience is what I agree to attend to" (p. 402), highlighting the selective function and the processing capacity of attention and suggesting that unattended inputs will not be experienced (remembered). Correspondingly, two main functions of attention are (1) as a filter to screen out information inputs, and (2) as processing capacity to encode and store the processed information (Kahneman, 1973).

3.2.1. Attention as an information filter

Key theories that account for the selective mechanism of attention are *Selective filter theory* (Broadbent, 1958), *Filter-attenuation theory* (Treisman, 1964), and *Late selection theory* (Deutsch & Deutsch, 1963). Figure 3.1 illustrates a comparison between the theories.
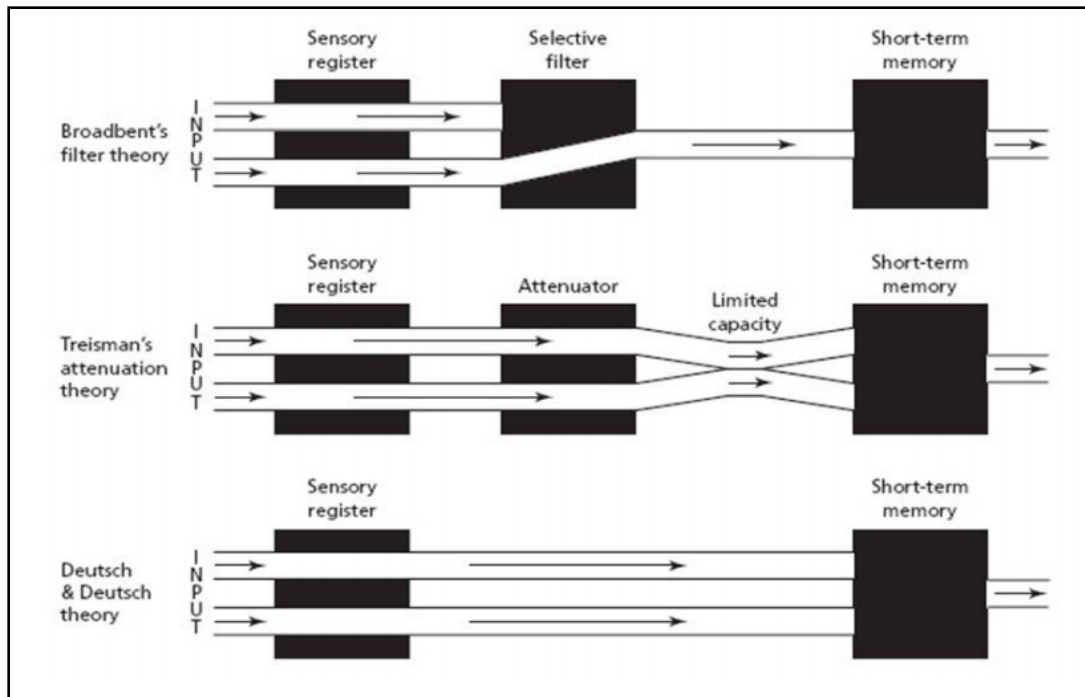
Figure 3.1 A comparison between theories of attention
Source: *Cognitive Psychology: A student's handbook (Eysenck & Keane, 2015, p. 134).*

Broadbent's (1958) *selective filter theory* proposes that all stimuli are initially processed for basic, physical properties, and only the attended stimuli are processed further to the point of identification (e.g. the meaning of the stimuli). Consequently, the meaning of unattended stimuli is not identified, and therefore, has no traces in memory. Later, the *filter-attenuation* theory (Treisman, 1964) proposes that the attentional filter does not block out but rather *attenuates* the information about the irrelevant stimuli. The filter is needed to allow for more intensive processing for the relevant stimuli. However, some irrelevant stimuli with a low identification threshold, such as a person's name or unexpected (novel, surprising) event can pass through the filter and be identified. As a result, partially processed stimuli on an unattended channel can sometimes pass through. Conversely, Deutsch and Deutsch (1963) took an alternative approach and proposed the *Late-selection theory* that all incoming stimuli are semantically identified before being filtered. This analysis takes place in parallel

across channels (visual, auditory, or kinaesthetic) and without capacity limits. This theory suggests that a partially attended stimulus will have the potential for, at least, some traces to be encoded in memory. Later, Broadbent (1982) pointed out that the main difference between these theories depends on the meaning of irrelevant stimuli. The fact that a stimulus is irrelevant to the task at hand does not preclude processing. Although minimally attended (i.e. low attention is given), an irrelevant stimulus may receive some processing such as the processing of simple, physical properties. As such, some progression from the first memory stage to a later process can be achieved.

These theories agree on two assumptions: first, everything that can be perceived by our senses might have been attended and analysed, and some memory traces can be established. Second, while allowing for more intensive processing for the relevant information, the attentional filter does not block out, but rather attenuates, the irrelevant one. As a result, some features of these memory traces are perhaps sufficient to trigger more deliberative processing later. Whilst attention can be activated by a range of sensory inputs, it can also be directed by more abstract representations in memory (Desimone & Duncan, 1995). That is, attention can bias the selection of information about objects, such as a particular feature and location, but it can also select goals for action from the contents of working memory. In all cases, attention determines which information needs to be given subsequent perception, encoding, storage, or action.

Another stream of research has studied the intensive aspect of attention and described attention as cognitive resource or processing effort (Kahneman, 1973), suggesting that an attentional filter is required because the brain has a limited capacity to process information at a given time.

3.2.2. Attention as processing capacity

Kahneman's (1973) *capacity theory of attention* posits that there is a single pool of attentional resource with limited capacity. The main assumptions are (1) information processing is constrained by the amount of cognitive capacity (or attentional resource) available at a given moment; and (2) cognitive activities vary in the attentional resource they require for optimal performance. In particular, automatic processes require a very minimal amount of resource; whereas effortful processes require a considerable amount of resource. However, this theory cannot sufficiently explain many instances of attention, such as the notion of divided attention or dual-task performance where subjects are able to perform multiple tasks simultaneously (Wickens, 2002), and the impact of unattended stimuli on behaviour that occurs without subject recognition (Shapiro, 1999; Shapiro et al., 1997). The *multiple resource theory* (Allport, Antonis, & Reynolds, 1972) provides an alternative explanation.

The limited capacity theory regards attention as a 'single, multi-purpose, central processor' with limited capacity, so doing multiple tasks at the same time will result in a complete disruption of performance (Kahneman, 1973) because these tasks compete for the same resource. However, Allport et al. (1972) raised questions about the single-channel concept of attention and proposed that attention comprises a number of independent, specialised modules. Each module deals with a different ability and has its own resource and limited capacity. Thus, attention can be easily divided when performing dissimilar tasks. When multiple tasks require different modules, the performance is not affected and the tasks can be processed in parallel without much difficulty; whereas, when the tasks are similar, they compete for the same module so performance will be impacted. For example, listening through left and right ears will

compete for the same auditory module; while listening to numbers and recognising a visual pattern will not. Research has found crossmodal effects of attention between the visual and auditory modalities. For example, words spoken in the background impede learning visually presented information (Baddeley, 2012), and vocal background music during shopping time would decrease the in-store ad recall more than instrumental music because lyrics place an additional load on attention (Kang & Lakshmanan, 2017). However, it should be noted that the depth of processing does not depend only on the nature of the task, but also on the environmental cues and the subject's internal disposition as attention is closely linked to emotion and motivation (Parasuraman, 1998). Thus, the more motivated the subject is, the more attentional resource will be allocated, and so people are able to divide attention among tasks even though the tasks demand the same modality, with one task receiving more and the other receiving less attention. This is supported by evidence that memory of in-store ads is not affected by either vocal or instrumental background music if shoppers consciously pay attention to the ads (Kang & Lakshmanan, 2017).

3.2.3. How does attention work?

3.2.3.1. The Spotlight Theory and The Gradient Model

To explain the mechanism of low attention effects investigated in this thesis, two theories about the workings of visual attention, namely the Spotlight Theory and the Gradient Model (Johnson & Proctor, 2004), are reviewed and compared. Currently, the Spotlight Theory of attention has inspired a number of advertising studies that utilise eye-tracking to determine which part of an ad is likely to gain attention and receive further processing. In this case, attention follows eye movements (Pieters & Wedel, 2008). According to this theory, attention highlights selected information and

leaves information outside the focus unattended. The focus of attention is limited in spatial size and moves from one region to another, known as attention switching. Thus, information which is not the focus of attention would have relatively no impact on cognition or behaviour. However, Posner and Presti (1987) argued that there can be *covert attention* in which the attentional spotlight shifts to a different location in the absence of eye movements. This implies that eye movements may not account for all processes of visual attention.

Alternatively, the Gradient Model assumes that attentional resource falls off from the centre of the gradient to the edges. This implies that, although the best result of processing is obtained from the centre of the gradient which is the focus of attention, there is a possibility that information outside the focus of attention receives some processing. The size of the visual field can vary substantially depending on the task demands. Later, it was found that attentional focus is allocated to an object rather than a region. The change blindness phenomenon (Simons & Levin, 1997) showed that people were unaware of changes occurring in the visual field when attention was focused on a particular object. As such, opportunity to see (Wright, 2016), the first key element for advertising effectiveness, should be considered as more than just placing ads in the visual field.

The Gradient Model takes into account what is known as 'situation awareness', which is "the perception of the elements in the environment within a volume of time and space, the comprehension of their meaning, and the projection of their status in the near future" (Johnson & Proctor, 2004, p. 280). When people are aware of the current situation and the way it is evolving, they can make appropriate decisions and take appropriate actions in response to the situation. This situation awareness is supported

by attention. The direction and intensity of attention, guided either by the salience of the stimuli or the goal of the individual, will determine which elements in the environment will be incorporated into the situation awareness (Johnson & Proctor, 2004). For example, a driver is attending to the road conditions in front of him but is also aware of many things around him (e.g. the presence of other cars, buildings, traffic signs, billboards, people crossing the road). Failure in situation awareness becomes evident if attention is overtaxed. Studies reported that accidents occur when people have to remember things or talk on the phone while driving (Johnson & Proctor, 2004).

In line with the Gradient Model, Shapiro, MacInnis, Heckler, and Perez (1999) argued that when an individual focuses his or her attention on a piece of information, other information in the peripheral field of vision can also be processed incidentally. In this view, consumers who are engaged in a goal-driven online activity can subconsciously process ads which appear on their screen. Overall, the process of information processing in relation to attention is complex as it involves the enhanced perception of selected material as well as the degraded perception of unattended material (Desimone & Duncan, 1995). In some instances, the degraded perception of unattended material can be enhanced by the ease of processing (e.g. processing previously seen material) and can have an impact on subsequent behaviour (Schwarz, 2004).

3.2.3.2. The role of attention in advertising processing

According to Kahneman (1973), "[Attention] is a label for some internal mechanisms that determine the significance of stimuli and thereby make it impossible to predict behaviour by stimulus consideration alone" (p.2). Accordingly, we cannot determine the effectiveness of advertising if processing effort (attention) is not taken into

consideration. However, attention is only one of the elements in the advertising process, together with exposure, memory activation, and retrieval being the determinants for advertising effectiveness (Wright, 2016).

Attention affects (i.e. enhances or inhibits) the process by which information in a stimulus (e.g. an advertisement) is translated to a response (Johnson & Proctor, 2004). Attention can take different forms and roles: (1) as a sort of amplifier, making processing of information more efficient, enhancing the processing of selected information, and filtering out distracting information, and (2) as a retrieval agent, such that paying attention might cause people to more easily recall the perceived information and use the information to perform an action (Johnson & Proctor, 2004). However, the nature of attention does not allow for direct observation because attention is a property of the whole brain, rather than a localised property. This means no specific structure in the brain is dedicated to attention, but rather, attention is inherent in any level of the central nervous system (Pieters & Wedel, 2008). As a result, a variety of methods (e.g. eye-tracking, EEG, and fMRI) have been developed to identify and measure the extent to which attention affects the process of encoding, storing, and responding to information in the ads, without actually measuring attention itself.

As a key component in the processing of advertising stimuli, increased attention means increased impact of the stimuli on memory, attitude and behaviour (Romaniuk & Nguyen, 2017). It is argued that advertising messages would have a stronger impact if the processing of those messages involves higher levels of attention; thus, if attention is not sufficient, the messages would fail to (fully) impact behaviour (Romaniuk & Nguyen, 2017). Consequently, ads which are unable to capture (hold) consumer attention and do not change attitudes are often considered ineffective. However, the

Gradient Model suggests that attention is more diffuse and broader so that less attended advertising messages can still have an impact. The impact is likely to be subtle but may become substantial through repeated exposure (Ehrenberg, 2000). Research has shown that the repetition effect was moderated by the amount of attention given to the processing of the ads (Storme, Myszkowski, Davila, & Bournois, 2015) or by the level of processing consumers engage in (Nordhielm, 2002). Therefore, capturing consumer attention is useful as attention may facilitate comprehension and interpretation of information in the ad. However, attention is not a sufficient condition for ensuring effective advertising because consumers are still required to make a favourable response in a way the advertiser has intended them to. Yet, the literature is inconclusive whether advertising outcome is a linear function of attention.

Wright (2016) noted that *opportunity to see* and *attention* are the first two stages to accomplish for effective advertising. In this case, the greater the number of times people are exposed to ads, the greater the potential opportunity to respond to it. In fact, the actual amount of attention given to an ad will increase with exposure (Mackenzie, 1986). This corresponds to the concept of advertising equity (Rosengren & Dahlén, 2015) that states that prior experience with an ad will affect people's willingness to approach the ad in the future, provided that the prior encounter is positive. In other words, people will pay more attention to an ad if their previous experience with that ad is favourable. The assumption is consonant with the premise of 'processing fluency hypothesis' (Schwarz, Bless, Strack, et al., 1991) that prior exposure to a stimulus makes the stimulus easier to perceive, encode, and process when it is encountered at a later stage. Additionally, the ease of processing an option (e.g. ease of perceiving, encoding, and retrieving it from memory) can influence preference for that option. In this view, prior experience with an ad makes the ad more easily processed at a later

time, the assumption being that more exposure leads to more fluency, and more fluency yields more attention given to the ad, and thus increases preference for the ad and/or the brand. This is because repeated exposure to an ad will result in a stronger 'representation' (of the ad, brand, association) in memory, and when the ad or the brand is encountered at a later time, this memory is stimulated and strengthened (Janiszewski & Meyvis, 2001).

In contrast to the prior discussion that a positive repetition effect will occur if more attention is given, the literature on advertising repetition reveals contradictory findings in which the deployment of attention does not always produce positive effects. Pechmann and Stewart (1988) distinguished two types of repetition effects: *wear-in* effects (i.e. an ad has a significant positive effect on consumers at a certain level of exposure), and *wear-out* effects (i.e. an ad has no significant effect or has a negative effect at a certain level of exposure). There are two factors that contribute to these effects: positive factors such as habituation and learning will lead to a positive attitude and result in wear-in effects; whereas negative factors such as redundancy and boredom will lead to a negative attitude and result in wear-out effects (Schmidt & Eisend, 2015). Interestingly, attention given to the processing will enhance both the wear-in (learning) and wear-out (boredom), with Tellis (2004) maintaining that "wear-in and wear-out occur faster for consumers who are highly motivated and actively process the message in the ads than those consumers who are not so motivated and active." (p. 101).

Nordhielm (2002) provided further support for the relationship between exposure and affective response. He found that an inverted U-shaped relationship was observed in the deeper processing condition; whereas an ever-increasing relationship was found in the shallow processing condition. The shallow processing occurs when exposure

durations are extremely short, so people are so limited in their ability to process the ad and they may not recall how frequently they have seen the ad. In this case, people would be more likely to misattribute processing fluency as liking for the ad/brand (Nordhielm, 2002). The shallow processing reflects the typical ad exposure situations where excessive volume of ads compete for consumer limited attention. Similarly, a meta-analysis on effective frequency in advertising reported that low involvement, rather than high involvement, enhances repetition effects on attitude towards the brand (Schmidt & Eisend, 2015).

Although the advertising effect is known to be subtle and built upon repetitions, scholars are in disagreement about the most effective frequency to obtain the maximum effect of advertising (Schmidt & Eisend, 2015). Presumably, the opposing results about advertising repetition effects may be attributable to the variability and amount of attention (level/depth of processing) and the different methods used to measure the effects. Despite the disagreement, few studies point to the fact that repetitive advertising would yield a more positive effect if processed at lower rather than at higher attention. However, it should be noted that although advertising effect may not be entirely instantaneous, "advertising is effective either early on or never" (Tellis, 2004, p. 20), implying that it is possible to observe the effects immediately after few exposures. As Tellis has also cautioned that "the effects are fragile and easily lost or biased by the use of the wrong analysis or method" (Tellis, 2004, p. 17), it is worth noting that although recall and fixation are commonly used as measures of ad effectiveness, they are poor indicators of visual attention. A study by Chandon et al. (2009) found that participants forgot 58% of the brands that they had fixated, and only 25% of those brands were included in the consideration set. Thus, the use of an appropriate measurement sensitive to the subtle effects of advertising is imperative in

evaluating advertising effectiveness. One such measurement may be brand consideration and choice as suggested by Wright (2016). In particular, these measures may be sensitive to the conscious and nonconscious effects of attention on consumer choice.

In conclusion, attention plays a significant role in the process by which information in an ad is translated into a subsequent response. Attention can affect the process in two different ways: by enhancing perception and facilitating learning, and thereby eliciting a positive response; but also by encouraging boredom and redundancy, and thus, eliciting a negative response. While prior research shows that low attention might delay boredom in the case of repetitive advertising, the amount of learning under the low attention condition is hardly known due to the subtlety of the effects and the use of inappropriate measurement. The eye-tracking, EEG, and fMRI methods are commonly used to determine the effects of attention on advertising processing and provide useful insights into what attention selects; however they do not inform the effect of this selection on behaviour. Alternatively, brand consideration and brand choice may be better measures to capture the subtle effects of visual attention on consumer choice.

3.2.3.3. Selective visual attention to advertising

As noted earlier, attention is a mechanism to select a small subset of stimuli that have been perceived by our sensory systems for more extensive processing, while neglecting the rest of stimuli for only limited analysis (Johnson & Proctor, 2004). The selectivity derives from the limitation in the brain's capacity for processing information. Desimone and Duncan (1995, p. 193) wrote,

> The first basic phenomenon is limited capacity for processing information. At any given time only a small amount of the information available on the retina can be processed and used. Subjectively, giving attention to any one target leaves less available for others… The second basic phenomenon is selectivity-the ability to filter out unwanted information. Subjectively, one is aware of attended stimuli and unaware of unattended ones.

While attention is often associated with eye-movements, Ladeira, Nardi, Santini, and Jardim (2019) describe the relationship between attention and eye movements: (1) the eyes follow attention, which is known as 'top-down' or endogenous attention; and (2) attention follows the eyes which is known as 'bottom-up' or exogenous attention. Exogenous attention is driven by external stimuli that possess salient features, such as animation, brightness, bigger sizes, and different colours from the background; while endogenous attention is controlled by internal factors within the observer (e.g. motivation and personal relevance).

Advertisers mostly focus on capturing exogenous attention. Attention-grabbing ads that utilise salient features (e.g. novelty, striking colour, animation) produce variable outcomes: on one hand, these ads can increase brand memory and recognition, but on the other hand, they are regarded as intrusive and annoying leading to a negative attitude (Liu-Thompkins, 2019). Similarly, in a meta-analysis of 201 eye-tracking studies, Ladeira et al. (2019) found that the top-down factor that has the biggest impact on visual attention is product involvement while the factor with the least impact is recall; whereas for bottom-up factors, the variable that has the largest impact on attention is visual complexity and the factor with the least impact is the visual area of the label. This means the brand name and logo typically attract less attention than the visual complexity of the packaging. The more interesting finding is about the relationship between scene complexity and competition for attention, in which the effect of attention on consumer choice and purchase intent will be stronger if more

products and brands are presented (Ladeira et al., 2019). As such, divided attention may not be a problem it is assumed to be, despite the concern that multitasking and multi-screening (Segijn, Voorveld, Vandeberg, & Smit, 2017) can limit advertising processing.

Research on visual attention to advertising mostly focuses on (1) eye-tracking technology to analyse the eye movements when consumers are exposed to ads, and (2) neurophysiological measures (i.e. bodily reactions) to explore affective responses to advertising via visual attention. These methods provide useful insights into how attention to advertising works.

3.2.3.4. Lessons from eye-tracking research

Does ad complexity inhibit attention? Given the limited capacity of attention, visual complexity will harm ad processing because complexity demands attention and is difficult to process. However, research found that complexity can actually benefit advertising because it captures attention, thus serving as a stopping power that breaks through clutter as "where the eyes stop, the sale begins" (Pieters, Wedel, & Batra, 2010, p. 48). Pieters et al. (2010) classified complexity into two types: feature complexity (i.e. when ads contain many different perceptual features) and design complexity (i.e. when ads use elaborative creative design). They found that feature complexity makes people pay less attention to the brand and the ad; while design complexity attracts attention and enhances likability and attitude toward the ad. Thus, ad complexity affects visual attention differently depending on where the complexity resides: the feature complexity inhibits but the design complexity facilitates attention to the ads.

This finding is particularly important to predict whether or not people will pay attention to the brand name or logo if the ad contains complex visual features.

Additionally, the finding is crucial to the current research because the difference in complexity is more nuanced in ads using rational versus emotional appeals, which is investigated in Study 2. Generally, emotional ads are perceptually more complex than rational ones, perhaps because emotional ads aim for psychological interpretations of the product rather than featuring the product as a primary focus. However, the effect can be in the opposite direction as emotional content is assumed to be more easily processed at low attention (Heath, 2007) and can lead to greater purchase intent (Young, Gillespie, & Otto, 2019).

Does media multi-tasking inhibit attention? Digital consumers often divide their attention to multiple media/devices simultaneously, also known as *multi-screening* (Segijn, Voorveld, Vandeberg, et al., 2017). In fact, people switch between screens 2.5 times per minute during their online activities (Segijn, Voorveld, Vandeberg, et al., 2017). The study found that advertising is more effective when people attend to a single screen than when they are engaged in multi-screening. However, when people paid sufficient attention to the content, multiscreeners remembered the content as well as single screeners. Therefore, multi-screening only reduces ad effectiveness if attention is directed by bottom-up factors, but not if attention is voluntarily directed (top-down). Moreover, they reported that multi-screening does not harm ad performance if the programs on both screens are related (e.g. people watch *The Voice* on television and read social media posts about *The Voice*). This implies that divided attention can be facilitated by repetition (seeing it on television and then on social media). This finding is important as it shows that the repetition effect can be observed immediately (even

under divided attention), as opposed to repetitions over time (Ehrenberg, 2000), and that repetition can involve seeing the ads in different formats.

Does recall reflect attention to advertising? Another important feature of digital advertising is *advertising blindness*, defined as the inability to recall the episode of being exposed to an advertisement (Hervet et al., 2011). Given clutter and low attention, consumers often do not remember having seen an ad during their online navigation. Questioning the validity of previous findings that low recall suggests that subjects do not pay attention to the exposed ad, Hervet et al. (2011) argue that no conclusions can be made whether or not attention has been paid to an ad, despite the fact that subjects do not remember having seen the ad. It might be possible that attention was paid to the ad, but subjects could not remember it because they had to process many different ads in the experiment. Using the eye-tracking, Hervet et al. (2011) reported that a majority of subjects, indeed, fixated on the ads at least once during the website visit. The first ad was fixated more often and for a longer period of time than the following ads. They also found that incongruent ads attracted more attention but did not result in better memory for the ad. Although more attention was given to the incongruent ad, the ad was poorly recalled because the information was not properly processed due to its incompatibility with the subjects' activated network (related knowledge in memory). The findings imply that (1) fixation does not guarantee that the ad will be recalled, (2) memory performance may not be a proxy for attention, and (3) internet users display ad avoidance behaviour because fixation duration decreases considerably after the first exposure.

Overall, the results from the eye-tracking research generally imply that ad complexity, media multitasking, and ad blindness are source factors that can affect visual attention

to advertising. Although eye movements are proxies for the direction of attention, they do not accurately predict the depth of attentional processing, such that fixation does not necessarily lead to recall, and recall does not necessarily reflect deliberative processing (Hervet et al., 2011). This raises key questions about the importance of memory theory inclusion in advertising measurement and whether what people remember is the test for advertising effectiveness.

3.2.3.5. Lessons from neuroscience research

More recently, there has been an increased interest in the analysis of emotional reactions when people view the ads (e.g. Dahlén, 2002; Matukin et al., 2016; Poels & Dewitte, 2019). These reactions cannot be observed with eye-tracking because emotional reactions tend to be automatic and subconscious so that people have little control over them (Clore & Ortony, 2000).

Are attention-grabbing ads effective? A study using fMRI on non-commercial ads revealed that attention-intensive format that captures attention would compete with the ad's content for cognitive resources and resulted in reduced processing of and less retention of the ad's content (Langleben et al., 2009). However, the research has an important limitation,

> Neuroscientists have, in modern times, been especially concerned with the neural basis of cognitive processes such as perception and memory. They have for the most part ignored the brain's role in emotion. (Ambler, Ioannides, & Rose, 2000, p. 19).

Later, researchers have used brain-imaging (neuro) measures to gauge two basic types of consumer response: attention and emotion (Varan et al., 2015). The work of Matukin et al. (2016), combining eye-tracking and EEG methods to analyse emotional reactions

to ads, revealed that peripheral information (e.g. award information) consumes attentional resource so that stimuli containing peripheral information has shorter fixations, and therefore less recalled; however, the additional information also enhances emotional reactions shown by increased activation in the brain. Briefly, the study showed that although processing of peripheral information comes with the expense of attention (i.e. less memory of the stimuli), it also elicits a positive emotional response at the subconscious level.

Does recall lead to increased brand attitude? Varan et al. (2015) reported that recall did not correlate with positive emotion about the brand. Specifically, consumers would more likely remember advertisements for brands they are less willing to buy. In contrast, an experimental study by Ambler et al. (2000) reported that recall and recognition were significantly stronger for ads with emotional content, but also emphasised that individuals can have emotional experience without being aware of it. Similarly, different regions of the brain are activated for affective reactions and for memory judgements, suggesting that affect and cognition are independent systems (Zajonc, 2001). These studies show that there is an unclear link between recall and brand attitude.

To summarise, neuro-advertising research provides mixed evidence on the roles of attention and emotion in advertising. Attention-grabbing formats could block learning and retention of information in the ads (Langleben et al., 2009), but retention may not be necessary as it does not correlate with positive emotion (Varan et al., 2015). The findings further imply that ads can elicit a positive emotional response despite a decrease in attention (Matukin et al., 2016), suggesting that ad processing at low attention might be more effective than is widely assumed.

3.3. Low attention advertising processing

3.3.1. Background

The notion that advertising that is ignored or processed at low attention can have a positive impact on behaviour has some support (Brasel & Gips, 2008; Goodrich, 2014; Heath, 2007; Reijmersdal, 2009; Wilson, Baack, & Till, 2015). Mere exposure has been used as a justification for advertising that may be seen but not explicitly processed, such as billboards (Till & Baack, 2005) , banner and web ads (Yoo, 2009), pre-roll ads (C. Campbell, Thompson, Grimm, & Robson, 2017), or in-stream video ads (Li & Lo, 2015), to produce increased positive affect the next time the ads are encountered, which may lead to an increase in the purchase likelihood of the brand. However, this argument is somewhat suspect and some question if exposure is sufficient to induce the effect. It is argued that the level of attention paid to an ad (however brief or minimal) affects the encoding of information; and the positive outcome is predicted when the encoding is tagged with positive affect.

3.3.2. Conceptualisation

Heath (2007) notes that *passive* or *implicit* learning is the way most advertising works in real situations as consumer motivation to process advertising is generally low. As such, everything our senses experience is transmitted *unedited* to our brain for interpretation, even if attention is not given, because some neuronal circuits necessary for interpretation have been activated when a stimulus is perceived (Heath, 2007). Thus, Heath argues that advertising may not work through an active cognitive process but through a subconscious process, called *subconscious seduction.* His ideas are

described in the book, *Seducing the Subconscious: The Psychology of Emotional Influence in Advertising* (Heath, 2012). The basic arguments in his book are:

1. It is unequivocally the case that people do not pay much attention to advertising.

2. Advertising with emotional appeals can work effectively without being overtly persuasive.

3. Brand building is best achieved through emotive advertising that generates positive feelings which are linked to the brand through repetition. High attention to advertising does not support this process and may actually inhibit it.

4. The less attention people pay to advertising, the less likely they will counter-argue, so the more effective the subconscious communication will be.

5. Emotive advertising can have an impact in three ways: (a) via the agency of *emotionally competent stimuli*, (b) by influencing the relationship that people have with a brand, and (c) by acting as a subconscious 'gatekeeper' to rational decisions, similar to the notion of 'somatic marker' by Damasio (1996).

3.3.3. Low attention conditions

Media multitasking when consumers switch their attention simultaneously from one device to another, or from one channel to another within a device (Segijn, Voorveld, Vandeberg, et al., 2017) and information overload as consumers are exposed to an excessive volume of advertising at a given time (Cho & Cheon, 2004) are some of the enduring features that deplete consumer attention to advertising on digital platforms. This condition is referred to as *divided attention*, in which attention is directed at the

processing of multiple stimuli simultaneously at a given time (Spataro, Mulligan, & Rossi-Arnaud, 2013).

Furthermore, the rapid growth in the use of ad-blocking software that shields consumers from unwanted ads (Tudoran, 2019) and increasing avoidance behaviour (Cho & Cheon, 2004) reflect typical consumer response to advertising and imply that the majority of consumers regard advertising as an intrusive and annoying factor that obstructs their online activities. In fact, goal obstruction is the most important antecedent for advertising avoidance (Cho & Cheon, 2004). Also, consumers are not interested in learning about brands as they are familiar with most of them (Heath, 2007) and frequently regard ads as meaningless, nonsense materials (Krugman & Krugman, 2008). As a result, people are not generally motivated to process ads (Krugman & Krugman, 2008), and thus ad processing appears to be a secondary task and occurs at a low level of attention (Yoo, 2009). This condition is referred to as *incidental attention* in which target stimuli are not the subject of attentional focus (Shapiro et al., 1997). The current research focuses on the examination of these two conditions of low attention and compares them with focused attention and a control condition.

3.3.4. How ads create effects under conditions of low attention

Emotional content in ads can trigger emotional associations. These associations become linked to the brand through repetition and automatically induce emotional 'markers' that influence attitude toward the brand when people encounter brand-related cues in a purchase situation (Heath, 2007). In this context, these associations can exert a powerful influence on brand choice, without being subject to active thought or deliberative analysis. Therefore, the main role of advertising is to reinforce associations

to consumer memories so that some memories later stand out as being linked to the brand in a purchase situation. In this view, a great deal of advertising information is absorbed by the consumers without active search or conscious evaluation. As such, advertising works through a weak mechanism that does not require much cognitive effort or attention (Barnard & Ehrenberg, 1997; Jones, 1990) although it should be noted that a weak mechanism can still accumulate substantial effects.

Wright (2016) agrees about the potential for advertisements to have an affective impact through the development of mild emotional attachments. However, he also suggests that ads are capable of having both conscious and subconscious impacts by refreshing memory nodes or associations. Wright draws on associative network memory theory (Anderson & Bower, 1974) that the processing of environmental cues may lead to a cascade of spreading influence when the retrieval of concepts (memory nodes) reaches a threshold level of activation. As associations between concepts are strengthened by the mere act of spreading activation, Wright (2016) suggests that an advertising stimulus can strengthen associations even if the ad is not consciously processed or has already been forgotten. At a later stage, these strengthened associations promote brand retrieval by increasing the amount of activation that reaches the relevant brand concepts in response to a new stimulus, thus making the brand more salient. Brand salience, defined as "the propensity of the brand to be thought of by buyers (i.e. 'stand out' from memory) in buying situations" (Romaniuk & Sharp, 2004, p. 328), slightly increases the accessibility of the brand in a purchase situation. Thus, it seems plausible to assume that an increase in salience is important for the inclusion of the brand in the consideration set and the selection as the preferred brand choice.

To conclude, low attention processing is a subconscious process that most consumers carry out when being exposed to advertisements. This process can automatically trigger emotional associations, with these associations strengthened by the mere act of spreading activation in memory and becoming linked to the brand when consumers encounter brand-related cues in a purchase situation. This process makes the brand more salient and increases its likelihood to be purchased. The new theoretical perspective proposed here is consistent with recent advertising theories (Heath, 2007; Wright, 2016) and the operation of visual attention of the Gradient Model (Johnson & Proctor, 2004). These theories suggest that even on platforms where attention to advertising is low, in principle at least, advertising can still be effective.

3.4. Key theories of low attention processing

As attention is a psychological construct, a number of theories from psychology and their applications in advertising shed light on the mechanisms for low attention processing that advertising can produce positive effects without conscious attention.

3.4.1. Dual-process theory

Novak, Hoffman, Deighton, and Luce (2009) categorise consumer online activities into *goal-directed* and *experiential* in which consumers undertake active searching and passive browsing, respectively. During passive browsing, ad processing is not the primary goal, therefore, consumers tend to ignore the ads or, at best, interpret ad messages in a *heuristic* manner, exerting only a little effort in processing the information (Chaiken, 1980). Alternatively, during active searching, consumers are more motivated to devote attention in order to process the relevant information in the ads as the information is necessary for goal attainment. Thus, consumers are more

likely to process the ads in a *systematic* manner by attempting to comprehend and evaluate the arguments (Chaiken, 1980). However, when searching for a particular brand/product, consumers are also exposed to many other ads which are not related to their goals. Consequently, they may ignore these ads or process them in a heuristic manner.

Interestingly, perceived intrusiveness of advertising increases when people engage in simple tasks rather than complex tasks (e.g. Zhang, 2000), suggesting that when attention is more diffuse, people's perception of advertising is more positive. This provides support for the notion that ads would be more effective if processed under low attention conditions. Simple tasks primarily occur during 'browsing' as opposed to 'goal-directed searching' and therefore bottom-up (stimulus-driven) processing is more relevant to the issue of inattention, suggesting that higher attention to advertising during browsing can have negative consequences. Arguably, intrusiveness is perceived only after attention is given to the ads. As such, some sort of processing has taken place in which specific brand information, mostly perceptual features, has been encoded (Krugman, 1986). Thus, despite being processed heuristically, an ignored ad can have some outcome because attention has been given. Some encoding still occurs, even without the same level of active processing that a fully attended ad receives, as long as the encoding is tagged with positive affect. This affect would slightly increase the likelihood of the brand being selected (Wright, 2016).

The theoretical core of the systematic and heuristic modes corresponds to the dual-process theory, which can also be described as System 1 and System 2 processing (Kahneman, 2011). He explains that *System 1* operates fast and automatically, with little effort and no sense of voluntary control, is often emotionally charged, and is

responsible for intuitive decisions based on associative memory; while *System 2* is slow, effortful, allocates attention, and is responsible for rational, rule-based decisions. These two systems not only govern the way consumers process ads, but they also generate two routes by which consumers make choices: intuition and reasoning (Kahneman, 2011).

3.4.1.1. Intuition and reasoning

Intuition is spontaneous, seen as the contrastive of reasoning, possibly appears in the absence of reasoning, and is more directly associated with immediate action (Foxall, 2005). Intuition provides more accurate decisions when it is based on relevant prior learning (Evans, 2010). On the other hand, reasoning is reflective, deliberative, and goal-oriented thinking (Evans, 2010), and is frequently used to analyse the consequences of undertaking an action before forming an intention to do so (Foxall, 2005). For these reasons, intuition is particularly effective when a decision is made fast or spontaneously, in the presence of distractions such as in divided attention, or when processing capacity is restricted such as in incidental attention.

As ad processing is mostly heuristic, it seems logical to assume that consumers tend to choose brands intuitively. For example, a choice can be made based on simple rules such as *the brand that I bought last time* or *the brand that I know* (Heath, 2000). These simple rules are called *heuristics,* defined as "some simple, task-specific decision strategies that are part of one's repertoire of cognitive strategies for solving a choice task" (Gigerenzer, 2004, p. 63). Heuristics are mostly used to simplify complex problems, such as choosing among alternatives (Kahneman, 2003). Utilising heuristics for making a choice is an automatic mechanism that people use when resources are

limited or knowledge is incomplete. It works by effectively exploiting information structures in the environment during the choice process (Gigerenzer, 2004), thus enabling people to use simple inferential rules to form decisions (Chaiken, 1980), as opposed to cost/benefit analysis. This process of making a choice is known as the 'constructive choice process' (Bettman, Luce, & Payne, 2008), that is, given the limited processing capacity and lack of cognitive resources to generate stable preferences, consumers tend to construct choices by making use of all accessible and available information. Therefore, a choice among alternatives is critically context-dependent, mirroring the interaction between the information processing system and the properties of task environments (Bettman et al., 2008). Thus, the decision-making process is highly contingent upon such factors as the nature of the response, the complexity of the problem, how information is displayed, or the values associated with the outcome (Bettman, Luce, & Payne, 1998).

The implications for ad processing would be that a change in response may result from the same evaluation of information (i.e. the process used to combine information into a judgement), but with attention focused on different information. However, if information is lacking and cognition is restricted such that in low attention situations, consumers would more likely undertake an intuitive process relying on more accessible information other than the ad content, such as a sense of familiarity, or a vivid memory developed from routine usage of the brand/product, or positive affect from processing pleasant ads.

3.4.1.2. Intuitive choices under low attention conditions

Kruglanski and Gigerenzer (2011) maintain that "heuristics that are less effortful and in which parts of the information are ignored can be more accurate than cognitive strategies that have more information and computation" (p. 97). In low attention circumstances, a sense of familiarity with the brand/product can serve as *recognition heuristic* (Bettman, 1979), such that a consumer does not examine all attributes or beliefs about choice alternatives, but simply elicit previously stored information from memory and choose a brand that is familiar to them. Also, people frequently attach higher probability or preferences to ideas that are easily retrieved, called *availability heuristic* (Gigerenzer, 2004) defined as "the ease with which instances or associations come to mind" (Tversky & Kahneman, 1973, p. 208). Repeated exposure to a stimulus that is initially obscure often leads to a liking for that stimulus because a known stimulus is more easily processed and retrieved from memory (Schwarz, Bless, Strack, et al., 1991). In addition, *affect heuristic* (Slovic, Finucane, Peters, & MacGregor, 2007) describes the reliance on affect (subtle feelings) in which the retrieval of brand memory is tagged with its emotional accompaniments. However, it should be noted that affect heuristic is experienced as part of a memory retrieval process which is basically a cognitive process.

Although consumers engage in a cognitive decision-making, they are, to some extent, also driven by emotions, because consumption experience is often directed toward the pursuit of fantasies, feelings, and fun (Holbrook & Hirschman, 1982). Therefore, the decision-making process does not rely on cognition alone but also on affect (Damasio et al., 1996; Kelley & Jacoby, 1998). Although Kahneman (2003) argues that intuition is often emotionally charged, this process is purely cognitive in nature where emotion

is a cognitive appraisal. Thus, the dual-process theories have not explicitly considered the role of affect (emotion) in their frameworks (e.g. Evans, 2011, 2014; Osman, 2004).

3.4.1.3. Going beyond the dual-process theory

While the dual-process theory is widely accepted, it is not without criticism. Among the critiques are (1) "evidence used to support dual-process theories is consistent with single-system accounts" (Osman, 2004, p. 1006), (2) "evidence for dual processing is ambiguous or unconvincing… there are experimental manipulations designed to affect one type of processing while leaving the other intact" (Evans & Stanovich, 2013, p. 232), and (3) "…that the different two-system theories lack conceptual clarity, that they are based upon methodologies that are questionable, and that they rely on insufficient (and often inadequate) empirical evidence" (Keren & Schul, 2009, p. 534). Briefly, the current status of the debate seems to propose that the two types of processing may share the same properties. That is, reasoning (System 2 processing) and intuition (System 1 processing) can be done in a slow and careful, but also a quick and casual manner, and both System 1 and 2 processing can have conscious and nonconscious aspects (Evans & Stanovich, 2013; Kruglanski & Gigerenzer, 2011). The implication is that intuitive choices can be as accurate as rational choices, in contrast to traditional view. The question remains, does attention affect intuitive judgements? This is taken as a scientific inquiry in Studies 2 and 3 of the current research.

There are fundamental reasons to examine whether attention affects intuitive judgements. The dual-process theory assumes that the choice process is cognitive ranging from intuition (low cognition) to reasoning (high cognition); however, in situations of low attention, the intuitive process is predominantly likely to be affective

(Heath, 2007) relying on positive affect as information to guide choices. As discussed previously, a brand can stand out in memory (salient) when it is linked to some sort of mild emotional attachments arising from ad processing (Wright, 2016). Brand salience increases the odds of the brand being considered for purchase (Romaniuk & Sharp, 2004). If salience develops from the mild emotional associations with the brand, the brand choice process will take place in an intuitive manner, such that people may not have access to the source of their decisions. Thus, it seems plausible to argue that the intuitive process by which consumers make choices under low attention is likely to be an affective rather than cognitive processing, and therefore, attention may have a little impact on intuitive judgements.

3.4.2. Mere exposure effect

In many occasions, ads are perceived without any intent and consumers are merely exposed to them. Mere exposure effect (MEE) occurs when repeated exposures of a stimulus (e.g. an ad) are capable of making the evaluation toward the stimulus more positive (Zajonc & Markus, 1982), without demanding the individual to process the information, or without any response required for the target stimulus. This process typically occurs under impoverished encoding conditions (Tavassoli, 2008). In this view, repeatedly exposed stimulus diminishes a negative state (uncertainty and fear when people encounter a novel stimulus) and this effect can be obtained without the awareness of the exposure event.

A meta-analytic study of MEE (Bornstein, 1989) has reported (1) a robust effect of exposure on preferences; (2) eight moderating variables (stimulus type, stimulus complexity, presentation sequence, exposure duration, stimulus recognition, age of the

subject, delay, number of presentations) that affect the magnitude of the effect; (3) an inverted U-shaped relationship between frequency and preferences; and (4) that recognition is not a pre-condition for the effect. Importantly, stimuli perceived without awareness produce substantially larger effects than do the stimuli that are consciously perceived (Bornstein & D'Agostino, 1992). Thus, MEE is more pronounced when people are not aware of the exposure event. However, this may not be the case for ads that are actively ignored or passively viewed because consumers recognise ads as being irrelevant to the current goal and so ads are perceived as intrusive, implying that consumers are aware of the exposure. In particular, this theory fails to recognise that some exposure may lead to a decrease in brand attitude and choice. In other words, it would be over-simplistic to conclude that any exposure would be a 'good exposure' leading to a positive effect.

The application of mere exposure theory in advertising is problematic. On one hand, exposure of non-aggressive ads reduces counter-arguing (Greenberg, 2012) and so may be sufficient to induce MEE which would lead to an increased evaluation of the brand; on the other hand, advertisers believe that those ads run the risk of being overlooked by the consumers particularly when ads have to compete with other content (Matthes, Schemer, & Wirth, 2007). If an ad is not seen, there will not be any effect. Thus, ads should be distinctive and salient to ensure visibility or 'opportunity to see' (Wright, 2016), but the exposure should be 'unreinforced' to facilitate MEE (Baker, 1999). This contradiction shows that the arguments and boundaries of MEE in advertising are much less clear than advertisers and researchers typically assume.

3.4.3. Processing fluency

Processing fluency theory (Kelley & Jacoby, 1998) originates from dual-process models of memory (e.g. Diana, Reder, & Arndt, 2006; Yonelinas, 2002) and the mere exposure affective model (Zajonc & Markus, 1982). The theory posits that repeated exposure to a stimulus increases the processing ease, speed, and fluency of the stimulus so that the stimulus is encoded and processed more quickly and more easily than a novel one, and therefore the stimulus is perceived as familiar and preferred more (Montoya, Horton, Vevea, Citkowicz, & Lauber, 2017). In other words, when an ad has been processed previously, future processing is streamlined and can produce a feeling of familiarity which can be interpreted as positive affect toward the brand.

Montoya et al. (2017) explained the relationship between processing fluency and subsequent positive affect in three accounts: (1) as there is an inherent disposition to fear the unknown, fluency indicates that there is no negative consequence; (2) fluency produces a feeling of familiarity and this feeling drives positive affect because it indicates that the individual has successfully processed the stimulus; and (3) fluency is misattributed to liking when people have no clear access to the source of their fluency. Further development of the processing fluency approach concludes that the fluency effects can occur without conscious attention or deliberate cognitive processing (Reber et al., 2004; Reber, Winkielman, & Schwarz, 1998; Schwarz, Bless, Strack, et al., 1991; Winkielman et al., 2003). Therefore, it seems logical to assume that the simple act of vision (opportunity to see and visual attention) enhances how an ad is processed and evaluated when the ad is re-encountered at a future time, speculating on the affective consequences of low-attention ads.

3.4.4. Hedonic marking of processing fluency

The theory of hedonic marking of processing fluency is an extension of affect-as-information theory. In the *affect-as-information* perspective, affect will influence the processing of and response to persuasive messages when it is experienced as a source of relevant information for judgements (Schwarz, Bless, & Bohner, 1991). They argue that affect has an impact in two stages: the encoding stage during stimulus exposure, and in the decision-making stage when people make a response to the stimulus. Thus, when an individual is exposed to an ad, the ad can evoke some sort of emotion, and this emotion influences his/her subsequent response e.g. how likely it is to buy the brand. This affect is informative in its own right so that the decisions made often deviate from the presented stimulus (Schwarz, 2004). For example, consumers like the product less when they are asked to recall more about positive attributes (Menon & Raghubir, 2003). This shows a mental contamination (biased) process that occurs when processing of information is easy. Thus, people will experience more positive affect when processing is easy than when it is difficult. In this context, preferences for the product are determined by the affect generated when performing the task, and not necessarily by the objective information processed. As ease of processing denotes the amount of cognitive resource (attention) devoted to the process, with a difficult process being more effortful and demanding more resource (Menon & Raghubir, 2003), processing ads at lower attention potentially generates a more positive affect.

The *hedonic marking of processing fluency* theory (Reber et al., 2004; Winkielman et al., 2003) supports this assumption. According to this theory, a stimulus that is easy to process (high fluency) is associated with positive affect, while a stimulus that is difficult to process (low fluency) elicits negative affect. The theory distinguishes two

processes of forming an evaluation: declarative and experiential (Winkielman et al., 2003). Evaluation can be drawn from declarative knowledge, such as features of a target that we attend to or recall from memory. However, this process has a drawback such that we may conclude that a product is not good when we find it difficult to recall its positive attributes. Alternatively, evaluation can be made based on experiential information (i.e. affect that occurs as the result of ease of processing). There are two types of affect generated by this process: feature-based and non-feature-based (Winkielman et al., 2003). Feature-based affect (also known as integral affect) arises from the appraisal process of analysing the features of a target; whereas non-feature-based affect (known as incidental affect) results from the dynamics of information processing itself. In particular, "a fluency signal is hedonically marked and that high fluency elicits a positive affective reaction" (Winkielman et al., 2003, p. 191).

How does fluency generate affect? First, fluency is a cue for familiarity. A stimulus previously encountered is more easily processed than a novel one as it subsides the 'fear of the unknown' (Zajonc & Markus, 1982). As such, high fluency is hedonically marked, signalling a positive cognitive system, such as truth (Winkielman et al., 2003), and a familiar stimulus elicits less attentional resource than a novel stimulus (Desimone & Duncan, 1995). Second, fluency is a cue of symmetry. Processing of symmetrical stimuli as the schema is associated with faster and less complex processing (Posner & Dehaene, 1994) than processing asymmetrical stimuli. Third, a fluency signal may be the most informative input when little information can be extracted from the stimulus. Conversely, when the stimulus is more meaningful, the fluency effect is attenuated, provided that the conditions allow for a conceptual process (i.e. extraction of stimulus meaning) (Winkielman et al., 2003).

To conclude, the above theories generally support the assumption that low-attention processing of advertising can produce a positive outcome via generation of positive affect. However, the literature is inconclusive about whether low attention processing of digital ads is capable of developing immediate effects that inform advertising effectiveness.

3.5. Chapter Summary

In the context of information processing, attention has two functions: *information filter* and *processing capacity* (Kahneman, 1973). These functions can be biased by stimuli-related factors (bottom-up/exogenous) and factors within the individuals (top-down/endogenous) factors. The review of literature contributes to the conceptualisation of low attention processing in the current research. Psychological research informs two conditions of low attention: *divided attention*, when people have to process multiple information at a given time, and *incidental attention*, when the information is not the focus of attention. Under these conditions, ads can trigger emotional associations that are linked to the brand through repetitions and automatically induce positive affective reactions when consumers encounter brand-related cues in a purchase situation. In other instances, repeatedly exposed ads are capable of having both conscious and subconscious impacts through refreshing of memory associations or developing mild emotional attachments to the brand (Wright, 2016). Briefly, ads would be more effective if they can evoke positive affect as brand knowledge or memory is inhibited due to limited processing in the low attention circumstances. If brand knowledge is limited, activation of related memory structures is restricted, and so consumers are more likely to rely on affect to guide them in a purchase situation.

Several theories provide relevant explanations for this process. MEE (Zajonc & Markus, 1982), processing fluency (Kelley & Jacoby, 1998), and hedonic marking of processing fluency (Winkielman et al., 2003) consistently support the notion that repeated, easy, low effort, high-speed processing will generate positive affect that will make an evaluation of target more favourable. In addition, dual-process theories imply that consumers make intuitive choices by relying on recognition, availability, or affect heuristics, which are mostly subconscious (Gigerenzer, 2004). With respect to low attention, hedonic fluency marker (positive affect) can be a powerful informative source for judgements as other information is less accessible due to the minimal, impoverished encoding of information in such circumstances.

The review of the literature prompts several questions pertaining to low attention processing:

1. Does low attention processing of digital advertisements increase the likelihood of the advertised brand being included in the consideration set and being selected as the brand choice?

2. Is the effect of low attention processing of digital advertisements greater for (a) familiar or unfamiliar brands, (b) hedonic or utilitarian products, or (c) familiar brands if the products are utilitarian or hedonic?

3. Is the effect of low attention processing of digital advertisements greater for ads with emotional or rational appeal?

4. Is the effect of low attention processing of digital advertisements greater for (a) ads with matching or mismatching appeals, (b) matching ads with utilitarian-rational or hedonic-emotional appeals, (c) emotional ads if the brand is utilitarian or hedonic (d) rational ads if the brand is hedonic or utilitarian?

5. Are people more likely to make rational (intuitive) judgements if processing occurs at higher (lower) attention?

CHAPTER 4: CONTEXTUAL FACTORS AND SPECIFIC HYPOTHESES

4.1. Introduction

The research focuses on digital advertising processing on social media, particularly Twitter, where consumers' lack of attention has been a key concern for advertising effectiveness. In this context, ads coexist with other content and therefore compete for attentional resources. The research investigates whether advertising can still have a positive impact despite being processed at low attention. Low-attention effects may be moderated by brand/product characteristics such as brand familiarity, product type, appeals, and matching/mismatching between appeal and brand type. These factors have been shown to highly correlate with consumer choice (Dahlén & Lange, 2004; Dhar & Wertenbroch, 2000; Klein & Melnyk, 2016; Pieters et al., 2002; Pieters & Wedel, 2004), but have not been studied in the context of low attention. As it is argued that low attention processing may work through an affective process, the outcomes would be different from the cognitive processing that prior research has investigated. The chapter begins by discussing the context of digital advertising, briefly reviews social media landscape that provides justification for the research context and shows how particular brand/product characteristics may interact with low attention processing and affect subsequent choices.

4.2. Digital advertising

Digital technologies have created new advertising media and formats that provide numerous opportunities for advertisers to reach consumers (Valos, Maplestone, Polonsky, & Ewing, 2017). Correspondingly, spending on digital ads is growing

rapidly and expected to grow 17% to $ 333.25 billion by 2019, accounting for more than 50% of total ad spend in several countries such as the US, the UK, and China (Enberg, 2019). Digital advertising refers to all types of branded messages delivered to consumers through digital media which include not only traditional online media (the internet), but also all types of digital media, including the offline digital channels such as digital signage and mobile advertising (Lee & Cho, 2019).

Despite the potential opportunities, digital media also provide unprecedented challenges for advertising to influence consumers. First, advertisers are confronted with limited resources and competition for attention (Gavilanes et al., 2018). Limited resources refer to time, effort and budget constraints in order to create, optimise, and efficiently distribute high-quality content to specific channels; while the fierce competition for attention results from clutter and the consumers' main motivation to use the media as social channels rather than to fulfil consumption-related needs. Advertising can be perceived as an intrusive and annoying factor that interrupts the flow of consumer online activities (Rettie, 2001). As a result, consumers avoid ads (Cho & Cheon, 2004), use ad-blocking software (Tudoran, 2019), or post negative messages about the ad/brand/product (Charlett, Garland, & Marr, 1995). For these reasons, the 'attention economy' highlights the importance of managing consumer attention for successful advertising and posits that low attention is the default mode for ad processing (Davenport & Beck, 2013; Nelson-Field, 2020).

Second, consumers are often engaged in multitasking (Duff & Sar, 2015) and multiscreening (Segijn, Voorveld, Vandeberg, et al., 2017) where attention switching appears to restrict information processing, including ad processing. As previously discussed, the findings from recent studies are encouraging that multiscreening is not

always detrimental to advertising effects if people view related programs, such as watching a show on television and simultaneously using social media to chat or post the content of the show (Segijn, Voorveld, & Smit, 2017). The positive outcome may be due to 'repetition' effect as people see the program on television, and see it again on social media.

Third, despite numerous digital metrics in existence, there is no validated measurement for advertising effectiveness under conditions of low attention. Many metrics rely on 'high attention' processing such as cost per completed view (CPCV) and audible and visible on complete (AVOC) (Nelson-Field, 2020). One problem with these metrics deals with the so-called 'invalid (nonhuman) traffic' that describes huge impressions for an ad while in reality nobody actually sees the ad (Fulgoni, 2016). For all these reasons, adopting social media for advertising has been regarded as one of the most difficult tasks in marketing (Valos et al., 2017).

Although there is some support for the low attention effects of advertising, the understanding is limited, but a review of digital advertising research by Liu-Thompkins (2019) provides useful insights. Table 4.1 presents the key findings in the review which are pertinent to the current research.

Table 4.1 *Summary of key findings of digital adevertising research from 2008 to 2018*

Themes	Key findings
Advertising effectiveness	
• Direct effects of digital ads	Digital advertising is effective, but the magnitude of its effects varies significantly by product category, customer segment, and ad format.
• Indirect effects through cross-media strategy	Findings are mixed on cross-media synergy between online and offline channels and within online channels; cross-media synergy depends on the sequence of exposure to different channels and whether the medium receives the primary or secondary attention.
Advertising mechanisms	
• Engagement effects	Engagement enhances advertising effectiveness. This is more evident for ads formats that claim consumers' focal attention and when consumers have sufficient cognitive resources.
• MEE	Digital ads frequently work through mere exposure effects in which lower attention leads to more favourable attitudes, and implicit memory increases without a corresponding increase in explicit memory. However, the effects are moderated by the interaction between the ad and the consumers' focal tasks.
Creative elements	
• Attention-getting devices (e.g. size, format, animation)	Attention-getting devices enhance brand memory and recognition but are often perceived as intrusive and annoying. Thus, the effects of those devices tend to be 'non-significant' on attitudinal outcomes. Such devices are effective when memory or immediate traffic is the main goal.
• Emotional appeal	Emotional appeal generates positive effects such as high arousal but also more complex emotions. Dynamic variations of emotional appeal in an ad are important determinants of consumer response.
• Creative coordination across ads	Varying ad creatives across exposures can reduce the perceived intrusiveness of the ads and lead to positive evaluations. This is particularly true when ad and website content are not related.
Context effects	
• Ad-context congruence	Congruence moderates the effects of creative elements in an ad. Ads can work better in congruent or incongruent contexts depending on goal relevance and ad position.

The key findings show that digital advertising effects are moderated by various factors and most of the effects are found to be context-specific and conditional. Knowledge about these conditions is important for advertisers to ensure effective digital ads. While processing of digital ads is typically incidental, affect-based, and occurs at low levels

of attention (Heath et al., 2006; Rosengren, 2016; Wright, 2016; Yoo, 2009), there has been limited discussion about the impact of this type of processing on digital advertising effectiveness, which the current research considers as a central question.

4.2.1. Advertising on social media

In recent years, consumers' first contact with brand information has been increasingly digital rather than in a store (Moran, Muzellec, & Nolan, 2014); and, often, they rely on social media as their key source of information about unfamiliar brands (Naylor, Lamberton, & West, 2012). Consequently, firms are using social media as an important marketing strategy (Goncalves et al., 2016). Branded content on Facebook has been found to increase brand attitude (Schivinski & Dabrowski, 2016) and encourage people to buy across several product categories (Kumar, Bezawada, Rishika, Janakiraman, & Kannan, 2016). In addition, branded messages on Twitter are a powerful tool for building brand image (Culotta & Cutler, 2016).

Social media is defined as "a group of internet-based applications that build on the ideological and technological foundations of Web 2.0 and that allow the creation and exchange of user generated content" (Valos et al., 2017, p. 1522), and advertising on social media refers to all forms of branded content that is delivered through social network sites, both explicit (e.g. banner advertising and commercial videos) and implicit (e.g. fan pages or firm-related tweets) messages (Gavilanes et al., 2018). Even comments that consumers make about brands can be considered 'advertising' if the comments are essentially relevant to a particular brand (Rodgers & Thorson, 2018).

Many types of social media exist, each with unique characteristics and not all media focusing on social connections. Facebook is a social network, Snapchat is an instant

photo messaging platform, Instagram is a photo-sharing application, YouTube is a video sharing platform, Twitter is a microblogging application, Google+ is an interest-based social network, and LinkedIn is a business-oriented social networking service (Voorveld et al., 2018). Because of the differences among social media platforms, some scholars argue that 'social media' is insufficient as an umbrella concept (Voorveld et al., 2018) and recommend the term 'digital advertising' for advertising on digital media, including social media (Rodgers & Thorson, 2017). Following the convention in recent literature, the current research uses the term 'digital advertising' to refer to branded tweets.

Consumer engagement with advertising is often used as an indicator of advertising effectiveness. Gavilanes et al. (2018) categorise consumer engagement with digital ads into four levels: (1) passive perception (e.g. view, watch, clicks), (2) active consumption (e.g. like, follow, comment, reply), (3) cognitive and affective processing (e.g. upload/publish/share, retweet), and (4) advocacy (e.g. review). While consumer engagement with advertising corresponds with the evaluation of the advertising, the impact can go beyond the engagement with the media platform itself (Voorveld et al., 2018). Thus, the effect of advertising can be generalised beyond a particular platform.

Yet, engagement as a measure of effectiveness has limitations. One important consideration concerns advertising format. One example is the pre-roll ads which are displayed automatically before a video content (C. Campbell et al., 2017). Pre-roll ads, a common format of social media advertising, rely on forced exposure which is sometimes non-skippable (e.g. on YouTube) or skippable after a short segment (e.g. on Twitter). While the practice of pre-roll ads fulfils the first two elements for effective advertising: *opportunity to see* and *attention* (Wright, 2016), it neglects the importance

of emotion in ad processing. Forced exposure interrupts consumer online navigation so pre-roll ads are likely to elicit irritation, increase ad avoidance, and produce negative effects (Joa, Kim, & Ha, 2018). The same might apply to other invasive formats such as pop-up and banner ads (J. Lee & Ahn, 2012). Although these ads receive low attention processing, they might not produce a favourable outcome because they are tagged with negative affect.

In fact, consumers believe that nowadays digital ads are becoming more intrusive and appearing in more places (Benes, 2018), so there is increased resistance to advertising (e.g. Duff & Lutchyn, 2017; Nelson-Field, Riebe, & Sharp, 2013; Ordenes et al., 2018). To respond to this, advertisers attempt to disguise advertising messages as regular content in the so-called 'native advertising'. However, if consumers discern that the messages are brand-sponsored, this can also lead to a negative brand evaluation (Wojdynski & Evans, 2016), and encourage greater ad avoidance behaviour in the future (Rosengren & Dahlén, 2015).

Some studies have found factors influencing ad avoidance behaviour. Avoidance has been shown to correlate with advertising content as well as modes of viewers. In terms of content, attention-grabbing ads (e.g. featuring celebrities) are skipped more frequently than ads that do not attract attention (C. Campbell et al., 2017). Video ads with entertaining appeal are watched more often than those with rational appeal (Joa et al., 2018). However, responses to ads also vary across different modes. *Prosumers* who are highly involved in content creation and distribution, such as uploading or commenting on content, may perceive ads as another genre of content, thus they are more likely to be paying attention to ads; whereas, *spectators* who are more goal-oriented might consider advertising as interference for their online activities, and thus

they actively avoid ads (Joa et al., 2018). Surprisingly, people who focus more on specific tasks or purposes are experiencing the *flow*, and thus would be more receptive to ads (Hoffman & Novak, 1996). The flow experience is the state during online navigation that consumers are deeply involved with the content that "nothing else seems to matter" (Hoffman & Novak, 1996, p. 57). In this case, they may not recall any disruption from ads, particularly when ads are placed outside the focal vision (Seyedghorban, Tahernejad, & Matanda, 2016). Collectively, these studies provide support for the low attention processing. Although ads must be viewed before any effect can occur, ads would be more effective if they are not attention-grabbing, are entertaining rather than informative, are peripherally rather than centrally located, and when people are more focused on their tasks.

4.2.2. Advertising on Twitter

Twitter, the most popular microblogging platform launched in 2006, has 330 million users worldwide who post more than 500 million tweets each day (Statista, 2019) with 90% of users following brands (Kwon et al., 2014). Consumers and companies use Twitter for business purposes more than they use any other platforms (Culotta & Cutler, 2016), particularly because messages are delivered faster on Twitter to a large audience at a lower cost (Vargo, Gangadharbatla, & Hopp, 2019). This is because the default setting for tweets is public, so ads posted by a brand can be seen by anyone, not limited to the brand's followers, thus providing greater opportunity for the ads to be seen and generate responses (e.g. retweets, likes, replies).

According to https://business.twitter.com, there are different types of advertising on Twitter, namely promoted tweets, promoted accounts, and promoted trends, marked

with a very clear 'promoted' icon, so that users can easily identify them as brand-sponsored tweets. Unlike in other social media platforms, pre-roll video ads on Twitter have a *skip button*, so users can opt to view or skip the ads immediately, demanding the ads to be user-friendly and low-attention (C. Campbell et al., 2017) as well as 'informative and entertaining' (Ducoffe & Curlo, 2000) so that, even given a chance, consumers would not skip.

One unique feature of Twitter is brand followers, defined as "motivated individuals who give permission to receive brand-related content by following certain brands on Twitter" (Kwon et al., 2014, p. 258). These people not only consume, but also distribute and publish brand-related content, demonstrating engagement with ads in all levels (Gavilanes et al., 2018). Another important feature of Twitter is '*re-tweeting*', a key mechanism for advertising diffusion, whereby people decide to re-publish a branded tweet received from either an individual or a company and pass it along to her or his followers on Twitter (Araujo, Neijens, & Vliegenthart, 2015). Retweeting can be done easily by copying a particular tweet and adding 'RT' to it, with just a mouse click. This is why Twitter spreads news and information very quickly. In particular, rational, informational tweets (e.g. product details, links to a brand's website) are more likely to be retweeted than emotional tweets (Araujo et al., 2015) in contrast to previous literature.

Twitter presents a compelling context for the current research for several reasons. First, a majority of Twitter users (80%) follow at least five brands and there are more branded posts (including advertising) on Twitter than on any other platforms (Culotta & Cutler, 2016). Second, with about 500 million tweets posted every day and 92% of companies tweet more than once while 19% tweet up to ten times daily (Clement, 2020), Twitter

provides a suitable environment for low attention processing examination. Third, the use of ecologically valid stimuli in the current research can be confounded by design and creative factors. Unlike other social media posts, branded tweets are consistently short and simple with an average length of 34 characters, although Twitter allows for a maximum of 280 characters (Clement, 2020). This should reduce the variability and complexity of the creative design in the stimuli and, thus, ensure higher research validity. Fourth, branded tweets look like other tweets as they can be easily scrolled up/down without having to close pop-ups and they can easily be ignored without causing irritation. Surprisingly, consumer perception of advertising on Twitter is more negative compared to other platforms (Voorveld et al., 2018), making Twitter one of the most challenging media for advertising. For these reasons, the current research uses Twitter as a context to examine the effects of low attention processing of digital ads on consumer brand consideration and choice, while taking into account a number of brand/product characteristics that may influence the effects.

Therefore, the following hypothesis is proposed:

H1 *Low attention processing of digital advertisements increases the likelihood of the advertised brand being included in the consideration set and being selected as brand choice.*

4.3. Conditions affecting brand consideration and brand choice

Processing of and responses to advertising are influenced by various factors such as individual differences (e.g. age, gender, predisposition), situational factors (e.g. motivation/involvement, relevance), and contextual factors (e.g. media, brand and product characteristics) (Bettman, 1979). While individual differences are generally

beyond the control of marketing, situational and contextual factors can be controlled. There are a number of brand and product characteristics that can affect the low attention processing of advertisements. In particular, we focus on brand familiarity and hedonic/utilitarian (HED/UT) product type (Study 1), rational/emotional appeals (Study 2), and matching/ mismatching between appeal and brand type (Study 3).

4.3.1. Brand familiarity

There is a close relationship between ad or brand familiarity and advertising. As previously discussed, Poels and Dewitte (2006) noted that emotional reactions are positively correlated with familiarity such that previously seen ads evoke more positive emotion compared to first seen ads. While brand familiarity is related to "the amount of time that has been spent processing information about the brand" (Baker, Hutchinson, Moore, & Nedungadi, 1986, p. 637), how brand familiarity affects advertising processing under low attention conditions is largely unknown. Despite the well-established notion that brand familiarity facilitates consumer processing and brand choice (Park & Lessig, 1981; Pieters et al., 2002; Pieters & Wedel, 2004), recent work suggests that this view is overly simplistic. Stocchi, Wright, and Driesener (2016) report that familiar brands became less likely to be recalled when category knowledge is high. Similarly, a meta-analytic study on visual attention (Ladeira et al., 2019) found no relationship between brand familiarity and attention (in fact, the effect, although non-significant, was negative). Konopka, Wright, Avis, and Feetham (2019) also found that deliberation disproportionately benefited unfamiliar stimuli, compared to familiar stimuli, which is in contrast to the traditional view.

To assess an unfamiliar brand, consumers must allocate additional cognitive resources to process the novel stimulus. For a familiar brand, additional processing is less

important and less onerous as consumers already know the brand well (M. C. Campbell & Keller, 2003). Thus, under low attention conditions, familiar brands might be expected to benefit more from advertising than unfamiliar brands, as they are less demanding of cognitive resources. However, brand familiarity can also arise as a result of repeated exposure (Zajonc & Markus, 1982) which is capable of making the individual's attitude toward this brand more positive. Even a single prior exposure could lead participants to consider buying an unknown, and indeed fictitious, brand (Coates, Butler, & Berry, 2006). Thus, some sort of exposure to an unfamiliar brand, even when people do not explicitly process or remember the stimulus, could induce the feeling of familiarity thus making brand evaluation more positive. The literature is therefore inconclusive whether, under conditions of low attention, advertising will be relatively more effective for familiar or unfamiliar brands. Hence, with some uncertainty, the following hypothesis is proposed for investigation:

H2a   *The effect of low attention processing of digital advertisements is greater for familiar than unfamiliar brands.*

4.3.2. Utilitarian and hedonic product type

Research suggests that consumers may undertake different processing strategies when evaluating hedonic versus utilitarian products. For utilitarian products, the inherent product features are important (Mittal, 1989), and information processing is cognitively elaborative (Dhar & Wertenbroch, 2000). Alternatively, hedonic products are less susceptible to feature discriminations, and people are more likely to rely on the psychological interpretations of the product, including ego gratification, social acceptance and sensory stimulation (Mittal, 1989). Therefore, processing for a hedonic product is less cognitive and more affective (Dhar & Wertenbroch, 2000).

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Consequently, the type of processing will determine the way branded tweets influence consumers' decisions. When processing is less deliberate because attention is low, the relative potential for pleasure and enjoyment-related benefits as opposed to instrumental functionality can be the basic motivational force that governs the processing of branded tweets and generates an effect on consumer behaviour. Therefore, it seems possible that under conditions of low attention, advertising will be relatively more effective for hedonic products. However, a utilitarian choice is easier to justify (Okada, 2005), so it might be that a familiar brand which is utilitarian is preferred. Hence, the following hypotheses are proposed:

H2b *The effect of low attention processing of digital advertisements is greater for hedonic than utilitarian products.*

H2c *The effect of low attention processing of digital advertisements is greater for familiar brands if the products are utilitarian than hedonic.*

4.3.3. Rational versus emotional appeal in advertising

Since Copeland (1924) found that people bought a product and a service for either a rational or emotional reason, there has been a lot of discussion to explain the rationality and emotionality of advertising in influencing consumers' decisions. One question that has bothered researchers for years is '*does advertising have more impact on consumers' thoughts or feelings?'* The attempts to answer this question have led to the dissociation between rational and emotional appeals in advertising.

Rational appeal provides factual information showing product benefits; whereas emotional appeal is based on the emotional (experiential) side of consumption to create a likeable product (Hornik, Ofir, & Rachamim, 2017). Other similar terms used in the

literature include 'cognitive and affective content' (Dubé, Chattopadhyay, & Letarte, 1996), 'argument-focused and emotion-based' ads (Chandy et al., 2001), and 'thinking and feeling' ads (Chaudhuri & Buck, 1995). Although most ads usually contain a certain degree of both rational and emotional aspects, ads can be distinguished by the degree they rely on one type of appeal or another (Dubé et al., 1996). Furthermore, a meta-analytic study (Hornik et al., 2017) has identified several factors that can moderate the effects of appeals: involvement (high/low), brand familiarity, product types (goods/services, durable/nondurable, HED/UT), media, and gender. The study suggests that appeals are not equally effective and there is a hierarchy of appeals, for example, within the emotional appeals, sex and humor appeal is more effective than fear (Hornik et al., 2017). Also, images associated with emotions lead to greater purchase intention than images associated with reasoning (Young et al., 2019).

While few studies found that consumers respond more favourably to emotional than rational appeal (Hornik et al., 2017; Young et al., 2019), the literature is inconclusive whether emotional ads are more effective than rational ads, demonstrating variable predictive results by contexts. For example, rational ads are more effective for older consumers (Sudbury-Riley & Edgar, 2016) and emotional ads are better for mature markets than new markets (Chandy et al., 2001). In neuroscience, the brain responds to rational versus emotional appeals differently and the processes require different levels of attention (Couwenberg et al., 2017). Comparing a unique set of different ads from the same brand, the study concluded that effectiveness was better achieved when combining rational and emotional appeals (Couwenberg et al., 2017), which surprisingly, is in contrast to the conventional principles of persuasive advertising that appeals should not be mixed (Armstrong et al., 2010). Of particular interest is to know which appeal is more effective under conditions of low attention. Although people are

more likely to pursue emotionally-oriented than knowledge-oriented goals when time and cognitive resources are limited (Sudbury-Riley & Edgar, 2016) and emotional ads can be more easily processed at lower attention (Heath et al., 2006), Du Plessis (2005) argues that the main role of emotional appeal is to attract attention, so emotive ads are unlikely to be processed at low attention. Therefore, the following hypothesis is proposed:

H3   *The effect of low attention processing of digital advertisements is greater for ads with emotional appeal than rational appeal.*

4.3.4. Utilitarian and hedonic brand type

Although prior research investigates utilitarian versus hedonic choices at the product level (Dhar & Wertenbroch, 2000; Klein & Melnyk, 2016), the distinction of utilitarian versus hedonic choice may be more pronounced at the brand level than the product level as there exist utilitarian as well as hedonic brands within a product category. For example, Rolex (hedonic) and Timex (utilitarian) are brands in the watch product category (Bhat & Reddy, 1998). A brand can be perceived as either having functional (related to specific and practical consumption needs) or symbolic (related to self-image and social identification) nature, thus tapping into consumers' utilitarian and hedonic needs respectively (Bhat & Reddy, 1998). In addition, shopping situations, such as buying for another person versus buying for oneself, can influence preferences for utilitarian and hedonic consumption (Babin, Darden, & Griffin, 1994; Lu, Liu, & Fang, 2016). People who buy things for others prefer more ideal options and choose hedonic products more than utilitarian products (Lu et al., 2016). Knowledge about the relationship between brand type and appeal in advertising is relatively limited and the

key questions remain how to advertise a utilitarian or hedonic brand effectively and whether the rational or emotional appeal should be used.

4.3.5. Matching and mismatching between appeal and brand type

Integrated marketing communication (IMC) advocates that advertising should establish brand-knowledge structures by informing, persuading, and reminding consumers about the brand in consistent messages over time (Delgado-Ballester, Navarro, & Sicilia, 2012). This principle of consistency derives from the Schema theory that new information in the ads will be more likely accepted if the information is congruent with an existing schema in the consumers' mind (Dahlén & Lange, 2004). In contrast, a few studies have found some positive effects derived from information incongruency. For example, ad-brand incongruence has been shown to increase brand attitude and brand memory for familiar brands, but no effect for unfamiliar brands (Lange & Dahlén, 2003). These opposing results can be explained by looking at the roles of attention and ad repetition. Consumers have a well-established schema about familiar brands, so congruent ads will wear-out quickly, but incongruent ads will reduce boredom and attract more attention (Lange & Dahlén, 2003). However, incongruent information is difficult to process and requires more effort (low fluency) that may lead to negative affect (Schwarz, 2004). Later, it was found that moderately incongruent, rather than congruent or extremely incongruent, produces the best results (Meyers-Levy & Tybout, 1989).

The notion of maintaining marketing communication consistency is widely accepted among practitioners. One of the basic principles for creating persuasive advertising is matching advertising appeal to product type, known as the *match-up hypothesis* (Choi,

Yoon, Paek, & Reid, 2012; Johar & Sirgy, 1991). Emotional appeals are effective for hedonic products, while rational appeals are effective for utilitarian products (Johar & Sirgy, 1991; Shavitt, 1992). Yet, the match-up hypothesis has not achieved empirical generalisation as research continues to provide conflicting evidence. For example, young consumers prefer emotional ads for hedonic products and rational ads for utilitarian products, but older consumers prefer emotional ads regardless the type of the products (Drolet, Williams, & Lau-Gesk, 2007). Mismatching emotional appeal to utilitarian product enhances ad processing and subsequent purchase intent, more than does matching rational appeal to utilitarian product; whereas, there is no significant effect of matching versus mismatching for hedonic products (Klein & Melnyk, 2016). While Kahneman (1973) maintaining that prediction of behaviour cannot be based on stimulus consideration alone without involving attention, all those studies, however, have not considered attention as the source factor or the moderator of the effect. For example, allowing subjects to look at the stimuli as long as they wish (Klein & Melnyk, 2016, Study 1) can result in distinct types of processing (with attention being from high to low), and therefore produce variable effects.

While the literature on this subject is inconclusive, practitioners continue to apply matching/mismatching between appeal and brand/product type without knowing which strategy is more (less) effective. For example, SWATCH, a utilitarian watch brand, alternately uses both rational (e.g. "Choose your #SkinIrony #FutureClassic favourite! https://swat.ch/skin-irony-prerelease_TWcarousel") and emotional appeals (e.g. "Sunday Funday! Are you staying in bed today or are you already out and about? #SkinIrony http://swat.ch/skin-irony-tw") in their branded tweets. Thus, the current research proposes the following hypotheses to investigate:

H4a *The effect of low attention processing of digital advertisements is greater for ads with matching than mismatching appeals.*

H4b *The effect of low attention processing of digital advertisements is greater for matching ads with rational-utilitarian appeal than hedonic-emotional appeal.*

H4c *The effect of low attention processing of digital advertisements is greater for mismatching ads with emotional-utilitarian appeal than rational-hedonic appeal.*

4.3.6. Rational versus intuitive judgements

As previously discussed, rational choices tend to rely on explicit memory such as information processed from the ads; whereas, intuitive choices are more likely to rely on implicit memory (recognition and availability heuristics) and affect. Thus, it would be assumed that attention has a stronger effect on rational than intuitive judgements. In particular, if intuitive judgements rely on affect, there would be no significant effect of attention on intuitive judgements, suggesting that attention and affect are two distinct systems independent of each other. To investigate the process by which consumers make choices in low attention situations, the tendency of making a rational versus an intuitive choice is measured posthoc by Situation-Specific Thinking Style (SSTS), defined as "the particular thinking style or momentary thinking orientation adopted by a consumer in a specific situation" (Novak et al., 2009, p. 57). This measure, a ten-item Likert scale, would be capable of separating the dispositional tendency of adopting either the rational or intuitive thinking style from the orientation that people bring to a specific situation. The scale for rational judgements include statements such as *I reasoned things out carefully*, *I tackled this task systematically,* or *I was very focused*

on what I was doing to arrive at the answers; whereas the scale for intuitive judgements include statements such as *I used my gut feelings*, *I went by what felt good to me*, or *I used my heart as a guide for my actions*. However, it should be noted that STSS relies on subjective introspection which is an unreliable predictor of actual behaviour because some people lack access to their own thoughts or feelings or cannot recollect or articulate their experience accurately (Berger et al., 2012). Therefore, the judgements measured by the scale may not directly correspond with brand consideration and choice, because brand consideration and choice are the results of advertising processing, that is, the interactions between attention and brand/product characteristics. Despite this limitation, STSS may provide useful insights into the consumer choice process in the context of low attention.

Therefore, it seems logical to assume that when attention is low, consumers would more likely engage in heuristic than deliberative processing when selecting brands for consideration or choice. However, intuitive and rational judgements can result from the same processes and share similar properties (Evans & Stanovich, 2013). Thus, the following hypotheses are proposed for testing:

H5a *People more likely make rational judgements if processing occurs at higher attention.*

H5b *People more likely make intuitive judgements if processing occurs at lower attention.*

4.4. Chapter summary

Given clutter and consumers' goal-oriented nature, low attention processing is a distinctive feature of digital advertising, especially on social media platforms such as

Twitter. However, processing of and responses to advertising depends on the level of attention given to the ads during exposure which can be influenced by factors related to brand/product characteristics, such as brand familiarity, product type, appeal, and matching/mismatching between appeal and brand type. These factors become the focus of investigations in the current research as their effects on advertising effectiveness are largely unknown, especially when processing occurs at lower levels of attention.

CHAPTER 5: METHODOLOGICAL APPROACH

5.1. Research objectives

Advertising research frequently employs a positivist paradigm (Chang, 2017). According to this paradigm, research begins with theory building, hypotheses formulation, and hypotheses testing that will be confirmed or disconfirmed through statistical inferences. The positivist assumption entails a quantitative approach which helps specify the relationship among variables and formulate some predictions (Bryman & Bell, 2015). The current research adopts the quantitative approach in which (1) measurements are used to demonstrate the effects; (2) the causal relationship between low attention, advertising processing, and consumer choice will be explained based on statistical computations; and (3) empirical data will be compared in a systematic way to make a generalisation of the findings. The objectives of the current research are to investigate

1) whether digital advertising is effective if it is processed under low attention conditions;

2) the effects of this type of processing on consumer brand consideration and choice;

3) the brand/product variables that are likely to influence the effects; and

4) a meaningful way to measure the effects.

5.2. Methodological challenges and approaches in this research

Advertising research on attention is fragmented, with various attentional phenomena being investigated but rarely compared or related to each other, so a conclusive

understanding of consumer attention to advertising is difficult to draw. The review of literature has revealed two main challenges: (1) research is grounded upon different theoretical and methodological perspectives; and (2) research often faces challenges in developing an appropriate ecological context. The following section details the issues and how they will be addressed in the current research. Further, as the current research seeks to examine the causal relationship between advertising stimuli, low attention, and the subsequent outcomes (brand consideration and brand choice), the design that matches the nature of the study is experimentation. The challenges of the experimental approach taken are also briefly discussed.

5.2.1. Theoretical and methodological perspectives

Attention has important implications for attitudinal and behavioural responses to advertising (e.g. Greenberg, 2012; Greenwald & Leavitt, 1984; Rosengren, 2016). Two primary aspects of attention, selectivity and intensity (processing capacity), jointly determine the advertising effects; however, many studies tend to investigate them separately. As discussed in Chapter 2, the eye-tracking methods are used to study the selective aspect – where attention is directed (Nevid, 1984; Pieters et al., 2002; Pieters & Wedel, 2004); whereas, the neurophysiological methods are used to examine the intensive aspect – how much attention is allocated (Couwenberg et al., 2017; F. Shen & Morris, 2016). Such research, however, may miss several important points. As attention can be overt and covert (Carrasco, 2011), attention may not be directed to a location but rather to an object or features of an object (Johnson & Proctor, 2004), and people can look at a stimulus without actually seeing it (Mack, 2003).

In addition, opposing theories exist, proposing that effective advertising benefits from ad/brand memory (what consumers remember consciously or unconsciously) or ad-

evoked affect (the way consumers feel about the brand). As a result, advertising outcomes are measured in different constructs such as recall and recognition, advertising impressions (click-through rates), advertising value, attitude toward the ad/brand, brand awareness, brand preference, brand evaluation, or purchase intention (e.g. Dahlén, 2002; Muehling & Laczniak, 1988; Spears & Singh, 2004; Zaichkowsky, 1986). Although these studies are important and interesting, there is currently little agreement about how to define, and hence, measure those constructs. Consequently, if there is conflicting evidence, we cannot decide if the discrepancy is due to the measurements or the actual behaviour.

Unlike many past studies which treated selectivity and limited capacity as separate elements of attention, the current research examines them as a single 'attentional processing' due to their close interdependence. This mental processing refers to the intangible steps undertaking in the consumers' minds when they see an ad that can lead to observable outcomes. The current research manipulates attention but also allows for consumer control, then directly observes the effects of the manipulation on the subsequent behavioural responses, namely brand consideration and brand choice (Trinh, 2015).

5.2.2. The ecological context of research

Consumer attention research often takes place in a laboratory setting (Janiszewski et al., 2013; H. Shen & Sengupta, 2014), relies on rigid protocols to manipulate attention (Romaniuk & Nguyen, 2017), and depicts an artificial scenario (Morales et al., 2017). This kind of research may have limited capability to examine the actual state of attention and behaviour of the consumers, which in turn, raises doubts of its relevance and applications to address the real problems (Morales et al., 2017; Romaniuk &

Nguyen, 2017). According to Romaniuk and Nguyen (2017), there are, at least, three levels of attention competition when a consumer is exposed to advertising: first, the ad must compete with the consumer's internal and external environment; second, an ad for one brand has to compete with the ads from other brands and also any other content; and third, the elements in an ad (e.g. brand name, advertising claims, pictorial, celebrity endorser) vie for attention. All these factors should be taken into consideration when researching attention to advertising, because they can divert consumers from fully processing an ad, and the ad is likely processed with low attention.

In response to the challenges, a more realistic approach to research has been proposed (Morales et al., 2017; Romaniuk & Nguyen, 2017). The main principle is to study attention in *real-life* contexts, where consumers are in control over their attention, which is prone to distractions from their internal and external environments. This implies that the same stimulus can generate different effects depending on how people devote their attention to that stimulus, and thus it would be impossible to predict behaviour by stimulus considerations alone without considering attention (Kahneman, 1973). Consequently, the relative effectiveness of advertising stimuli should be examined in terms of how the stimuli are processed (i.e. the extent to which attention is given).

Considering these recommendations, the current research adopts a more realistic approach. The research design allows for attention manipulations but also integration of natural variability of attention. The experiments emulate Twitter environment in which tweets from a brand compete for consumer limited attention with tweets from other brands and all other tweets. Generic tweets from real brands are used as ecologically valid stimuli. The complexities in the tweet design provide an appropriate

setting for the brand name to compete with other creative elements in the tweets. Finally, the stimulus-based consideration set as the dependent measure presents target brands as well as other competing brands in the category, reflecting the situation when consumers have to choose among alternatives and target brands have to compete with other brands for consumer attention. Managing these factors should allow for a more realistic experimentation and more ecologically-valid findings. However, the potential challenges for this approach are the possibility of small effect sizes and the non-significant results when comparing the treatment and control groups. When real brands are used as ecologically-valid stimuli, the subjects may already have some prior knowledge of the brands. This knowledge can overpower the effect of the treatment in the current research.

5.2.3. Experimentation

Experimentation is a method in which the researcher manipulates or controls one or more potentially causal or independent variables and then observes the corresponding differences in the outcome or dependent variables (Vargas, Duff, & Faber, 2017). Bryman and Bell (2015) distinguish two types of experimental designs, namely, *classic experimental* design and *quasi-experimental* design. The former involves two groups: the experimental group who receives the treatment is compared to the control group who does not; while the latter has some characteristics (e.g. involving experimental and control groups) but does not fulfil the internal validity requirements (e.g. there is no random assignment).

Hence, the current research adopts the classic experimental design for several reasons: (1) the relationships between attention, brand/product characteristics and consumer choice are hypothesised as causal, such that brand/product characteristics interact with

attention and jointly influence choice; (2) it is necessary to manipulate the independent variables (e.g. attentional conditions and brand/product characteristics such as brand familiarity, product type, or brand type) in order to determine whether they do, in fact, have an influence on the dependent variables, namely brand consideration and brand choice; (3) the effects found in the treatment groups are compared to the control group as the baseline or what is expected by chance, and (4) participants are randomly assigned to either the treatment or control groups to avoid biases caused by individual characteristics, such as age, gender, and cognitive style.

5.2.4. Laboratory versus online experiment

Experimentation can take place in a laboratory or an online setting, and the current research uses both. Study 1 used a laboratory setting to provide a controlled environment for different low attention conditions to occur; whereas Studies 2 and 3 were online experiments to explore whether low attention effects can be generalised to actual behaviour of the consumers beyond the laboratory confinement.

Laboratory experiments provide several benefits including manipulating study variables, controlling for confounds, and ensuring efficacy of an experimental protocol (Bryman & Bell, 2015); while the internet has been utilised to gain more insights into consumers' behaviour (Klein & Melnyk, 2016; Melnyk, Klein, & Volckner, 2012; Nguyen, Romaniuk, Faulkner, & Cohen, 2018). Additionally, the internet is considered a more effective medium for experimental research as it overcomes several limitations of the laboratory setting (Reips, 2002):

1) external validity is likely difficult to establish in a laboratory setting as the interaction of setting and treatment is likely to be unrelated to the real-world experiences (e.g. the use of eye-tracking device when viewing ads);

2) the internet enables the researcher to reach a large subject pool, which are heterogeneous in terms of demographics (for example, education, age, gender, country/city of residence); whereas a laboratory experiment is more challenging for recruiting a heterogeneous sample;

3) online research provides 'double blindness' between the researcher and the subjects, so that there is no direct interaction between the researcher and the subjects, ensuring anonymity of the research thus reducing biases;

4) online research is more cost-effective in terms of time, space, and labour compared to laboratory research; and

5) some studies comparing the results of a paired experiment split into online and laboratory experiments reported similar findings that behavioural patterns observed in the laboratory were replicated online (Anderhub, Müller, & Schmidt, 2001; Arechar, Gächter, & Molleman, 2018).

5.3. Research questions and hypotheses

In the context of the above methodological challenges and approaches selected, the current research seeks to address the overarching question:

Is digital advertising effective under conditions of low attention?

As discussed in Chapter 2, one key issue regarding advertising effectiveness is how to measure it. In low attention circumstances, the processes would most likely be non-conscious occurring outside of people's awareness and the resultant effects would also be fragile, easily lost by the use of inappropriate measurement. Tellis and Ambler

(2007) have cautioned that "we should be careful not to confuse an inability to measure effects with there being no effects" (p.5).   The brand consideration and brand choice measures have been proposed as measures of advertising effectiveness as they reflect a unique, enduring brand identity in the consumers' mind resulting from conscious and unconscious processes when consumers are exposed to advertising (Wright, 2016). Therefore, low attention processing of digital ads is deemed effective if it can increase the likelihood of the advertised brand being included in the brand consideration and being selected as the brand choice. Three experimental studies namely Study 1, 2, and 3 are designed to answer the overarching and other research questions and to test the hypotheses corresponding to the research questions. Table 5.1 details the research questions and hypotheses addressed in each study.

Table 5.1 *Summary of research questions and hypotheses*

	Research questions		Hypotheses	Studies
RQ1	*Do digital advertisements increase the likelihood of the advertised brand being included in the consideration set and being selected as brand choice under conditions of low attention?*	**H1**	*Digital advertisements increase the likelihood of the advertised brand being included in the consideration set and being selected as brand choice under conditions of low attention.*	**1,2,3**
RQ2	*Do brand familiarity and product type enhance the effectiveness of digital advertisements under conditions of low attention?*	**H2a**	*The effect of low attention processing of digital advertisements is greater for familiar than unfamiliar brands*	**1**
		H2b	*The effect of low attention processing of digital advertisements is greater for hedonic than utilitarian products.*	
		H2c	*The effect of low attention processing of digital advertisements is greater for familiar brands if the products are utilitarian than hedonic.*	
RQ3	*Does emotional (rational) appeal enhance the effectiveness of digital advertisements under conditions of low attention?*	**H3**	*The effect of low attention processing of digital advertisements is greater for ads with emotional appeal than rational appeal.*	**2**
RQ4	*Does the matching (mismatching) between appeal and brand type enhance the effectiveness of digital advertisements under conditions of low attention?*	**H4a**	*The effect of low attention processing of digital advertisements is greater for ads with matching than mismatching appeals.*	**3**
		H4b	*The effect of low attention processing of digital advertisements is greater for matching ads with rational-utilitarian appeal than hedonic-emotional appeal.*	
		H4c	*The effect of low attention processing of digital advertisements is greater for mismatching ads with emotional-utilitarian appeal than rational-hedonic appeal.*	
RQ5	*Does attention in the processing of digital advertisements affect the likelihood of people making rational versus intuitive judgements?*	**H5a**	*People are more likely to make rational judgements if processing occurs at higher attention.*	**2,3**
		H5b	*People are more likely to make intuitive judgements if processing occurs at lower attention.*	

5.4. Methodology

5.4.1. Overview of studies

The research comprises three experimental studies: Study 1, Study 2 and Study 3. Study 1 is a laboratory experiment, while Studies 2 and 3 are online experiments. A laboratory experiment is necessary to achieve the level of requisite control when testing the feasibility of low attention research by controlling the external distraction from the environment. As the manipulation is successful in the laboratory setting, a further test for attention manipulation is conducted online which allows for varying degrees of internal and external distractions that can affect attention to advertising stimuli to be present during the experiments.

Ladeira et al. (2019) note that attention can be affected by external (bottom-up) or internal factors (top-down). To control for bottom-up factors, the current research presents the same stimuli to the treatment groups. The treatment groups who are exposed to the target brands are compared to the control group (baseline) who are not exposed to the target brands. The differences among the treatment groups, and between the treatment and control groups are expected to be observable in the probability of target brands being included in the brand consideration set and selected as brand choice. The top-down factors are not controlled but are integrated into the research design to improve ecological validity. Study 1 examines the feasibility of low attention processing in two conditions: divided and incidental; whereas, Studies 2 and 3 explore the feasibility of high versus low attention processing. Low attention is investigated in two conditions: (1) *divided attention* (Spataro et al., 2011), where participants are exposed to different information and have to process the information simultaneously;

and (2) *incidental attention* (Shapiro et al., 1997), in which the target information is not the focus of attention. The details of the research design are presented in Table 5.2.

Table 5.2 *Experimental details with between and within subjects factors*

	Study 1 $n = 65$	*Study 2* $n = 210$	*Study 3* $n = 1016$
Between-subject factors			
• Attention	Divided and	Focused, divided, and	Focused, divided, and
• Ad characteristics	Incidental	incidental	incidental
			Matching vs mismatching stimuli
Within-subject factors			
• Brand characteristics	Familiar vs unfamiliar brands		Hedonic vs utilitarian brands
• Product characteristics	Hedonic vs utilitarian products	Shampoo and toothpaste	Watches
• Ad characteristics		Emotional vs rational appeal	Emotional vs rational appeal
• Contexts			Shopping for others vs self
Experimental design	Laboratory experiment	Online experiment	Online experiment
Main method of analysis	Logistic regression	Logistic regression	Logistic regression
Post-hoc examinations		Intuitive vs rational judgements; response latency	Intuitive vs rational judgements; response latency
Post-hoc method of analysis		ANOVA	ANOVA
Manipulation check	Recognition test	Recognition test	Recognition test
	Pre-tests	*Pre-tests*	*Pre-tests*
	$n = 23$	$n = 66$	n = 66
Selection	Brands, products, and stimuli	Brands and stimuli	Brands and stimuli
Survey design	Paper survey	Online survey	Online survey

5.4.2. Variables

A variable is an attribute on which cases vary and can be distinguished into independent and dependent variables (Bryman & Bell, 2015). In a predicted causal relationship, the independent variable is the variable that forms the basis of prediction, also known as a predictor; while the dependent variable is the variable being predicted, also known as the criterion. The former is expected to have a causal influence on the latter. There is another type of variable called a moderating variable that affects the strength of the relationship between an independent and dependent variable (Bryman & Bell, 2015). Moderating variables are typically an interaction term in regression models (Hosmer & Lemeshow, 1989). Table 5.3 details the variables used in the current research.

Table 5.3 *Summary of variables used in the current research*

	Independent variables	Moderating variables	Dependent variables
	Main effects	*Interaction effects*	
Study 1	Attention Brand familiarity Product type	Attention*familiarity Attention*product type Attention*familiarity*product type	Brand consideration, Brand choice
Study 2	Attention Appeal Product	Attention*appeal Attention*appeal*product	Brand consideration, Brand choice
Study 3	Attention, Matching vs mismatching Brand type Shopping situation	Attention*(mis)matching Attention*(mis)matching*brand type	Brand consideration, Brand choice
Studies 2 & 3 (Post hoc)	Attention		Rational vs Intuitive Judgements, Response latency

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5.4.3. Treatments

The current research seeks evidence of whether systematic differences in brand consideration and choice can be observed if the amount and focus of attention are manipulated. It compares the outcomes of the treatment groups with the control group. The treatment groups receive exposures of target brands; while the control group receive exposures of non-target brands. The treatment groups consist of focused attention (FA), divided attention (DA), and incidental attention (IA). As the treatment groups receive the same exposures, the differences in brand consideration and choice can be attributed to differences in attentional conditions. As the control group does not receive any exposure to target brands, the inclusion of target brands for this group denotes the chance likelihood. The differences in brand consideration and choice between the treatment groups and control group denote the effectiveness of advertising. As noted earlier, due to the use of ecologically valid stimuli, the differences might be small and statistically non-significant.

Study 1 has three conditions: *DA, IA,* and *control group*; while Studies 2 and 3 have four conditions: *FA, DA, IA,* and *control group.* DA participants were instructed to pay attention to both target as well as distracter tweets; IA participants were instructed to pay attention to distracter tweets; whereas FA participants were instructed to pay attention to branded tweets including the target tweets. While being exposed to the stimuli, participants are asked to do related tasks. The experimental treatments are summarised in Table 5.4.

Table 5.4 *Summary of experimental treatments*

Conditions	Instructions	Tasks	Exposure of target brands
Focused attention	Pay attention only to branded tweets and ignore other tweets.	• Which tweet(s) is/are branded tweet(s)? • Do you recognise the brand(s)?	Yes
Divided attention	Pay attention to all tweets.	• What type of tweet is it (brand or non-brand tweet)? • Do you recognise the brand/celebrity in each tweet?	Yes
Incidental attention	Pay attention only to celebrity tweets and ignore other tweets.	• Which tweet is from a celebrity? • Do you recognise the celebrity?	Yes
Control group	No specific instructions	• What type of tweet is it (brand or non-brand tweet)? • Do you recognise the brand/public figure in each tweet?	No

As noted, participants in the treatment groups are exposed to the targets as well as distracters. Thus, the instructions given on which tweets to attend will have limited ability to *fully* direct attention to target tweets, because participants are in control of their attention, so they can attend to any tweets they want to or their attention can be unduly captured by any tweets, a situation resembling the actual digital environment where a brand's ad competes with ads from other brands and with other content for consumer's limited attention.

5.4.4. Reliability

Reliability answers the question of whether the results of the study are repeatable or whether the measure of a construct is stable and consistent (Bryman & Bell, 2015). In the current research, reliability testing is applied to the measurement. The Cronbach's Alpha is used to test the reliability of SSTS scale (Novak et al., 2009) as the measurement for intuitive versus rational judgements (Studies 2 and 3).

Items used to measure the rational judgements

1. I reasoned things out carefully.
2. I tackled this task systematically.
3. I was very aware of my thinking process.
4. I was very focused on what I was doing to arrive at answers.
5. I arrived at my answers by carefully assessing all information in front of me.

Items used to measure the intuitive judgements

1. I used my gut feelings.
2. I went by what felt good for me.
3. I relied on my sense of intuition.
4. I used my instinct.
5. I used my heart as a guide for my actions.

Additionally, reliability testing is also applied to the brands used in the experiments so that the target brands (Study 2), the targets and all other brands in the consideration set (Study 3) do not differ in terms of familiarity and likeability.

5.4.5. Validity

Validity concerns the integrity of the conclusions generated from a study. Bryman and Bell (2015) distinguish four types of validity: measurement, internal, external, and ecological. Measurement validity, also known as concept validity, answers the question if the measures really represent the concepts they are supposed to measure. Internal validity deals with the validity of a conclusion relating to a causal relationship between independent and dependent variables. That is, whether it is really true that the independent variable is the one responsible for variation in the dependent variable, and not other factors. External validity concerns the generalisability of research findings, that is, whether the results can hold true beyond the specific research context. Ecological validity concerns the application of research findings to a natural setting. Research findings can be technically valid, but if they have little relevance to explaining the real world outside the laboratory, they are not ecologically valid.

Measurement validity in this research applies to the SSTS scale in Studies 2 and 3. The scale is validated using the exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Internal validity is ensured by pre-testing the feasibility of treatments, and the selection of brands and stimuli. Also, the face validity of the instruments (Studies 2 and 3) is determined by the participants' in-retrospect about their experience. To address the external validity, experiments are conducted in both the laboratory and online settings to see if the effects can be replicated across settings. The ecological validity is ensured by incorporating the natural variability of consumer attention, emulating clutter in the Twitter environment, and using ecologically valid stimuli (i.e. real brands and generic tweets).

A frequent criticism of experimentation is the evidence of *demand effects*. Demand effects refer to the degree that participants infer the purpose of the experiment and alter their response accordingly (Baker, 1999; Zizzo, 2010). To determine whether demand effect is a potential confound, a post-hoc examination on demand effect is performed (Studies 2 and 3). Demand effects are measured by two questions:

Q1 *Which of the following brands do you think the researcher wanted you to choose?*

Q2 *When did you conclude what brand(s) the researcher wanted you to choose?*
     (I concluded just now/ I figured it out when I was making choices in the supermarket situations/ I am still not sure what the researcher wanted).

A case is labelled *'demand suspect'* if the participant identifies the target brands correctly (Q1) and answers, 'I figured it out when I was making choices in the

supermarket situations' (Q2). Consequently, that particular case would be excluded from the analysis.

5.4.6. Confounding factors

The basic purpose of an experiment is to test the impact of a treatment on an outcome by controlling all other factors, called confounding factors, that might substantially alter the overall results (Creswell, 2014). For example, they may indicate that an independent variable causes a change in the dependent variable, while in fact, it does not. Several possible confounds may threaten the validity of this research. In particular, attention can be disproportionately affected by bottom-up factors such as complexity, saliency, familiarity, novelty and creativity (Ladeira et al., 2019) while the tendency to choose a brand can be deviated by demand of processing effort for that brand (Garbarino & Edell, 1997). That means processing an unfamiliar brand would be more effortful than processing a more familiar brand, and so an unfamiliar brand would be liked less, regardless of exposure or attention to the ads. Thus, it is important to ensure that the target brands and alternative brands presented in the consideration set are equivalent in terms of familiarity and that the target stimuli are equal in terms of creativity and liking, so the observed effects on brand consideration and choice can be attributed to the interactions between ad stimuli and attention. Controlling for these possible confounds is paramount as the current research uses ecologically valid stimuli, and thus, a rigorous pretesting is carried out prior to the main experiments.

5.4.7. Controlling for confounding factors

A series of pre-tests were performed with the specific objectives to select (1) target stimuli that are equivalent on the combination of likeability (*How do you like the*

tweet?) and interestingness (*How interesting is the tweet?*) and (2) target and alternative brands/products that are parallel on the combination of familiarity (*How well do you know this brand?*) and likeability (*How do you like the brand?).* As participants view the brand identity (the logo and brand name) in the consideration set, the likeability testing also allows for controlling for interests in the logo design. Therefore, the examination of attention and brand/product characteristics should not be confounded by the selection of ecologically valid stimuli. Detailed information about the pre-tests of each study is presented in the subsequent chapters.

5.4.8. Post hoc examinations

Studies 2 and 3 have post hoc examinations to shed light on attention processes during decision making. In particular, whether or to what extent prior attention during ad exposure influences the way consumers make decisions is currently unknown. While attention is frequently missing in the choice models, Orquin and Loose (2013) hypothesise a constructive role of attention in decision-making that "the final decision emerges, not as a simple application of preferences and heuristics to choice stimuli but, through complex interactions among stimuli, attention processes, working memory, and preferences" (p. 203). To examine the role of attention in decision-making, two post hoc examinations are proposed: (1) intuitive and rational judgements, and (2) response latency.

As discussed in Chapter 4, the dual-process theory (Kahneman, 2003) posits that there are two fundamental modes of thinking – intuitive and rational. Intuitive decision-making is affect-based and relatively more rapid processing; while rational decision-making is logical, reason-based and slower processing. A modified SSTS (Novak et

al., 2009) is used to measure intuitive and rational judgements. More details about the scale are presented in Chapter 7.

While attention may affect judgements, it may also affect response latency or reaction times. Response latency is one of the most commonly used behavioural measures of attention as the making of a response is considered the outcome of cognitive process (Johnson & Proctor, 2004). People who are engaged in deliberation and rational decisions would take a longer time to decide than those making intuitive decisions (Johnson & Proctor, 2004). In the current research, response latency is measured through the use of the internal clock embedded in the survey platform to indicate the time interval between the onset of the consideration set and the page submit. That is, how long the participants spend on the page where the stimulus-based consideration set is presented, and they have to select three out of the six alternative brands and rank the selected brands 1st, 2nd, and 3rd.

5.5. Chapter summary

The effectiveness of digital advertisements, in particular, branded tweets, were scrutinised in three experiments: Study 1, a laboratory experiment, examines the feasibility of low-attention effects and the influences from brand familiarity and hedonic vs utilitarian product type; Study 2, an online experiment, explores the effects of rational vs emotional appeal under conditions of high vs low attention; and Study 3, an online experiment, investigates the effects of matching or mismatching between appeal and brand type under conditions of high vs low attention. The effects are observed on brand consideration and brand choice as the dependent variables. The research adopts a more naturalistic approach to investigating the low-attention effects of advertising, allowing for natural variability of consumer attention to be integrated

into the experiment, and employing the generic tweets from real brands as ecologically valid stimuli. This approach would improve the ecological validity of research and the relevance of findings to address the real-life problems.

CHAPTER 6: STUDY 1 – METHOD, RESULTS, DISCUSSION

6.1. Introduction

As discussed in Chapter 4, the relationship between ad exposure, brand familiarity, and brand choice has not been fully understood, with conflicting evidence also reported. Although emotional reactions to advertising increases for familiar ads, the effect is found stronger for unfamiliar than familiar brands (Poels & Dewitte, 2006). Similarly, exposure to the brand makes the brand more familiar and more favourable (Zajonc & Markus, 1982); however, the exposure effect is also facilitated by attentional strength (Obermiller, 1985). Thus, brand familiarity increases if focused rather than distracted attention is given. In contrast, brand familiarity is unlikely to exert a robust effect on choice if attention and involvement are high and extensive brand knowledge is available (Baker et al., 1986). Therefore, there is no clear evidence of whether or to what extent brand familiarity affects brand choice under low attention conditions. Furthermore, brand familiarity can increase the likelihood of the brand being included in the consideration set through a set of mechanisms: perceptual identification, brand memory activation, or brand preference. These processes occur when the consumer encounters retrieval cues (e.g. product attributes) in the consideration process (Baker et al., 1986). Of particular interest is whether the hedonic or utilitarian nature of product serves as a retrieval cue that affects brand consideration and choice when ad processing occurs under low attention conditions.

Study 1 examines the effects of low attention processing of Twitter ads and the influences from brand familiarity and product type on brand consideration and brand choice. The experiment features a 2 (brands: familiar vs unfamiliar) x 2 (products:

hedonic vs utilitarian) x 3 (attentional conditions: IA, DA, and control) *mixed-factorial* design, with brands and products as the *within-subject* factors and attentional conditions as *between-subject* factors.

The research questions and hypotheses addressed in Study 1 are presented in Table 6.1.

Table 6.1. *STUDY 1 - Research questions and hypotheses*

Research questions		Hypotheses	
RQ1	*Do digital advertisements increase the likelihood of the advertised brand being included in the consideration set and being selected as brand choice under conditions of low attention*?*	*H1*	*Digital advertisements increases the likelihood of the advertised brand being included in the consideration set and being selected as brand choice under conditions of low attention.*
RQ2	*Do brand familiarity and product type enhance the effectiveness of digital advertisements under conditions of low attention?*	*H2a*	*The effect of low attention processing of digital advertisements is greater for familiar than unfamiliar brands.*
		H2b	*The effect of low attention processing of digital advertisements is greater for hedonic than utilitarian products.*
		H2c	*The effect of low attention processing of digital advertisements is greater for familiar brands if the products are utilitarian than hedonic.*

*DA and IA

6.2. Method

6.2.1. Sample

Sixty-five consumers, 35 females and 30 males, who were Twitter users, proficient in English, between 18 and 45 years old participated voluntarily in the study and were rewarded for their participation. Twenty-three people took part in the pre-tests and 42 participated in the main experiment. They were academic and non-academic staff in a private university in Indonesia. The experiment was conducted during the period of 1 December 2016 - 20 December 2016. The ethics approval for this study was obtained

from the Massey University Human Ethics Committees, with the ethics notification number 4000017023 dated 22 November 2016.

6.2.2. Pre-tests

The objectives of the pre-tests are to select target brands and products. Two principal characteristics guided the selection for brands and products to be used in the main experiment. The brands and products had to (a) demonstrate a strong presence in Twitter (judged from the number of followers and activities). Specifically, the brand has more than 1,000 followers and has been on Twitter for more than one year and has been actively tweeting for the past six months; and (b) be appropriate for use as stimuli for the population of study participants. The method of the pre-tests was a survey with 23 participants having the same criteria as the sample for the main experiment.

6.2.2.1. Product selection

Following the procedure in prior research (Crowley, Spangenberg, & Hughes, 1992; Voss, Spangenberg, & Grohmann, 2003), eight products, namely, mobile phones, coffee, supermarkets, fast-food restaurants, cars, athletic shoes, glue sticks, and confectionary, were tested for their hedonic and utilitarian dimensions using the HED/UT scale of 10 semantic differential pairs rated on a 7-point Likert scale from Voss et al. (2003). Cars and sports shoes were two products with the biggest valence for their hedonic versus utilitarian dimensions. *T-test paired sample* reported that cars ($M_{utilitarian} = 4.71$, $SD = 0.90$; $M_{hedonic} = 5.30$, $SD = 0.82$) were significantly perceived as hedonic ($t_{(22)} = 2.56$, $p = 0.18$), whereas sports shoes ($M_{utilitarian} = 5.50$, $SD = 1.14$; $M_{hedonic} = 4.86$, $SD = 1.33$) as utilitarian ($t_{(22)} = 4.28$, $p = 0.00$). Thus, cars were used

to represent a hedonic product and sports shoes were used to represent a utilitarian product in the main experiment.

6.2.2.2. Brand selection

Participants were asked to list down the brands that they knew for cars and sports shoes. A total of 14 brands from cars and sports shoes were tested for their familiarity (*How well do you know the brand?*) and likeability (*How do you like the brand?*) using the procedure in Coates et al. (2006). *T-test paired sample* reported that, for cars, TOYOTA (M_{Toyota} = 13.22, SD = 3.42) and HOLDEN (M_{Holden} = 6.78, SD = 2.17) were significantly different in terms of brand familiarity ($t_{(22)}$ = 6.92, p = 0.00), with TOYOTA perceived as familiar and HOLDEN as unfamiliar; whereas, for sports shoes, NIKE (M_{Nike} = 14.04, SD = 3.01) and BROOKS (M_{Brooks} = 6.43, SD = 2.35) were significantly different ($t_{(22)}$ = 10.01, p = 0.00), with NIKE perceived as familiar and BROOKS as unfamiliar. Thus, these brands were used as target brands in the subsequent experiment.

6.2.2.3. Stimuli selection

The stimuli used were generic tweets actually posted by the target brands on Twitter, not including replies or retweeting. The use of ecologically valid stimuli raises the possibility of confounding effects from varying degrees of likeability and interest in the selected tweets. Therefore, a further pre-test was run to tweets from the selected brands using ratings from 23 people on the combination of tweet likeability (*How do you like the tweet?*) and interestingness (*How interesting is the tweet?*) using seven-point Likert scales (1= Not at all, 7 = Very much). In terms of likeability and interestingness, there was no significant difference between tweets for TOYOTA

(M_{Toyota} = 12.26, SD = 1.25) and HOLDEN (M_{Holden} = 11.70, SD = 1.52), t (22) = 1.29, p = 0.12; and also between tweets for NIKE (M_{Nike} = 11.96, SD = 1.52) and BROOKS (M_{Brooks} = 11.57, SD = 1.40), t (22) = 0.87 p = 0.40. Therefore, the examination of low attention, product type and brand familiarity should not be confounded by the selection of ecologically valid stimuli.

6.2.3. Main experiment

6.2.3.1. Experimental procedure

The experimental sessions, ranging from 5 to 10 participants, were conducted in a laboratory equipped with computers. Upon arrival, participants were informed about the purpose of the study and asked for their consent. Then they were randomly assigned to one of the three experimental conditions: *DA*, *IA*, and *control group*. The experimental procedure was shown in Figure 6.1.
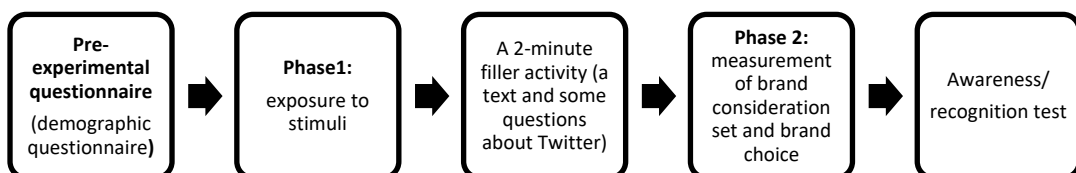

Figure 6.1 STUDY 1 - Experimental Procedures

Pre-experimental questionnaire. The questionnaire asks participants about their demographic information, such as age, gender, and their social media usage (e.g. what social media accounts they have, and how often they use them).

Exposure to stimuli. Participants were presented with 10 slides, each slide displaying three tweets: one target tweet and two distracters. The slides changed automatically every 20 seconds. While looking at the slides, participants were asked to do a task

corresponding to each slide as detailed in Table 5.4. The task would limit their attention and ability to process the exposed tweets and help to ensure the conditions of low attention.

A sample question for incidental attention

Please look at the following tweets. Pay attention to the tweets from celebrities and ignore other tweets. Then answer the questions that follow.

A.

B.

C.

1. Which tweet is a celebrity tweet?

Tweet A

Tweet B

Tweet C

2. Do you recognise the celebrity?

Yes

No

3. What is his/her occupation?

A singer

A politician

A sports figure

A sample question for divided attention

Please look at the following tweets and answer the questions that follow.

A.

B.

C.

1. What type of tweet is it?

	Brand tweet	Non-brand tweet	Celebrity tweet
Tweet A	○	○	○
Tweet B	○	○	○
Tweet C	○	○	○

2. Do you recognise the person/brand/organisation?

	Yes	No
Tweet A	○	○
Tweet B	○	○
Tweet C	○	○

Filler activity. To control for effects that participants may alter their responses simply because they are in an experiment, known as the *"Hawthorne Effect"* (Zikmund, Babin, Ward, Lowe, & Winsar, 2011), a filler activity was given between the exposure of stimuli and the measurement of effects. A short reading text about Twitter followed by two easy questions were given for 2 minutes.

6.2.3.2. Dependent measures

For each product, cars and sports shoes, participants are presented with a list of six brands (two of the brands are target brands, one is a familiar and the other is an unfamiliar brand, which have been previously presented). Given hypothetical shopping scenarios, for cars and sports shoes respectively, participants have to choose three brands that they would consider buying for each situation, and rank the brands 1st, 2nd, and 3rd. Rank 1st is for the brand they would most likely buy. For consideration set, if the target brand is included, it is coded '1' and if it is not, it is coded '0'. For brand choice, if the target brand is ranked 1st, it is coded '1' and '0' if it is not ranked 1st. Figures 6.2 and 6.3 describe the consideration set measures.

Figure 6.2 STUDY 1 - Brand consideration set – cars

Figure 6.3 STUDY 1 - Brand consideration set - shoes

6.2.4. Data analysis

As the dependent variables are binary or dichotomous (1 and 0), two logistic regression analyses (Hosmer & Lemeshow, 1989) were performed using SPSS release 25 (SPSS, Inc., Chicago, IL, USA) with the significance level of $\alpha = 0.05$. The main and interaction effects were estimated, with attention, brand familiarity, and product type as predictors for the main effects and the two- and three-way interactions of those predictors as the interaction effects. The main objective of the analysis is to find the most parsimonious, clinically interpretable model to describe the relationship between brand consideration and brand choice (dependent variables) and a set of independent predictors (covariates), namely low attention, brand familiarity, and HED/UT product types.

6.3. Results

6.3.1. Manipulation check

Attention manipulation was checked using recognition (awareness) test defined as the ability to correctly identify the previously presented stimuli among the non-presented stimuli. The procedure follows what has been done in prior research on unconscious processing of web advertising (Yoo, 2009) in which recognition is measured by asking participants to select the ads they are exposed to during the experiment among other ads that are not exposed. Thus, successful manipulation on low attention conditions would be found if statistically equivalent recognition scores are found between the control, DA, and IA groups. This shows that the level of attention of participants in the treatment groups is the same as those in the control group (baseline).

Participants were presented with a slide displaying eight tweets, two of the tweets having been presented previously, and were asked to identify the tweet they had seen during the experiment, but they could only choose one tweet. If an old tweet is recognised, it is coded '1'. The manipulation is deemed successful if the recognition scores between treatment and control groups *do not differ significantly*, indicating that the attention level of participants in the low attention groups do not significantly differ from those in the control group or what would be expected by chance. However, it would be difficult to observe a significant difference between DA and IA due to the small sample size ($n = 42$) because both groups undertake low-attention processing. An ANOVA (Analysis of Variance) was performed with SPSS Windows release 25 (SPSS, Inc., Chicago, IL, USA) at the significance level of $\alpha = 0.05$. Table 6.2 presents the means of recognition across groups.

Table 6.2 *STUDY 1 - Recognition*

$n = 42$	Mean	Std. Deviation
Incidental attention	0.36	0.49
Divided attention	0.50	0.51
Control group	0.21	0.43

As Table 6.2 shows, participants in DA recognised the old tweet more often than those in IA or control group, implying that DA might have slightly higher attention than the other groups. In Table 6.3, one-way ANOVA reported that recognition of the participants in the treatment groups (IA and DA) ***did not significantly differ*** from those in the control group [$F (2, 39) = 1.23$, $p = 0.304$]. Therefore, low attention manipulation was deemed successful.

Table 6.3 *STUDY 1 - One-way ANOVA on recognition*

	Sum of squares	df	Mean square	F	Sig.
Between groups	.571	2	.286	1.228	.304
Within groups	9.071	39	.233		

Post hoc tests showed a non-significant difference in recognition between treatment and control groups as presented in Table 6.4.

Table 6.4 *STUDY 1 - Recognition across groups*

Attention		Mean difference	Std. Error	Sig.
Incidental attention	Divided attention	-.143	.182	.715
	Control group	.143	.182	.715
Divided attention	Control group	.286	.182	.272

6.3.2. Main effects

The measured dependent variables were the inclusion of target brands in the brand consideration set and the selection of the most preferred brand. Two binary logistic regression analyses were performed to predict these outcomes with attention conditions, brand familiarity, and product type included as predictors. Table 6.5 presents the results of the logistic regression for each dependent variable.

Table 6.5 *STUDY 1 - Binary logistic regression on brand consideration and brand choice*

	Brand consideration			Brand choice		
	β	*SD*	OR	β	*SD*	OR
Constant	-2.120**	.691	.120	-2.353**	.724	.095
Attention	(Wald χ2 = 10.536, *p* = .005)**			(Wald χ2 = 8.843, *p* = .012)**		
Incidental	2.708**	.888	15.000	2.066**	.903	7.891
Divided	2.408**	.877	11.111	2.641**	.903	14.029
Base= Control						
Brand familiarity						
Familiar	2.263**	.719	9.615	1.698**	.727	5.463
Base = Unfamiliar						
Product type						
Utilitarian	.000	.644	1.000	.430	.660	1.538
Base = Hedonic						
Attention*Brand familiarity						
Incidental*familiar	-1.552	1.119	.212	-1.123	1.054	.325
Divided*familiar	-2.839**	1.049	.059	-2.902**	1.081	.055
Attention*Product type	(Wald χ2 = .122, *p* = .941)			(Wald χ2 = 2.485, *p* = .289)		
Incidental*Utilitarian	-.300	1.009	.741	-.730	1.019	.482
Divided*Utilitarian	-.288	.996	.750	-1.634	1.038	.195
Attention*Brand familiarity*Product type	(Wald χ2 = 3.107, *p* = .211)			(Wald χ2 = 5.211, *p* = .074)*		
Incidental*Familiar*Utilitarian	.793	1.269	2.209	.929	1.116	2.531
Divided*Familiar*Utilitarian	1.875**	1.137	6.519	2.408**	1.133	11.111
Omnibus tests (Model)						
Model summary	χ2 = 38.697, df = 10, *p* = .000			χ2 = 24.820, df = 10, *p* = .006		
-2 Log likelihood	193.343			201. 149		
Cox & Snell Square	.206			.137		
Nagelkerke R Square	.275			.186		
Classification accuracy (overall)	67.9%			67.3%		
Chosen	90.0%			50.7%		
Not chosen	42.3%			78.2%		

** Significant at α = .05   * Significant at α = .1

6.3.2.1. Low attention – Main effects

As shown in Table 6.5, the effects of DA and IA are significant for both brand consideration (Wald $\chi2$ = 10.5, p = 0.005) and brand choice (Wald $\chi2$ = 8.8, p = 0.012). Thus, **H1 is confirmed:** Low attention processing of digital advertisements does have a positive effect on brand consideration and brand choice. Interestingly, the effect of IA (β = 2.7, *SD* = 0.9, *OR* = 15.0) is stronger than DA (β = 2.4, *SD* = 0.9, *OR* = 11.1) for brand consideration; but the effect of IA (β = 2.1, *SD* = 0.9, *OR* = 7.8) is weaker than DA (β = 2.6, *SD* = 0.9, *OR* = 14.0) for brand choice. Given that the level of

attention is assumed to be higher in DA than IA, the brand choice process appears to benefit from having slightly higher attention available to process the branded tweets; while the brand consideration process is more effective at lower levels of attention.

6.3.2.2. Brand familiarity – Main effect and interactions

As expected, Table 6.5 shows that, if attention is not considered, more familiar brands do receive greater brand consideration (β = 2.3, SD = 0.7, OR = 9.6, p = 0.002) and choice (β = 1.7, SD = 0.7, OR = 5.5, p = 0.019). However, of greater interest is the interaction between low attention and brand familiarity. This interaction is detectable for both brand consideration (Wald $\chi2$ = 7.3, p = 0.03) and brand choice (Wald $\chi2$ = 7.2, p = 0.03); however, the specific effect is significant for DA but not for IA, although the direction of the effects is consistent across all four parameters. The beta coefficients for the interactions between brand familiarity and the low attention conditions are all negative. Thus, with all other factors held constant, the interaction between low attention and brand familiarity is associated with a decrease in brand consideration or choice probability. Thus, **H2a is not supported:** The effect of low attention processing of digital advertisements is NOT greater for familiar than unfamiliar brands. While a meta-analytic study on the relationship between brand familiarity and attention had previously found a non-significant, negative relationship (Ladeira et al., 2019), Study 1 found a significant negative relationship between brand familiarity and DA, but non-significant for IA, although the direction of the effects is also negative. This provides mixed evidence that less familiar brands benefit more from low attention processing than do more familiar brands, especially if processing occurs under DA.

6.3.2.3. Product type – Main effect and interactions

The main effect of product type is not significant for brand consideration (β = 0.00, SD = 0.6, OR = 1.00, p = 1.00) and brand choice (β = 0.4, SD = 0.7, OR = 1.5, p = 0.52). Moreover, the overall interaction between low attention and product type was non-significant for both brand consideration (Wald $\chi2$ = .12, p = 0.94) and brand choice (Wald $\chi2$ = 2.5, p = 0.29). The beta coefficients were negative for utilitarian products, suggesting that, under low attention conditions when all other factors are held constant, hedonic products will have higher brand consideration and brand choice probabilities than utilitarian products will. While there is directional support for **H2b** that the effect of low attention processing of digital advertisements is greater for hedonic than utilitarian products, the effect is insufficient to be statistically significant; so, **H2b is not supported** by these data.

6.3.2.4. Three-way interaction of low attention, brand familiarity, and product type

In examining the more nuanced effects, it was found that, while the interaction between low attention, brand familiarity, and product type was non-significant for brand consideration (p = 0.21), it was marginally detectable for brand choice (Wald $\chi2$ = 5.2, p = 0.07). The effect was again consistent across all four parameters (for both IA and DA, and for both consideration and choice), but only statistically significant for DA. Specifically, the interaction between DA, familiar, and utilitarian had a significant effect on brand consideration (β = 1.9, SD = 1.1, OR = 6.5) and also on brand choice (β = 2.4, SD = 1.1, OR = 11.1) at α = 0.05. That is, under DA condition, a familiar brand is more often included in the consideration set and then selected as

brand choice if the product is utilitarian rather than hedonic. Therefore, **H2c is supported** that the effect of low attention processing of digital advertisements is greater for familiar brands if the products are utilitarian.

6.4. Discussion

The results of Study 1 show that the participants exposed to branded tweets under conditions of low attention were more likely to consider and then choose the brands involved. This occurred despite participants not being able to accurately identify the related tweets. The trend towards intrusive attention-grabbing ads is, therefore, not only potentially counterproductive but also possibly unnecessary, as digital ads that are minimally processed at low attention can still have a positive impact. Furthermore, this study shows that few exposures (three exposures with different stimuli) are required to impact brand consideration and choice, albeit consideration and choice followed closely after exposure here. This supports Krugman (1986) who notes that "human processor does learn – even if by quick looks, short attention, and unrecalled exposure or perception" (p.79). The results also provide a confirmation that brand consideration and choice measures are capable of capturing the subtle effects of the low attention advertising processing and should, therefore, be considered as alternative measures for advertising effectiveness. Overall, the results of Study 1 provide clear evidence that digital advertising can be effective under conditions of low attention although greater effects are found under DA than IA.

There is evidence that brand/product characteristics interact with low attention processing. The results show that brand familiarity and product type moderate the effect of low attention processing. The low attention effect is higher for unfamiliar than familiar brands, and also for familiar brands that are utilitarian. In the case of

brand familiarity, there may be opposite effects at play, with familiar brands requiring less cognitive resource to process, while unfamiliar brands benefit from accumulation of exposure effects. The results are consistent with Dahlén and Lange (2004) who argue that, due to limited capacity or lack of motivation, consumers will process the brand name more than the message when exposed to advertisements for unfamiliar brands, because message processing requires higher effort. As the brand name receives more processing, the brand name is better remembered and the brand becomes salient. Theoretically, the results suggest that advertising works as a strong force as far as unfamiliar brands are concerned, but as a weak force for more familiar brands.

In the case of hedonic versus utilitarian choices, it seems logical to think that hedonic choices play into the strengths of low-attention advertising. While there were tantalising results in these areas, the current experiment did not have sufficient statistical power to clearly reveal the effects. In contrast with prior research on HED/UT choices (e.g.Bridges & Florsheim, 2008; Chitturi, Raghunathan, & Mahajan, 2008; Dhar & Wertenbroch, 2000; Palazon & Ballester, 2013), the results showed that ads for utilitarian versus hedonic products did not have different effects on brand consideration or brand choice. Presumably, the distinction between hedonic versus utilitarian choice was so subtle that it could not be perceived under conditions of low attention.

There was mixed evidence of low attention effects interacting with brand familiarity and product types. The estimated parameter coefficients consistently showed negative effects for the interaction of low attention and familiarity (that is, low attention effects are not greater for familiar brands), and positive effects for low attention, familiarity and utilitarian product type (that is, low attention effects are slightly greater for

familiar brands when they are utilitarian). However, the effects were much stronger for DA and did not reach statistical significance for IA. Briefly, the results suggest that brand familiarity and product type moderate the effects of low attention, and they jointly influence consumer choice in brand consideration and choice.

Although the findings are encouraging, Study 1 has several limitations. First, the small sample size in the main experiment ($n = 42$) can be associated with low statistical power that prevents a proper drawing of conclusion about the low attention effects. In particular, the significant interaction effects are evident only in DA but not in IA. Thus, despite directional support, a conclusion about how brand familiarity and product type interact with low attention and the impact on brand consideration and choice is difficult to draw. Second, the manipulation of HED/UT choices was successful, but the examination might have been confounded by the brands used to represent the constructs. For example, NIKE and BROOKS are used to represent a utilitarian product (sports shoes), but NIKE can be assumed as a hedonic brand, while Brooks is a utilitarian brand. Therefore, testing HED/UT choices at the brand level may improve the prediction and offer an interesting possibility for future research. Third, the laboratory setting might have influenced the results in some unexpected ways. Participants might have paid higher attention than the actual behaviour of the consumers as the distraction from the external environment is diminished. Thus, it is useful to explore whether the effects can be observable in a more realistic situation beyond the laboratory setting, where consumers are in full control over their attention, and ad exposure is prone to distraction from the internal (own thoughts) and external environments (e.g. noises, multitasking), thus an online experiment is proposed.

6.5. Chapter summary

While the way consumers process advertising at low attention is nuanced, the study reveals two conditions of low attention, namely *divided attention* – processing multiple ads at a given time, and *incidental attention* – actively ignoring the ads. The logistic regression analysis shows subtle differences between DA and IA in brand consideration and choice, despite no significant difference in recognition memory. This prompts a need for reassessment of memory theory in advertising measurements. However, the results should be interpreted with caution due to the small sample size and weak effects. In addition, the nuanced results from brand/product characteristics may be due to different factors that come into play at different stages of advertising processing and consumer decision-making. Much needs to be done to understand how brand/product characteristics and also ad properties (e.g. advertising appeals) interact with low attention processing and affect subsequent choice.

CHAPTER 7: STUDY 2 – METHOD, RESULTS, DISCUSSION

7.1. Introduction

Since Copeland (1924) proposed that consumers would buy a product or service for either a rational or emotional reason, there has been a lot of debate about the effectiveness of rational versus emotional appeal used in advertising. Research found that, while rational advertising was facilitated when attention was given, emotional advertising was better processed with lower attention (Heath, 2009). Challenging Heath's proposition, Du Plessis (2005) argued that the emotional appeal in advertising serves to attract attention and, therefore, it is very unlikely that emotive advertising will be processed at low attention. While there has been increasing interest in the emotional reactions to advertising, in which emotion is an essential element for behaviour (Damasio et al., 1996), the dispute surrounding rational versus emotional appeal leaves advertisers with no clear guidance on whether emotive/rational advertising is more effective under conditions of low attention.

Study 2 investigates how branded tweets framed by either rational or emotional appeal interact with attention and jointly influence brand consideration and choice. The online experiment features a 2 (appeals: rational vs emotional) x 2 (products: shampoo vs toothpaste) x 4 (attentional conditions: FA, IA, DA, and control) *mixed-factorial* design, with appeals and products as the *within-subject* factors and attentional conditions as the *between-subject* factors.

The research questions and hypotheses addressed in Study 2 are presented in Table 7.1.

Table 7.1 *STUDY 2 - Research questions and hypotheses*

Research questions		Hypotheses	
RQ1	*Do digital advertisements increase the likelihood of the advertised brand being included in the consideration set and being selected as brand choice under conditions of low attention*?*	*H1*	*Digital advertisements increase the likelihood of the advertised brand being included in the consideration set and being selected as brand choice under conditions of low attention.*
RQ3	*Does emotional (rational) appeal enhance the effectiveness of digital advertisements under conditions of low attention?*	*H3*	*The effect of low attention processing of digital advertisements is greater for ads with emotional appeal than rational appeal.*
RQ5	*Does attention in the processing of digital advertisements affect the likelihood of people making rational versus intuitive judgements?*	*H5a*	*People are more likely to make rational judgements if processing occurs at higher/focused attention.*
		H5b	*People are more likely to make intuitive judgements if processing occurs at lower attention.*

*DA and IA

7.2. Method

7.2.1. Sample

A total of 276 U.S. consumers participated in this study, with 66 participants taking part in the pre-tests and 210 participants participating in the main experiment. The participants were randomly recruited through *Qualtrics®*, a panel management company. They individually opted in for the experiment and were awarded for their participation. Paying research participants is a widespread, long-standing, ethically acceptable practice. While payment may increase motivation to participate and attention to the exposed stimuli, this has very little influence on the attention manipulation. Attention is manipulated through instructions and related tasks and participants do not know the actual purpose of the experiment (5.4.5. demand effect) or which stimuli are the target stimuli, so the payment cannot be influential. Table 7.2 describes the sample size and characteristics of the sample for the main experiment.

Table 7.2 *STUDY 2 - Sample*

n = 210		Aged 21-29 (45%)	Aged 30-49 (35%)	50 - above (20%)	Total
Focused attention	M	12	9	5	52
	F	12	9	5	
Divided attention	M	12	11	5	54
	F	12	9	5	
Incidental attention	M	12	9	5	52
	F	12	9	5	
Control group	M	12	9	5	52
	F	12	9	5	
Total	M	48	38	20	106
	F	48	36	20	104

Sampling technique. The sampling criteria included participants who were between 21 and 50 years old and active Twitter users. The survey platform used quota features to ensure the sample criteria matched to Twitter user statistics in the U.S. Based on age, Twitter users in the US are 45% aged 18-29, 35% aged 30-49, and 20% aged 50-64 (Clement, 2018). The system randomly assigned participants to one of the four groups: FA, DA, IA, or control. This procedure was done by incorporating 'randomiser and quota features' in the survey flow, so that each group would have an equal number of participants with even gender and age spread. Because age can influence the processing of rational versus emotional messages, in which older consumers show higher preferences for rational than emotional messages (Sudbury-Riley & Edgar, 2016); Study 2 has a proportionate age spread in each group to rule out this confound.

Ethnocentrism considerations. The current research uses global as well as local brands to improve the generalisability of the findings, so the U.S. consumers were purposefully selected because they are less suspect to *ethnocentrism* and *anti-global* tendencies that may affect their evaluation of global versus local brands (Holt, Quelch, & Taylor, 2004). While it may be a benefit, the use of global brands entails some confounds in which consumers may equate globality with foreignness, thus

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discounting global brands. Such consumers are known as anti-global consumers, the number of which is relatively high in the UK and China (Holt et al., 2004), and the practice of avoiding and distrusting global brands stems from consumer ethnocentrism (Dimofte, Johansson, & Ronkainen, 2008). Dimofte and colleagues reported that ethnocentrism is not common in the U.S. because most leading global brands are U.S.-based. This blurs the distinction between American and global brands. Thus, the U.S. consumers would be less affected by anti-global or ethnocentric tendencies in brand evaluation and would be deemed appropriate for sample of the current research.

Ethical considerations. Ethical issues in internet research such as the conventions of politeness and acceptable behaviour (Bryman & Bell, 2015) have been addressed. Another ethical concern regarding the use of real brands and organic tweets has also been considered. Brand names and tweets were used with care so that the company's reputation would not be impacted. Although real brand names were presented in the experiment, the actual purpose of the experiment was disguised, so that participants would not know the actual purpose and would not make interpretations or comparisons about the quality of brands. The research fell within the Massey University's guidelines for a low-risk research, and the confirmation was received on 28 November 2017 with ethics notification number 4000018743.

7.2.2. Pre-tests

The pre-tests were online surveys using the Qualtrics® platform. The objectives of the pre-tests are to select target brands and stimuli. A total of 66 U.S. consumers, 34 males and 32 females, were recruited through Qualtrics® and rewarded for their participation. Thirty-three respondents participated in the brand selection from 6 February 2018–15

February 2018; and the other 33 participated in the stimuli selection on 19 May 2018–20 May 2018. All respondents gave their consent and indicated that they were committed to providing thoughtful answers.

7.2.2.1. Brand selection

Eight brands of shampoo (SUAVE, AVEDA, VO5, FINESSE, AVEENO, AUSSIE, MATRIX, SYOSS) and eight brands of toothpaste (CLOSYS, CEDEL, CREST, SIGNAL, FIXODENT, ZENDIUM, AQUAFRESH, SENSODYNE) were pre-tested. The brands were selected from www.portal.euromonitor.com, existed in the U.S. market at the time of the study, and were active on Twitter, meaning that the brands had been actively tweeting in the past six months and had more than 1,000 followers. These brands were tested on the basis of favourability, which is indicated by the sum of familiarity and liking. To assess familiarity, the question *"How well do you know this brand?"* on a five-point Likert scale (1= Not at all, 5= Extremely) was used; while liking towards the brand or the logo was assessed by the question *"How much do you like the brand?"* on a five-point Likert scale (1= Not at all, 5= Extremely). The brands with the highest and lowest scores for each product (shampoo and toothpaste) were excluded from analysis and would not be used in the subsequent experiment because high familiarity and liking may disproportionately capture attention and affect brand consideration and choice. For shampoo brands, SUAVE (the top) and SYOSS (the bottom) were excluded from analysis with $M_{Suave} = 7.30$, $SD= 0.33$ and $M_{Syoss}= 3.15$, $SD= 0.31$ respectively; whereas, for toothpaste brands, CREST (the top) and CEDEL (the bottom) were excluded with $M_{Crest} = 8.21$, $SD = 0.22$ and $M_{Cedel}= 3.00$, $SD = 0.31$ respectively. Two brands from each product category were selected as target brands. For shampoo, **AVEDA** and **VO5** were selected as targets as the two brands showed no

significant difference in terms of favourability (M_{Aveda}= 5.33, SD = 0.41; M_{VO5} = 6.21, SD = 0.46; t [32] = 1.645, p = 0.11); while for toothpaste, **AQUAFRESH** and **SENSODYNE** ($M_{Aquafresh}$= 7.36, SD = 0.34; $M_{Sensodyne}$= 7.27, SD = 0.38; t [32] = 0.237, p = 0.81) were selected as targets as there was no significant difference in favourability towards the brands.

A sample question for shampoo brands

7.2.2.2. **Stimuli selection**
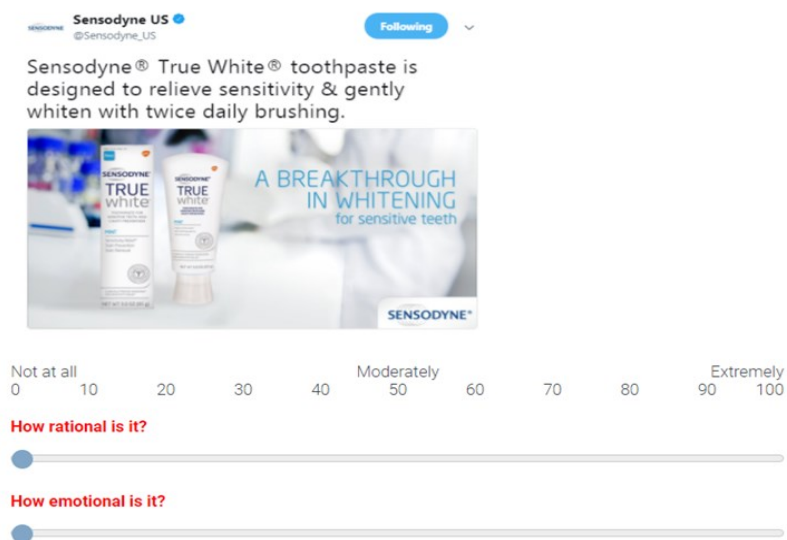
The stimuli selection was to evaluate selected tweets from the target brands (AVEDA, VO5, SENSODYNE, and AQUAFRESH). Six pre-selected tweets posted by each brand were pre-tested. A 100-point scale in the form of a slider was used to evaluate the rational and emotional appeals of the selected tweets (Roggeveen, Grewal, Townsend, & Krishnan, 2015). Compared to a Likert scale in which respondents are forced into expressing opinions in a few response alternatives, a slider provides respondents with opportunities to indicate their responses more precisely. Unlike Roggeveen et al. (2015) who used only one slider to evaluate two distinct items

(hedonic at one end and utilitarian at the other end), this study uses *two different sliders*: one for rational appeal and another one for emotional appeal, addressing the assumption that rational and emotional appeals are not exactly two opposing constructs, and a particular ad can have both appeals but can still be distinguished by the degree to which they rely on one type of appeal or the other (Gardner, 1994).

Procedure. For each brand tweet, respondents were asked to indicate their response to two questions *"How rational is this tweet?"* and *"How emotional is this tweet?"*, each on a 100-point slider scale (0 = Not at all rational/emotional, and 100 = extremely rational/emotional).

A sample question for evaluating the tweet's rational/emotional appeal

Look at the tweet below.

Stimuli selection results. The results reveal that the majority of tweets posted by AVEDA and SENSODYNE are rational tweets; while posts by VO5 and AQUAFRESH are emotional tweets. *T-tests* for *paired samples* were used to analyse the differences between rational and emotional scores for each tweet. The target

stimuli are ones with significant differences between rational and emotional scores. The results of stimuli selection are presented below.

Shampoo. The following tweets showed significant differences in rational versus emotional evaluations and were therefore used as target stimuli.

Stimuli for rational appeal

*(M*rational = 72.36 > *M*emotional = 29.67, *t*[33] = 6.385, *p* < 0.005)	*M*rational = 65.12 > *M*emotional = 32.61, *t*[33] = 5.071, *p* < 0.005).	*(M*rational = 69.24 > *M*emotional = 34.24, *t*[33] = 4.901, *p* < 0.005)

Stimuli for emotional appeal

($M_{emotional}$ = 71.15 > $M_{rational}$ = 42.18, $t[33]$ = 3.750, $p < 0.005$)	($M_{emotional}$ = 75.45 > $M_{rational}$ = 37.45, $t[33]$ = 4.859, $p < 0.005$)	($M_{emotional}$ = 73.42 > $M_{rational}$ = 37.15, $t[33]$ = 5.134, $p < 0.005$)

Toothpaste. The following tweets showed significant differences in rational versus emotional evaluations and were then used as target stimuli.

Stimuli for rational appeal

($M_{rational}$ = 72.76 > $M_{emotional}$ = 29.21, $t[33]$ = 6.244, $p < 0.005$)	($M_{rational}$ = 73.52 > $M_{emotional}$ = 30.21, $t[33]$ = 6.622, $p < 0.005$).	($M_{rational}$ = 74.64 > $M_{emotional}$ = 32.36, $t[33]$ = 6.549, $p < 0.005$)

Stimuli for emotional appeal

	$(M_{\text{emotional}} = 67.21 > M_{\text{rational}} = 38.91,$ $t[33] = 3.493, p < 0.05)$
	$(M_{\text{emotional}} = 62.55 > M_{\text{rational}} = 42.15,$ $t[33] = 2.540, p < 0.05)$
	$(M_{\text{emotional}} = 68.12 > M_{\text{rational}} = 33.30,$ $t[33] = 4.416, p < 0.05)$

7.2.3. Main experiment

7.2.3.1. Experimental procedure

The procedure follows that in Study 1, but it is conducted online. In addition, Study 2 has the post hoc examinations for (1) the type of judgements people more likely make

under low attention conditions, and (2) response latency defined as the interval time between the onset of the consideration set and the time participants submit the page. Figure 7.1 describes the experimental procedure.
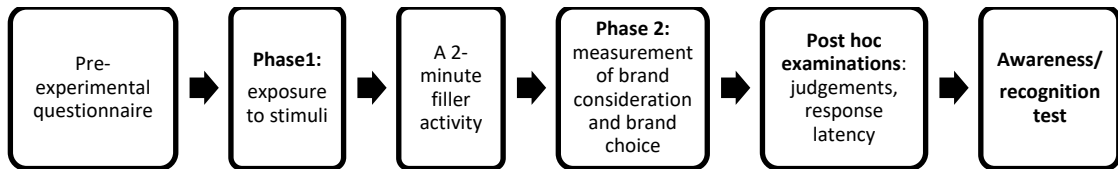
Figure 7.1 STUDY 2 - Experimental procedure

Pre-experimental questionnaire. Prior to the experiment, participants were given the information about the project and asked for their consent to participating and their commitment to providing thoughtful and honest answers; then they were asked to answer questions about demographic information (age, gender, and whether they use Twitter).

Exposure of stimuli. Participants in the FA, IA, and DA groups were presented with 10 sets of tweets, each consisting of three tweets: a target tweet and two distractor tweets. The order of the target tweets and distractor tweets was randomised and counterbalanced to prevent context effects (Lehmann & Pan, 1994). Randomisation was applied to the order of presentation of target tweets, so that each target brand was represented with a tweet on the top position, in the middle, and at the bottom position. In the control group, target tweets were replaced by distractor tweets from non-target brands or celebrities, so there was no exposure to target brands in the control group. Following the tweets, there were tasks that participants had to complete before moving on to the next set (See Table 5.4). The survey applied 'forced answer' and 'no back button' features so that participants could not skip the questions, move backwards, or change their answers. During trials, participants spent approximately 11 minutes on

the experiment, so to control for the quality and reliability of data, anyone doing it in less than 8 or more than 15 minutes would be excluded from the analysis.

Filler activity. A short text about Twitter followed by two easy multiple-choice questions were given as a filler activity to disguise the real purpose of the experiment and to minimise the *'Hawthorne Effect'* (Zikmund et al., 2011).

7.2.3.2. Dependent measures

Two stimulus-based consideration sets were used to measure brand consideration and choice, for shampoo and toothpaste respectively. Given two hypothetical shopping situations, participants were asked to choose the brands they would consider buying in each of the situation. When a participant had chosen three brands, the next questions asked the participant to rank each of the brands.

Coding. If a target brand is included in the consideration set, it is coded '1' and if it is not included, it is coded '0'. If a target brand is ranked 1st, it is coded '1', if it is not, it is coded '0'. Attention is a categorical variable and is coded '1' for FA, '2' for DA, '3' for IA, and '4' for the control group. Appeals are coded '1' for emotional appeal and '0' for rational appeal.

Figures 7.2 and 7.3 display the consideration sets.

You are at a supermarket in a new town. You have to buy **shampoo**. The supermarket only has the six brands below. Which brands would you consider buying?
Please choose 3 (three) out of the six brands presented below. Click on the logos to select.

Please make sure you have selected 3 (three) brands before you click 'Next>>>'.
Then rank the brands 1st, 2nd, and 3rd based on your preference.

13. How do you rank this brand?

| Rank 1 | Rank 2 | Rank 3 |

Figure 7.2 STUDY 2 - Brand consideration set and choice – shampoo

You are at a supermarket in a new town. You need to buy **toothpaste**. The store has only the 6 brands below. Which brands would you consider buying? **Please choose 3 (three) out of the six brands presented below.** Click on the logos to select.

Please make sure you have selected 3 (three) brands before you click 'Next>>>'.
Then rank the brands you have selected 1st, 2nd, and 3rd based on your preference.

15. How do you rank this brand?

| Rank 1 | Rank 2 | Rank 3 |

Figure 7.3 STUDY 2 - Brand consideration and choice – toothpaste

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7.2.3.3. Data analysis

For dichotomous dependent variables, *logistic regression* is particularly appropriate to describe the relationship between an outcome (dependent variable) and a set of predictors (independent variables) called covariates (Hosmer & Lemeshow, 1989). Thus, predictions for brand consideration and choice are estimated in two logistic regressions by entering attention, appeals, and the interaction between attention and appeals as covariates.

7.2.4. Reliability and validity

The reliability test – Cronbach's alpha, and validity tests – EFA and CFA are used to validate the scale in the post hoc examination. The tendency of consumer intuitive versus rational judgements is measured using a modified SSTS scale from Novak et al. (2009).

7.2.4.1. Reliability testing

The Cronbach's alpha test shows high internal consistency among the five items used to measure rational judgements ($\alpha = 0.867$) and the five items used to measure intuitive judgements ($\alpha = 0.848$). The overall reliability of the scale is relatively high ($\alpha = 0.712$), so the scale is appropriate to use.

7.2.4.2. Validity testing

7.2.4.2.1. Exploratory and Confirmatory Factor Analyses

EFA using SPSS 25 and CFA using AMOS 25 were performed to determine the validity of the SSTS scale. In EFA, the correlation matrix of association was evaluated

by Principal Component Analysis (PCA) because the primary purpose was to identify factors underlying the items. The Kaiser-Meyer-Olkin (KMO) test of sampling adequacy was 0.802, above the commonly recommended value of 0.6, indicating that the sampling is adequate. The Bartlett's test of sphericity was significant (χ^2 (210, 45) = 1024.03, p = 0.00) and the communalities were all above 0.03. EFA identified two factors based on the "eigenvalue greater than 1" rule (Brewer, Reis, & Judd, 2000). The two factors explained 36% and 29% of the variance respectively, which explained a total of 65 % of the variance. Table 7.3 describes the EFA results

Table 7.3 *Exploratory factor analysis - Rational and intuitive judgements*

	Mean	SD	Factor 1	Factor 2	Communalities
Rational judgements					
Ratio 1	5.31	1.75	0.80	-0.07	0.65
Ratio 2	5.08	1.65	0.78	0.03	0.60
Ratio 3	5.51	1.55	0.79	-0.08	0.63
Ratio 4	5.56	1.60	0.84	-0.13	0.72
Ratio 5	5.60	1.64	0.83	0.00	0.69
Intuitive judgements					
Intu 1	5.27	1.76	-0.23	0.73	0.58
Intu 2	5.74	1.48	0.01	0.75	0.56
Intu 3	5.30	1.75	0.06	0.86	0.74
Intu 4	5.32	1.80	0.02	0.88	0.76
Intu 5	5.00	1.90	-0.10	0.74	0.55
Eigenvalue			3.617	2.851	
Explained variance by factor (%)			36.17	28.51	
KMO measure of sampling adequacy		0.802			
Bartlett's test of sphericity		0.000			

Notes: Extraction method: Principal component analysis.   Rotation method: Varimax with Kaiser Normalization.

Additionally, Figure 7.4 displays the component plot of the items. Items for rational judgements weakly correlate with items for intuitive judgements (*r* is between 0.061 and -0.23), showing their independence. In contrast, there were strong correlations

among items of the same measure (Pearson r is between 0.73 and 0.87). The EFA indicates that two distinct factors underlying consumers' rational and intuitive judgements are highly consistent internally.
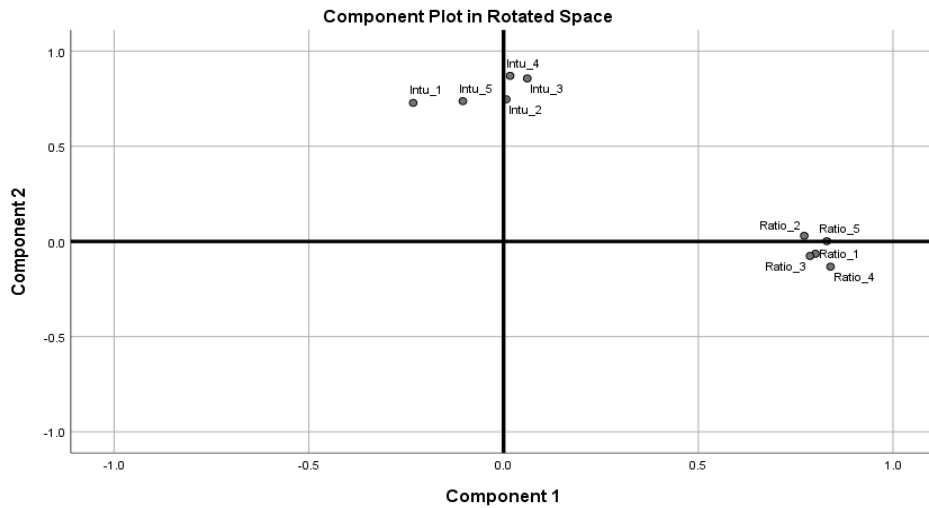
Figure 7.4 Component plot of rational and intuitive judgements

The CFA specifies the model by indicating which variables load on which factors or whether the factors are correlated, so it minimises the difference between the estimated and observed matrices (Schreiber, Nora, Stage, Barlow, & King, 2006). The two-factor model was fit to the data after dropping two items (Intuitive 1 and Ratio 1) and the fit indices for the final model were $\chi^2 (19) = 36.65$; RMSEA= 0.67; GFI = 0.957; AGFI = 0.919; CFI = 0.975; TLI = 0.964; p = 0.009. Thus, scores obtained for Ratio 1 (*I reasoned things out clearly*) and Intu 1 (*I used my gut feelings*) would be excluded from the analysis. The scale is shown in Figure 7.5.

16. Please respond to the following statements about how you selected and ranked the brands in the previous supermarket situations.

	Strongly Agree 7	6	5	Do not know 4	3	2	Strongly Disagree 1
I reasoned things out clearly.	O	O	O	O	O	O	O
I tackled this task systematically.	O	O	O	O	O	O	O
I used my gut feelings.	O	O	O	O	O	O	O
I went by what felt good for me.	O	O	O	O	O	O	O
I was very aware of my thinking process.	O	O	O	O	O	O	O
I was very focused on what I was doing to arrive at answers.	O	O	O	O	O	O	O
I relied on my sense of intuition.	O	O	O	O	O	O	O
I used my instinct.	O	O	O	O	O	O	O
I arrived at my answers by carefully assessing all information available to me.	O	O	O	O	O	O	O

Figure 7.5 Rational and Intuitive Judgements Scale

7.2.4.2.2. Face validity of the instrument

Of 210 participants, 95 submitted their responses. The responses were organised and classified into three categories: positive, negative, and neutral. The results reported 73 positive responses, 16 neutral responses, and 6 negative responses. As the majority of responses are positive, the research instrument is deemed appropriate.

Examples of positive responses include:

"It kept my attention. I didn't get bored with the questions." (DA)

"This was the first fun survey I have done!" (DA)

"It was fun. I like the real products in all their colourful glory." (Control)

"I thought this was very interesting. Will make me look at things more closely on Twitter." (Control)

"Interesting. I will actually like a copy and also to know the results." (FA)

Examples of neutral responses are:

"I only knew a few brand names"

"I know it might seem weird, but I thought they wanted me to pick Aussie since none of the tweets were about that brand. I just thought that because the university is in New Zealand. It would make more sense if it was one of the brands they showed in the tweets but that is just what I was thinking." (FA)

"They used the tweets to get subliminal messages to the person taking the survey, so then your subconscious remembers seeing them and when given an option to choose products, the person is more likely to choose the products they've previously seen in the tweets" (FA)

"At the last section it really opens your eyes to the influence of brand tweets in the selections you make for yourself." (DA)

Examples of negative responses are:

"It was kind of weird." (FA)

"Well, frankly, if I were to go to the supermarket in order to buy toothpaste or shampoo, there wouldn't be a chance in hell I'd choose any of those products." (DA)

"I'm not sure twitter ads matter. I will still choose the brands I trust and like the most." (FA).

7.2.4.2.3. Demand effects

The degree to which the participants might alter their responses because they know the purpose of the experiment, known as 'demand effect', is indicated when the participant could correctly identify four target brands and answer *'I figured it out when I was making choices in the supermarket situations'*. As Table 7.4 shows, two cases (# 67 and 68) in the DA were 'demand suspect', so they were excluded from subsequent analysis.

Table 7.4 *STUDY 2 - Demand effects*

	All four target brands were recognised			
	I'm still not sure what the researcher wanted	*I concluded that just now*	*I already figured it out when I made brand selection*	*Total*
Focused	2	6	0	8
Divided	4	7	2	13
Incidental	0	2	0	2
Control	1	2	0	3

7.3. Results

7.3.1. Manipulation check

A recognition test was employed to ensure attention manipulation across groups. Participants were presented with eight tweets, two targets (tweets they have seen previously) and six distractors (new tweets). Participants were allowed to click as many tweets as they thought they had seen previously, but the system had been set to prevent them from clicking more than four tweets. Four metrics are obtained, namely hits, misses, false alarms, and correct rejections (Jacoby et al., 1989). *Hits* are obtained when participants correctly recognise the old tweets; *misses* are for the old tweets not chosen; *false alarms* are for the new tweets recognised as old; and *correct rejections* are for the new tweets not recognised. Thus, the recognition rate is calculated using the following formula (Jacoby et al., 1989):

(a) Hit rate $= \dfrac{hits}{hits+misses}$

(b) False alarm rate $= \dfrac{false\ alarms}{false\ alarms+correct\ rejections}$

(c) Recognition rate $= hit\ rate - false\ alarm\ rate$

The overall manipulation of attention will be deemed successful if there is a significant difference in recognition rates across groups, suggesting that participants in the different groups have different levels of attention. However, Study 2 manipulates different types of attention: high (FA) versus low attention (DA and IA). Thus, another criterion is used to determine the success of the manipulation. The manipulation of high versus low attention will be deemed successful if recognition in FA is significantly higher than that in DA or IA.

Table 7.5 presents the means of hits, misses, false alarms, and correct rejections across groups. As the table shows, among the treatment groups, participants in FA had the highest recognition rates, while those in IA had the lowest. It seems that when more attention is given to the processing, the information will be better remembered, suggesting that attention facilitates memory of previously seen stimuli.

Table 7.5. *STUDY 2 - Hits, Misses, False alarms, Correct rejections, and Recognition rates*

n = 208			Mean (*SD*)		
Attention	Hits	Misses	False alarms	Correct rejections	Recognition rates
Focused	1.42 (0.7)	0.57 (0.7)	0.88 (0.9)	5.11 (0.9)	0.57 (0.4)
Divided	1.04 (0.8)	0.96 (0.8)	1.04 (0.9)	4.96 (0.9)	0.35 (0.4)
Incidental	0.98 (0.7)	1.01 (0.7)	0.88 (0.8)	5.12 (0.8)	0.34 (0.4)
Control	1.50 (0.6)	0.50 (0.6)	0.87 (0.9)	5.13 (0.9)	0.61 (0.4)

Further analysis determines whether the mean differences in recognition were significant. As Table 7.6 shows, ANOVA reported that recognition across groups was

significantly different [F (3, 206) = 6.065, p = 0.001]. Thus, the overall manipulation

of attention is considered successful as the levels of attention vary across groups.

Table 7.6 *STUDY 2 - One-way ANOVA: Recognition across attention*

	Sum of squares	df	Mean square	F	Sig.
Between groups	3.188	3	1.063	6.065	0.001**
Within groups	36.095	206	0.175		

*** Indicate significance at p < 0.05*

To check the manipulation for high versus low attention, multiple comparisons using

Tukey Honest Significant Difference (HSD) test revealed that recognition in FA was

significantly higher than DA (p = 0.028) and IA (p = 0.028), suggesting that the level

of attention in FA was higher than that in DA or IA. Thus, the manipulation for low

versus high attention is deemed successful. The results are shown in Table 7.7.

Table 7.7 *STUDY 2 - Multiple comparisons - Recognition across attention*

Attention		Mean difference	Std. Error	Sig.
Focused attention	Divided attention	0.228	0.081	0.028**
	Incidental attention	0.231	0.082	0.028**
	Control group	-0.032	0.082	0.980
Divided attention	Incidental attention	0.003	0.081	1.000
	Control group	-0.260	0.081	0.009**
Incidental attention	Control group	-0.263	0.082	0.009**

***indicates significance at p < 0.05*

7.3.2. Main effects

The measured dependent variables were the inclusion of target brands in the brand

consideration and the selection of the most preferred brand. After removing the cases

of 'demand suspect' (Table 7.4), the data were analysed using SPSS 25. Table 7.8

presents the descriptive statistics of brand consideration and choice across groups.

Table 7.8 *STUDY 2 - Descriptive - Brand consideration and brand choice*

	Mean (SD)	
	Brand consideration	**Brand choice**

Attention	Emotional appeal	Rational appeal	Emotional appeal	Rational appeal
Focused attention	.51 (.50)	.69 (.46)	.26 (.44)	.42 (.49)
Divided attention	.58 (.49)	.62 (.49)	.40 (.49)	.28 (.45)
Incidental attention	.62 (.49)	.72 (.46)	.51 (.50)	.38 (.48)
Control	.49 (.50)	.48 (.50)	.27 (.44)	.15 (.36)

As shown in Table 7.8, emotional appeal consistently has greater effects on brand consideration and choice under lower than higher attention conditions; whereas rational appeal has a higher effect on brand consideration under IA, but a higher effect on brand choice under FA. Further, two binary logistic regression analyses were performed to predict these outcomes, with attention conditions and appeals included as predictors and product as a control variable. Table 7.9 presents the results of the logistic regression for each dependent variable.

Table 7.9 *STUDY 2 - Logistic regressions on brand consideration and brand choice*

n = 208	Brand consideration			Brand choice		
	β	SD	OR	β	SD	OR
Constant	-.709**	.229	.492	-2.408**	.313	.090
Attention	(Wald χ2 = 15.424, p = .001)**			(Wald χ2 = 21.303, p = .000)**		
Focused	.972**	.303	2.643	1.485**	.347	4.414
Divided	.646**	.296	1.907	.795**	.358	2.215
Incidental	1.071**	.306	2.919	1.312**	.349	3.712
Base= Control						
Appeal						
Emotional	.042	.291	1.043	.744**	.359	2.103
Base = Rational						
Attention*Appeal	(Wald χ2 = 1.965, p = .580)			(Wald χ2 = 5.726, p = .126)		
Focused*Emotional	.247	.471	1.280	-.919*	.533	.389
Divided*Emotional	.657	.470	1.930	-.129	.540	.879
Incidental*Emotional	.232	.474	1.261	.276	.511	1.318
Product						
Toothpaste	1.249**	.194	3.488	1.173**	.208	3.230
Base = Shampoo						
Attention*Appeal*Product	(Wald χ2 = 39.154, p = .000)**			(Wald χ2 = 8.164, p = .043)**		
Focused*Emotional*Toothpaste	-2.271**	.449	.103	-1.073**	.494	.342
Divided*Emotional*Toothpaste	-1.731**	.447	.177	-.020	.467	.980
Incidental*Emotional*Toothpaste	-1.575**	.449	.207	-.941**	.445	.390
Omnibus tests (Model)						
Model summary	χ2 = 76.832, df = 11, p = .000			χ2 = 86.256, df = 11, p = .000		
-2 Log likelihood	1049.373			975.199		
Cox & Snell Square	.088			.098		
Nagelkerke R Square	.119			.137		
Classification accuracy (overall)	63.3%			68.6%		
Chosen	82.5%			40.5%		
Not chosen	35.8%			82.8%		

* Significant at α = .05   ** Significant at α = .1*

7.3.2.1. Attention – Main effect

As shown in Table 7.9, the overall effects of attention on both brand consideration

(Wald χ2 = 15.4, p = .001) and brand choice (Wald χ2 = 21.3, p = .000) are positive

and significant, suggesting that attention is a strong predictor for brand consideration

and brand choice. Thus, **H1 is confirmed:** Low attention processing of digital advertisements does have a positive effect on brand consideration and brand choice. Interestingly, the effect of IA (β = 1.1, *OR* = 2.9) was stronger than FA (β = 0.97, *OR*= 2.6) on brand consideration. Conversely, the effect of FA (β = 1.49, *OR* = 4.4) was stronger than IA (β = 1.3, *OR*= 3.7) on brand choice. The results suggest that brand consideration benefits from low attention processing; whereas brand choice process benefits from more deliberative processing when people process ads with higher attention. Of the two low attention conditions, IA has a greater effect than DA on both brand consideration and choice, suggesting that ads could be less effective when people process multiple ads simultaneously than when people ignore the ads.

7.3.2.2. Appeals – Main effect and Interactions

The main effect of appeal is non-significant on brand consideration (β = 0.04, *OR* = 1.0, *p* = 0.884) but significant on brand choice (β = 0.74, *OR* = 2.1, *p* = 0.039). All coefficients are positive, indicating that ads with emotional appeal increase brand consideration and choice. However, in the brand choice data, when emotional appeal interacts with FA or DA, the coefficients become negative, but only significant for FA (p < 0.1), suggesting that brands with rational ads are chosen more often than those with emotional ads. In contrast, although there is directional support that emotional appeal might be more effective under IA, it does not reach significance (p = 0.589). Therefore, **H3 is rejected:** The effect of low attention processing of digital advertisements is NOT greater for ads with emotional appeal than rational appeal. Despite failing to reach significance, the effect sizes of emotional appeal denote more interesting results. In brand consideration, the effect size of DA (*OR* = 1.93) is greater than that of FA (*OR* = 1.28); whereas in brand choice, the effect size of IA (*OR* =

1.32) is much greater than and in opposite direction from that of FA ($OR = 0.39$). These results indicate that emotional appeal generates greater effects when interacting with IA, but there are mixed results when emotional appeal interacts with DA or FA.

7.3.2.3. Products – Main effect and Interactions

'Product' was included in the model as a control variable. The main effect of products was positive and significant both on brand consideration ($\beta = 1.3$, $OR = 3.5$, $p = .000$) and brand choice ($\beta = 1.1$, $OR = 3.2$, $p = .000$), suggesting that target brands for toothpaste are more frequently chosen than shampoo. In contrast, the three-way interactions between attention, appeal, and product were more nuanced. The interaction between IA, appeal, and product is negative and significant, indicating that emotional appeal has a stronger effect than rational appeal, on shampoo than on toothpaste brands, and if processing occurs under IA. Therefore, *the effect of low attention processing of digital advertisements is greater for ads with emotional appeal than rational appeal if the product is shampoo and processing occurs under IA*. However, similar interaction effect was also obtained under FA. The results suggest that under low and high attention, shampoo ads would be more effective using emotional appeal; while toothpaste ads would be more effective using rational appeal. The result is interesting as prior research often examines the effect of appeal on high versus low involvement products (e.g. Holmes & Crocker, 1987); whereas, Study 2 shows that the effects differ even among the low involvement products (toothpaste versus shampoo) when attention is taken into account.

7.3.3. Post hoc examination

7.3.3.1. Rational and intuitive judgements

The measured dependent variables are scores from two Likert scales for rational and intuitive judgements. Table 7.10 displays the descriptive statistics of judgements across groups.

Table 7.10 *STUDY 2 - Descriptive- Rational and Intuitive judgements*

n = 208	*Mean (SD)*	
Attention	*Rational judgements*	*Intuitive judgements*
Focused attention	24.29 (3.9)	19.50 (7.1)
Divided attention	19.46 (5.4)	22.33 (4.3)
Incidental attention	20.38 (5.9)	22.63 (4.9)
Control group	22.96 (4.3)	20.98 (5.7)

As shown in Table 7.10, FA has the highest score for rational judgements, while IA has the highest score for intuitive judgements. The result suggests that when people process information with higher attention, they are more likely to make rational judgements, whereas when they process information with lower attention, they tend to make intuitive judgements. Further, ANOVA reported that there is a significant difference across attention in rational judgements [F (3, 206) = 10.66, p = 0.00] and in intuitive judgements [F (3, 206) = 3.46, p = 0.017]. Post Hoc tests using Tukey HSD revealed that rational judgement in FA is significantly higher than DA (p = 0.000) and IA (p = 0.001). Likewise, intuitive judgement in FA is significantly lower than DA (p =0.047) or IA (p = 0.023). The results suggest that attention has an impact on the way people make judgements, with higher attention leading to rational and lower attention to intuitive judgements. Table 7.11 details the results.

Table 7.11 *STUDY 2 - Tukey HSD: Rational and Intuitive judgements*

		Mean difference	Std. Error	Sig.
Rational judgements				
Focused attention	Divided attention	4.83	.97	.000**
	Incidental attention	3.90	.96	.001**
	Control group	1.32	.98	.526
Divided attention	Incidental attention	-.92	.97	.776
	Control group	-3.50	.97	.002**
Incidental attention	Control group	-2.58	.98	.044**
Intuitive judgements				
Focused attention	Divided attention	-2.83	1.08	.047**
	Incidental attention	-3.13	1.09	.023**
	Control group	-1.48	1.09	.529
Divided attention	Incidental attention	-.30	1.08	.992
	Control group	1.35	1.08	.597
Incidental attention	Control group	1.65	1.09	.432

**indicates significance at $p < 0.05$

Further, to test hypotheses H5a and H5b, *paired-sample T-tests* were performed on the data. Table 7.12 details the results.

Table 7.12 *STUDY 2 - T -test paired samples: Rational and Intuitive judgements*

	Paired differences				
	M	SD	t	df	Sig. (2-tailed)
Focused attention Rational versus intuitive	4.79	7.6	4.568	51	.000**
Divided attention Rational versus intuitive	-2.87	7.54	-2.799	53	.007**
Incidental attention Rational versus intuitive	-2.25	8.43	-1.923	51	.060*

** indicates significance at $p < 0.05$ * indicates significance at $p < 0.1$

As shown in Table 7.12, rational judgement is significantly higher than intuitive judgement in FA; whereas intuitive is higher than rational in DA and IA. Thus, **H5a is supported** that people are more likely to make rational than intuitive judgements when processing occurs at higher attention. Likewise, **H5b is supported** that people are more likely to make intuitive than rational judgements when processing occurs at lower attention.

7.3.3.2. Response latency (reaction time)

Response latency was measured through the use of the internal clock embedded in the survey platform to indicate the time interval between the onset of the consideration set and the page submit. There are two variables for shampoo and toothpaste respectively. Arguably, people who are engaged in deliberation would take a longer time to decide as they may consciously search for a memory of the processed information before making decisions. Table 7.13 displays the descriptive statistics of response latency across groups.

Table 7.13 *STUDY 2 - Descriptive - Response latency*

n = 208	Timing first task (shampoo)	Timing second task (toothpaste)
	Mean (Standard Deviation)	
Focused attention	12.38 (7.94)	9.45 (6.86)
Divided attention	12.59 (8.99)	8.75 (4.33)
Incidental attention	11.54 (8.30)	10.41 (12.38)
Control group	10.81 (6.05)	10.68 (11.17)

Overall, participants significantly took longer time to decide for the first task ($M_{shampoo}$ = 11.83, SD = 7.9) and less time to decide for the second task ($M_{toothpaste}$ = 9.8, SD = 9.2), $[t\,(207) = 3.002, p = 0.003]$. The difference in timing between the first and second task is greatest in DA, showing that the facilitation effect is significantly enhanced when people process multiple information simultaneously. Further, the ANOVA reported that there is no significant difference in response latency across groups for the first task (shampoo) as well as the second task (toothpaste) as shown in Table 7.14.

Table 7.14 *STUDY 2 - ANOVA - Response latency*

n = 208	*Sum of squares*	*df*	*Mean square*	*F*	*Sig.*
Timing shampoo					
Between groups	103.71	3	34.57	.554	.646
Within groups	12720.75	204	62.36		
Timing toothpaste					
Between groups	123.17	3	41.06	.478	.698
Within groups	17526.88	204	85.92		

Overall, the ANOVA results suggest that attention does not have a significant effect on the length of time people take to make decisions.

7.4. Discussion

Although FA drives the greatest impact, low attention processing of digital ads does increase brand consideration and choice, compared to 'no exposure'. In particular, IA has a stronger effect than DA on brand consideration and brand choice. The results show an asymmetrical effect in brand consideration and brand choice, with low attention having a stronger effect on brand consideration, and high attention having a stronger effect on brand choice. This suggests that different processes underlie brand consideration and brand choice, with brand consideration relying more on non-conscious, low attention processing, and the choice process benefitting from more deliberative processing. In line with prior research, brand consideration can be distinguished from brand choice (Nedungadi, 1990), in which brand availability features the brand consideration stage and brand evaluation characterises the brand choice stage. Thus, brand consideration may be influenced by factors other than those assumed to affect brand choice. As the results show, one such factors is low attention. Brand choice appears to be slightly more resistant to low attention because brand evaluation process involves deliberative analysis about the brands in the consideration set to arrive at a final choice.

Despite the encouraging results supporting the core assumption of low attention processing, a conclusion about the superior effects of emotional appeal should be drawn with caution. It is known that rational ads require more deliberative processing and therefore, higher attention, and emotional ads require less attention and are more easily processed (Holmes & Crocker, 1987). Consistent with this, the results showed that rational appeal increased brand choice more than emotional appeal in FA, while the effects of rational versus emotional appeal were not significantly different in DA or IA. Although there is directional support that emotional appeal might increase brand choice under IA, it does not reach significance ($p = .589$), but the effect size ($OR = 1.318$) is much larger than that of FA ($OR = .389$), suggesting that emotional appeal is a stronger predictor for brand choice in IA than the rational appeal in FA. The results are also consistent with prior research (Ambler et al., 2000; Heath et al., 2006) that we can process emotional content in advertising effectively at lower levels of attention, and that advertising can evoke an emotional experience without people being aware of it. This explains the non-significant difference between emotional and rational appeals because low attention narrows the gap between them. Alternatively, the findings suggest that the positive effects of low attention on brand consideration and choice may be independent of the type of appeal used in the ads.

Holmes and Crocker (1987) found a superior effect of emotional appeal for low-involvement than for high-involvement products. While prior studies have used shampoo and toothpaste as low-involvement products (Klein & Melnyk, 2016; Olson & Thjømøe, 2003), the results of Study 2 show a moderation from product category, in which the effect of emotional appeal was stronger for shampoo while the effect of rational appeal was stronger for toothpaste. A possible explanation would be that there might be qualitative differences between brands of shampoo and toothpaste, other than

familiarity and liking that had been pretested to be equivalent for the brands of those products. Presumably, people might have an existing predisposition that shampoo has hedonic (e.g. hair feels soft and silky) benefits; whereas, toothpaste is predominantly utilitarian (e.g. whiter, stronger, healthier teeth).

Another important issue concerning the interaction of emotion and attention is the extent to which processing of emotional ads depends on attentional resource availability. While emotionally salient stimuli can capture attention automatically (Du Plessis, 2005; Yamaguchi & Onoda, 2012), Heath et al. (2006) caution that higher attention can actually weaken the effect of emotional stimuli. As such, emotive advertising is better processed at lower attention (Heath, 2007), allowing for generation of positive affect (Reber et al., 1998) and development of mild emotional attachments to the brand (Wright, 2016). Thus, to maintain the processing at an effortless, low-attention level, emotional content in advertising should not be combined with attention-grabbing tactics such as animation, bigger fonts, colour contrast, or featuring a celebrity.

The findings of Study 2 also provide useful insights into how consumers make judgements under different levels of attention. People more likely make rational judgements in FA and intuitive judgements under low attention (DA and IA). As expected, attention affects rational but not intuitive judgements. When attention is limited, people tend to use heuristics and base their decisions on impression rather than searching for processed information in memory, leading to intuitive decisions; however, when attention is adequately available, people tend to deliberate and analyse the information, resulting in rational decisions (Kruglanski & Gigerenzer, 2011). As the effect of emotional appeal is more pronounced under low attention, it seems logical

to propose that ads that resonate emotionally tap into System 1 dynamics. Yet, how emotive ads stir System 1 shifts that may generate changes in future purchase of the brand remains an open question that offers an interesting inquiry for future research.

Response latency is often used as a proxy for attention (Johnson & Proctor, 2004). Despite the successful attention manipulations, ANOVA reports that attention does not have a significant impact on response latency, thus providing support for the proposition that System 1 and System 2 may share the same properties and be based on common principles (Evans & Stanovich, 2013). In other words, even if IA is likely to rely on System 1 and FA on System 2, participants might be slow or fast in making decisions, depending on other factors such as memory constraint, personality trait, and emotional state. This may explain why there is no significant difference in response latency across attention.

Several limitations are noted for this study. First, although the stimuli selection successfully differentiates rational from emotional ads, some aspects regarding the design and creative are not carefully considered as a consequence of the realistic approach to research. For example, emotional ads appear noisier, more colourful, and more complex than rational ads. In addition, it is not possible to have purely rational versus emotional ads as most ads contain both rational and emotional elements to a certain extent. Moreover, the data about the rational/intuitive judgements were collected through retrospective self-report, which has been criticised as being insensitive to nonconscious processes (Varan et al., 2015). As people may not be able to report back their true experience, the SSTS scale for intuitive judgement might be unable to capture the intuitive process which is implicit and nonconscious, occurring outside of awareness.

7.5. Chapter summary

Overall, Study 2 provides clear evidence of the low attention effect of digital advertisements. In particular, the effect could be observed in a real-life situation beyond the laboratory setting where ad processing has to compete with the consumers' internal and external distractors; therefore, ensuring the ecological validity of the research. Although the greatest impact is obtained under FA, the results suggest that exposure to advertising at lower attention does increase brand consideration and choice. The effect is obtained with few exposures and with different ads within a campaign. However, more nuanced effects are found for appeals and products. As expected, emotional appeal enhances advertising effectiveness under IA; while rational appeal enhances effectiveness under DA and FA. More specifically, emotional appeal enhances the effectiveness of shampoo ads; whereas rational appeal increases the effectiveness of toothpaste ads. Furthermore, the general rule for the emotive advertising seems to be that either a positive or no effect occurs, rather than a negative effect. Finally, people are more likely to make rational judgements at high attention (FA) and intuitive judgements at low attention (DA or IA).

CHAPTER 8: STUDY 3 – METHOD, RESULTS, DISCUSSION

8.1. Introduction

One of the basic strategies in creating effective advertising is the application of rational and emotional appeals. In Study 2, it was found that emotional appeal works better for shampoo which is predominantly hedonic, while rational appeal is more effective for toothpaste which is predominantly utilitarian. The results are consistent with the 'match-up' hypothesis that the type of appeal needs to match the product type for optimal effectiveness (Johar & Sirgy, 1991). However, the application of this 'match-up' strategy has produced many ambiguous results (Dahlén & Lange, 2004; Klein & Melnyk, 2016). This is because within a particular product category, there exist different brand types, namely utilitarian brands that satisfy functional or practical needs, and hedonic brands that meet consumers' needs for self-expression and prestige (Bhat & Reddy, 1998). For example, in the category of watches, Casio is a utilitarian brand, while Rolex is a hedonic brand. Considering this, prior research has studied the utilitarian and hedonic dimensions within a product category. Examining television ads for food products, Dubé et al. (1996) found that most ads primarily used rational, informative appeal despite the fact that many food products could be categorised as hedonic products, thus providing little support for the 'match-up' hypothesis. This study, however, did not analyse the effectiveness of such an approach.

Prior research has found that the efficacy of the 'match-up' strategy varies for high versus low involvement products (Choi et al., 2012). Here, involvement also explains the perceived level of involvement in making a product or brand choice. As involvement can be gauged by the level of information processing needed for decision

making and the degree of thoughts required for information processing (Percy & Donovan, 1991), attention, as cognitive resource and processing capacity, would determine the effectiveness of (mis)matching strategy in influencing consumer brand choice. Therefore, it is important to examine whether (mis)matching appeals to brand types would increase advertising effectiveness if high versus low attention is given. Currently there is little knowledge about to what extent the (mis) matching strategy helps advertisers in coping with inattentiveness to digital advertising.

Study 3 investigates whether (mis)matching between advertising appeal and brand type enhances advertising effectiveness, with a specific focus on effectiveness under conditions of low attention. The study is an online experiment featuring a 2 (stimuli: matching vs mismatching) x 2 (appeals: rational vs emotional) x 2 (brand types: utilitarian vs hedonic) x 4 (attentional conditions: FA, DA, IA, and control) *mixed-factorial* design, with appeals and brand types as the *within-subject* factors and stimuli and attentional conditions as the *between-subject* factors.

The research fell within the Massey University's guidelines for a low risk research. Notification of low-risk evaluation was submitted for the online experimental research, and the confirmation was received on 28 November 2017 with the ethics notification number 4000018743.

The research questions and hypotheses addressed in Study 3 are presented in Table 8.1.

Table 8.1 *Study 3 - Research questions and hypotheses*

Research questions		Hypotheses	
RQ1	*Do digital advertisements increase the likelihood of the advertised brand being included in the consideration set and being selected as brand choice under conditions of low attention*?*	*H1*	*Digital advertisements increases the likelihood of the advertised brand being included in the consideration set and being selected as brand choice under conditions of low attention.*
RQ4	*Does the matching (mismatching) between appeal and brand type enhance the effectiveness of digital advertisements under conditions of low attention?*	*H4a*	*The effect of low attention processing of digital advertisements is greater for ads with matching than mismatching appeals.*
		H4b	*The effect of low attention processing of digital advertisements is greater for matching ads with rational-utilitarian appeal than hedonic-emotional appeal*
		H4c	*The effect of low attention processing of digital advertisements is greater for mismatching ads with emotional-utilitarian appeal than rational-hedonic appeal.*
RQ5	*Does attention in the processing of digital advertisements affect the likelihood of people making rational versus intuitive judgements?*	*H5a*	*People are more likely to make rational judgements if processing occurs at higher/focused attention.*
		H5b	*People are more likely to make intuitive judgements if processing occurs at lower attention.*

*DA and IA

8.2. Method

Study 3 consists of two phases: (1) two pre-tests to select stimuli and target brands, and (2) an online experiment. The experiment tests the effect of two types of stimuli: matching and mismatching stimuli. The participants are exposed to either matching or mismatching stimuli, and the effectiveness of the stimuli is measured in the likelihood of target brands (either utilitarian or hedonic brand) being included in the consideration set or chosen as brand choice. The effect is observed in four attentional conditions, so in total, the experiment has eight cells. The research design is described in Table 8.2.

Table 8.2 *STUDY 3 - Research design*

Attention	Type of stimuli	Stimuli	Target brands
Focused attention	Matching	1	1
		2	2
	Mismatching	3	2
		4	1
Divided attention	Matching	1	1
		2	2
	Mismatching	3	2
		4	1
Incidental attention	Matching	1	1
		2	2
	Mismatching	3	2
		4	1
Control group	Matching	1	1
		2	2
	Mismatching	3	2
		4	1

Stimuli: (1) rational appeal-utilitarian brand, (2) emotional appeal-hedonic brand, (3) rational appeal-hedonic brand, and (4) emotional appeal-utilitarian brand.

Target brands: (1) SWATCH (Utilitarian brand), (2) BREITLING (hedonic brand)

8.2.1. Sample

A total of 1,082 U.S. consumers participated in Study 3, with 66 participating in the pre-tests and 1,016 in the main experiment. The U.S. consumers are specifically selected as they are less suspect to 'ethnocentrism' (Holt et al., 2004) and are recruited through Qualtric*s®*, a panel management company. They individually opted in for the experiment and were rewarded for their participation. Study 3 employed the same sampling criteria and method as Study 2 but included 'place of residence' in the criteria, so the sample was dispersed across regions in the U.S. to avoid biases from specific geographic areas (e.g. urban vs rural areas). Mapping to Twitter statistics in the U.S., the sample are 45% aged 21-29, 35% aged 30-49, and 20% aged 50 and above. Table 8.3 details the sample for the main experiment ($n = 1,016$).

Table 8.3 *STUDY 3 - Sample*

Groups	Gender	Regions				Total
		Midwest	Northeast	South	West	
1	M	13	19	20	10	62
	F	14	13	20	17	64
2	M	12	15	24	13	64
	F	14	15	21	14	64
3	M	11	21	20	`11	63
	F	9	16	24	18	67
4	M	10	17	25	10	62
	F	15	7	25	18	65
5	M	9	18	22	14	62
	F	16	16	21	11	64
6	M	9	18	22	14	63
	F	15	16	21	11	63
7	M	17	15	19	12	63
	F	9	17	23	14	63
8	M	11	18	21	13	63
	F	13	12	26	13	64
Total		197	249	355	215	1016

Groups: 1 = focused-match; 2 = divided-match; 3 = incidental –match; 4 = control-match; 5 = focused-mismatch; 6 = divided-mismatch; 7 = incidental-mismatch; 8 = control-mismatch.

Regions: **Midwest** (Wisconsin, Michigan, Illinois, Indiana, Ohio, North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa, Missouri); **Northeast** (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, New Jersey); **South** (Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Mississippi, Alabama, Oklahoma, Texas, Arkansas, Louisiana); **West** (Idaho, Montana, Wyoming, Nevada, Utah, Colorado, Arizona, New Mexico, Alaska, Washington, Oregon, California, Hawaii).

8.2.2. Pre-tests

The pre-tests are online surveys using the *Qualtrics*® platform. The objectives of the pre-tests are to select target brands and stimuli. The brand selection is to select two target brands from pre-selected watch brands existing in the U.S. – one is utilitarian and the other is hedonic – which are equivalent in terms of favourability (i.e. brand familiarity and likeability). The stimuli selection is to select tweets from two target brands which are distinct in terms of emotional versus rational appeal. For the purpose of the experiment, each target brand is represented by three emotional tweets and three rational tweets. Rational tweets from the utilitarian brand and emotional tweets from

the hedonic brand are categorised as 'matching' stimuli; whereas rational tweets from the hedonic brand and emotional tweets from the utilitarian brand are categorised as 'mismatching' stimuli.

The respondents of the pre-tests are 66 U.S. consumers who were recruited through Qualtrics® and rewarded for their participation. 33 respondents participated in the brand selection conducted between 6 February 2018 and 15 February 2018; and the other 33 respondents participated in the stimuli selection conducted between 19 May 2019 and 20 May 2019. All respondents gave their consent and were committed to providing thoughtful answers.

8.2.2.1. Brand selection

Fourteen brands of watches were pretested in three steps: *first*, all brands were assessed on their utilitarian and hedonic dimensions using the scale from Voss et al. (2003); *second,* two brands with the greatest differences in these dimensions were chosen as target brands; *third*, the target brands and alternative brands used in the consideration set were tested for favourability to control for confounds.

Step one. Based on the ratings from the respondents, six brands were categorised as hedonic: ROLEX, FOSSIL, OMEGA, PATEK PHILLIPE, TAG HEUER, and BREITLING; and six brands were utilitarian: SWATCH, TIMEX, KOBOLD, ICE, SEIKO, and WEISS; while the other two brands had the same utilitarian and hedonic ratings: LONGINES and TISSOT, thus categorised as neutral. For utilitarian brands, SEIKO (the top) and KOBOLD (the bottom) were excluded from analysis (M_{Seiko} = 6.42, SD = 0.42 and M_{Kobold} = 3.5, SD = 0.36 respectively). For hedonic brands,

ROLEX (the top) and PATEK PHILLIPE (the bottom) were excluded (M_{Rolex} = 8.00, SD = 0.34 and M_{Patek} = 3.39, SD = 0.35 respectively).

Step two. BREITLING ($M_{utilitarian}$ = 3.3, SD = .82; $M_{hedonic}$ = 3.70, SD = .81, t [32] = 2.171, p = 0.037) and SWATCH ($M_{utilitarian}$ = 4.2, SD = .92; $M_{hedonic}$ = 3.70, SD = .92, t [32] = 2.139, p = 0.040) have the greatest differences in the utilitarian versus hedonic dimensions, and thus are selected as target brands for the main experiment.

Step three. It is important to ensure that brand alternatives in the consideration set are equivalent. ANOVA showed that the six brands used in the consideration set, TIMEX (M_{Timex} = 5.67, SD = 1.9), OMEGA (M_{Omega} = 5.42, SD =2.2), WEISS (M_{Weiss} = 4.48, SD = 2.6), TAG HEUER (M_{Tag} = 4.73, SD= 2.5), BREITLING ($M_{Breitling}$ = 4.67, SD = 2.1), and SWATCH (M_{Swatch} = 5.58, SD = 2.3), had *no significant difference* in terms of favourability [F (5, 192) = 1.707, p = 0.135]. Therefore, examination of low attention effects should not be confounded by familiarity and liking towards particular brands.

To sum, the brand selection determined two target brands – SWATCH as the utilitarian brand and BREITLING as the hedonic brand – and four distractor brands (two utilitarian brands: TIMEX and WEISS, and two hedonic brands: OMEGA and TAG HEUER). These brands were presented in the consideration set. To rule out confounds from favourability towards particular brands, ANOVA was performed and the results showed there was no significant difference in favourability for the brands in the consideration set (p = 0.135).

A sample question for brand selection

17 a. Please look at the brand above and answer the following questions.

	Not at all	Slightly	Moderately	Very	Extremely
How well do you know the brand?	○	○	○	○	○
How much do you like the brand?	○	○	○	○	○

17 b. For the brand above, please respond to these statements.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
This brand is *functional, practical, useful*, and/or *effective*	○	○	○	○	○
This brand is *stylish, luxurious, fun*, and/or *it expresses (people's) personality*	○	○	○	○	○
This brand is *impressive, prestigious,* and/or *exclusive*	○	○	○	○	○

8.2.2.2. Stimuli selection

The purpose of the stimuli selection was to identify (perceived) rational and emotional tweets for each of the two target brands, SWATCH (utilitarian) and BREITLING (hedonic). Each target brand is represented by three rational tweets and three emotional tweets. Ten pre-selected tweets from each target brand were rated by 33 respondents using the same procedure as Study 2 to select six target tweets for the main experiment. Thus, the stimuli selection produced 12 target tweets – three rational tweets for the utilitarian brand, three rational tweets for the hedonic brand, three emotional tweets for the utilitarian brand, and three emotional tweets for the hedonic brand.

A sample question of stimuli selection

24. Please look at the tweet below.

The stimuli selection identified 12 target tweets with significant differences in rational versus emotional evaluation. Three rational tweets for SWATCH and three emotional tweets for BREITLING are categorised as *'matching stimuli'*; whereas three emotional tweets for SWATCH and three rational tweets for BREITLING are categorised as *'mismatching stimuli'*. The results of stimuli selection are presented below.

Matching stimuli – Rational appeal and utilitarian brand

$M_{\text{rational}} = 71.24 >$ $M_{\text{emotional}} = 33.55$, $t[33] = 5.759, p < 0.005$	$M_{\text{rational}} = 67.70 >$ $M_{\text{emotional}} = 32.82$, $t[33] = 5.214, p < 0.005$	$M_{\text{rational}} = 72.21 >$ $M_{\text{emotional}} = 30.97$, $t[33] = 6.559, p < 0.005$

Matching stimuli – Emotional appeal and hedonic brand

$M_{\text{emotional}} = 70.39 >$ $M_{\text{rational}} = 35.36$, $t[33] = 4.207, p < 0.005$	$M_{\text{emotional}} = 65.39 >$ $M_{\text{rational}} = 40.18$, $t[33] = 3.143, p < 0.005$	$M_{\text{emotional}} = 72.21 >$ $M_{\text{rational}} = 32.45$, $t[33] = 5.646, p < 0.005$

Mismatching stimuli – Rational appeal and hedonic brand

$M_{\text{rational}} = 68.70 >$ $M_{\text{emotional}} = 33.42$, $t[33] = 4.089, p < 0.005$	$M_{\text{rational}} = 60.15 >$ $M_{\text{emotional}} = 38.85$, $t[33] = 2.533, p < 0.005$	$M_{\text{rational}} = 76.85 >$ $M_{\text{emotional}} = 30.65$, $t[33] = 6.566, p < 0.005$

Mismatching stimuli – Emotional appeal and utilitarian brand

$M_{\text{emotional}} = 63.15 >$ $M_{\text{rational}} = 38.45$, $t[33] = 3.982, p < 0.005$	$M_{\text{emotional}} = 73.00 >$ $M_{\text{rational}} = 35.15$, $t[33] = 4.670, p < 0.005$	$M_{\text{emotional}} = 74.82 >$ $M_{\text{rational}} = 31.73$, $t[33] = 6.008, p < 0.005$

8.2.3. Main experiment

In **Study 3**, the participants (1,016 U.S. consumers) were randomly assigned to one of the eight experimental groups: 1 = focused-match; 2 = divided-match; 3 = incidental–match; 4 = control-match; 5 = focused-mismatch; 6 = divided-mismatch; 7 = incidental-mismatch; and 8 = control-mismatch.

The experiment follows the same procedure as Study 2. It begins with the pre-experimental questionnaire asking participants for their demographic information, followed by the presentation of stimuli in which participants are exposed to six target stimuli from two brands – SWATCH and BREITLING. The match groups are presented with three rational tweets from SWATCH and three emotional tweets from BREITLING; while the mismatch groups are presented with three emotional tweets from SWATCH and three rational tweets from BREITLING. The order of the tweets is randomised to rule out confounds from context effects (Eun Sook, Whitehill King, Nyilasy, & Reid, 2019). To ensure low attention manipulation, the target tweets are presented together with distractor tweets and participants are asked to do particular tasks while viewing the tweets. Following the exposure is the measurement of brand consideration and brand choice. The experiment ends with post hoc examination in the form of self-retrospective measure of rational and intuitive judgements using the modified SSTS scale (Novak et al., 2009).

8.2.3.1. Dependent measures

The dependent measures are the inclusion of target brands in the consideration set or and selection as brand choice (Trinh, 2015). Prior research has shown that preferences for utilitarian or hedonic brands in a shopping situation depends on the purpose of shopping, namely shopping for others or for oneself (Lu et al., 2016). To control for this confound, two hypothetical shopping situations and consideration sets are given. The situations are different, but the sets are identical. Participants have to choose three brands to be included in the consideration set and then rank the selected brands 1st, 2nd, and 3rd. The brand ranked 1st is for the brand they would most likely buy.

Situation 1   *You are assigned to buy a gift for a manager who is retiring. The company wants you to buy him/her a watch. Which brands would you consider?*

Situation 2   *You are shopping for a new watch for yourself. Which brands would you consider?*

A consideration set consisting of six brands (two targets, SWATCH and BREITLING, and four distractors, TIMEX, WEISS, OMEGA and TAG HEUER) is used to measure brand consideration and choice for each situation. The brands in the set have been pre-tested and shown no significant difference in terms of favourability. Figure 8.1 displays the measure for consideration set, while Figure 8.2 displays the measure for brand choice.

Figure 8.1 STUDY 3 -Brand consideration set

13. How do you rank this brand?

TIMEX

| Rank 1 | Rank 2 | Rank 3 |

Figure 8.2 STUDY 3 - Brand choice

8.2.3.2. Data analysis

Data of brand consideration are coded '1' if a target brand is included in the consideration set and coded '0' if it is not. Data of brand choice are coded '1' if a target brand is ranked 1st and coded '0' if it is not. As the data are dichotomous, two binary logistic regressions are used to test if attention has any effect on brand consideration and brand choice. The parameters include the influences from (1) matching versus mismatching stimuli, (2) utilitarian versus hedonic brand type, and (3) shopping situations: shopping for others or oneself.

8.3. Results

8.3.1. Manipulation check

The success of the attention manipulation was checked using recognition rates, or the degree the participants recognised the old tweets relative to the new ones. The overall manipulation of attention will be deemed successful if there is a significant difference in recognition across groups, suggesting that participants in the different groups have different levels of attention. However, Study 3 manipulates different types of attention, namely high attention (FA) and low attention (DA and IA), so another criterion is used to determine if the manipulation of high versus low attention is successful. The manipulation is successful if recognition in FA is significantly higher than DA or IA.

The manipulation check follows the same procedure as Study 2. Participants are presented with eight tweets: two targets (tweets they have seen previously) and six distractors (new tweets), and are asked to click the tweets they think they have seen previously in the experiment. They can make multiple clicks but the system limits them up to four clicks.

The recognition rates are calculated based on the following formula (Jacoby et al., 1989):

(a) Hit rate $= \dfrac{hits}{hits+misses}$

(b) False alarm rate $= \dfrac{false\ alarms}{false\ alarms+correct\ rejections}$

(c) Recognition rate $=$ *hit rate $-$ false alarm rate*

Table 8.4 presents the means of hits, misses, false alarms, correct rejections, and recognition rates across groups.

Table 8.4 *STUDY 3 - Hits, Misses, False alarms, Correct rejections, and Recognition rates*

n = 1016	Mean (*Standard Deviation*)				
Attention	*Hits*	*Misses*	*False alarms*	*Correct rejections*	*Recognition rates*
Focused	1.27 (0.8)	0.73 (0.8)	1.38 (1.1)	4.62 (1.1)	0.41 (0.5)
Divided	1.30 (0.8)	0.70 (0.8)	1.34 (1.0)	4.66 (1.0)	0.43 (0.5)
Incidental	1.05 (0.8)	0.94 (0.8)	1.40 (1.1)	4.60 (1.1)	0.29 (0.5)
Control	1.39 (0.8)	0.62 (0.8)	1.36 (1.0)	4.64 (1.0)	0.46 (0.5)

As the table shows, among the treatment groups, participants in DA had the highest recognition rate, even higher than FA; while those in IA had the lowest. The results suggest that the level of attention in DA is relatively higher than in IA. This is not surprising as prior research has found that DA might represent two distinct mechanisms: cognitive load and perceptual load, the former inhibiting while the latter

enhancing attention (Lavie, Hirst, de Fockert, & Viding, 2004). If perceptual load underpins DA, it increases attention and helps to improve recognition memory.

Further analysis tests whether the mean differences in recognition were significant to determine the success of the overall manipulation. In Table 8.5, ANOVA reported that recognition rates across groups were *significantly different* [F (3, 1012) = 5.525, p = 0.001], suggesting that the levels of attention varied across groups, so the overall attention manipulation was deemed successful.

Table 8.5 *STUDY 3 - ANOVA - Recognition rates across groups*

	Sum of squares	df	Mean square	F	Sig.
Between groups	4.177	3	1.392	5.525	0.001**
Within groups	255.034	1012	0.252		

** *Indicate significance at p < 0.05*

Further, to determine whether manipulations for high versus low attention are successful, the multiple comparisons using Tukey HSD were performed. The results in Table 8.6 revealed that recognition in FA was significantly higher than IA (p = .049), while recognition in DA was not significantly different from control (p = .870). Therefore, the manipulation for high versus low attention is deemed successful although there is a significant difference within low attention conditions (IA versus DA), p = .012. This may suggest that DA and IA are two different conditions and 'low attention' may be insufficient as an umbrella concept.

Table 8.6 *STUDY 3 - Multiple comparisons - Recognition across attention*

Attention		Mean difference	Std. Error	Sig.
Focused attention	Divided attention	-.021	.045	.965
	Incidental attention	.115	.045	.049**
	Control group	-.055	.045	.604
Divided attention	Incidental attention	.136	.045	.012**
	Control group	-.034	.045	.870
Incidental attention	Control group	-.170	.045	.001**

** *Indicate significance at p < .05*

The results that DA has recognition memory up to the level of FA also imply that exposing people to multiple information can have two possible outcomes: people can be 'cognitive misers' (Fiske, 1981) and discount the information; or they can allocate more attention to process the information, known as 'attentional boost effect' (Spataro et al., 2013).

8.3.2. Main effects

The measured dependent variables were the inclusion of target brands in brand consideration and the selection as the most preferred brand. Prior to data analysis, cases which were subject to demand effect were removed. Demand effect is defined as the degree to which the participants might alter their responses because they know the purpose of the experiment (Baker, 1999). In this study, demand effect is indicated when the participants could correctly identify two target brands, SWATCH and BREITLING, and answer *'I figured it out when I was making choices in the supermarket situations'*. As Table 8.7 shows, five participants (cases # 93, 202, 740, 762, and 830) were demand suspects as they could identify the two target brands and answer that they already figured that out when they made the brand selection, so they were excluded from subsequent analysis.

Table 8.7 *STUDY 3 - Demand effect*

| | All two target brands were recognised | | | |
Attention	I'm still not sure what the researcher wanted	I concluded that just now	I already figured it out when I made the brand selection	Demand suspect
Focused	1	3	1	1
Divided	0	3	3	3
Incidental	0	3	1	1
Control	3	3	0	0

After removing the cases of demand effect, the data were analysed using SPSS 25. Table 8.8 presents the descriptive statistics of means of brand consideration and brand choice across groups.

Table 8.8 *STUDY 3 - Descriptive - Brand consideration and brand choice*

n = 1011		*Mean (Standard Deviation)*			
		Attention			
		Focused	**Divided**	**Incidental**	**Control**
Brand consideration					
Matching	.57 (.50)				
• Emotional appeal-hedonic brand		.53 (.50)	.50 (.50)	.58 (.50)	.43 (.50)
• Rational appeal-utilitarian brand		.69 (.47)	.64 (.48)	.62 (.49)	.53 (.50)
Mismatching	.55 (.50)				
• Emotional appeal-utilitarian brand		.69 (.46)	.66 (.48)	.63 (.48)	.51 (.50)
• Rational appeal-hedonic brand		.56 (.50)	.51 (.50)	.49 (.50)	.39 (.49)
Brand choice					
Matching	.28 (.45)				
• Emotional appeal-hedonic brand		.12 (.33)	.11 (.32)	.20 (.40)	.13 (.34)
• Rational appeal-utilitarian brand		.48 (.50)	.42 (.50)	.42 (.49)	.35 (.48)
Mismatching	.25 (.43)				
• Emotional appeal-utilitarian brand		.46 (.50)	.45 (.50)	.42 (.50)	.27 (.45)
• Rational appeal-hedonic brand		.12 (.32)	.09 (.28)	.13 (.33)	.07 (.26)

As shown in Table 8.8, the effect of matching is marginally greater than mismatching for both brand consideration and brand choice. With respect to attention, matching emotional appeal to hedonic brand appears more effective under IA, while matching rational appeal to utilitarian brand is better under FA. Conversely, mismatching emotional appeal to utilitarian brand is more effective under FA; whereas mismatching rational hedonic can be effective either under FA or IA.

Further, two binary logistic regressions were performed to predict the brand consideration and choice outcomes with attention, matching/mismatching, and brand types included as predictors, and shopping situations as a control variable. Table 8.9 presents the results of the logistic regression for each dependent variable.

Table 8.9 *STUDY 3 - Logistic regressions on brand consideration and brand choice*

n = 1011	Brand consideration			Brand choice		
	β	*SE*	OR	β	*SE*	OR
Constant	-.529**	.101	.589	-3.516**	.158	.030
Attention	(Wald χ2 = 35.469, *p* = .000)**			(Wald χ2 = 27.651, *p* = .000)**		
Focused	.732**	.129	2.079	.819**	.168	2.267
Divided	.555**	.128	1.742	.675**	.170	1.964
Incidental	.474**	.127	1.606	.716**	.169	2.047
Base= Control						
Matching/mismatching						
Matching	.135	.127	1.144	.514**	.171	1.672
Base = Mismatching						
Attention*Matching	(Wald χ2 = 2.845, *p* = .416)			(Wald χ2 = 5.935, *p* = .115)		
Focused*Matching	-.215	.182	.807	-.466**	.230	.628
Divided*Matching	-.170	.181	.843	-.511**	.232	.600
Incidental*Matching	.041	.181	1.042	-.282	.230	.755
Brand type						
Utilitarian	.516**	.064	1.675	1.747**	.086	5.740
Base = Hedonic						
Shopping situation						
Shopping for others	.112*	.064	1.118	1.387**	.083	4.003
Base= shopping for self						
Omnibus tests (Model)						
Model summary	χ2 = 125.793, df = 9, *p* = .000			χ2 = 792.231, df = 9, *p* = .000		
-2 Log likelihood	5442.121			3904.558		
Cox & Snell Square	.031			.177		
Nagelkerke R Square	.041			.259		
Classification accuracy (overall)	58.4%			79.5%		
Chosen	82.5%			52.6%		
Not chosen	27.7%			89.2%		

*** Significant at α = 0.05*   ** Significant at α = 0.1*

8.3.2.1. Attention – Main effect

As shown in Table 8.9, the coefficients of FA, DA, and IA are positive and significant for both brand consideration (Wald χ2 = 35.5, *p* = 0.00) and brand choice (Wald χ2 = 27.7, *p* = 0.00). This suggests that attention is a strong predictor for brand consideration and brand choice. FA had the greatest effect on both brand consideration and choice; whereas IA had the weakest effect on brand consideration and DA had the weakest effect on brand choice. Although the low attention effects are not as great as FA, they are significantly greater than 'no exposure'. Thus, **H1 is confirmed** that low attention processing of digital advertisements does have a positive effect on brand consideration and brand choice.

8.3.2.2. Matching – Main effect and Interactions

The main effect of matching, relative to mismatching, is non-significant on brand consideration ($\beta = 0.14$, *OR* = 1.1, *p* = 0.29) but significant on brand choice ($\beta = 0.51$, *OR* = 1.7, *p* = 0.00). If attention is not considered, matching ads would significantly increase the probability of target brands being selected as the preferred brand choice. However, the interaction effect between attention and (mis) matching is more nuanced. Despite failing to reach significance, the effect of matching on brand consideration was negative for FA ($\beta = -0.21$, *OR* = 0.81, *p* = 0.24) and DA ($\beta = -0.17$, *OR* = 0.84, *p* = 0.35), but positive for IA ($\beta = 0.04$, *OR* = 1.0, *p* = 0.82). This shows that brands with mismatching ads would more likely be included in the consideration set when processing occurs under FA or DA, while brands with matching ads would more likely be included under IA. In contrast, the effect of matching on brand choice was negative and significant for FA ($\beta = -0.466$, *OR* = 0.63, *p* = 0.04) and DA ($\beta = -0.511$, *OR* = 0.6, *p* = 0.03), but non-significant for IA ($\beta = -0.282$, *OR* = 0.8, *p* = 0.22) although the direction of effect is the same. The results suggest that brands with mismatching ads would more likely be chosen under FA and DA and weakly so under IA. Although there is directional support that the effect of matching ads under IA is positive, the effect does not reach significance. Thus, **H4a is not supported:** The effect of low attention processing of digital advertisements is NOT greater for ads with matching appeals.

To test H4b and H4c, another regression logistic separating matching from mismatching data was performed. The results are presented in Table 8.10.

Table 8.10 STUDY 3 - *Logistic regression: matching versus mismatching*

n = 1011	Brand consideration			Brand choice		
	β	*SE*	OR	β	*SE*	OR
Matching						
Constant	-.285**	.127	.752	-1.902**	.187	.149
Attention	(Wald χ2 = 11.576, *p* = .009)**			(Wald χ2 = 9.773, *p* = .021)**		
Focused	.397**	.179	1.487	-.063	.268	.939
Divided	.301*	.178	1.351	-.156	.272	.856
Incidental	.596**	.178	1.814	.515**	.243	1.674
Base= Control						
Brand type						
Utilitarian	.412**	.127	1.509	1.302**	.228	3.675
Base = Hedonic						
Attention*Brand type	(Wald χ2 = 3.234, *p* = .357)			(Wald χ2 = 8.921, *p* = .030)**		
Focused*Utilitarian	.248	.257	.931	.569*	.323	1.766
Divided*Utilitarian	.168	.254	.437	.441	.327	1.554
Incidental*Utilitarian	-.177	.254	.488	-.230	.303	.794
Mismatching						
Constant	-.461**	.128	.631	-2.524**	.238	.080
Attention	(Wald χ2 = 16.464, *p* = .001)**			(Wald χ2 = 4.771, *p* = .189)		
Focused	.707**	.180	2.029	.555*	.306	1.742
Divided	.516**	.180	1.676	.268	.321	1.307
Incidental	.438**	.179	1.549	.582*	.304	1.790
Base= Control						
Brand type						
Utilitarian	.493**	.180	1.637	1.528**	.277	4.610
Base = Hedonic						
Attention*Brand type	(Wald χ2 = .183, *p* = .980)			(Wald χ2 = 2.333, *p* = .506)		
Focused*Utilitarian	.057	.259	1.059	.273	.360	1.314
Divided*Utilitarian	.103	.257	1.109	.512	.373	1.668
Incidental*Utilitarian	.082	.256	1.086	.097	.359	1.102

As shown in Table 8.10, the interaction effects between low attention and matching versus mismatching were non-significant for both brand consideration and choice. Consequently, **H4b is not supported:** The effect of low attention processing of digital advertisements is NOT greater for matching ads with rational-utilitarian than emotional-hedonic. Although there is directional support that the effect of matching rational-utilitarian is greater under DA, the effect is non-significant. Likewise, the effect of matching emotional-hedonic is greater under IA but it is also non-significant.

Moreover, mismatching emotional-utilitarian increases brand consideration and brand choice under DA and IA. Yet, those effects also fail to reach significance. Thus, **H4c**

is not supported: The effect of low attention processing of digital advertisements is NOT greater for mismatching ads with emotional-utilitarian than rational-hedonic. The non-significant results might be due to the fact that attention given to the stimuli was so meagre that the difference between matching and mismatching was hardly perceived. Moreover, the participants were exposed to mixed stimuli (i.e. rational-utilitarian as well as emotional-hedonic) that could reduce the statistical power of the effects.

An interesting finding is that matching emotional-hedonic or mismatching emotional-utilitarian increases brand consideration and choice under IA, suggesting that emotional appeal has greater effects when processed under IA, in support for Heath et al. (2006). Moreover, matching rational-utilitarian or mismatching emotional-utilitarian increases brand consideration and choice under DA or FA. Obviously, attention moderates the efficacy of (mis) matching between appeal and brand type, providing a boundary condition for the 'match-up strategy' (Johar & Sirgy, 1991). Specifically, matching emotional-hedonic is more effective under lower attention, while matching rational-utilitarian is more effective under higher attention.   In contrast, mismatching emotional-utilitarian remains effective despite the differences in attention.

8.3.2.3. Brand type and shopping situation - Main effects

Brand type and shopping situation are included in the model as control variables for their disproportionate influences on brand consideration and choice. The main effect of brand type was positive and significant on brand consideration ($\beta = 0.516$, $OR = 1.7$, $p = 0.000$) and on brand choice ($\beta = 1.747$, $OR = 5.7$, $p = 0.000$), suggesting that

utilitarian brands were more likely considered and chosen than were the hedonic brands. The strong effect of utilitarian brands is consistent with Dahlén and Bergendahl (2001) who found that click-through rates for utilitarian products are twice as high as for hedonic products. They conclude that consumers tend to allocate more attention to ads for utilitarian than hedonic brands because ads for utilitarian brands contain factual information that needs more effortful processing, so the ads/brands will be more easily retrieved at the point of purchase.

Additionally, prior research shows that consumers prefer hedonic brands when shopping for others and utilitarian brands when shopping for oneself (Lu et al., 2016). In contrast, Study 3 suggests that utilitarian brands are more often chosen than hedonic brands both when shopping for others ($M_{utilitrian} = 0.61$, $SD = 0.49$; $M_{hedonic} = 0.15$, $SD = 0.36$) and for oneself ($M_{utilitrian} = 0.21$, $SD = 0.41$; $M_{hedonic} = 0.10$, $SD = 0.30$). Yet, this might be due to the influences from the product category used in this study (i.e. watch which is predominantly utilitarian).

Interestingly, Study 3 also found that target brands were more likely considered ($\beta = 0.112$, $OR = 1.1$, $p = 0.083$) and selected ($\beta = 1.387$, $OR = 4.0$, $p = 0.000$) when shopping for others than when shopping for oneself. This suggests that advertising would be a more important source of brand information when people buy things for others than when they buy things for themselves.

8.3.3. Post hoc examination

While the main objective of the research is to shed light on advertising effectiveness under low attention conditions, it is necessary to know how consumers make decisions in such circumstances. The theoretical core corresponds to the dual-process theory

(Kahneman, 2003) that there are two modes of thinking – intuitive and rational. Intuitive decision-making is associative, affect-based and relatively rapid; while rational decision-making is logical, reason-based and slower. However, the literature on dual-process theory has not clearly explained the role attention processes play in constructing decisions. While attention plays an active role in stimulus processing, the role of attention in triggering rational or intuitive decision-making as a response to that stimulus remains obscure. The current research explores whether the likelihood of people making rational versus intuitive judgements varies according to the type of attention (focused, divided, or incidental) given during ad processing.

8.3.3.1. Rational and intuitive judgements

To answer RQ5 and test H5a and H5b, a post hoc examination in the form of a self-retrospective report provides useful insights into how participants in different attention groups make judgements. Participants were asked to respond to 10 statements about how they made decisions about the brands of watches in the consideration set and brand choice. The same scale as Study 2 was used (See Figure 7.5). The scale consists of two 7-point Likert scales, one for rational and another one for intuitive judgements. The descriptive statistics of rational and intuitive judgements across groups are shown in Table 8.11.

Table 8.11 *STUDY 3 - Descriptive - Rational and Intuitive judgements*

n = 208	Rational judgements	Intuitive judgements
	Mean (Standard Deviation)	
Focused attention	22.38 (4.6)	21.36 (5.2)
Divided attention	22.51 (5.0)	21.53 (5.0)
Incidental attention	21.32 (5.5)	22.08 (4.8)
Control group	22.82 (4.8)	21.52 (5.2)

As shown in Table 8.11, rational judgements are higher than intuitive judgements in FA and DA. In contrast, intuitive judgements are higher than rational judgements in

IA. Thus, rational decision-making is associated with higher attention and intuitive decision-making is associated with lower attention. The results suggest that prior attention during ad processing has some impact on the way consumers make rational or intuitive decisions as responses to advertising.

Further, ANOVA was performed on the data and reported that there is a significant difference across groups in rational judgements [F (3, 1012) = 4.697, p = 0.003] but there is no significant difference between groups in intuitive judgements [F (3, 1012) = 1.012 p = 0.387]. Post Hoc tests using Tukey HSD revealed that scores of rational judgements in FA and DA are significantly different from IA, p = 0.083 and 0.038 respectively; while there is no significant difference across groups in intuitive judgements. Consistent with the results of Study 2, attention has more influence on rational rather than intuitive judgements. However, it should be noted that the results are not based on direct observation but on retrospective self-report of conscious memory of choice instances. While people may be able to recall their experience when making rational decisions, they may have difficulty to access their experience of making intuitive decisions due to the nonconscious aspect of intuition. Table 8.12 displays detailed results.

Table 8.12 *STUDY 3 - Multiple comparisons - Rational and Intuitive judgements across groups*

		Mean difference	Std. Error	Sig.
Rational judgements				
Focused attention	Divided attention	-.13	.43	.991
	Incidental attention	1.01	.43	.062*
	Control group	-.44	.43	.736
Divided attention	Incidental attention	1.2	.43	.027**
	Control group	-.31	.43	.884
Incidental attention	Control group	-1.5	.43	.002**
Intuitive judgements				
Focused attention	Divided attention	-.17	.45	.981
	Incidental attention	-.53	.45	.63
	Control group	-.17	.45	.982
Divided attention	Incidental attention	-.35	.45	.852
	Control group	.01	.45	1.0
Incidental attention	Control group	.37	.45	.846

**indicates significance at *p* < 0.05   * indicates significance at *p* < 0.1

Further, to test H5a and H5b whether rational and intuitive judgements are different within particular attention, *paired-sample T-tests* were performed on the data. Paired sample T-tests are used as the same participants provide values for both rational and intuitive judgements. Table 8.13 details the results.

Table 8.13 *STUDY 3 - T-test paired sample results: rational versus intuitive judgements*

	Paired differences				
	M	SD	t	df	Sig. (2-tailed)
Focused attention Rational versus intuitive	1.028	6.13	2.657	250	0.008**
Divided attention Rational versus intuitive	.980	5.72	2.733	253	0.007**
Incidental attention Rational versus intuitive	-.761	6.94	-1.755	255	0.080*

**indicates significance at *p* < 0.05   * indicates significance at *p* < 0.1

As shown in table 8.13, there are significant differences between rational and intuitive judgments in FA, DA and IA. Interestingly, rational is significantly higher than intuitive judgements in FA *(p = 0.008)* and DA *(p = 0.007)*; whereas, rational is lower than intuitive judgments in IA *(p = 0.080)*. The results suggest that rational judgements are associated with higher attention, while intuitive judgements are associated with

lower attention. Therefore, **H5a is supported** that people are more likely to make rational than intuitive judgements when processing occurs at higher attention. Likewise, **H5b is supported** that people are more likely to make intuitive than rational judgements when processing occurs at lower attention, particularly under IA; whereas under DA, people are more likely to make rational judgements. This finding is in contrast to that in Study 2 that people are more likely to make intuitive judgements under IA and DA.

8.3.3.2. Response latency (reaction time)

Response latency can provide insights into choice processes. The length of time an individual spent responding to an ad can be a measure of the amount of attentional effort (Celsi & Olson, 1988). People who are engaged in deliberation and rational decisions would take a longer time to respond than those making intuitive responses (Johnson & Proctor, 2004). The measure for response latency is the interval between the onset when the consideration set is presented and the time the participants make the response by submitting the page. It is measured through the use of an internal clock embedded in the survey platform. As participants have to make brand consideration for two shopping situations, namely shopping for others and for oneself, two values of response latency are obtained. The means of response latency across attention groups are presented in Table 8.14.

Table 8.14 *STUDY 3 - Response latency across attention*

n = 1016	Time first task (Shop for others)	Timing second task (Shop for self)
	Mean (Standard Deviation)	
Focused attention	10.77 (9.7)	8.96 (5.7)
Divided attention	12.59 (22.6)	10.10 (13.8)
Incidental attention	11.51 (10.9)	8.71 (7.5)
Control group	10.56 (6.4)	8.31 (4.5)

On average, participants significantly took a longer time when they shop for others (M_{others} = 11.33, SD = 0.43) than when they shop for themselves (M_{self} = 9.02, SD = 0.27), [t (1015) = 5.180, p = 0.000]. Consistent with the results in Study 2, response latency is higher for the first than the second task, indicating that the choice process can be facilitated by repetition. However, this can also result from the difference in shopping situations, in which shopping for others possibly needs more thinking than shopping for oneself. Further, ANOVA reported that there are no significant differences in response latency across groups for the two shopping situations as shown in Table 8.15.

Table 8.15 *STUDY 3 - ANOVA - Response latency*

n = 1016	*Sum of squares*	*df*	*Mean square*	*F*	*Sig.*
Shopping for others					
Between groups	640.029	3	213.343	1.116	.341
Within groups	193387.96	1012	191.095		
Shopping for self					
Between groups	450.693	3	150.231	1.996	.113
Within groups	76178.470	1012	75.275		

Table 8.14 shows that there are no significant differences in response latency across attention when shopping for others or oneself (p = 0.34 and 0.11 respectively). The results replicate those found in Study 2. In conclusion, the different levels of attention during exposure of stimuli do not significantly affect the amount of time people spend to make decisions in response to the stimuli. However, it should be noted that response latency can be subject to 'noises' due to individual differences that, regardless of attention, people can deliberate about their responses, make several attempts before they arrive at a response, or decide very quickly because they are not involved.

8.4. Discussion

Consistent with findings from previous studies, Study 3 finds that low attention processing consistently increases brand consideration and choice, compared to the control group who receive no exposure. As such, exposure to advertising in a cluttered environment when consumers' attention is divided to process multiple ads or when consumers actively ignore the ads has led to an increase in the likelihood of target brands being considered or selected as the preferred brand choice. In the literature, such ads are often described as nonconsciously exposed or passively viewed ads.

While the effect for IA is relatively consistent across three studies, the effect for DA, as predicted, is less consistent. One possible explanation would be that opposite effects are at play as two distinct mechanisms may underpin DA, namely the *cognitive load* and the *perceptual load* (Lavie et al., 2004). The first impairs attention, leading to a more negative effect, while the latter enhances attention, leading to a more positive effect. This should explain why DA sometimes has a higher, but sometimes a lower effect than IA. Unlike DA which relies on cognitive resource and working memory capacity, IA seems to work through an affective mechanism, which may be independent of processing capacity, resulting in subtle but more stable effects. However, these subtle effects can still accumulate into substantive effects.

Further, the results for source factors are more nuanced but suggest an asymmetrical effect across attention: mismatching emotional appeal to utilitarian brands was more effective under FA and DA; while emotional ads might benefit both utilitarian and hedonic brands under IA. Arguably, the level of processing in the IA was so meagre that the difference between matching and mismatching stimuli became less pronounced. Another explanation would be that, unlike FA and DA which are

predominantly cognitive processing benefiting utilitarian more than hedonic brands, IA relies more on affective processing in which utilitarian versus hedonic choice might have little effect on ad processing. This is consistent with prior research that goal-mismatching arguments increased processing for utilitarian products; whereas for hedonic products, matching versus mismatching did not affect processing because hedonic arguments disrupted cognitive processing when evaluating ads and activated affective processing (Klein & Melnyk, 2016). Overall, the results of Study 3 offer some support for the proposition that the effectiveness of '(mis)matching strategy' is moderated by the level of processing an individual engages in.

Additionally, the current research explores whether the likelihood of people making rational versus intuitive judgements varies by attention. The post hoc examination shows rational judgements are associated more with higher attention, while intuitive judgements are associated with lower attention. A closer look at judgements under low attention conditions finds mixed evidence, with DA increasing rational judgements and IA triggering intuitive judgements. Consistent results are found for IA in Studies 2 and 3. On the other hand, unlike the results of Study 2 in which DA led to an increase in intuitive judgements, Study 3 revealed dual-mechanism underpinning DA (Lavie et al., 2004), leading to an increase in rational judgements. Therefore, it is difficult to draw a conclusion about how consumers make decisions under DA conditions.

As participants are more likely to make rational judgements under FA and DA, the literature provides a possible explanation for this. Rational decision-making in FA results from deliberative processing based on analytical and logical rules; while rational judgements in DA may be linked to heuristic processing based on the availability heuristic or processing fluency (Kahneman, 2003; Kruglanski &

Gigerenzer, 2011). This also implies that rational decision-making can be based either on System 2 such that in FA or System 1 such that in DA, invalidating the alignment of System 1 with low processing and System 2 with high processing. As such, the results offer support for the proposition that the two systems can be based on common principles and may share the same properties (Evans & Stanovich, 2013; Kruglanski & Gigerenzer, 2011).

In addition, the results of response latency seem to support this 'single process' notion that there is no significant difference in response latency across attention. While people are more likely to make rational judgements at higher attention and intuitive judgements at lower attention, they can be fast or slow when making intuitive or rational judgements. This finding provides little support for the notion of thinking fast and slow (Kahneman, 2011).

Study 3 has theoretical and practical implications. From a theoretical perspective, the results raise questions about the efficacy of memory measurements in determining advertising effectiveness. Despite a higher recognition memory, DA has lower brand consideration and choice than FA, and lower brand choice than IA. The results agree relatively well with the findings from past research that awareness of advertising stimuli has little correlation with brand attitude (Karrh, 1998; Matthes et al., 2007; Reijmersdal, 2009), implying that people may remember the ad or brand but they do not like it. Although attention facilitates encoding and storage of information, at the same time, it triggers cognitive defences and activates counterarguments that can reduce message acceptance (Friestad & Wright, 1994). As such, the memory of the ad or brand does not necessarily lead to preference for the advertised brand (Biehal et al.,

1992). Therefore, the inclusion of the brand in the consideration set and selection as brand choice may be independent of recognition for the exposed ads.

From a practical and managerial perspective, the effectiveness of (mis) matching strategy depends on how consumers process the ads. When consumers are engaged in multitasking or multiscreening, mismatching enhances the effectiveness of digital advertisements. Conversely, matching appeal to brand type is more effective when the ads are placed in a high-cluttered media where exposure to ads is likely to be brief and incidental. Additionally, for targeted advertising, mismatching emotional appeal with utilitarian brand can achieve better outcomes.

Despite encouraging results, a limitation is noted for the study. As recognition rates do not differentiate between FA, DA, and control, several questions arise: Is the recognition memory measure unable to differentiate FA, DA, and control? or Is the manipulation for FA not successful as it is hard to increase involvement in the experiment? Interestingly, despite the non-significant difference in recognition memory, the effects of FA and DA on brand consideration and choice are significantly different from control. Thus, to some extent, the manipulations work. The manipulation check could be improved by having additional checks such as motivation to deliberate (Baker, 2001), thoughts listing and confidence (Petty, Priester, & Brinol, 2002), and physiological measures of attention such as eye-tracking and biometrics (Bellman et al., 2019).

8.5. Chapter summary

Consistent with the results of previous studies, Study 3 reports that low attention processing does increase brand consideration and brand choice. Importantly, ads that

have been viewed even under IA or DA could establish implicit preferences for the brand, shown by an increase in the likelihood of choosing the target brands in forced-choice tasks. This confirms that low attention processing is different from eliminating ads completely through ad-blocking software, which is regarded as 'zero' attention, leading to 'zero' effect. Low attention would imply that 'active' encoding occurs, even without the same level of conscious processing that the fully attended ads receive. Consequently, this type of processing should be more seriously considered in evaluating advertising effectiveness.

In contrast to the 'match-up strategy' (Johar & Sirgy, 1991), the findings suggest that advertisers can capitalise low attention effects by mismatching emotional appeal to utilitarian brands. The effect is greater when consumers are processing multiple ads than when they ignore the ads. In such circumstance, emotional appeal evokes automatic associations that can increase the brand's availability in the consumers' mind, so that the brand will more likely be noticed, recognised, or considered in future purchase decisions.

Finally, the results also suggest that emotive advertising seems to tap into System 1 dynamics, leading consumers to make intuitive decisions. In contrast to a prevalent belief, rational judgements can be observed under high and low processing potential, implying that rational decision rules are less subject to attentional capacity; whereas, intuitive decisions are more prominent under low processing potential.

CHAPTER 9: DISCUSSION AND CONCLUSION

9.1. General discussion

As human capacity for attention is finite, the explosion of digital content has made attention unavoidably scarce for advertising. The problem of low attention was scrutinised from the perspectives of the *digital landscape*, *consumer behaviour*, *psychological view on attention*, and *advertising theory*. Yet, no clear evidence emerged from literature on whether advertising is effective under low attention conditions.

In the cluttered *digital landscape*, capturing attention is a critical challenge for advertising (Teixeira, 2017). Digital media allow ad sharing for wider exposure across platforms (Tellis, MacInnis, Tirunillai, & Zhang, 2019), but it also creates higher clutter. Digital platforms often promote that they can deliver advertising impacts by increasing viewability (opportunity to see the ads), sometimes by use of attention-grabbing tactics such as pre-roll, pop-up, or unskippable ads. Although attention-grabbing ads can increase brand memory, they may result in ineffective attempts at changing attitudes (Liu-Thompkins, 2019) and trigger avoidance behaviour (Cho & Cheon, 2004). Moreover, digital ads have been made more relevant, targeted, and directed towards users whose interests broadly align with the product, but this strategy can also increase perceived intrusiveness (Doorn & Hoekstra, 2013), leading to further avoidance. While it might seem indisputable that attention is prerequisite for effective advertising, digital advertising has to rely on low attention.

Consumer behaviour is unpredictably evolving with the development of digital and mobile technologies. Media multitasking (Angell et al., 2016), multiscreening (Segijn,

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Voorveld, Vandeberg, et al., 2017), and the increasing use of adblockers (Tudoran, 2019) present greater challenges for capturing consumer attention. Furthermore, digital consumers are increasingly more selective over what they want to see, and most of the time, advertising is not their primary reason to access digital content (Duff & Lutchyn, 2017). Thus, processing of advertising is a secondary task, typically done at lower attention (Yoo, 2009). Although exposure to digital ads is likely brief and incidental, the exposure may lead to some outcome for the exposed ads. Krugman (1986) notes, "human processor does learn – even if by quick looks, short attention, and unrecalled exposure or perception" (p. 79). Despite becoming more prevalent, low attention processing has been the subject of limited research and there is a big question whether digital advertising can be effective under low attention conditions.

Attention is a psychological construct. However, the *psychological view* on low attention processing is currently fragmented. Most of the understanding of attention to advertising draws on the 'limited capacity' framework (Lang, 2000) that humans have limited capacity to process information, and low attention inhibits the ability to process that information. In this model, low attention is regarded as a consequence of cognitive load and usually leads to a negative impact such as lower recall and recognition (Angell et al., 2016) and a decrease in brand purchase probability (Janiszewski, 1998). The current research diverges from such an approach. It considers low attention processing as a unique form of consumer–advertising interaction and the default mode of digital ad processing. Attention theory from psychology sheds light on low attention processing. The Gradient Model posits that attentional resources concentrate at the centre and gradually decrease away from the centre (Johnson & Proctor, 2004). In line with this, Shapiro et al. (1999) argue that when an individual focuses attention on a piece of information, other information in the peripheral field of vision can also be

processed incidentally. Thus, consumers who are engaged in a goal-driven online activity can subconsciously process ads which appear on their screen.

From the *advertising theory* perspective, the question of advertising effectiveness under low attention conditions cannot be easily answered as current theories provide competing explanations. The Strong theory (Jones, 1990) and the ELM (Petty et al., 1983) advocate that advertising needs to gain higher levels of attention to be effective. In contrast, the Weak theory (Ehrenberg, 2000) and the LAP (Heath, 2007) propose that advertising works through a weak mechanism occurring at lower levels of attention. From quite a different perspective, Cramphorn (2004) and Wright (2016) argue that effective advertising works through affective processing by changing the way people feel about the brand. These theoretical controversies prevent advertisers from capitalising on low attention effects. Unless advertisers understand how to make advertising work at low attention, the practice of bombarding consumers with intrusive and attention-grabbing ads will continue to rise, and ad avoidance will accelerate, which in turn, will put advertising at a bigger risk of being wasted.

The thesis, therefore, contributes to this important theoretical debate by investigating low attention processing of digital advertisements in the well-established domain of brand consideration and brand choice (Roberts & Nedungadi, 1995; Shocker et al., 1991; Trinh, 2015). The thesis seeks to answer the overarching question:

RQ1 *Do digital advertisements increase the likelihood of the advertised brand being included in the consideration set and being selected as brand choice under conditions of low attention?*

Further, Johnson and Proctor (2004) mention two types of attention, namely endogenous (goal-driven) attention and exogeneous (stimulus-driven) attention, and advertisers are more concerned with the latter. In this case, attention can be influenced by specific brand/product characteristics embedded in the ads (Ladeira et al., 2019). However, the intersection between low attention and source factors – factors that can moderate the effect of stimuli on the outcome – remains poorly understood. First, although there is ample evidence that familiar brands or utilitarian choice have more advantages than their unfamiliar or hedonic counterparts; it is not clear whether the advantages still occur if the ads are processed at low attention. Second, there is conflicting evidence about the effectiveness of rational/emotional appeals. It is not clear whether emotive advertising will be more effective at higher/lower attention (Du Plessis, 2005; Heath et al., 2006). Third, the application of (mis) matching between appeals and brand types has also produced many ambiguous results (Dahlén & Lange, 2004; Klein & Melnyk, 2016). Thus, it is not clear whether emotional (rational) appeal will benefit hedonic (utilitarian) brands, particularly if ad processing occurs at lower levels of attention.

The research questions regarding source factors are recapped below:

RQ2 *Do brand familiarity and product type enhance the effectiveness of digital advertisements under conditions of low attention?*

RQ3 *Does emotional (rational) appeal enhance the effectiveness of digital advertisements under conditions of low attention?*

RQ4 *Does the matching (mismatching) between appeal and brand type enhance the effectiveness of digital advertisements under conditions of low attention?*

Finally, to know the processes underlying brand consideration and brand choice, the current research conducts a post-hoc examination on the likelihood of people making intuitive versus rational judgements under low attention circumstances. The theoretical consideration corresponds to two modes of thinking: System 1 and System 2 (Kahneman, 2003). As Kahneman also predicts that System 1 is relatively faster and System 2 is slower, response latency – the time delay before the participants make responses in brand consideration and brand choice – is taken. Thus, the following question is posed:

RQ5 *Does attention in the processing of digital advertisements affect the likelihood of people making rational versus intuitive judgements?*

9.1.1. Summary of key findings and hypotheses testing

The key findings of the current research are summarised as follows:

- Low attention processing of advertising *is effective* in a digital context. The effects are positive, significant ($p_s < 0.005$), and consistent across three studies, five product categories, ten brands, and two experimental settings.

- Unfamiliar brands benefit more from low attention processing, with a significant effect under DA when the effect is compared to the control group (no exposure). The result agrees relatively well with the findings from prior research (Konopka et al., 2019; Stocchi, Wright, et al., 2016) that deliberative processing benefits unfamiliar brands more than do familiar brands.

- Emotional appeals have fairly small (non-significant) advantageous effects. The exception is on brand choice where emotional appeals have negative effects under

DA and FA. The result is consistent with prior findings (Heath et al., 2006) that emotional appeals are more effective when processed with lower attention (i.e. incidental attention).

- Matching appeal and brand type has a negative effect on brand consideration and choice under DA and FA. This means ads with matching appeal and brand type are more effective when processed with lower attention (i.e. incidental attention).

To help answer the research questions, ten hypotheses were formulated based on the literature and were tested in three experimental studies: Studies 1, 2, and 3. The results of hypotheses testing are presented in table 9.1.

Table 9.1 *Summary of hypotheses testing*

Studies		Hypotheses	Remarks
1,2, 3	*H1*	*Digital advertisements increase the likelihood of the advertised brand being included in the consideration set and being selected as brand choice under conditions of low attention.*	**Supported** *(compared to 'no exposure')*
1	*H2a*	*The effect of low attention processing of digital advertisements is greater for familiar than unfamiliar brands*	**Not supported** *(the effect is greater for unfamiliar brands)*
	H2b	*The effect of low attention processing of digital advertisements is greater for hedonic than utilitarian products.*	**Not supported** *(directional evidence only)*
	H2c	*The effect of low attention processing of digital advertisements is greater for familiar brands if the products are utilitarian than hedonic.*	**Supported** *(significant only for DA)*
2	*H3*	*The effect of low attention processing of digital advertisements is greater for ads with emotional appeal than rational appeal.*	**Not supported** *(directional evidence only)*
3	*H4a*	*The effect of low attention processing of digital advertisements is greater for ads with matching than mismatching appeals.*	**Not supported** *(The effect is greater for mismatching ads)*
	H4b	*The effect of low attention processing of digital advertisements is greater for matching ads with rational-utilitarian appeal than hedonic-emotional appeal.*	**Not supported** *(directional evidence only for DA)*
	H4c	*The effect of low attention processing of digital advertisements is greater for mismatching ads with emotional-utilitarian than rational-hedonic appeal.*	**Not supported** *(directional evidence only)*
2, 3	*H5a*	*People more likely make rational judgements if processing occurs at higher attention.*	**Supported** *(consistent and significant for FA)*
	H5b	*People more likely make intuitive judgements if processing occurs at lower attention.*	**Supported** *(consistent and significant for IA)*

9.1.2. Answering the research questions

9.1.2.1. RQ1: *Do digital advertisements increase the likelihood of the advertised brand being included in the consideration set and being selected as brand choice under conditions of low attention?*

Digital advertisements do increase the likelihood of target brands being included in the brand consideration and selected as brand choice under conditions of low attention. The low attention effects are consistently positive and significant across three studies. The effects are observable both in the laboratory as well as online experiments, which indicates the robustness of low attention effects compared to 'zero attention' or 'no exposure'.

Although FA still drives the greatest impact on brand consideration and choice, DA and IA consistently show greater impacts than 'zero' attention. However, the directions and sizes of the effects vary for brand consideration and choice. This implies that brand consideration and choice may be separate processes and different mechanisms underlie these processes. The findings suggest that brand consideration benefits from the subconscious, low-attention processing; while brand choice is facilitated by slightly higher attention and more elaborative processing. Additionally, the effects vary for DA and IA. The effect of DA is generally lower than IA, suggesting that processing multiple ads at a given time impairs encoding more badly than ignoring the ads, which in turn, inhibits brand retrieval during the consideration and choice processes.

To conclude, advertising has a greater effect when FA is given. However, the effect of low attention in both DA and IA is greater than the 'no exposure', suggesting that advertising is effective despite low attention. While all attention groups receive the

same exposure, the effects vary as a function of attention, suggesting that attention effect rather than exposure effect is an important determinant for advertising effectiveness. This raises questions about the boundary conditions for MEE (Zajonc, 1980) because the same exposure does not create equal effects. Moreover, the research also finds that specific brand/product characteristics act as source factors that moderate the attention effects.

9.1.2.2. RQ2: *Do brand familiarity and product type enhance the effectiveness of digital advertisements under conditions of low attention?*

Study 1 revealed that brand familiarity and product type did not enhance the effectiveness of digital advertisements under conditions of low attention. In fact, under conditions of low attention, the effect was higher for unfamiliar than familiar brands; while there was no significant difference in the effect of product type for utilitarian versus hedonic products. However, the low attention effect was also slightly greater for familiar brands when they were utilitarian.

As expected, if attention is not considered, brand familiarity significantly increases brand consideration and choice. However, when brand familiarity interacts with low attention, low attention benefits unfamiliar more than familiar brands. This is shown by a bigger difference in the effect between unfamiliar and control, compared to familiar and control. Additionally, a familiar brand which is utilitarian has a higher probability of being included in the consideration set and chosen as brand choice if processing occurs under DA rather than under IA. Obviously, having slightly higher attention seems to benefit ad processing of utilitarian products.

Brand familiarity activates the associative network of the brand and so a familiar brand is more often selected (Anderson, 1996). However, ad processing for familiar brands can be effortful as the brain has to match the new information with that already recorded, known as schema. Consequently, such processing is inhibited when attention is limited. In contrast, ads for unfamiliar brands activate very little cognition as there are fewer associations about the brands. However, ads can evoke positive affect if processing is effortless. The affect can serve as a heuristic cue for brand recognition in the subsequent choice task. According to the *affect-as-information* theory (Schwarz, Bless, Strack, et al., 1991), people will likely base their judgements on readily accessible affect and use affect as a cue to recognising the relevant brand. Therefore, unfamiliar brands would be selected more often than familiar brands under conditions of low attention.

With respect to hedonic/utilitarian product type, despite a lack of statistical power, there is directional support that low attention benefits hedonic products. This is unsurprising as the distinction of utilitarian versus hedonic choices may be more pronounced at the brand than the product level. Although the pre-test was successful in differentiating the products - cars as hedonic product and sports shoes as utilitarian product, prior research has categorised cars and sports shoes in the same quadrant (Voss et al., 2003), demonstrating that the two products are equivalent in their hedonic and utilitarian nature.

However, the results also show that low attention effects are slightly greater for familiar brands when they are utilitarian. A typical choice context usually favours a utilitarian option because a choice involves a reason-based assessment process (Palazon & Ballester, 2013). Consequently, a utilitarian choice is relatively easier to

justify (Okada, 2005). When processing occurs at low attention, the encoding of 'new information' is limited, so brand cognitions are higher for familiar than unfamiliar brands. As the choice process needs an elaborative evaluation, cognition will enhance the process. As a result, people will more likely choose familiar brands which are utilitarian.

In summary, the low attention processing is more effective for unfamiliar than familiar brands, but also for familiar brands which are utilitarian if processing occurs under DA. As advertising for utilitarian products often include factual and logical arguments (Johar & Sirgy, 1991), DA can suppress counterarguments and increase acceptance to the message (Jeong & Hwang, 2012), leading to a more positive evaluation of the brand. However, given the small sample size of Study 1 ($n = 65$), more data are needed to eliminate alternative explanations for the findings, such as the attractiveness of rational versus emotional appeals that can disproportionately influence brand choice.

9.1.2.3. RQ3: *Does emotional (rational) appeal enhance the effectiveness of digital advertisements under conditions of low attention?*

Emotional appeal enhances the effectiveness of digital ads under IA, while rational appeal enhances the effectiveness under FA and DA. This shows that emotional content can be processed without active attention, consistent with Heath et al. (2006). Conversely, processing logical arguments requires cognitive resource to consciously scrutinise the arguments, so the effect of rational appeal is greater when higher attention is given. A closer look at the effect of emotive ads show that emotive ads increase brand consideration and choice under IA, while there is mixed evidence for

FA and DA. Emotive ads have a positive effect on brand consideration but a negative effect on brand choice when processing occurs under FA and DA.

The results agree relatively well with the LAP model (Heath, 2007) and the notion of mild emotional attachments (Wright, 2016). They argue that low attention ads can generate positive affect that increases the brand's salience. In turn, salience will be translated into increased preferences for the brand when consumers encounter the brand-related cues (brand name and logo) at the point of purchase. Likewise, Shiv and Fedorikhin (1999) noted that spontaneous affective reactions have a greater impact on choice than cognitions when processing resources are limited. However, it should be noted that the positive affect proposed here does not necessarily originate from the emotional content of the ad. Rather, it results from an 'effortless processing', referred to as ease of processing or processing fluency (Reber et al., 2004; Winkielman et al., 2003). This implies that rational or emotional ads both have a potential to create positive affect provided that processing is 'effortless'. I refer to this type of processing as 'emotive communication'.

Emotive communication and low attention are closely related; specifically because emotions can be processed without attention being paid to (Heath et al., 2006). However, the process and the result of this process likely occur outside of awareness, so that the experience may be inaccessible for retrospective reporting, yet it still has an impact on behaviour. As such, advertising measures that rely on explicit memory (e.g. recall) may produce misleading results as they do not account for emotive communication effects. While it is argued that emotions can be processed pre-attentively and rational arguments requires cognitive resources and deliberation, it is also possible that consumers can undertake a more effortful processing and counter-

argue the emotional claim when they pay more attention to the ads. However, as soon as attention dissipates, the brain automatically starts processing associations. Although people can buy *Andrex* (toilet tissue) for a functional reason such as its quality, *Andrex* ads use emotive communication to influence choice. A puppy in the ads can be associated with family, love, and softness (Heath, 2012). These associations can generate mild emotional attachments to the brands (Wright, 2016), leading to brand salience that slightly increases brand consideration and choice.

Finally, advertising scholars have debated the effectiveness of emotional versus rational appeals for many years (Geuens, De Pelsmacker, & Faseur, 2011; Hongxia, Jin, Fang, & John, 2014; Sudbury-Riley & Edgar, 2016). Study 2 found that the relative effectiveness of appeals depends on the amount of attention being paid to the ads during exposure. Emotional appeal increases brand consideration under low and high attention, but decreases brand choice when higher levels of attention is given. The boundary condition for the effect is that emotional appeal is more effective for brands which have both utilitarian and hedonic nature, rather than for brands which are predominantly utilitarian or hedonic. However, there is a methodological consideration. Although an ad can be perceived as predominantly rational or emotional, the use of ecologically valid stimuli in this study does not allow for distinguishing of *purely* rational and emotional ads and fully separating the effects of those appeals. As a result, many of the effects fail to reach statistical significance in the regression analyses. However, the non-significant results are still theoretically relevant and provide directional support for the hypotheses.

9.1.2.4. RQ4: *Does the matching (mismatching) between appeal and brand type enhance the effectiveness of digital advertisements under conditions of low attention?*

Study 3 revealed that mismatching emotional appeal to utilitarian brand enhanced the effectiveness of digital advertisements under DA, and weakly so under IA. In particular, mismatching significantly increased brand choice under DA; despite directional support for matching (emotional appeal for hedonic brand), the difference between matching and mismatching was non-significant under IA.

The results suggest that the effect of (mis)matching is moderated by the amount of attention given to the ad during exposure. Mismatching ads increase the likelihood of the brand being considered and chosen when higher attention is paid to the ads; whereas matching increases the likelihood when lower attention is given. This provides some support for the thesis's proposition that initial attention during advertising exposure influences the entire processing of and responses to advertising.

The 'match-up theory' posits that rational appeal is more effective for utilitarian products and emotional appeal is more effective for hedonic products (Choi et al., 2012; Johar & Sirgy, 1991; Shavitt, 1992). The findings in Study 3 extend the theory by providing a boundary condition that attention modifies the relative effectiveness of (mis)matching elements in the ads. This is an important challenge for advertisers who intuitively focus on creative efforts and neglect attentional effects as a key to improving advertising effectiveness. To conclude, mismatching enhances the effectiveness of digital advertisements under FA and DA; while matching enhances the effectiveness under IA.

9.1.2.5. RQ5: *Does attention in the processing of digital advertisements affect the likelihood of people making rational versus intuitive judgements?*

Studies 2 and 3 confirmed that attention during ad processing notably affected the likelihood of people making rational versus intuitive judgements as responses to the ads. In particular, people were more likely to make rational judgements when processing took place at higher attention (FA); whereas people were more likely to make intuitive judgements when processing took place at lower attention (IA). It should be noted that DA shows different patterns across two studies, suggesting that people's judgements under this condition are less predictable. As discussed previously, this result might be due to the distinct mechanisms underlying DA, namely cognitive and perceptual load (Lavie et al., 2004). Alternatively, as discussed in Chapter 8, the result in DA can reflect the influences either from people being cognitive misers (Fiske, 1981) or from an attentional boost effect (Spataro et al., 2013).

Based on the findings, it seems logical to argue that consumers are more likely to make intuitive judgements under low attention conditions because (1) affect is greater and more accessible than cognition, (2) consumers have limited information about the choice options due to low attention processing that restricts a reason-based evaluation process, and (3) low attention processing is tagged with positive affect (hedonic marking) resulting from the ease of processing (fluency). The findings also present an important theoretical consideration. They seem to invalidate the alignment of intuition with low processing and deliberation with high processing, shown by increases in the likelihood of rational judgements in both FA and DA. As such, the findings support the notion of 'single-process' (Kruglanski & Gigerenzer, 2011). Moreover, Kahneman (2003) argues that intuitive judgements are rapid and associative, and rational

judgements are slow and rule-based; however, the results of response latency in Studies 2 and 3 that response latency is not affected by attention show that intuitive or rational judgements can be fast or slow.

9.2. Contributions of the thesis

As there is a lack of systematic studies that investigate the dynamic nature of low attention processing on consumer responses to advertising, this thesis makes a number of substantive contributions in terms of theory, methodology, and practice, and should be of great importance to advertisers and researchers alike.

9.2.1. Theoretical contributions

The first theoretical contribution of this thesis rests on advancing the advertising theory that consumers can be influenced by exposure of advertising under three conditions: (1) high attention (consciously selecting and processing the ads), (2) divided attention (merely perceiving the ads), and (3) incidental attention (actively ignoring/avoiding the ads). In support for the Strong theory, the AIDA model, and the central route of the ELM, there is clear evidence that greater impact was found in high attention than in low attention. However, the results are also consistent with the Weak theory that the effect obtained at lower attention (DA/IA) was significantly greater than the 'no attention' (no exposure) condition. The findings suggest that attentional effect rather than mere exposure effect determines the advertising effectiveness. Holding the exposure constant, the experiments found different effects under high versus low attention conditions.

The second contribution relates to the mechanism underlying the low attention effects. As the current research did not directly investigate the low attention mechanism, it remains an open question. However, the findings suggest a set of mechanisms by which the low attention effects might have been obtained: perceptual fluency, conceptual analysis, and affective processing. Studies on perceptual fluency (e.g. Janiszewski, 1988; Janiszewski, 1993) found that stimuli with matching perceptual features in exposure and testing were more frequently selected; whereas studies on conceptual analysis found that processing of advertising claims or brand names during exposure increased the probability of the advertised brand being selected (e.g. Shapiro, 1999; Yoo, 2009). This stream of research, however, implies that memory of features or the brand name is a prerequisite for the brand to be selected. The current research found that low attention processing may facilitate perceptual as well as conceptual processes, shown by the selection of target brands which are perceptually congruent as well as incongruent, but also proposes another mechanism, the affective processing. The results of Study 1 show the facilitation effect on unfamiliar brands despite participants' lack of recognition memory. Here, the results imply that low attention ads induce brand feelings that are expressed, so it can be measured, when people engage in brand consideration and choice tasks. By proposing the affective mechanism for low attention, the current research makes several theoretical contributions. It (1) supports the 'hedonic marking hypothesis' (Damasio et al., 1996; Reber et al., 2004; Winkielman et al., 2003), but also (2) extends it by showing that the hedonic marking process involves both perceptual and conceptual analyses, and (3) proposes an interplay between affect and low attention in responses to advertising.

The third contribution concerns examining the moderating effects of source factors (specific brand/product characteristics) and specifying the boundary conditions under

which these factors do or do not affect advertising effectiveness. Although an exclusive examination of the brand/product factors is beyond the scope of the current research, several factors inherent in any advertisement have been examined. It is found that the low attention processing benefits the unfamiliar more than familiar brands, but also familiar brands which are utilitarian. Also, emotional appeal enhances the effectiveness of digital ads under IA, while rational appeal enhances the effectiveness under FA and DA. Additionally, mismatching emotional appeal to utilitarian brand enhances the effectiveness of digital advertisements under DA, and weakly so under IA. Accordingly, the current research questions whether factors that have been shown to facilitate advertising effectiveness (i.e. increasing attention and salience) can have different impacts if consumers process the ads with lower attention.

The fourth theoretical contribution relates to the application of 'attention theories' in advertising research. Two theories explaining how attention works in information processing were compared, namely the Spotlight theory and the Gradient Model (Johnson & Proctor, 2004). The results confirm that the Gradient Model of attention offers a better explanation for the low attention effects. While the Spotlight theory posits that attentional focus moves spatially so only the location within its 'beam' receives processing, the findings reveal a distribution of attention in terms of a gradient, with attentional resource concentrated at the centre and gradually decreasing away from the centre. The findings also imply that attention is not allocated to region/location, but rather to an object or features of an object, so attention may be independent of eye movements. This challenges the principle of the eye-tracking method in advertising research which is likely based on the Spotlight theory of 'all or none' attentional distribution. Consistent with the Gradient model, other concepts in psychology include 'inattentional blindness' (Mack, 2003) and 'change blindness'

(Simons & Levin, 1997) showing that participants failed to notice the events/changes occurring in the focal field when attention was directed to a particular object, famously referred to as the 'looking without seeing' phenomena. Consequently, there are big questions about the validity of saccades and fixations in eye-tracking research to inform advertising effectiveness.

9.2.2. Methodological contributions

The first methodological contribution rests on integrating two approaches in advertising research (Chang, 2017): advertising effects (how advertising works and the effects it generates) and consumer psychology (information processing triggered by advertising). A body of research has focused on either the effects of ad stimuli (e.g. Dahlén & Lange, 2004; Smith, 1991; Young et al., 2019) or ad processing (e.g.Daugherty, Hoffman, Kennedy, & Nolan, 2018; Duff & Sar, 2015; Glassman & Pieper, 1980; McCreery & Krugman, 2017; Petty et al., 1983). However, Kahneman (1973) advocates that predicting behaviour from stimulus consideration alone without considering how the stimulus is processed would yield misleading results. The integration of the two approaches allows for the investigation of almost the entire process of advertising (Rossiter & Percy, 2017; Wright, 2016) including *opportunity to see*, *processing (attention)*, and *brand communication effect (activation and retrieval)*. The final outcome, *brand purchase,* is not included because of possible deflection at the point of purchase.

The second contribution concerns a novel methodology for investigating attention to advertising by employing a realistic experimental design which allows for natural variation of consumers' attention. Much evidence of low attention effects in prior research came from inferences (e.g. Heath et al., 2006; Reijmersdal, 2009) in which

the levels of attention during exposure were not known and low attention effects were inferred from evidence of an increase in brand preference despite lack of memory of the exposure. Allport (1989) notes that research can manipulate the direction but not the intensity of attention (i.e. how much thinking is given) as it is fully controlled by the individual. The current research did not directly measure attention, but the manipulation of attention was successful because a systematic difference in the outcomes was observed across attention groups. As such, the research contributes to the method for manipulating attention in advertising research. More importantly, the method allows for the natural variability of attention influenced by distractions from the internal as well as external environments being integrated into the experiment, and enables measuring the behaviour of the consumers when viewing digital ads, independently from self-reporting.

The third contribution relates to measurements for advertising effectiveness which are sensitive to low attention effects. Brand consideration and choice measures are validated across three studies. The methodology comprises two methods - laboratory and online experiments - serving as a triangulation for the reason that "different research techniques producing consistent results provide a more effective base for describing, explaining, understanding, interpreting, predicting, controlling, and critiquing a communication process or event than a single research technique producing a single result" (Frey, Botan, & Kreps, 1991, p. 14). Across two methods and three studies, the results are remarkably consistent that low-attention advertising does have a positive effect on brand consideration and choice. This provides confidence that the results were not due to some undocumented errors or research design artefact as the findings hold firm across deliberately manipulated conditions (Sharp & Wind, 2009). The research contributes to calibrating brand consideration and

choice as alternative measurements for advertising effectiveness. Prior research has employed memory measures to reflect the researchers' beliefs that what is remembered consciously or subconsciously is an indicator of advertising effectiveness (Cramphorn, 2008). However, in the context of low attention, advertising effectiveness may not reflect brand memory, but rather, indicate that exposure of advertising has changed the way people feel about the brand, which can be measured in brand consideration and brand choice.

9.2.3. Practical and managerial contributions

The research makes several contributions for advertisers. First, the findings are encouraging in which it relaxes advertisers from the necessity to attract and hold consumer attention to their ads. A recent study reported that 94% of all attention paid to Facebook ads is passive viewing (Nelson-Field, 2020), so low attention processing seems to be the default mode when consumers view digital ads. As the current research shows that low attention has a positive impact on brand consideration and choice, advertisers need to reconsider their reliance on high attention metrics to assess the *full* range of advertising effectiveness. The research also sparks the need for digital metrics of attention that account for low attention effects. Current digital metrics relying on viewability and high attention, such as clicks, cost per completed view (CPCV), and audible and visible on complete (AVOC) (Nelson-Field, 2020), are prone to non-human traffic (IVT) that can inflate advertising impressions while in reality, no one has seen the ads (Fulgoni, 2016). This fraud potentially wastes much of advertising expenditure. Briefly, the research offers a practical method for assessing digital ads effectiveness, which can be used for pretesting or testing the on-going campaigns. Marketers can use the method to assess the effectiveness of roadside billboards, in-

store ads, in-game ads, or any other type of advertising that primarily works under conditions of low attention. The simplicity of the online methods in the current research addresses a recent call for practical measures for advertising effectiveness rather than complicated measures with methodological rigour commonly employed in advertising research (Ang & Eisend, 2018).

Second, the nuanced effects from the interaction between source factors and low attention processing inform specific advertising elements that advertisers can exploit to enhance the low attention effects, and provide a practical guidance for media placement. For example, Study 1 suggests that ads from well-established brands of utilitarian products will be more effective if they are published in the media where attention switching is prevalent such as mobile devices. In this case, spending budget on buying dedicated space and targeted ads would not be effective as attracting more attention can diminish positive affect and reduce purchase likelihood. The practical implication of Study 2 is that emotional ads will have more impact on brand choice when they are placed in incidental attention environments such as in advergame and roadside digital signage; whereas ads that convey rational arguments will be more effective when they are placed in low-cluttered media where attention is more focused. For example, targeted advertising, pop-ups, pre-roll or in-video ads, or buying dedicated space for DRTV commercials. Finally, Study 3 implies that utilitarian brands should be promoted using emotional ads in high-cluttered media where consumers often switch their attention between multiple screens. Additionally, this type of ads can also be effective for more targeted audience such as social media news feeds, where attention is likely more focused. In contrast, for low-attention environments in which ads are not the primary goal, utilitarian brands should be promoted in rational ads to slightly increase processing.

Third, while buying impulsiveness is frequently triggered by information at the point-of-purchase (Khachatryan et al., 2018; Strack & Deutsch, 2006), the current research suggests that impulsiveness can be facilitated when consumers process ads with lower rather than higher attention. The growth of e-commerce and the ease of acquiring the product online expand the opportunity for digital ads to encourage impulsive purchases (Strack & Deutsch, 2006). While there is a set of mechanisms that consumers use to help them make 'satisficing' decisions (Simon, 1955), the *availability heuristic*, an assessment of the degree of 'satisficing' based on the ease of retrieval (Kahneman, Slovic, & Tversky, 1982; Schwarz, Bless, Strack, et al., 1991), offers an explanation of how low-attention ads can drive buying impulsiveness. This is consistent with prior research reporting that impulsive buying increased if participants' cognitive resource was depleted by a preceding task (Hofmann, Rauch, & Gawronski, 2007). Obviously, there is some support in the literature that low attention processing can drive impulsiveness.

9.3. Limitations of research

Although the current research provides valuable insights into low attention processing of digital ads, several limitations have been identified. First, the screening and subsequent selection of a brand by the consumers is an important process that brand managers need to understand and manage. While brand choice can be driven by the commonness or uniqueness of the brand's name or logo, this factor was not manipulated in this research as a consequence for ecologically valid stimuli. Selected generic tweets were used at exposure and the real brand names and logos were used in the measurement of dependent variables. Although all brands presented in the consideration set have been pre-tested to show no significant differences in terms of

familiarity and likeability, this does not preclude the potential biases from the commonness/uniqueness of particular brand name and logo, including the specific information as part of the logo. For example, the Breitling logo includes the year '1884' and the Weiss logo features 'US made'. This specific information can activate particular associations and disproportionately affect brand choice, but they were not removed for ecological reasons.

Second, there are several methodological limitations. In Study 1, although the pre-test was successful in differentiating hedonic versus utilitarian product type, the logistic regression showed a non-significant difference, suggesting that doing so at the brand level instead may improve the classification accuracy, and thus, the power of the experiment. In Study 2, while the stimuli selection was successful in differentiating rational and emotional ads, it is not possible to have purely rational and emotional ads as organic tweets were used as stimuli. As a result, many interaction effects between appeals and low attention did not reach significance. In Study 3, although matching and mismatching were between-subject factors, participants were exposed to two types of stimuli. Participants in the matching groups were exposed to both rational-utilitarian and emotional-hedonic ads; while those in the mismatching groups were exposed to rational-hedonic and emotional-utilitarian ads. This approach leads to aggregated results that reduce the significance level. Logistic regression is sensitive to the amount of variance in the data, and aggregated data reduce the variance, and therefore reduces the statistical power. Theoretically, investigating the effect in a full between-subject design would improve the statistical power.

9.4. Recommendations for future research

In an effort to better clarify the relationship between low attention and advertising effectiveness, this research could be extended in specific ways. More work is needed to reproduce the basic results, gain fresh samples, investigate new categories, new formats (such as Facebook or Instagram ads, static or dynamic ads, verbal or visual, and presented peripherally or simultaneously), apply other types of experiments (such as field experiments with companies), and examine the effects from individual differences (such as gender, age, motivation) and other media (such as mobile media due to the widespread use of smartphones).

Another area to consider is the impact of source factors. Much can continue to be done to understand how brand/product and ad characteristics interact to affect low attention processing. Future research can investigate brand-related cues that facilitate low attention processing. Prior research has found that 'jumping frog' in Sony television ads (Ohme, 2009) and a puppy in Andrex toilet tissue ads (Heath, 2012) can drive the success of advertising, despite being irrelevant to the brand/product. When consumers process the ads at low attention, these 'items' will evoke positive affect that can be linked to the brand. Knowledge of such cues is critical for advertisers and marketers to bridge the gap between brand communication effect in advertising and the actual brand purchase.

A further line of research to consider is the nature of the attention being paid to the advertisement. There may be other subtle differences between IA and DA, beyond those already seen in the logistic regression results. Which has less cognitive oversight? Is it incidental attention, because so little cognition occurs? Or is it divided attention, because handling multiple objects fully occupies deliberative and executive

reasoning, allowing stimuli to slip through oversight more readily for processing? Additionally, future research can look at the different ways ads are processed (e.g. sensory, semantic, ad claim, and brand) and how they affect subsequent brand choice; specifically, what brand-related cues that consumers encounter at the point of purchase will likely evoke the positive affect from low attention ads. These are empirical questions that need more research.

Finally, advertising likely interacts in a variety of subtle ways with the consumer decision-making process. There are four stages in the process – ad exposure, ad processing, brand communication effects, and brand purchase (Rossiter & Percy, 2017). Thus, the nuanced results for brand/product characteristics found in the current research may be due to different factors coming in to play at different stages of this process. To develop a full understanding of these effects may require more thinking about the role of advertising in different stages of the consumer decision making process. A set of standardised outcomes could be developed to help measure effects for each stage of this process. For example, salience metrics, brand consideration, brand preference (choice), and also actual purchase (sales data) may all give separate insights into advertising effects at different stages of the decision-making process. Research that compresses the consumer decision-making process into one or two simple steps may only ever yield a partial understanding of advertising impact.

9.5. Conclusions

The current research elucidates the relationship between low attention and digital advertising effectiveness. The proposition for low attention processing is particularly relevant to address current problems such as media multitasking (Angell et al., 2016), multiscreening (Segijn, Voorveld, Vandeberg, et al., 2017), perceived ad intrusiveness

(Doorn & Hoekstra, 2013), and advertising avoidance (Cho & Cheon, 2004). It also provides some support for 'attention economy' (Davenport & Beck, 2013; Nelson-Field, 2020) that highlights the scarcity of consumer attention and considers attention as a highly valuable commodity.

The findings suggest that, at least in the Twitter environment, advertising is effective even under conditions of low attention. Specifically, ads that were viewed under conditions of low attention received *'active'* processing which increased the likelihood of the advertised brand being considered and selected as preferred brand choice. *'Active'* processing here refers to the simple notion that positive affect may result from subconscious evaluative associations in response to an advertisement. An important consideration is that low attention at initial exposure can influence brand retrieval when specific brand-related cues are encountered, leading to greater brand consideration and choice, even without conscious recognition memory. Obviously, being considered has an important implication for actual brand purchase. The current research considers 'low attention' as active processing that has an impact on brand choice, and argues for attentional effects as an important determinant for advertising effectiveness, as opposed to exposure effects (Zajonc & Markus, 1982), which currently dominate the advertising literature.

Considering the nature of advertising processing and brand choice, it is somewhat surprising that many studies on advertising effectiveness do not account for attentional effects, in particular low attention effects that arise from affective processing and occur without recognition of previously seen ads in their measurements. Often consumers are exposed to a brand advertisement, ignore it, and do not act on it at the time of exposure. If brand choice depends on the accessibility of brand cognitions, it is more

likely to suffer from lack of elaboration resulting from reduced attention during exposure. Although advertising may need time to work, "advertising is effective early on or never" (Tellis, 2004, p. 29), so ads which do not produce any effect early will probably not be effective in the long run. Consequently, if the low-attention effect can be observed immediately following advertising exposure, the effect is predicted to persist and potentially guide consumers in a buying situation.

Furthermore, the research presents a novel testing methodology for digital advertising effectiveness, accounting for effects that occur under conditions of low attention. It provides confirmation for Wright's (2016) proposition that brand consideration and choice measures are capable of capturing the subtle effects of low attention processing and should, therefore, be considered as alternative measures for advertising effectiveness. It should be noted, however, that these two measures may be useful for diagnostic purposes or copy testing, as shown in the current research, but their usefulness for evaluating the actual performance of digital ads in the marketplace (i.e. sales) has not been examined. Also, the value of this research lies in its simple, practical, and ecological methodology addressing a longstanding concern that advertising research is more concerned with methodological rigour which practitioners often strive to apply. Apart from digital advertising, the research has substantive implications for other types of low attention advertising including roadside billboards, in-store ads, in-game ads, brand sponsorships, and any other ads that primarily work at low attention.

Finally, recent developments in digital media have heightened the need for understanding and managing consumer attention. The low attention effects, although subtle, are observable and highly relevant to understanding how consumers process

digital ads and the impact of this type of processing on consumer choice. As the effects are obtained without subsequent correct respondent recognition, the research sparks the need for reassessment of the use of memory theory in advertising measurement, and for fresh insights into factors that drive the success of digital advertising. Indeed, more systematic research is needed to explore the low attention processing across a wide range of conditions as many questions arise regarding the current advertising theory and principles and their relevance to the digital revolution.

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