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HUMAN FACE AND COGNITIVE LOAD EFFECTS ON ADVERTISEMENT ATTENTION GRABBING AND ATTENTION GUIDING

DOCTORAL DISSERTATION

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AUTHORSHIP STATEMENT

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SUMMARY

Advertising is constantly evolving, and the challenges it faces today are vastly different from those it faced in the past (Wijaya, 2012; Dahlen & Rosengren, 2016; Fortenberry & McGoldrick, 2020). Nevertheless, the original goal of advertising, to attract consumer attention, remains the same. The consumer attention, or gatekeeper to higher-level advertising outcomes (Bellman et al., 2019), must not only be efficiently attracted, but also guided to the central advertising message. The relationship between the advertisement presentation and these higher-level advertising outcomes, such as positive feelings toward the product, brand loyalty, and actual purchase, is rather weak (Eisend & Tarrahi, 2016). The sheer volume of events that occur between the presentation of the advertisement and consumer behavior directed toward the advertised product can confound the overall impact of the advertisement. For this reason, the goal of marketers is to positively influence each event under their direct control. The design of advertisement is certainly one of them.

The present research continues the series of research begun in the 1990s to determine how to most effectively capture consumer attention. Although more than half of all advertisements feature human faces (Xiao & Ding, 2014), the human face itself has surprisingly not received enough attention from researchers. The practice of showing a human face in advertisements has been associated with easier recall, more positive attitudes, and purchase intentions in the sparse literature on the topic. However, even those researchers who have studied the human face in an advertising context (Droulers and Adil, 2015; Palcu et al., 2017; Guido et al., 2019) have not focused on the factors that influence the face's ability to automatically grab attention, nor on what happens to consumer attention once it has been captured by the human face in an advertisement.

This dissertation will attempt to elucidate the potential mechanisms by which the human face can attract consumer attention to advertisements. We hypothesize that the ability of the face to grab and guide attention lies in the eyes (**gaze direction**) and **emotional expression**. The eyes are considered one of the most important social stimuli that can be used to express complex mental states such as beliefs, desires, and emotions. Thus, we will argue that this evolutionary importance of attending to and recognizing of another person's gaze direction can be used to either direct attention to the ad itself or to guide attention to a specific advertising element (to which the model is gazing at). Similar to gaze, facial expression is another salient channel through which a person expresses their emotional state. The importance of quickly becoming aware of another person's emotional expression to the survival of our ancestors has led to the development of a mechanism by which emotional expressions can be quickly identified and recognized.

The final factor examined in this paper is **consumer cognitive load**. It is almost impossible to study advertising without including consumers' cognitive resources, which are more

likely to be invested in other activities than in advertisement processing. This problem is exacerbated by the proliferation of new media channels that result in consumers being exposed to a huge amount of advertisements presented simultaneously on multiple channels. Each of these stimuli competes for consumers' cognitive resources, which drive not only their attention but also their internal thoughts and goal-directed behavior.

To test whether advertising effectiveness can be increased by using these evolutionarily important social stimuli, such as the human face, and how this relationship depends on consumers' cognitive load, two studies were designed. In each study, consumers' cognitive load was manipulated in different ways. The first study examined how external cognitive load (complexity of the visual scene in which the advertisement is placed) affects the ability of the advertisement to grab attention. Having shown that the mere presence of a face in an ad is an efficient attentional cue that can capture consumers' attention, another study examines what happens to attention once it is captured by the ad and the role of internal cognitive load (amount of cognitive resources available to consumers) at the ad evaluation stage.

The results are consistent with predictions from evolutionary psychology that the importance of the human face can be used to increase the attentional efficiency of ads, but also the attitude toward the ad presented. The possible reason for this finding is the ease with which the face is processed and perceived because of its evolutionary significance, which has led to the face being preferentially attended by the human cognitive system. Most importantly, we were able to confirm the observation that faces can also be used to guide the viewer's attention to a specific location where the central advertising message or product is presented in the ad. The mechanism by which the face acts as an efficient attention grabber is the increased salience of the ad. When the saliency of the advertised product is significantly higher than the saliency of the surrounding stimuli, all other design features become less important. This can be achieved in a number of ways, such as varying the color, luminosity, size, orientation, etc. of the product. However, if the advertised product or the ad itself does not automatically stand out from its surroundings, consumers' attention is drawn by the stimuli they prefer to look for, e.g. the human face, making the ad showing it stand out from its surroundings.

The facial expression of happiness significantly increased ad saliency, resulting in shorter search times compared to other emotional expressions and other cue types. The same emotion was positively related to the ad evaluation. The gaze effect was not as strong as the emotional expression. Although some reduction in the time required to respond to a presented product was observed, the effect was rather small. Finally, unlike external cognitive load, internal cognitive load was not related to the attention (i.e., reaction time) or the speed of orienting of attention toward the presented product. Instead, internal cognitive load had a significant effect on the ad evaluation stage, with ads being perceived more positively when consumers had more cognitive resources available (low internal load).

In summary, the main contribution of this work is the finding that **the mere presence of a face in an ad has a positive advertising effect on both ad evaluation and the orientation of consumers' attention to said ad. This is true even when the ad is placed in a visually demanding environment and even when a significant portion of the consumers' cognitive resources have been consumed with another unrelated task.** Moreover, these effects can be enhanced by careful manipulation of facial features such as gaze direction and the emotional expression shown. We also extended the findings of previous research on cognitive load by showing that internal cognitive load, unlike external cognitive load, was not associated with a difference in the time taken to click on the advertised product. Instead, ratings of the advertisement were more positive when participants' minds had more resources available.

Both studies suggested that evolutionary principles may play a key role in modeling today's consumer, as the mechanisms that protected our ancestors from a potentially life-threatening situation still exist and can still be efficiently triggered in order to focus attention on these evolutionarily important stimuli in our environment. Although we used only the human face as an evolutionarily important attentional stimulus, we argue that other evolutionarily important stimuli can be used with similar efficiency. On the other hand, this represents the main limitation of the study, which should be addressed in future studies in which other evolutionarily important stimulus categories can be compared with the attention grabbing properties of the human face.

Keywords: attention, advertising, cognitive load, human face, advertising effectiveness

POVZETEK

Oglaševanje je proces, ki se nenehno razvija, in se način njegove uporabe danes bistveno razlikuje od oglaševanja pred nekaj desetletji (Wijaya, 2012; Dahlen & Rosengren, 2016; Fortenberry & McGoldrick, 2020). Vendar pa je tisto, kar je skupno nekdanjemu in sodobnemu oglaševanju, pritegniti pozornost potrošnikov - sprva na oglas in nato na ključno sporočilo le-tega, da bi se lahko potencialno vplivalo na stališča, čustva in vedenje potrošnikov.

Skupni učinki oglaševanja so relativno majhni (Eisend & Tarrahi, 2016) v primerjavi z dolgoročnimi promocijskimi in kontekstualnimi dejavniki, kot so navade, zvestoba in pretekli nakupi, ki pojasnjujejo dve tretjini variabilnosti vedenja potrošnikov (Eisend, 2015). Zato vsak še tako majhen korak k povečanju skupnega oglaševalskega učinka predstavlja pomemben dobiček za blagovno znamko.

Z namenom, da bi oglas bil učinkovit pri pritegnitvi pozornosti, je bilo testiranih več delov oglasa, vključno z velikostjo oglasa, številom črk na oglasu, višino oglasa glede na cesto itn. Eden najpogosteje uporabljenih elementov pri oglasih je človeški obraz, ki je prisoten na več kot polovici vseh oglasov (Xiao & Ding, 2014). Le-ta je povezan z bolj učinkovitim spominom oglasa ter pozitivno naravnanostjo ter nakupnim namenom. Vendar se prejšnje raziskave (Droulers and Adil, 2015; Palcu et al., 2017; Guido et al., 2019) niso osredotočale na dejavnike, ki vplivajo na to, da obraz na oglasu samodejno pritegne pozornost, niti na to, kaj se posledično dogaja s pozornostjo potrošnika, ko ga obraz v oglasu pritegne.

Eden od ključnih ciljev doktorske raziskave je preizkusiti domnevo, da sta emocionalni izraz obraza in smer, v katero je obraz usmerjen, dva najpomembnejša mehanizma s katerima pozornost potrošnika ne le pritegneta, temveč tudi preusmerita na ključno sporočilo oglasa. Domneva temelji na raziskavah evolucijske in razvojne psihologije, po katerih so oči eden najpomembnejših družbenih dražljajev, ki lahko izražajo kompleksna duševna stanja, kot so prepričanja, želje in čustva.

Drug mehanizem, s katerim je mogoče dobiti vpogled v namere druge osebe, je njegova mimika obraza. Podobno kot pogled, tudi čustveno izražanje prenaša sporočilo čustvenega stanja osebe, pa tudi motivacijo in namere vedenja. Zgodnje odkrivanje namenov druge osebe je bilo evolucijsko pomembno za namen priprave na morebitni beg ali boj, zato so mehanizmi za hitro zaznavanje smeri pogleda in čustvenega izraza obraza evolucijske prilagoditve, za katere pričakujemo, da jih bomo lažje obdelali kot druge manj pomembne dražljaje.

Zadnji dejavnik, ki ga raziskujemo v doktorski raziskavi, je kognitivna obremenitev potrošnikov. Skoraj nemogoče je raziskovati oglaševanje brez upoštevanja kognitivne obremenitve potrošnikov, saj je le-to potrebno za pozornost in tudi za zaznavanje oglasov. Poleg tega, glede na dejstvo, da imajo vsi ljudje na voljo omejeno število kognitivnih virov,

se pri uporabi le-teh obnašajo racionalno in jih namenjajo ciljno usmerjenim nalogam, ne pa motečim dražljajem, kar oglasi pogosto so. Ta problem se še poslabša zaradi vse večjega števila medijskih kanalov, prek katerih se lahko prikazujejo oglasi, kar ima za posledico izpostavljenost potrošnikov ogromnim količinam oglasov, ki se istočasno prikazujejo ter tekmujejo za isti vir kot ciljno usmerjene naloge – pozornost potrošnikov.

Izvedeni sta bili dve raziskavi z namenom, da bi preučili kako oblikovanje oglasov vpliva na pozornost potrošnika in kakšna je vloga zunanje kognitivne obremenitve, ki jo povzroča kompleksnost scene v kateri je oglas predstavljen, in notranje osredotočenosti potrošnika na lastne misli in/ali dejanja. V vsaki od raziskav je bila variirana ena izmed vrst kognitivne obremenitve. V prvi raziskavi je bila kompleksnost prizora, v katerem je bil prikazan oglas, pokazatelj zunanje kognitivne obremenitve, ki so ji bili subjekti izpostavljeni. V drugi raziskavi pa so preiskovanci dobili lažjo in težjo spominsko nalogo, ki je subjektom povzročila notranjo kognitivno obremenitev. V nasprotju s prvo se je v drugi raziskavi poleg pozornosti meril tudi odnos do prikazanih oglasov.

Rezultati kažejo, da človeški obraz, predstavljen v oglasu, pozitivno vpliva tako na pozornost potrošnika kot na odnos do oglasa. To je doseženo z evolucijskim pomenom obraza, zaradi česar je obdelava obraza prioriteta za človeški kognitivni sistem. Najpomembneje pa je, da lahko s človeškim obrazom usmerimo pozornost opazovalca na točno določeno mesto, kjer je v oglasu predstavljeno ključno oglaševalsko sporočilo ali izdelek. Mehanizem, s katerim obraz deluje na učinkovito usmerjanje pozornosti, je posledično povečana vidnost oglasa.

Rezultati so tudi pokazali, da je vidnost oglasa najpomembnejši dejavnik, ki pritegne pozornost opazovalca. V primeru, da je oglaševani izdelek močno izpostavljen na sceni oglasa, postanejo vsi ostali elementi oblikovanja manj pomembni. Če pa je oglas po zasnovi podoben drugim oglasom in/ali okolju, v katerem se nahaja, bo prisotnost obraza v oglasu povečala verjetnost, da bo potrošnik nanj bolj pozoren.

Čustvena ekspresija modela (sreča) je bistveno povečala vidnost oglasa, kar je prispevalo h krajšanju časa iskanja v primerjavi z drugimi čustvenimi izrazi in drugimi dražljaji, ki tudi lahko pritegnejo pozornost potrošnikov. Enako čustvo je pozitivno povezano z oceno oglasa. Učinek usmerjanja pozornosti z očmi ni bil tako močan kot čustven izraz na obrazu, čeprav je bilo opaziti skrajšanje časa potrebnega za zaznavanje predstavljenega izdelka. Toda omenjeni učinek je bil precej majhen in je mejil na statistično pomembnost.

Notranja kognitivna obremenitev, za razliko od zunanje, ni bila povezana s pozornostjo (tj. reakcijskim časom), ki je bila namenjena prikazanemu oglasu. Namesto tega je imela notranja kognitivna obremenitev pomemben vpliv na fazo ocenjevanja oglasov, saj so bili oglasi bolj pozitivno ocenjeni, ko so imeli potrošniki na voljo več kognitivnih virov (nizka notranja obremenitev), kar je povečalo verjetnost njihove preusmeritve na analizo in vrednotenje oglasov.

Skratka, glavni prispevek disertacije je celovita empirična študija pogosto uporabljene, a premalo raziskane spodbude za pritegnitev/usmerjanje pozornosti – človeškega obraza, s svojimi lastnostmi, kot sta čustveni izraz in usmerjenost pogleda.

Ta disertacija je tudi pokazala, da obstaja določena kategorija dražljajev, ki je prednostno kognitivno obdelana zaradi dejstva, da so jim ljudje izpostavljeni več deset tisoč let. Večina dražljajev, ki pritegnejo pozornost, kot so nenaden blisk, nenadna sprememba velikosti ali nenadno gibanje, je lahko povezanih z dogodki, s katerimi so se naši predniki pogosto srečevali in ki so kazali na bližino potencialne nevarnosti. Vse to je motiviralo ljudi k razvoju učinkovitih mehanizmov za hitro usmerjanje pozornosti na tovrstne dražljaje. Ti mehanizmi, čeprav se uporabljajo manj pogosto kot takrat, še vedno obstajajo in jih je še vedno mogoče učinkovito uporabiti za usmerjanje pozornosti evolucijsko pomembne dražljaje v našem okolju.

Čeprav je bil v študiji kot evolucijsko pomemben dražljaj za pritegnitev pozornosti uporabljen samo človeški obraz, je predpostavka, ki izhaja iz naše raziskave, da lahko tudi drugi evolucijsko pomembni dražljaji enako učinkovito pritegnejo pozornost. To je tudi največja omejitev raziskav, ki bi jo morali upoštevati pri prihodnjih raziskavah, v katerih bodo druge evolucijsko pomembne kategorije dražljajev primerjali z lastnostmi pritegnitve pozornosti človeškega obraza.

Ključne besede: pozornost, oglaševanje, kognitivna obremenitev, človeški obraz, učinkovitost oglaševanja

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RT – reaction time

ms – millisecond

INTRODUCTION

Broader scientific research

Advertising as part of the marketing communication process represents one of the most distinctive aspects of marketing, although many practitioners, as well as scholars, confuse the two (Feldman Barr & McNeilly, 2003). Depending on how advertising is defined, it can be argued that it is as old as commerce itself (McDonald & Scott, 2007). However, the real advertising boom began in the mid-20th century, after the world wars and deferred purchases during the reconstruction of national economies. Around the same time, advances were being made in the field of cognitive psychology that led marketers to incorporate consumers' cognitive processes into their advertising models, in addition to the behavioral aspects previously used. This cognitive revolution was particularly important because the main goal of advertising up to that point had been to inform consumers or describe the product to them. However, with the development of understanding, as well as the methods by which it was now possible to gain insight into the unobservable phenomena such as memory, attitudes, emotions, etc., advertising was used not only to directly influence sales, but also to **create demand, reinforce brand image, or generate feelings toward the brand** (Jones, 1998).

With the sudden progress in the way advertising is used and perceived, researchers tried to systematize and categorize the different steps in the advertising process in order to create a unified theory that describes and explains the whole process. Over the years, various models of advertising have been proposed. Despite their differences, in order for any of them to correctly describe consume behavior following an exposure to advertisement, a necessary, but not sufficient step first has to be complete – **the attentional capture by the advertisement.**

The ultimate challenge in designing an advertisement is to create such an advertisement that grabs consumer attention, despite knowing that consumers actively avoid engaging with an advertisement (Teixeira, Wedel & Pieters, 2010; Hervet et al., 2011) and that they prefer to devote their cognitive resources to their goals (Bardhi, Rohm & Sultan, 2010; Brasel & Gips, 2011) rather than processing the advertisement. It follows that any advertisement must break through two different types of clutter in order to capture reach consumer awareness - external clutter, everything surrounding an ad in the visual scene (imposing external cognitive load on the consumer) and consumer motivation to focus attention on the current target (imposing internal cognitive load on the consumer).

In the course of the two studies, we will test the notion that a particular stimulus category that has evolutionary significance is not only harder to ignore but also automatically attracts attention (Tsao & Livingstone, 2008; Hadjikhani et al., 2009). For these studies, the human face is tested as a stimulus because it is not only an important social stimulus per se, but also has the ability to guide the viewer's attention in a particular direction (Friesen & Kingstone,

1998). This can be done by the emotional expression of the face (some emotional expressions are preferentially looked at, such as anger and happiness, while others direct observer's attention outside the face expressing the emotion to the source of that emotion, such as surprise or fear) and by the direction in which a person is looking (a person looking directly at an observer is more easily detected than a person looking elsewhere).

As is shown in this brief overview of the major themes of the dissertation, the present research brings together several areas. The importance of evolutionary cues in advertising is still in its infancy. Only a handful of authors have attempted to incorporate this evolutionary perspective into marketing (Barkow, Cosmides & Tooby, 1992; Griskevicius, Ackerman & Redden, 2012; Saad, 2013). Although there is a solid foundation and some previous work on this topic (Jami, 2019), there is still a lack of conclusive evidence to support the claim that the human face is a special stimulus category that can most efficiently grab attention (Palcu, Sudkamp & Florack, 2017; Guido et al., 2019). More specifically, the claim that there are two distinct categories of emotions that can either grab or guide attention will be tested. The evolutionary framework suggests that the so-called approach oriented emotions, such as happiness or anger, motivate people to attend to the face displaying these emotions (Adams & Kleck, 2005), whereas another type of emotion, the so-called avoidance oriented emotions, reduce the importance attached to a face displaying these emotions. Rather, attention is being guided to the source of these emotions because that is where the danger or opportunity is located (Bindemann, Burton & Langton, 2008).

Previous research in evolutionary psychology has shown how accurately and quickly humans process evolutionarily ancient stimuli. For example, Oehman, Flykt & Esteves (2001) have shown that stimuli such as a snake or a spider are recognized significantly faster than fear-irrelevant stimuli such as a flower or a mushroom. The authors conclude that these types of stimuli (evolutionarily threatening) were found in a preattentive, parallel processing manner, while other, evolutionarily irrelevant stimuli were sought in a more effortful, serial manner. We will investigate whether positive stimuli, such as a smiling individual, can also have a similar effect on attention - to automatically grab attention and thus provide cognitive resources for goal-directed behavior. In this sense, this thesis aims to expand the knowledge of advertising by highlighting the importance of consumer attention as a starting point for future advertising effects. The thesis will also describe the mechanism by which consumer attention is efficiently grabbed and guided to the advertising message.

Thus, **the main contribution of the dissertation is to highlight the importance of designing advertisement that not only efficiently grabs consumer attention, but also receives preferential attention**. By providing a set of guidelines for marketers, they will be able to design advertisement that is efficient in attracting consumer attention, but is not necessarily more complex or (more) expensive to design. The results of this dissertation may show that **understanding our evolutionary ancestors is much more important than knowing today's consumers**.

Research topic and research questions addressed in the dissertation

The interconnectedness of these issues has led the scientific community to explore some of them together. Examples of such research include studies of the relationship between attention to roadside advertisements and external cognitive load (Beijer, Smiley & Eizenman, 2004; Costa et al., 2019) and studies examining how observer attitudes are affected by looking at a person next to an object (Bayliss et al., 2006). However, we are not aware of any study that combines the human face, advertising, and consumer cognitive load in a single study. This assertion represents one of the most unique contributions of this dissertation.

In reviewing the literature, we found that authors disagree on the extent to which a human face can attract attention. Several studies have shown that faces are perceived in a similar way to other stimuli (Damasio, Damasio & Van Hoesen, 1982; Diamond & Carey, 1986), while the opposite current argues that faces represent an important evolutionary signal (Bahrick, Bahrick & Wittlinger, 1975; Morton & Johnson, 1991; Tanaka & Gordon, 2011). The same is true for the validity of emotional expression and gaze direction as attentional cues. The disagreement is still present, with both groups receiving empirical support for their hypotheses. Although a single study is unlikely to solve the problem on a large scale, it can certainly help accumulate evidence for one of the groups. But by explaining the mechanism by which consumer attention is captured, marketers will have a solid basis for their decisions. Filling this gap will open another one in which future research should investigate whether such a mechanism is strictly tied to a human face or **whether it extends to other important evolutionary stimuli**, e.g., waist-to-hip ratio, images of a hill, images of savannahs, etc.

The present study was also intended to fill one of the implicit gaps in the advertising literature. As Heath (2007) argues, marketers often confuse attention with awareness. This problem can be attributed to the increasing availability of technologies capable of measuring things that were previously impossible to measure, such as eye movements. Given the complexity of such devices, as well as the importance of attention in advertising, the shift from attention to awareness may be the result of the unavailability of such devices. As a result, attention in advertising is either taken for granted or inferred incorrectly. At the very least, the present study can demonstrate that technological advances are such that there is no longer any excuse for not being able to correctly measure such complex cognitive phenomena. Finally, the sparse inclusion of clutter concepts, which are virtually inseparable from consumer behavior, provides another opportunity for the present work to contribute to knowledge accumulation. Both types of cognitive load will be experimentally manipulated to test whether the category of evolutionary stimuli is more efficient at drawing attention to advertisements than other commonly used attention grabbing stimuli such as arrows (Tipples, 2008).

Ultimately, the goal of this dissertation is to conduct a comprehensive experimental investigation of the attention grabbing and attention guiding properties of the human face in

advertising. Although the human face is used in most commercials, the mechanisms by which consumers' attention is manipulated by the human face are still poorly understood. The results of the present study are expected to provide marketers with a solid basis for their advertising decision making, but also to deepen the knowledge of consumer behavior. Although the thesis aims to explore the effectiveness of advertising, by showing the mechanisms with which consumers perceive and process advertising, a better understanding of consumer behavior is achieved. This also means that the main contribution of the study is to add an evolutionary framework to previous research on advertising effectiveness. By examining how exactly these types of stimuli are processed in terms of cognitive resources invested, cognitive load theory will also benefit from this merging of advertising and evolutionary psychology.

The goal of this dissertation is to examine how the effectiveness of advertising is influenced by the inclusion of the human face, and specifically how the emotional expression and gaze direction of said face influence attention to the advertisement and subsequent evaluation of the advertisement. At the same time, the amount of external and internal cognitive load imposed on participants will be tested for its moderator role in the relationship between attentional stimulus and advertising effectiveness.

The research questions (RQ) addressed in the dissertation are:

RQ1: *How does the human face, and its attributes, in advertisement, affect consumers' attention to ad? (H1a-H1d)*

RQ2: *How does the human face, and its attributes, in advertisement, affect consumers' ad evaluation? (H2a-H2d)*

RQ3: *How does cognitive load affect relationship between face presence in ad and consumers' attention to advertisement? (H3a-H3b)*

RQ4: *How does cognitive load affect relationship between face presence in ad and consumers' ad evaluation? (H4a-H4b)*

Potential contribution of the dissertation

This dissertation offers new insights in the field of marketing, especially in the literature on advertising and consumer behavior. However, it also provides new information for managers and may offer a different methodological perspective for studying advertising effectiveness. The theoretical contribution aims mainly to fill some existing gaps in the literature, namely, the importance of consumer attention in influencing consumer behavior

It is shown how different advertising models assume that advertising efficiently grabs consumers' attention before influencing their emotions, cognitions and behavior. Although the starting point of some models is explicitly referred to as attention or awareness, this usually refers to consumers' perception of the product/brand, rather than the advertisement itself. The main contribution of this work is to emphasize the importance of designing

advertising that not only grabs consumer attention, but also **receives preferential attention**. In most cases, advertisements are distracting stimuli that are preferentially ignored rather than focused on. By using stimuli bearing an evolutionary importance to humans, consumer attention should automatically be directed to those stimuli and to the advertisement itself, especially if the stimuli used have the ability to both grab and guide attention. Examples of such features include emotional facial expressions and the direction in which the face is gazing at. By showing that these evolutionary adaptations can be used in an advertising context, both evolutionary psychology and the advertising literature are expanded.

Another important contribution is our adoption of the difficult-to-dismiss concept of consumer cognitive load. Consumers' thoughts and concentration (internal cognitive load) and the amount of stimuli in their visual environment (external cognitive load) are constantly taxing consumers' cognitive resources, not only while consumers are exposed to advertising, but literally all the time. All of these stimuli represent additional clutter that advertising must break through. Previous literature has barely addressed the importance of consumer cognitive load, with a few notable mentions (Yoon, Choi & Song, 2011; Zimmerman & Shimoga, 2014; Bang & Wojdynski, 2016; Pantoja, Rossi & Borges, 2016; Wang & Duff, 2016; Jing Wen et al., 2020). For this reason, this dissertation will add to the existing literature on consumer cognitive load and potentially stimulate new research on this topic.

The methodological contribution of the dissertation relates to the research design used in conducting both studies. Although experiments are not as popular as correlational studies, they provide a unique opportunity to infer causal relationships between constructs. The use of the infrequently conducted, true randomized experiments also greatly increases the validity of the results. Rather than asking participants to indicate their subjective perception of how their attention was functioning, participants' behavior was measured in terms of the time it took them to move their computer mouse as an indicator of their attention, which increases the applied validity of the results.

Managerial implications

Marketers concerned with the design of advertising should not only think about what automatically attracts the attention of consumers, but also about which stimuli are less demanding and more satisfying to process for consumers. It can be observed that the majority of ads already show a human face (Xiao & Ding, 2014), but the reasons for this decision by marketers are not clear. It may well be that they use it because everyone else does. We will empirically test whether a human face can both grab consumers' attention without overly burdening their cognitive resources and guide it to a specific location in the advertisement. Regardless of the type of attention stimulus (a human face, a bright color, an arrow pointing to a specific location in the ad, etc.), the advertiser's goal is to make the consumers aware of the advertising message. **The notion that there is a stimulus that automatically grabs the consumer attention, guides it to the advertising message, and on top of that, belongs to a stimulus category that is preferentially attended to in a crowded environment**

(Oehman, Lundqvist & Esteves, 2001; Juth et al., 2005) **is almost too good to be true**. Therefore, the main potential contribution of this dissertation is to provide marketers with a valid rationale for why they should use human faces in advertising. However, another, perhaps more implicit, contribution is to broaden their views on how to use evolutionary adaptations that have evolved over tens of thousands of years, rather than focusing on microdesign features, such as what keyword to use or what font to write the letters in or how to express the price, etc.

Structure of the dissertation

This dissertation is organized into five major themes: (1) Goals and effectiveness of advertisements; (2) Human face perception and processing in advertisements; (3) Consumers' cognitive load in advertising context; (4) Research methodology and results; (5) Discussion and conclusion.

The introduction defines a broader scientific research topic and presents the research questions that will be addressed throughout the dissertation. The first chapter outlines the theoretical background on which the research will be based. Various advertising models are described and reviewed in terms of their key characteristics. The chapter emphasizes that, despite their differences, most, if not all, models are based on the fact that consumer attention is attracted by advertisement. The following, second chapter introduces the human face as a special stimulus category that efficiently grabs attention. The mechanisms by which faces are perceived are described in detail, with particular attention paid to the two most salient facial features - emotional expression and gaze direction. The final important concept explored in this dissertation, consumer cognitive load, is presented in the third chapter. A distinction is made between different types of cognitive load under which all consumers constantly operate, followed by a review of the sparse literature on cognitive load in the advertising context. The descriptions and results of the two studies are preceded by a detailed overview of each research question and the proposed hypotheses. Finally, the main findings, placed in the theoretical context and the implications for management are presented in the discussion and conclusion. The fifth chapter ends by addressing the few shortcomings of both studies and suggestions for future research on this topic.

1 GOALS AND EFFECTIVENESS OF ADVERTISEMENTS

Advertising is constantly evolving, and the way it is used today is vastly different from what it used to be (Wijaya, 2012; Dahlen & Rosengren, 2016; Fortenberry & McGoldrick, 2020). However, the change is merely contextual and reflected in the variety of channels through which it is presented. But the core purpose of advertising has not changed that much. Evidence of this is the fact that it is still defined as a paid form of brand communication with its consumers (Duff, Faber & Nan, 2019). Half a century ago, this definition was formalized by Alexander (1960), who defined it as any paid form of non-personal communication about an organization, service, product, or idea by a known sponsor, usually the brand itself. The definition stems from the fact that advertising has its price, that it is a form of communication, that it is presented through the channels of mass media, and that it is a non-personal form of communication

Contemporary definitions merely rename the original concepts. Dahlen & Rosengren (2016), for example, replace the term "*consumer"* with "*people*" because advertising affects not only consumers of the advertised product, but other people in general. This change only captures the new context surrounding advertising, but the core mission of influencing consumers is still the same as it was in the beginning. This contextual change is not trivial. One could argue that capturing consumer attention is a qualitatively different task today than it was before the advent of the Internet, let alone TV and other media channels. Although exact numbers are difficult to obtain, Carr (2021) compares various reports suggesting that the average person in the 1970s was exposed to an average of 500 to 1600 ads per day. In today's world, it is estimated that an average consumer sees between 6000 and 10000 ads each day.

From an advertiser's perspective, all of these ads are competing among themselves, even though they come from a plethora of product and brand categories. They are all competing with each other for the consumers' cognitive resources, which are usually exhausted by thinking about the task at hand, or by being preoccupied with something in the environment, or with something in their head. As if this task was not difficult enough, the advertisers are faced with the insurmountable task of getting their advertisement to be attended and not perceived as a distraction (Hervet et al., 2011). Only when this **necessary but not sufficient condition** is met can advertisers predict how advertising will affect consumers. If the consumer attention is not attracted efficiently or quickly enough, another possible advertising effect cannot be observed. For this reason, the effectiveness of advertising, regardless of how it is conceptualized, depends largely on the advertisement's ability to capture attention efficiently.

The following chapter provides a brief overview of the different advertising models and their short- and long-term effects on consumers. At the end of the chapter, the measurable results are presented.

1.1 Foundational concepts of advertising effect(ivenes)s

It has been a long time since the reigning paradigm in advertising was that advertising leads to a direct increase in sales (Jones, 1998), although this is an ultimate goal of marketers. Instead, advertising can serve a variety of purposes. Kotler & Keller (2006) summarize four main purposes of advertising: to inform, to persuade, to remind, and to reinforce the consumer. Advertising that aims to inform the consumer increases brand awareness; advertising that aims to persuade the consumer creates liking, preference, and purchase intentions for the products; advertising that reminds the customer of the various benefits of the brand's products/services is intended to encourage repeat purchases; and finally, some advertisements serve the purpose of convincing the buyer that they have made the right choice. Within these goals there is a certain order, and this order corresponds to a certain group of advertising models - the hierarchy of effects models, which will be discussed in the following sections.

The problem lies in defining and measuring intended and unintended advertising effects (Rodgers & Thorson, 2019). Intended effects include behavioral outcomes (purchase and behavior change beyond purchase), cognitive outcomes (purchase intention, memory, attention), and affective outcomes (attitude toward the advertisement/brand and involvement). Examples of unintended effects also span all three of these categories by promoting the materialistic view, buying things that are not needed, unhealthy behaviors, and misunderstandings. A few observations emerge from this. First, some advertisements aim to influence consumer behavior, then there are some that aim to inform the consumer, and others that aim to build an affective bond with the advertised product and brand. Putting all these functions together, as Eisend & Tarrahi (2016) found in their meta-meta-analytic study on the sample of 1700 primary studies, the average advertising impact is rather low ($r = 0.20$). However, it is important to note that their study only considered measures that were under the direct control of advertisers. This finding is in complete agreement with previous findings that the effects of advertising tend to be small but significant (Sethuraman, Tellis & Briesch, 2011). Inertia, loyalty, and past purchases explain nearly two-thirds of the variability in consumer behavior in markets, making the meta-meta-analytic effect more important (Eisend, 2015).

Looking at the individual effects of these advertising inputs, grouped as source, message, and recipient, source has twice the effect on advertising outcomes as recepient and message (Eisend & Tarrahi, 2016). The validity of the hierarchy of effects can be established based on the effect sizes of the different steps (McGuire, 1978; Eisend & Tarrahi, 2016), with the previous steps having to have a larger direct effect on consumer behavior than the latter ones. Eisend & Tarrahi's (2016) results suggest that the effects of the source are stronger on attitudes than on behavior, that the message has the largest effect on cognition and emotion, and that the advertising strategy has the largest effect on the processing of the advertising message. This result empirically confirms the claim that the hierarchy of effects models

should not be considered generalizable, but are dependent on various other influences (Vakratsas & Ambler, 1999).

Confirmation of Eisend's findings quickly becomes apparent when reviewing the advertising literature. Although there are various perspectives from which advertising is studied, there is far less variability in the advertising outcomes used. One of the most commonly used outcomes in the advertising literature are **brand attitudes**, reported in studies ranging from brand anthropomorphism (Delbaere, McQuarrie & Phillips, 2011), corporate and product advertising (Kim et al., 2009), consumer sociodemographic characteristics and advertising presentation (Goodrich, 2013), and multitasking (Segijn & Eisend, 2019). Other commonly used outcomes are **purchase/behavioral/use intentions**, used in the studies mentioned earlier, but also in studies of ethical advertising (Pezzuti et al., 2015).

The problem that runs throughout the literature review, and was highlighted by Barry & Howard (1990) decades ago, is the interchangeable use of terms related to cognition and affect. The most striking example is the use of *attitudes* as indicators of affect. If one looks at the definition of an attitude in its original field of social psychology, the confusion is somewhat easier to understand. An attitude is defined as an evaluative integration of cognitions and affects experienced in relation to a particular object (Crano & Prislin, 2011). Another example of confusion between the two terms is the use of intentions as an indicator of affect (Segijn & Eisend, 2019). Intentions are actually indicators of an individual's willingness to perform a particular behavior, and are thought to arise from attitudes and lead to actual behavior (Ajzen, 1991)

It could be argued that advertising researchers have taken a conservative stance in defining consumer cognition and affect. Meta-analyses show that consumer cognition is usually measured by memory and comprehension (Eisend, 2015; Eisend & Tarrahi, 2016; Segijn & Eisend, 2019) and that affect is usually measured as attitudes and intentions, positive feelings, etc. Barry & Howard (1990) are aware of this problem and state that consumer cognition has been defined as the mental activity reflected in knowledge, beliefs, or thoughts about their view of the world. The most salient difference between affect and cognition is that cognition is not valenced. Unlike emotions, which can be positive or negative, consumer cognition is rarely described as positive or negative. The affective components used in these models are concepts that have valence, such as feelings and emotions in a general sense. The proper distinction between consumer cognition and affect is important for measuring both. As discussed in the previous section, different authors conceptualize effectiveness differently depending on their view of advertising. Those who attempt to establish affective commitment with their consumers test how much affective commitment is increased by exposure to advertising, completely ignoring the ability of advertising to elicit positive feelings in consumers or make them smile, etc. In order to gain a better understanding of advertising effectiveness, researchers divide the advertising process into several interdependent steps and define advertising effectiveness as the influence on the step targeted by the advertisement

One of the main ideas of this dissertation is that **advertising effectiveness cannot be studied without measuring its ability to grab consumers' attention**. As briefly discussed earlier, some advertisements are aimed at increasing consumer purchase intentions, while others are designed to create a positive bond between consumers and the product. These two objectives may be (at least partially) independent of each other. However, the ability of advertising to grab consumer attention is closely related to the advertising objectives established in advance.

The following chapter presents the variety of advertising models used to describe advertising effectiveness, from different points of view. Particular attention is paid to the lack of explicit inclusion of **attention** in each of the models. However, it is also emphasized that most of these models implicitly assume that advertising is designed to efficiently capture consumers' attention before influencing their emotions, cognition, and/or behavior.

1.2 Models of advertising

The main function of a model is to represent something by retaining the most important elements while ignoring other, less important details (Fife, 2021). There is always a trade-off between the simplicity of the model (it is generalizable to a large number of phenomena) and its complexity (it is not so generalizable, but contains a lot of information about a particular phenomenon). This leads to one of the most important principles in science - the concept of parsimony (Popper, 2008). It refers to the property of a theory, model, or hypothesis to be as concise as possible and to be testable. To (dis)prove a theory, models are developed and tested using real-world data. Models that can explain important relationships in the real world are then used as evidence for theories (Shepherd & Suddaby, 2017). Researchers developing models/theories face the difficult task of explaining as much real-world variability as possible with the limited information available.

A researcher attempting to report on the total advertising expenditures of all firms in a given area can capture the advertising expenditures of all firms sampled, which would perfectly describe the real world situation, but would take both time and resources. On the other hand, the advertising expenditures of each company would be represented without error, none of the companies' expenditures would be over or underestimated. Another approach for the researcher who wants to report on the total advertising expenditures of all firms is to represent them using only one number, such as a mean. A mean represents a simple model that minimizes the error associated with describing each firm in a set (Field & Iles, 2016). Like most social domains, advertising is full of models that attempt to describe, explain, and predict events in the real world.

The impact of advertising depends on researchers' views of what advertising is and the ways in which it can affect sales. For example, econometric models that predict a brand's market share based on advertising expenditures in a given time period assume market-level data rather than consumer-level data. In contrast, researchers who focus on consumer perceptions

of an advertisement are less concerned with some of the macro variables that influence this relationship, such as market share, brand country of origin, etc. Although both groups study the effects of advertising, they rarely cross paths.

In order to concisely present multitude of different advertising models, we first grouped all of them according to their proposed nature. On the one hand, there is the so-called "Hierarchy implied model", according to which there is a cascade of phenomena, each of which depends on the previous one. Apart from this difference, they refer exclusively to the relationship between brand and consumer, ignoring the macroeconomic perspective. The other group of models, "Models without the assumption of hierarchy", is characterized by their simplicity and adaptability to different scenarios. Their simplicity stems from the fact that they either ignore microeconomic phenomena (Market Response Models), oversimplify the processes that influence consumer behavior, or assume that the order of these processes is not fixed and depends on the type of product and/or service.

The systematization of models used in this dissertation is a combination of various reviews of advertising models by Vakratsas & Ambler (1999), Barry & Howard (1990), Werder (2009), and others. The fact that there are numerous categorizations suggests that the field is not yet mature and that there are many potential gaps waiting to be filled by future research. Werder (2009) categorizes models by the issues they address. For example, there are models focusing on functional areas of advertising, those that relate to the advertising process, advertising outcomes, and finally artistic theories. On the other hand, there are also advertising models based upon theories of personality and motivation, association and reversal theories, as the least used.

Other authors (Vakratsas & Ambler, 1999) have categorized advertising models based on the intervening effects between advertising and sales. Their categorization follows a proposed framework according to which advertising input precedes consumers' mental experiences before influencing their behavior. This mental experience, conceptualized as cognition, affect, and experience, is what distinguishes the different advertising models, from the simplest, which does not deal with consumers' mental experiences, across ones that assume only cognition or only affect in response to advertising, to those that have a fixed and free sequence in which these stages occur. It has been noted that the main difference between the various advertising models is that a hierarchy is assumed between the initial exposure to advertising and the ultimate behavioral action (Barry & Howard, 1990; Vakratsas & Ambler, 1999; Werder, 2009; Eisend & Tarrahi, 2016; Rodgers & Thorson, 2019). The systematization of the models is shown in Table 1.

The term "model" instead of "theory" is used as there is still no consensus on whether advertising contains its own theory or is merely a group of models borrowed from other fields, although there are papers (Mortimer, 2002; Nan & Faber, 2004), book chapters (Werder, 2009), and entire books (Rodgers & Thorson, 2019) entitled "Advertising Theory".

Table 1: Systematization of advertising models

			Key Characteristic(s)	Position of Attention	Most important authors
Hierarchy implied models	Traditional (C/A - B)	AIDA	Four-step model corresponding to three psychological components of cognition, emotion and behavior	No attention, but awareness as the entry step into the model	Wijaya, (2012); Fortenberry and McGoldrick (2020)
		DAGMAR	Importance of defining consumers' steps in measurable terms	No attention, but awareness as the entry step into the model	Dutka and Colley (1995)
		Elaboration Likelihood Model	Emphasis on advertisements' persuasiveness affecting the way in which the advert is processed by the consumer	No explicit mention of attention. Ads are differentiated based on their ability to guide consumers' attention to ad's executional elements or to the ad's message	Petty and Cacioppo (1986)
		Lavidge and Steiner Model	The original hierarchical model, with seven distinct not equidistant steps	No attention. (Un)awareness represents the first two steps of the model	Lavidge and Steiner (1961)
	Alternative (B - C/A)	Low Involvement Hierarchy Model	Experience of a product/service mediates the relationship between cognition and affect	No mention of attention, since the entry point to the model is the actual purchase	Ehrenberg (2000)
		Ray and Bem's Models	Both beliefs and attitudes are developed only after experiencing the product/service		Bem (1967); Ray et al. (1973)
		Integrative Models	Order of the hierarchy depends on the context in which the advertising is taking place (FCB grid)		Vaughn (1986)
Models without the assumption of hierarchy	No Intermediate Effects	Market Response Models	No intermediary effects between advertising expenditure and sales. Macroeconomic perspective.	No attention in the model	Assmus, Farley and Lehmann, 1984; Dekimpe and Hanssens, 1995; Leone, 1995; Sethuraman et al., 2011
	One intermediate effect	Cognition Only	Advertisement's ability to inform the consumer is the most important predictor of the consumer behavior	Assumed, not explicitly mentioned.	Bharadway, Varadarajan and Fahy, 1993; Vermna, 1980; Kaul and Wittink, 1995
		Affect Only	Advertisement's ability of causing an affective response is the most important predictor of the consumer behavior	Assumed, not explicitly mentioned.	Zajonc, 2001; Berlyne, 1966; Blair, 2000
	Multiple Intermediary effects	Hierarchy Free	Consumer oriented, draws from various other fields (mythology, anthropology, etc.), brands are viewed as icons, beings, etc.	No attention in the model	Buttke, 1991; Delbaere, McQuarrie and Phillips, 2011

Source: Own work

1.2.1 Advertising models without the assumption of hierarchy

1.2.1.1 Market response models

The simplest model in terms of the mediator between advertising input and consumer behavior is the market response model. Its main feature is that it focuses entirely on macroeconomic phenomena and its primary data consist of market-level data (Deighton et al., 1994). In contrast to consumer-based models that derive brand loyalty from information obtained directly from consumers, market response models define brand loyalty as the number of repeat purchases (Vakratsas & Ambler, 1999). Although these models are not able to explain the intermediate effects on consumers, their main advantage is that they can be used to **set a boundary condition** of how large the total advertising effects are.

Most general findings about advertising come from this type of research. For example, estimates of the duration of advertising effects range from three to 15 months (Assmus, Farley & Lehmann, 1984), six to nine months (Dekimpe & Hanssens, 1995), to more than one year (Leone, 1995). Other notable findings include the conclusions that advertising helps a brand by making its consumers less price sensitive, as opposed to promotions that make consumers, especially non-loyal consumers, more price sensitive (Mela, Gupta & Lehmann, 1997)

These types of studies can provide a broader picture to other researchers. The fact that they do not look at the characteristics of the intermediaries, i.e., the consumers, is not as problematic as one might expect, since they are not selective in choosing the brands they observe. Advertising of the observed brands can be expected to affect consumers' cognition, affect, and experience equally, making it possible to state that these effects are controlled for. Findings that increased advertising is responsible for up to a 33% increase in sales for established brands and for more than half of newly established brands (Lodish et al., 1995) refer to the average way brands advertise. These types of studies have shown that short-term advertising effects quickly flatten out (Jones, 2007) and that advertising reach becomes more important than mere exposure after three exposures (Pedrick & Zufryden, 1991).

The most commonly used outcome measure in such studies is **brand's advertising elasticity**, or the percentage increase in sales or market share for a 1% increase in advertising (Sethuraman et al., 2011). Again, the results suggest that advertising has a small but significant effect on sales (Sethuraman & Tellis, 1991; Hu, Lodish & Krieger, 2007). The reported mean short-term elasticity is .12 and decreases over time. While this result may be surprising, Sethuraman et al. (2011), in defense of advertising, note that price reductions may boost sales but do not necessarily increase profits.

Another interesting result was observed for the recession period, which may be of particular importance because of the ongoing pandemic. Although the conventional wisdom is that

advertising costs should be reduced during these times because sales are lower, Sethuraman et al. (2011) observed just the opposite. Neither the short- nor the long-term advertising effects are lower during recession, with the long-term effects actually being higher. It is possible that **consumers pay more attention to advertising messages during such times** because fewer ads are presented. Once the economy recovers, sales increase again. For the same reason, elasticities are higher in Europe than in the U.S., possibly because too much advertising is done in the U.S. and too little in Europe.

The Market Response Models are quite unique compared to the other models we will present below. They represent the only macroeconomic perspective on advertising effectiveness. All other models focus on the processes that take place between the presentation of advertisement and sales.

1.2.1.2 Cognitive Information Models and Pure Affect Models

The two sets of models, described simultaneously, place consumers between the advertisement presentation and the brand's market share. Although conceptually similar, both assume that there is only one determinant that influences advertising effectiveness, either consumers' cognitions (Cognitive Information Models) or emotional states (Pure Affect Models). Both models assume that human behavior is determined by either the consumers' cognition or emotion. Although we now know that this is not the case, and that consumer behavior is often determined by an interaction of the two factors, the ideas behind the two models are rooted in the more advanced advertising models. In most cases, advertising appeals to consumers' emotions, but it also informs consumers about the brand and/or product being advertised. The Cognitive Information Models are important because they emphasize product categorization and focus on price sensitivity, while the contribution of the Pure Affect Models to the contemporary models is that they address issues such as advertising exposure. The main findings relevant to the contemporary models are presented below.

Proponents of the Cognitive Information Models argue that the only important attribute of advertising is the information provided, which in turn can reduce the search cost of shopping time (Bharadwaj, Varadarajan & Fahy, 1993). To account for oversimplification, the model introduces a categorization of goods into search and experience goods (Nelson, 1974). The main difference between search and experience goods is the possibility of verifying the truth of the advertising claims (Davis, Kay & Star, 1991). For this reason, advertising is expected to be more effective for experiential goods than for search goods because the advertising itself provides information that is not available for verification (Verma, 1980). The model was later transformed into search and experiential attributes (Wright & Lynch, Jr., 1995), since many of the goods can be considered both search and experiential.

Another important line of research involving Cognitive Information Models is price sensitivity, since many advertisements contain price information. After disagreement about

the relationship between price advertising and consumer price sensitivity, Kaul & Wittink (1995) conclude that non-price advertising decreases price sensitivity and that price advertising increases price sensitivity - leading to lower prices.

In contrast to the cognitive models, the Pure Affective Models disregard consumers' cognitive abilities and focus instead on their affective responses. Thus, the goal of advertising is to be appealing and pleasant and to evoke positive feelings toward the brand and/or product. The implicit assumption of this model is that consumer behavior is emotion-driven, which means that advertising that is judged to be more appealing should be more effective regardless of the information presented. Some authors even go so far as to claim that mere exposure to an appealing advertisement is sufficient to arouse positive emotions towards the brand (Zajonc, 2001). The main issue that interests researchers in these theories is the attrition of advertising (Blair, 2000). In order for an advertisement to become familiar and likable, it must be presented a certain number of times to achieve optimal arousal (Berlyne, 1966). Apart from this issue, researchers working within the framework of pure affect models have found that music can influence preference evaluations (Bierley, McSweeney & Vannieuwkerk, 1985), that liking of advertisements is related to behavior (Biel, 1990; as cited in Vakratsas & Ambler, 1999), and that affective attitudes toward advertisements can be formed independently of cognitive processes (Janiszewski, 1988). Opponents of Pure Affect Models claim that the methods used to study these effects induce a cognitive bias (Breckler & Wiggins, 1991), meaning that even when asked about emotional state, a certain amount of cognition is employed by the consumer in question

Both groups of models described are far from perfect representations of actual advertising effectiveness. The main method for inferring advertising effectiveness is to measure consumers' recall of the advertisement (Cognitive Information) or their emotional response to the advertisement (Pure Affect). If either measurement reveals a significant difference in response to the advertisement, attention capture of the advertisement would receive implicit evidence, making attention the first step in the model.

Contrary to the hypotheses of these models, consumer behavior is determined by both emotional and cognitive processing of their environment. However, their importance lies in triggering deeper exploration of consumer behavior. As will be seen later on, both represent an important part of each of the more complex models.

1.2.1.3 No-hierarchy models

The models that do not provide for a formal ordering of the stages between the presentation of the advertisement and its ultimate effect on the consumer fall into this category and are characterized by the person-centered view of advertising (Vakratsas & Ambler, 1999). As with the previously described models, No-hierarchy models are rarely used to explain consumer behavior because they tend to be unstructured and difficult to generalize. Such models are usually not designed to describe how exactly advertising works, but aim to relate

advertising to different viewpoints. For example, by treating brands as myths, which makes the advertising process a process of myth making that stems from anthropology (Stern, 1995)

Such models are usually based on case studies, such as the failure of New Coke despite promising pretest results (Vakratsas & Ambler, 1999), or the anthropomorphization of brands (Buttle, 1991; Delbaere, McQuarrie & Phillips, 2011) without actual empirical validation. The greatest value of these models is that they prevent researchers from generally accepting the hierarchy of effects as the only possible advertising model, since some of the drawbacks, such as the parallel ways in which the brain receives and processes information (Martin et al., 2000), have yet to be fully elucidated

Despite the fact that almost none of these models are used to explain advertising effectiveness per se, all have had a major impact on the emergence of the modern and more complex models. Some form a building block of all subsequent models (Cognitive Information Models and Pure Affect Models), while others set the stage for the theoretical magnitude of the effect of advertising on market share (Market Response Models) and emphasize the role of the consumer in advertising.

1.2.2 Hierarchy implied models

Hierarchy of effects models, unlike the models described earlier, are at least implicitly causal. The way advertising is conceptualized is as a long-term process, which means that causality is only established in the long run and sometimes cannot be observed in the short run (Lavidge & Steiner, 1961). The central idea of the hierarchy of effects models is that a positive response to one stage is a necessary but not sufficient condition for a positive response at the following stage (Preston & Thorson, 1983).

The basic idea behind the hierarchy of effects models is that people are better able to process information serially than in parallel. This distinction between the two will be explained in detail in subsequent chapters, but it refers to the order in which a series of stimuli is processed. They can either all be perceived simultaneously at a basic level (parallel) or they can be processed sequentially in a serial fashion. Even when parallel processing occurs, i.e., when neurons from different parts of the brain fire and interact simultaneously, serial information processing must be used to connect two or more features (Wolfe, 2014). The assertion that consumers operate serially rather than in parallel has led to the development of the so-called Hierarchy of Effects Models.

Barry & Howard (1990) highlight two reasons for the importance of the hierarchy of effects. First, it has been used in a variety of disciplines including psychology, sociology, marketing, and others. An example of this group of models is the frequently mentioned AIDA (Attention, Interest, Desire, Action) model. It is usually attributed to Strong (1925), although it was first postulated in some form by Elmo St. Lewis (Strong, 1925). It was not until Lavidge & Steiner (1961) coined the term “hierarchy of effects” that AIDA was placed in

the group of similar advertising models. The second reason for the importance of Hierarchy of Effects models is their longevity. In one form or another, its roots go back to the 19th century, where it was used as a guide for marketing communications. The starting point for the conceptualization of the model was the functions of advertising. Lavidge & Steiner (1961) list three: the communication of information and ideas to consumers, the building of positive attitudes and feelings, and finally the purchase. These three functions refer to different steps that lead to an increase in sales.

Since then, new technologies have led to a diversification of the hierarchy of effects models. For example, behaviorism has been abandoned in favor of cognitivism (Anderson, 2015). The development of procedures and tools to study how the human mind mediates and moderates the relationship between stimulus and response has improved a variety of models. Nevertheless, the core of the hierarchy of effects models has remained intact. Conceptual extensions usually refer to the addition of a specific element to the model that was previously ignored. There are two big groups of hierarchy of effects models, distinguished by the position of the behavior in the model. Traditional hierarchy of effects models position behavior as the final step, the ultimate outcome, while alternative models assume that behavior is one of the intermediate steps in the relationship between advertising and sales, since repeat sales, word of mouth, and other factors all potentially influence sales.

1.2.2.1 Traditional Hierarchy of effects models

The traditional hierarchy usually consists of three steps: Thinking (cognition), Feeling (affect/emotion), and Doing (behavior). Some of the most popular advertising models fall under the traditional hierarchy, namely **Lavidge and Steiner's model** (Lavidge & Steiner, 1961), the **AIDA model** (Wijaya, 2012), and the **DAGMAR model** (Dutka & Colley, 1995). The authors consistently assert that these three steps are the most important, if not the only, steps that mediate the relationship between advertising and sales. However, there is considerable disagreement about the order of these steps, particularly the position of behavior. Although it is not the primary goal of the thesis to test and evaluate competing models, the way the studies are laid out may provide some insight into the possible order of these steps.

Much of the disagreement stems from the inadequate operational, as well as conceptual, definition of both cognition and affect, as noted earlier (Barry & Howard, 1990). Cognition is most often conceptualized as a type of mental activity reflected in a person's knowledge, beliefs, or thoughts and takes the form of remembering, recognizing, or understanding (Eisend & Tarrahi, 2016), whereas affect is typically associated with feelings and emotions (Barry & Howard, 1990; Eisend & Tarrahi, 2016). The difficulties are evident in Eisend & Tarrahi's (2016) meta-meta-analysis, which breaks down advertising outcomes separately into attitudes, behavior, emotions, cognition, and memory. Consumer cognition and emotion overlap quite a bit. For example, when a person is asked if they like a particular product, the

consumer must think of the product in question and remember the experience of using it - triggering a cognitive response. An example of this cognitive bias is the perception that beautiful people have more positive attributes than less beautiful people (Kanazawa & Kovar, 2004), which could lead to triggering an effective response when asked how likely they are to buy a particular product. All of this shows how complicated both affect and cognition are.

The original hierarchy of effect model was proposed by Lavidge & Steiner (1961). It consists of a cascade of seven stages starting with unawareness, awareness, knowledge, liking, preference, conviction and finally an actual purchase. The authors emphasize that not all steps are necessarily equidistant, i.e., depending on the consumer and the product, the distance between each step may vary considerably. For example, the time required for the consumer to develop awareness of the advertised product may be much longer than the time between being informed about the product and feeling positive emotions about the product. Although there are seven steps in the model, they can be grouped into three so-called "traditional" steps: Cognition (unawareness-knowledge), Emotion (liking-conviction), and Behavior (purchase).

One of the greatest contributions of Lavidge and Steiner was their emphasis on the fact that not all advertisements target the same step. That is why some authors recommend measures that give marketers feedback on how well the ad is performing at the current stage. For example, advertising aimed at building awareness can be tested using brand preference rankings; advertising aimed at stimulating an immediate purchase can be evaluated using market tests or split-run tests; finally, brand awareness surveys and recall measures are used to evaluate the success of advertising campaigns aimed at building the cognitive component.

Another popular advertising model, AIDA, conceptualizes the customer's journey through the same stages, although the number of steps and their names are somewhat adjusted (Awareness - Interest - Desire - Action) (Wijaya, 2012). The four steps correspond to the three psychological components of cognition, emotion, and behavior. Awareness and interest are often categorized as the cognitive step, desire represents affect, and action represents behavior. Over time, it has been revised and significantly expanded. The most recent expansion includes post-purchase effects such as love/hate toward the product (Wijaya, 2012) and post-purchase consumer commitment (Fortenberry & McGoldrick, 2020). As depicted in the model, the consumer goes through all of the above steps in sequence, regardless of the product.

Another model similar to AIDA consisting of four steps related to cognition (*Awareness, Cognition*), emotion (*Conviction*), and behavior (*Action*) is the DAGMAR model (Dutka & Colley, 1995). Although it is similar to the AIDA model, the emphasis in the DAGMAR model is on the measurability of advertising outcomes. Therefore, each step must be defined in measurable terms. Again, awareness of the product/brand is the entry point that triggers the subsequent steps. However, none of the models take into account consumers' motivation

for processing advertising. On the other hand, they provide a simple guideline for advertisers to follow in order to make their advertisements attractive to consumers.

The model that not only considers but revolves around consumer motivation is **Petty and Cacioppo's Elaboration Likelihood Model** (ELM) (Petty & Cacioppo, 1986). Similar to the AIDA model described earlier, this model assumes that cognition precedes the affective step. The difference is that not all advertising is considered equally persuasive. Depending on the consumer and the ad, it may be carefully evaluated (central route) and each element of the ad may be carefully analyzed, or processing of an ad may be based on some cognitive, affective, and/or behavioral cues that allow easy inference about the ad (peripheral route). An example of processing an ad via the central route is evaluating the features of the advertised product, whereas attention to the executional elements of the ad (such as the presence of a celebrity endorser, or humor in the ad) occurs via the peripheral route. An important concept that comes from the elaboration likelihood model is involvement. The idea behind involvement is that consumers differ in their motivation to engage with an advertisement. Consumers who take the central route and pay close attention to the advertisement are considered highly involved, while others who pay more attention to the execution elements of the advertisement than to the advertising message are considered low-involvement consumers

Since then, involvement has been considered one of the most important moderators of advertising effectiveness (Krugman, 1965, 1967; Greenwald & Leavitt, 1984; Batra & Ray, 1986; Droge, 1989). The quality of consumers' processing of advertising depends on the extent to which they are involved with the product. Highly involved consumers, for example, tend to choose more elaborate methods of evaluating the advertising message, whereas low-involvement consumers tend to choose less elaborate processing methods (Petty & Cacioppo, 1986). Some of the major findings of this line of research are that the affective responses of less involved consumers lead to more positive perceptions of the brand than the affective responses of highly involved consumers (Batra & Ray, 1986); attitudes toward advertising are positively related to attitudes toward the brand, but again more so in the context of low involvement (Droge, 1989); the effect sizes in question tend to be small, with correlations between attitudes and behavior ranging from 0 to .30, casting doubt on the validity of this model (Fazio & Zanna, 1981)

Although ELM does not provide a clear answer to the question of how advertising works, its importance lies in its emphasis on the multipath approach to influencing consumer behavior. Moreover, the model is more suitable for modeling the behavior of low-involvement consumers, which could be particularly important for the present work, since **the main effect of interest is the presence of a human face in the advertisement**, which is undoubtedly the executive element of an advertisement responsible for leading consumers to process the advertisement in more detail by drawing consumers' attention to the advertising message.

Unlike all other models presented in this dissertation, this group of models relies on consumer attention. Surprisingly, despite careful consideration of each step, neither model assumes consumer attention to the advertisement. The most likely reason for the omission of attention in these models is the inability to measure it directly. This omission represents a significant gap that we attempt to address in this dissertation. The following models can also be improved by assuming consumer attention as the first step, but these traditional advertising models, which are the most commonly used, could benefit most from the results of our studies.

1.2.2.2 Alternative Advertising Models

The Alternative Advertising Models are characterized by the position of the behavioral aspect of consumers. The traditional models agree that consumer behavior is the final step in determining advertising effectiveness. However, the Alternative Advertising Models position behavior as an intermediate step, and argue that the ultimate goal of advertising is to develop positive attitudes and emotions toward the brand.

After involvement was introduced, alternative hierarchies of effects were introduced. Krugman (1965, 1967) defined it as the linkage between consumers' lives during exposure to an advertisement and the advertised product. It has also been defined as a state of arousal, motivation, and interest evoked by a particular stimulus that can trigger behaviors such as search, decision making, and information seeking (Houston & Rothschild, 1978). The reasoning is that the mere repetition of an advertisement leads to the purchase of the product, which in turn results in the formation of attitudes and emotions toward the product/brand. Indeed, the authors propose a model in which cognition precedes action, which leads to the formation of affect. Zajonc (2001) similarly rearranges the equation by claiming that the consumers' purchase decision is the result of affect and that cognition can only be used as a justification for the purchase. This notion that emotion influences cognition is the contemporary neuroscientific position (Garcés & Finkel, 2019)

The least applicable models in this group of models are presented by Bem (1967) and Ray et al. (1973), who propose that consumers develop attitudes and beliefs only after purchase. The latter group of models is the least discussed in the literature because it is rare for products to be purchased on a whim and may apply to a limited number of products (categories) (Jones, 1998). Others have questioned the usefulness of such models, even if they are valid (Barry & Howard, 1990), although not discounting the fact that behavior can and does influence future cognitions and attitudes. Their assertion has been proven correct as more and more advertising models have recently incorporated dimensions of post-purchase cognition and affect (Wijaya, 2012).

Finally, there are two groups of models, the most complex, that introduce another dimension in addition to affect and cognition - **experience**. According to these models, advertising works by **making the consumer aware of the advertised product through mere**

exposure, which is presumably sufficient to persuade the consumer to purchase a product. The role of advertising then depends on consumers' experience with the product. If consumers' initial experience with a product is negative, advertising may mitigate these negative effects. On the other hand, it is not as effective after a positive test, which is a much more important predictor of positive attitudes and feelings toward the product used (Smith & Swinyard, 1982; Hoch & Ha, 1986; Levin & Gaeth, 1988). Examples of such a model include the Low-Involvement Hierarchy Model (Ehrenberg, 2000) and the Integrative Model (Vaughn, 1986)

The only difference between the two models is that there is a fixed sequence of steps. Low-Involvement assumes that experience mediates the relationship between cognition and affect, while Integrative Models propose that the order of the hierarchy depends on the context in which advertising is conducted (Vakratsas & Ambler, 1999). The most prominent representative of this group is the FCB grid developed by Vaughn (1986), which considers Involvement and Think/Feel as the main motivators of consumers. Each product can then be placed in one of four quadrants that form a grid. Two dimensions define a grid, Think and Feel, and each quadrant represents one of the combinations of the (low/high) Think and (low/high) Feel dimensions. For example, in the validation study, it was found that frequently purchased packaged goods can be placed in the "low thinking" and "high feeling" category, and that advertising for these products should emphasize the affective component rather than the cognitive, informational component.

Although popular, its critics point out that it is oversimplified; does not explain complex consumer decisions (Choi et al., 2012); and that its statistical properties are not satisfactory, namely its reliability (Ratchford, 1987). More recently, researchers have updated the original grid by expanding it to include the dimension of online-offline purchase location and by making the original dimensions continuous rather than categorical (Cheong & Cheong, 2020). The bottom line is that the FCB grid provides guidelines for how advertising design should be adjusted depending on the type of product being advertised. For example, when advertising more expensive products such as cars or home appliances, advertising should aim to inform the potential consumer about the benefits of a product, as the purchase decision depends more on the **thinking dimension** (Cheong & Cheong, 2020), whereas when advertising hedonic products, the **affective component** of the ad should be emphasized. It is also important to emphasize that the grid categorizes product category, not brands or personal or situational engagement (McWilliam, 1997). The model was validated in the 1980s using more than 200 products. This resulted in guidelines for managers, such as that the design of advertising should depend on the quadrant in which the product falls.

This broad overview served a dual purpose. First, to show that scholars have still not reached a consensus on how to most accurately model the advertising process from initial advertising presentation to post-purchase behavior. However, it is encouraging to see that models are slowly converging toward the ultimate advertising model. Most models, especially the newer ones, view consumer behavior as the last, or at least penultimate, step, followed by post-

purchase feelings and/or attitudes toward the product/service. Another commonality among most models is the use of similar, if not the same, steps between the presentation of the advertisement and eventual purchase. These include the cognitive and emotional aspects of consumers. The order in which they precede the actual purchase is still controversial. One group of authors argues that cognition precedes affect, another that it is the other way around, and the third group suggests that there are still moderators on which advertising effectiveness depends.

The second purpose of this review was to highlight the fact that none of the models presented starts with consumer attention to advertisement, but either starts with *awareness* or implicitly assumes that all advertising is capable of attracting at least some level of consumer attention. As Heath (2007) argues, one possible reason for this shift from attention to awareness is the difficulty of measuring attention compared to awareness, which is most often conceptualized as a form of recognition and/or recall. Nonetheless, the following chapters argue that attracting consumer attention to advertising is as important as any other step.

This review has shown that consumer attention is equally important for each and every advertising model, with the exception of Market Response Models which completely ignore micro-level advertising effects. Even the nontraditional hierarchy models (according to which consumption is necessary to develop positive feelings about the product/brand) rely to some extent on consumers' attention being drawn to a particular product rather than another when they make a purchase.

The following subsection describes consumer attention, but also presents some ways to measure it in a way that does not require expensive equipment or technological knowledge, making measurement more relevant to future researchers who wish to incorporate it into their advertising models.

1.3 Consumers' attention

Whichever way the advertising model is oriented, attention is a starting point to influence consumer behavior and the first target of advertising (Duff, Faber & Nan, 2019). It is still puzzling that despite the large amount of research investigating the attention grabbing properties of advertising, they are still not considered in advertising models of consumer behavior. As discussed in the previous section, the term attention is rarely mentioned and is instead confused with more easily measured terms such as awareness. This is not to say that marketers undervalue attention. Rather, they view it as a gatekeeper to higher-value advertising outcomes (Bellman et al., 2019) and seek to manipulate it in ways that increase the effectiveness of the advertising message (Teixeira et al., 2010). Evidence for this claim comes from a variety of studies aimed at finding out how consumer attention works. This problem has been addressed in the online context of banner advertising (Diao & Sundar, 2004; Sundar & Kalyararamn, 2004; Simola et al., 2011; Simmonds et al., 2020), street advertising (Beijer, Smiley & Eizenman, 2004; Costa et al., 2019), humor in advertising

(Gulas & Weinberger, 2006; Eisend, 2009), ad design and logo position (Teixeira et al., 2010), and video ads (Bellman et al., 2019).

Interestingly, grabbing consumers' attention can also have negative effects on the processing of an ad. For example, humorous ad elements can overshadow the brand-related portions of the message (Zillmann et al., 1980), and attention grabbing packages reduce both brand recall and liking of the ad (Bellman et al., 2019). Advertisers must therefore carefully design advertisements so that they capture consumer attention as efficiently as possible, but making sure these attention grabbing elements do not interfere with or overshadow the core message of the advertisement. We suggest that this can be achieved by using an attention grabbing advertising element that is strong enough to grab consumer attention, but also capable of guiding that attention to the advertised product. Before describing such an element, we will explain in more detail what attention is and how it works in the following subsection.

1.3.1 The conceptualization of visual attention

Attention as a cognitive phenomenon has piqued the interest of scholars for more than a hundred years, when the original definition, still used as an introduction to various books (Styles, 2008; Cornish & Wilding, 2010) and articles (Myers, Stokes & Nobre, 2017) on attention, was proposed by William James, the father of psychology (James, 1890; as cited in Myers et al., 2017). As James argues even then, the term attention was so common that people knew what someone meant by it. Without the complex technology that facilitated his research, James came fairly close to a contemporary definition of attention when he defined it as "*...the taking possession of mind in clear and vivid form ... it implies withdrawal from some things in order to deal effectively with others.*".

The amount of stimuli entering our visual field at any given moment is astounding, and yet we have no problem ignoring some while focusing on other stimuli. Researchers often compare attention to a **bottleneck**. Every stimulus in our environment competes for our attention, but our attentional capacity is limited, so we can only pay attention to a limited number of stimuli (those that pass through the bottleneck). This notion that we cannot simultaneously read a text and count the number of people around us is the basic idea of the so-called early selectionists, who claim that attention acts as an **early filter**. These authors hypothesize that because people have a limited capacity for perceptual processing, they can only perceive what they are attending to at the moment, and not everything in their environment. Selective attention thus prevents the processing of distractions at an early stage (Treisman & Gelade, 1980; Broadbent, 1982). Each incoming stimulus is analyzed, and based on this information, one stimulus at a time is selected and brought into awareness ("into the bottle"). This analysis occurs quite early, certainly before we are fully aware of these stimuli (Serences & Kastner, 2014)

Broadbent (1958), the father of the **filter model of attention**, based his reasoning on the results of auditory experiments in which one message was played in one ear and another

message was played in another ear. The participants' task was to remember what was said in the ear they focused on and what was said in another ear. Some later results not predicted by the early selection approach, such as indirect measures indicating that participants perceived the distractor stimuli to some degree, led to another approach, the late selection approach (Deutsch & Deutsch, 1963; Duncan, 1980). Proponents of late selection assumed that perception has unlimited capacity and is capable of processing both relevant and irrelevant stimuli. Only later processes, such as memory, are affected by selective attention (Duncan, 1980). This debate is still not settled in a way that satisfies both sides. Research showing that unattended stimuli do not affect performance is taken as confirmation that attention acts early, while deterioration in performance affected by unattended stimuli is taken as support for the late selection model (Serences & Kastner, 2014).

Despite the large body of research on this topic, visual attention remains poorly defined. It is often considered as a multitude of other processes, states, and concepts. Nobre (2018) notes that it is incorrectly equated with a number of different mental states such as awareness, thought, effort, will, arousal, motivation, etc. Even in more specific contexts, attention has been equated with other unrelated concepts such as pre-attention, implicit/subconscious (Goodrich, 2013). The reason for this confusion may be the difficulty in measuring whether something has been paid attention to or not. There are studies that claim to examine attention effects without even measuring them in the study (e.g., Heath, Brandt & Nairn, 2006; Fang, Singh & Ahluwalia, 2007)

The term attention is listed in nine different sections of the book, The Psychology of Attention (Styles, 2008). Nobre (2018), on the other hand, divides attention into seven factors: **Attention is a process**, not a content (such as consciousness or memory), that allows one to select specific content; the main goal of the process is to **prioritize and select** from different stimuli; only **one stimulus** can be selected at a time; these stimuli can be either **external or internal**; attention implies focus, which means that there must also be an **inhibitory process**; attention **controls adaptive behavior** and is **essential** for normal cognition. All of these ideas are summarized in the recent definition of attention as the **prioritization of processing information relevant to the current goals of the task** (Nobre & Kastner, 2014).

The definition of attention does not usually define the modality of attention. Although researchers usually refer to visual attention (Nobre, 2018), auditory attention was initially used as an experimental context, due to the availability of multichannel tape recorders, but mainly to control overt orienting toward the stimulus, since we cannot turn our ears toward the auditory stimulus, which means that the only way of attending to the stimulus is by focusing and orienting our attention toward it (Broadbent, 1982). People can also attend to smells, tastes, sensations, and pain (Styles, 2008). There is limited research on these modalities. Nevertheless, it is important to distinguish the different types of attention before jumping to the usual approach of studying audio or visual attention. In the present work, we will refer exclusively to **visual attention**.

Previously, we have shown how attention in general has been compared to a **filter** or a **bottleneck**. Similarly, visual attention has been compared to the **spotlight** (Posner, 1980) - (we attend to what we focus on while ignoring everything else) and/or to the **zoom lens** (Eriksen & St. James, 1986) - what is attended to is seen clearly while everything outside the focus is not ignored, but simply more difficult to perceive. The more zoomed out our focus of attention is, the more information we can perceive, but the trade-off is that the accuracy of this information decreases. Researchers studying visual attention define it as **the process of selectively paying attention to a particular part of the visual environment** (Serences, 2018)

The core of what attention is, and more importantly how it is studied in the present research, is offered by Wedel & Pieters (2008), who define it by the **difference between the amount of information received by the human eye and the amount of information that the brain can process**. This has led to the development of a **mechanism to select a limited amount of information that is considered relevant to one's information processing**. Thus, visual attention serves to focus on some stimuli and ignore others so that our cognitive system is not overloaded.

It is important to note that awareness (and attention, as they are used synonymously), as represented in advertising models, should come after attention as defined in cognitive science. In the hierarchy of effects models, awareness can be equated with the process of detection (Posner, 1980). Even cognitive scientists' definitions of attention resemble Posner's description of detection as the level of consciousness at which it is possible to explicitly state that a stimulus has been perceived (Chalmers, 1996). The ability to report the presence of a stimulus after it reaches a level of the nervous system is quite similar to definitions of awareness in the advertising literature (Eisend & Tarrahi, 2016). Even Posner himself says that to detect is to be aware of the stimulus. Attention is thus defined by two distinct processes, detection and orientation of attention, aligning of one's attention to an externally presented stimulus or to an internal semantic structure from memory.

From the review of the advertising literature, it appears that this type of process was not included in the models. Perhaps its presence was taken for granted. In order for someone to notice an advertisement or brand, they must first notice it or focus their attention on it. This can be done overtly, by turning the head or directing the eyes toward it, or covertly (by focusing on the stimulus without moving the eyes). Then the stimulus must reach the critical level of the nervous system at which it is possible for the subject to report its presence by explicitly stating that he has noticed the stimulus by pressing a button or verbally stating that he is aware of the signal (Posner, 1980).

1.3.2 Drivers of attention

Attention may be oriented to the stimulus because of the characteristics of the stimulus and/or because of the observer's goal (Posner, 1980). Different authors label these two

processes differently, but they refer to the same phenomenon. For example, Posner distinguishes between **external (environmental cues)** or **central control (memory)**; Gaspelin & Luck (2018) divide them into **stimulus-driven** and **goal-driven attributes**, while Müller & Rabbitt (1989) refer to them as **reflexive** and **voluntary shifts of attention**.

According to the authors proclaiming the importance of stimulus attributes (i.e. attention being reflexive), **salient objects grab attention regardless of the observer's intentions**. This type of attentional capture can be described with the example of a consumer who is looking for a milk but automatically directs his attention to the big bold yellow letters advertising another product. Itti & Koch (2001) provide an overview of the attributes that cause this type of attentional capture. Stimuli that are high-contrast, bright, dynamic, colorful, and different from their surroundings are more efficient attention *grabbers*.

Conversely, according to authors advocating goal-directed theories, only stimuli that match the features of the search target stimulus will grab attention (Folk, Remington & Johnston, 1992; Lien, Ruthruff & Cornett, 2010; Lien, Ruthruff & Johnston, 2010). Without endogenous attention, our attention would be forever fixated on the shiny and bright objects. It refers to the ability to shift attention purposefully to search for a specific stimulus in a cluttered environment (Nobre, 2018). Applied to the above example, an ad for an unrelated product would only grab the consumer attention if it looks similar to either the milk or dairy brand, or if it shares some features with the product being searched for - the milk. The debate between the two opposing camps is heated and calls for more research on this topic (Gaspelin & Luck, 2018).

Finally, one can overtly pay attention to an object by gazing at the stimulus or covertly pay attention to an object without looking at it (Serences, 2018). Posner noted that it is easy to tell what a person is attending to simply by observing the direction of their gaze. This is an example of what is known as overt attention. This phenomenon refers to gazing directly at the object of interest, thus enhancing visual processing immediately on the retina. However, neuroscientists may be more inclined to explore covert visual attention. It refers to paying attention to a stimulus in the periphery without directing the eyes to the observed stimulus (Serences, 2018).

1.3.3 Measuring attention

When studying hard-to-define concepts such as intelligence, it is often the case that these concepts are defined by the measurement by which they are measured (van der Maas, Kan & Borsboom, 2014). Of course, this can be seen as a questionable research practice, but nonetheless, the conceptual definition is highly dependent on the operational definition and vice versa.

Cognitivists and neuroscientists prefer objective over subjective measures of attention such as reaction time, eye movements (Binford et al., 2020; Simmonds et al., 2020), and/or

neurophysiological responses (Casado-Aranda, Martínez-Fiestas & Sánchez-Fernández, 2018; Mostafa, 2020). Of the three aforementioned measures of attention, eye movements and neurophysiological responses require the use of expensive equipment to measure. It is possible, at least to some extent, to approximate eye movement using mouse movement on a computer as an indicator of overt orienting of attention (Goodrich, 2013), but this can lead to several methodological challenges. Reaction time measurements, on the other hand, are easier to obtain even with freely available equipment. Even with these more elaborate measurements, **it all boils down to reaction time**. Simola et al. (2011) define attention as the **time difference between the presentation of the stimulus and directing viewers' eyes on it**. A similar operationalization is offered by Lavie & De Fockert (2005), who interpret the difference in reaction time between tasks with and without distractions as evidence of attentional capture by an irrelevant stimulus.

The use of reaction time as a proxy for attention dates back to the earliest research on attentional capture (Posner et al., 1978) and has since been used extensively and reliably (van Ens et al., 2019; Weigard et al., 2019). Sperling's (Sperling, 1960) original experiments on visual attention required participants to recall as many letters that were presented briefly (50 ms). The results showed that humans have a visual memory with high capacity and rapid decay. Parts of it can be converted to another permanent state, while others are lost. This finding led to the conceptualization of so-called iconic memory (Neisser, 2014), which emphasizes the close relationship between attention and memory.

Two commonly used paradigms that rely on reaction time as a measure of attentional capture are Posner's cueing task (Posner, 1980) and the visual search task (Treisman & Gelade, 1980; Wolfe, 1998). Posner developed the cueing task to measure both manual reaction time and eye movement reaction time to the presence of a stimulus. By manipulating the cue that precedes the target stimulus, researchers can gain insight into the effects of attentional orienting. These cues can be endogenous, meaning they are presented in the center of the screen, usually in the form of an arrow or other directional cue pointing to either the left or right side of the screen where the stimulus might appear. Conversely, the cues can also be exogenous, that is, they are presented outside the center of focus and usually consist of highlighting a portion of the screen where the stimulus might appear. There are few constraints on this task. By comparing valid cues (correctly displaying or highlighting the location where the stimulus will appear) with invalid or neutral cues (no cue), researchers can test whether a particular stimulus category promotes or impedes attentional performance. Recently, attentional performance was found to be affected by age. Older observers responded more slowly to stimuli (Langley et al., 2011).

Visual search is a behavior we perform several times a day, so quickly that we are usually not even aware of it. For example, when we search for a product on a shelf or browse a website, we are constantly searching through our visual field. That being said, it is a useful paradigm for experimental research that allows researchers to quantify the capacity limits of one's attention (Wolfe, 2014). The usual procedure is to present participants with a display

containing the target stimulus and a specified number of distractor stimuli. There are plenty of opportunities for researchers to manipulate this. For example, they can vary the number of distractors from a few to many; they can vary how similar the target is to distractors; and finally, they can vary whether search is guided by stimuli or by a goal. The classic finding from such studies is that the color of a target is one of the strongest stimulus features that grabs attention. The reaction time required to search for a red stimulus within black distractors is independent of the number of distractors (Wolfe, 2014; Gaspelin & Luck, 2018). This effect is called the **pop-out effect**. Regardless of how the experiment is set up, time is used as the main outcome measure. More specifically the correlation coefficient (the slope), which represents the strength of the relationship between response time and set size is the key measure of interest.

The debate between stimulus- and target-driven search is still ongoing. Depending on the characteristics of the stimulus, there are two ways in which people can perform search. If the feature that distinguishes the target from the distractor is salient enough, search tends to be automatic and fast (Wolfe, 2014; Gaspelin and Luck, 2018). This type of research is used to support theories of stimulus-driven search. The most salient way to distinguish a target from a distractor is by color, known as color singleton (Jonides & Yantis, 1988; Theeuwes, 1992). Treisman & Gelade (1980) have shown that there is a limited number of basic stimulus features that can be processed in parallel (rapidly), resulting in a pop-out effect. The best known example is color, but motion, orientation, and length can also rapidly grab the viewer's attention (Wolfe, 2014). Among the various features, faces were classified by Wolfe as a complicated case where the evidence is ambiguous, which means that the human face can neither be accepted nor rejected as an attention grabbing feature based on the results of previous research.

When the visual scene is filled with different stimuli, humans apply a different, slower search - serial search. This search is slow and deliberate, and it is strongly influenced by the number of distractors and the strength of features that distinguish the target from the distractors (Gaspelin & Luck, 2018). We can then compare the time needed for attending to a stimulus (an ad for example) when is deemed highly relevant and when it is not relevant at all to a viewer. The smaller the difference, the more attention grabbing the ad is. Similarly, one can measure attentional cost by measuring how difficult it is for the participant to divert attention from a particular stimulus (Nobre, 2018).

Consumer attention must be handled carefully, i.e., it is important to direct their attention to the advertisement through a creative means that is capable of both grabbing and guiding consumer attention toward the ad message. Following Wolfe's (2014) assertion that the human face is a potential stimulus that can automatically grab attention, it is suggested that certain facial features can guide consumers' attention to the main message of the advertisement.

2 HUMAN FACE PERCEPTION AND ITS PROCESSING IN ADVERTISEMENTS

The human face is quite a popular element of advertising design. In general, more than 50% of all advertisements contain a human face (Xiao & Ding, 2014), while in some product categories a human face is almost exclusively depicted, namely in more than 80% of advertisements (Adil, Lacoste-Badie & Droulers, 2018). The human face has also been associated with easier advertisement recall (Droulers & Adil, 2015) and more positive attitudes and purchase intentions (Xiao & Ding, 2014).

Research on marketing communication in digital media has also found that the human face is frequently presented in social media and that its use can appeal to both everyday Instagram users (Bakhshi, Shamma & Gilbert, 2014) and social media influencer followers (Torbarina, Jelenc & Brkljačić, 2020). Both groups of authors explain the observed effects by suggesting that the potential of the human face to grab followers' attention leads them to spend more time looking at the post's content, which in turn leads to a higher likelihood that they will engage with the post by liking it. The effect was not observed for the higher levels of engagement (i.e., comments), which can be explained by the fact that the human face has a small but significant effect on consumer attention. Online banners with a face grab more attention than those without a face (Sajjacholapunt & Ball, 2014). Finally, Guido et al. (2019) confirmed the effect of faces on consumer attention, measured as self-report. Participants reported that their attention was drawn more quickly to an ad with a face than to an ad without a face, resulting in higher brand recognition in such ads. Interestingly, this attention-enhancing property of the human face was time-dependent. When exposed to the ad for a short period of time, participants reported being more attentional, but as exposure increased, their attention began to wander around the ad. This suggests that higher exposure is associated with greater awareness of the elements of the advertisement.

On the other hand, it is important to note that the effect of faces on consumer attention is not consistently observed. Palcu et al. (2017) report that the mere presence of a face in an ad does not increase the likelihood of attending toward the ad, nor does it increase the amount of time spent evaluating a particular ad. Nevertheless, the use of a human face in the ad is beneficial, as it efficiently guides attention to the advertised product when the model is facing the product. In terms of evaluation, participants indicated higher purchase intentions when the model was facing the product than when facing away from it. Guido et al. (2019) conclude that there is not yet enough evidence to provide a definitive answer to the question of whether the human face influences consumer attention.

These conflicting results provide a number of opportunities for future research. First, future research may provide evidence in one direction or the other, increasing confidence in the results themselves. The second opportunity for researchers is to investigate whether the differences in the results are due to specific conditions that have not been previously considered. For example, the difference in research design, such as the use of banners of

different sizes or the location of the banner on the website, could have led to the differences in the observed results. These issues need special consideration when designing a study.

The present study draws on evidence from the visual perception literature that faces are a special stimulus category that elicits more automatic orientation responses (Hershler & Hochstein, 2005; Van Rullen, 2006). It is hypothesized that the mere presence of a face in an ad influences the likelihood that consumers will attend to the entire ad. In doing so, we build on and extend previous research on the impact of human faces in retail marketing (Lindström et al., 2016), marketing communications (Bakhshi, Shamma & Gilbert, 2014; Torbarina, Jelenc & Brkljačić, 2020), and advertising (Sajjacholapunt & Ball, 2014; Xiao & Ding, 2014; Droulers & Adil, 2015; Guido et al., 2019). In the following chapter, we describe and explain how and why the human face is an efficient attention grabber before looking in more detail at specific features of the face that are known to guide attention in a particular direction.

2.1 Human face as a special stimulus category

People often report "seeing" faces in objects consisting of components that resemble those of a face (Hadjikhani et al., 2009). This is a consequence of the automatic, rapid, and unconscious perception of faces that starts in infancy (Palermo & Rhodes, 2007). Faces can be detected in less than 100 ms after their appearance (Crouzet, Kirchner & Thorpe, 2010), and we perceive them before other stimuli that are not faces (Langton et al., 2008).

Most healthy people are experts at processing human faces (Schwaninger, Carbon & Leder, Helmut, 2003). Recognition rates for familiar faces have been shown to exceed 90%, even for faces that have not been seen in 50 years (Bahrick et al, 1975). Moreover, when asked to name specific stimuli, people do not name the face as "a face" but as the person whose face they are looking at. Classifying objects at this subordinate level is typical of experts (Tanaka & Taylor, 1991). Neither categorization at the individual-level, with or without extensive expertise, can lead to face-like processing. The most likely explanation for this effect is threefold. First, infants are born with an innate representation of the structural shape of faces (Morton & Johnson, 1991), as evidenced by observing that the newborns preferentially track schematic faces. This type of behavior is driven by primitive subcortical attentional mechanisms, indicating the importance of face processing in humans. Second, unlike other stimulus categories, faces are processed holistically (Diamond & Carey, 1986). When turned upside down, recognition performance drops significantly for human faces, but not for other stimuli. Finally, a specialized part of the brain evolved to respond exclusively to faces (Kanwisher, McDermott & Chun, 1997). The fusiform face area (FFA) responds exclusively to face-like stimuli and is not active when visual attention is engaged, nor when any form of subordinate-level classification is made, nor when any other living or human form other than the face is observed. Thus, there is ample evidence to support the claim that the human neural

system favors the perception of the human face over other stimulus categories (McKone & Robbins, 2011).

However, there is also the opposing view that the human face has no special place in our neural system. The main arguments for this position are that faces are simply a special form of within-class objects (Damasio, Damasio & Van Hoesen, 1982) and that faces are also only a special case of the (complex) objects that most people process as experts (Diamond & Carey, 1986). Both arguments are contradicted by empirical findings. McKone & Robbins (2011) report that discriminating within-class objects did not lead to face-like processing, and it has been repeatedly observed that the difference in correct responding to faces when presented upright or upside-down is much larger than for other objects presented upright or upside-down (Leder & Carbon, 2005; Boutet & Faubert, 2006).

2.1.1 How the face is processed?

The human face as a stimulus is described as a complex, three-dimensional surface of the front of the human head (Schwaninger, Carbon & Leder, Helmut, 2003). The complexity is obvious from the information it contains. There are two types of information: featural, which are the aspects of a face that can be viewed in relative isolation, such as the eyes, nose, mouth, hairline, etc., and configural, which is the spatial relationship between these facial features, such as the *distances* between eyes, nose, etc. (Pascalis et al., 2011). Moreover, some of the facial features are invariant (eyes, nose, hairline, etc.), while others may change (eye movement, lip movement, wrinkling of the nose, etc.). In the following sections, it is argued that these changing features can be used as an efficient attention guide

Every face has a common basic geometry: two eyes, a nose, and a mouth, spatially arranged so that the eyes are horizontally positioned above the nose, which in turn is positioned above the mouth. This structure has been shown to grab attention in less than 100 ms (Crouzet, Kirchner, and Thorpe, 2010). Another 150 ms is already sufficient to correctly identify a familiar face (Grill-Spector and Kanwisher, 2005). Because of the geometric similarity between individual faces, it is not possible for humans to distinguish individuals based on this feature information; instead, it comes down to identifying subtle differences in features and their configuration that give the impression of a unique face (Tanaka & Gordon, 2011). These unique differences usually refer to the specific appearance of certain features (size, color, shape) and to their relationships (distance between the eyes, position of the nose in relation to the mouth, etc.)

Three experimental paradigms (Tanaka & Gordon, 2011) involving inversion, the composite effect, and the part-whole effect provide evidence for the assumption of holistic face processing. Although most objects are more difficult to recognize when upside down, the perception of faces appears to be disproportionately affected by this inversion (Tanaka & Gordon, 2011). A large body of evidence confirms this assumption for both familiar and novel faces, schematic faces, and photographed faces. In fact, reversal has been shown to

interfere more with the perception of faces than reversal of face parts presented in isolation (Rhodes, Brake & Atkinson, 1993). Further evidence for holistic processing of faces comes from experiments in which participants were presented with a composite face consisting of the top half of their own face and the bottom half of someone else's face (Young, Hellawell & Hay, 1987). The participants' task was to identify the cued half of the face, which proved difficult due to the strong influence of the unattended half of the face, leading to errors in recognition. The authors observed that their success could be increased by misaligning the two halves, disrupting holistic face processing. When presented in this way, participants were more likely to recognize the face they were looking for. The final piece of evidence comes from the part-whole task (Tanaka & Farah, 1993). The rationale for this task was the hypothesis that holistic processing of faces means that people are not very efficient at focusing on a single facial feature without being influenced by the entirety of the face (Tsao & Livingstone, 2008). To test this hypothesis, participants had to identify whose facial feature was being presented to them (e.g., whose nose it was). The main finding was that participants were much more successful in recognizing whose nose (or other feature) it was when it was presented on the original face than when it was isolated or presented on someone else's face. This type of processing is unique to human faces, meaning that faces are perceived as a combination of independently presented components and the relationships between them (Farah et al., 1998).

Processing of faces generally occurs through two distinct processes that govern face perception, detection and identification. Similar to attention, which attempts to balance the amount of information that can be perceived with the accuracy with which it is perceived (Schad & Engbert, 2012), these two tasks are opposed, meaning that a good detector should be poor at single recognition and vice versa (Tsao & Livingstone, 2008). Because separate mechanisms operate for detection and identification, it is difficult to use both simultaneously and efficiently. Identification requires fine-tuned analysis to determine how faces differ from each other, even though all faces have the same basic configuration. Conversely, to detect a face, one must extract what is common to all faces.

The two processes have different neural bases (Haxby, Hoffman & Gobbini, 2000). After the initial face perception, the neural pathways branch into different parts of the brain. One is responsible for processing the so-called changeable aspects of faces (which include gaze direction, emotional expression, and lip movement), while the other is responsible for processing *identity*. Therefore, to test the hypothesis that a human face can attract and direct attention, **it is better to use an unfamiliar individual as a model** so that participants do not have to waste time identifying the person.

2.1.2 Attention to faces

Once it was established that human faces should be prioritized by our cognitive system, empirical evidence was needed. Initial research on the attention grabbing properties of a face

revealed that not only is the face processed preferentially compared to other stimulus categories, but it also exhibits the pop-out effect (Hershler & Hochstein, 2005). The pop-out effect is observed when the target stimulus is attended to in a similar amount of time regardless of the number of distractors present in the scene. The classic pop-out study involved the search for a letter presented alongside a varying number of distractors (Treisman & Gelade, 1980). The authors showed that a target (a letter "T") popped out when it was a different color (the target was blue and all other distractors were red) than the distractors (letter "L"). Participants found the target letter in such a condition in about the same time when there was only one distractor and also when there were dozens of distractors. When both the target and distractor were presented in the same color, the time taken to find the target was proportional to the number of distractors present.

This effect was observed when the target was a face presented within a variety of distractors (Treisman & Gelade, 1980). However, the effect is **only present for the face as a whole** and has not been observed for scrambled or inverted faces. This effect is not consistently observed, providing another opportunity for the present investigation. Van Rullen (2006) states that the effect can only occur under tightly controlled conditions and that it would fail in the real world. However, Hershler & Hochstein's (2005) research received much stronger support, easily confirming the hypothesis that faces do pop-out (Harel, 2016; Yzer, Han & Choi, 2018). Given the stronger evidence that a human face grabs attention efficiently and almost automatically, the first hypothesis tested in this dissertation states that **the presence of a face next to a product will grab participant's attention more efficiently to advertisement, than other type of attention grabbing stimulus will (H1a)**.

There are several reasons why the perception of a face as a whole is important for the present study. First, it shows that faces are a special stimulus category that is processed differently than other stimulus categories, which increases the likelihood that they will capture consumers' attention. Second, it shows that it would be invalid to test the effect of facial features outside the context of the face as a whole. Third, the ability of a face to automatically grab attention to itself is dependent on the face as a whole being presented upright. Any other way of presenting a face, such as from a side view, could result in faces being part of the regular stimulus category without the benefit of automatic attention capture.

Holism should still be present even if some of the changing facial features, such as gaze or emotional expression, are manipulated. Even more, some of the changes lead to an even faster recognition of the face in the environment. The fact that the face is perceived holistically (Tsao & Livingstone, 2008) and that it automatically grabs attention brings advertisers halfway to their goal - to attract consumers' attention to the advertising message. The answer to the question of whether faces can be further used to guide attention should therefore have important managerial implications. The following sections present the two most important social signals that can be read from faces, namely emotional expression and eye gaze.

2.2 Face features – Emotional expression

One of the facial features that can potentially influence consumer attention is the emotional expression of the face. Emotional expressions are considered a major channel through which emotions are expressed (Ekman, 1970). They can provide important contextual information about the motivations and behavioral intentions of the expresser (Adams & Kleck, 2003). Individuals who are able to decode emotions from facial expressions can gain insight into the expresser's motivational tendencies (Reis & Gray, 2008; Lowe & Ziemke, 2011) and behavioral intentions (Seidel et al., 2010). Anticipation of another's behavioral intentions may lead a person to approach or avoid the expresser, both in terms of attention and behavior.

Before showing how the expression of emotions can be used to influence consumer attention, it is necessary to briefly describe what emotions are. Emotions are expressed more or less explicitly through a variety of pathways and channels: cognitive, behavioral, and neural, including changes in neurotransmitter levels, heart rate, pupil dilation, skin conductance, behavioral changes, and facial expressions (Cacioppo & Gardner, 1999). Emotions, as used in the present studies, are best defined by Ekman (1993), the pioneer of research on the relationship between facial expressions of emotion and the emotions themselves. The main premise of Ekman's work is that it is virtually impossible to feel emotion without expressing it through facial muscles, but that the opposite is also true, as there is some evidence that emotional state can be altered by simply changing facial expression. This relationship between facial expression and emotion should justify using a model's facial expression as a means of influencing consumer attention, as it is one of the most salient ways of indicating a person's emotional state (Ekman, 1993)

Ekman categorized emotions into six basic categories: Happiness, Sadness, Anger, Surprise, Disgust, and Fear (Ekman, 2006). These are referred as the basic emotions primarily because they are innate and observed across cultures (Matsumoto, 2009). Facial expressions of these emotions have been observed in infants (Sroufe, 1996) and blind people (Galati, Miceli & Sini, 2001; Tracy & Matsumoto, 2008) and are quite similar regardless of culture (Matsumoto, 2009). These emotions begin to develop as early as six months after birth (Sroufe, 1996). The finding that the emotion expression assessment is universal should ensure that an international sample should not affect the validity of the study or the accuracy of the emotion expression identification.

The emotions described by Ekman et al. (1971) were operationalized by the muscle movements required for their expression. Disgust, for example, can be identified by the face drawing the eyebrows together, curling the upper lip, and wrinkling the nose. The stimuli for the present study were created following Ekman's guidelines. Lundqvist et al. (1998) created a series of images of 70 subjects, each expressing six basic emotions and a neutral expression. These lay actors were given written instructions on how to portray each emotion, as well as further instructions to remember when they had felt the emotion. The stimuli were repeatedly used and validated (Lundqvist & Ohman, 2005).

2.2.1 Approach vs. avoidance oriented emotions

Regardless of the number of emotions that exist, they differ among themselves on a number of criteria, including their evolutionary significance. This question has motivated researchers to determine which of the emotions is prioritized by our cognitive system. Several hypotheses have been proposed, and the final conclusion has yet to be reached. The most commonly proposed hypotheses are the **happiness hypothesis** (Juth et al., 2005; Švegar, Kardum & Polič, 2013), the **threat hypothesis** (Calvo, Avero & Lundqvist, 2006), the **negativity hypothesis** (Fox et al., 2000), and the **emotionality hypothesis** (Martin et al., 1991). The *threat hypothesis* states that the human cognitive system prioritizes detection of an angry emotional expression; the *negativity hypothesis* refers to the fact that the cognitive system prioritizes distressing emotional experiences, whether or not they pose a threat, so that a sad face should grab attention as quickly as an angry face; the *emotionality hypothesis* states that a positive emotional expression takes precedence over negative emotional expressions.

The threat and happy face hypotheses were most strongly supported by the following researches. Švegar et al. (2013) and Juth et al. (2005) observed that visual search is much shorter when participants have to identify a happy face among angry distractors, than vice versa. On the other hand, according to evolutionary theory, individuals should place more importance on threat than on cooperation because the former is more dangerous (Öhman, Lundqvist & Esteves, 2001). And indeed, there are a number of studies that point in this direction. For example, one study found that angry faces were recognized faster when surrounded by happy distractors than vice versa (Horstmann & Bauland, 2006); and another that the same was true when distractors were neutral facial expressions (Calvo, Avero & Lundqvist, 2006); different paradigms, apart from the visual search task, also showed that the response to a probe stimulus is faster when the probe is presented at the location where the angry face was presented (Mogg & Bradley, 1999). There is evidence that angry faces are processed pre-attentively (Calvo, Avero & Lundqvist, 2006). A solution to the debate is proposed by Švegar et al. (2013), who explain that once emotional facial stimuli reach our retina, angry facial expressions are prioritized by our cognitive system because we can benefit from their early detection. Subsequently, happy facial expressions are prioritized in subsequent cognitive processing because they signal positive affect, a valuable mechanism for establishing and maintaining cooperative relationships.

Underscoring the fact that the field is still searching for a definitive solution, Gong & Smart (2020) conclude that neither the superiority of the happy face nor the superiority of the angry face can be observed when distractors showed different emotional responses. The only condition in which slight superiority of the angry face was observed was when the distractors were neutral facial expressions. Regardless of the outcome of the debate, both the angry face and the happy face can be expected to grab attention efficiently. Therefore, these emotions are termed **approach oriented emotions because the detection (orienting of attention) of**

such an emotional expression is considered a priority by our cognitive system because both potentially lead to significant consequences, either positive or negative

Another group of emotional expressions that have an opposite effect on attention than approach oriented emotions are the emotional expressions that motivate the observer to **attend away** from the face that shows them. These include surprise, fear, and disgust, which do not represent threat or opportunity but indicate potential danger in the environment (Adams & Kleck, 2005). Because **people are motivated to focus less on the face displaying these three emotions, they are termed avoidance oriented emotions**. The distinction between approach and avoidance oriented emotions is not new, as it has been proposed and validated in several studies (Adams & Kleck, 2003; Bindemann, Burton & Langton, 2008; O'Haire, 2011). The approach/avoidance model (Bindemann, Burton & Langton, 2008) is used for the proposition that emotional expressions such as fear and surprise are more efficient at guiding the observer's attention away from the face expressing the emotion, and that anger and happiness tend to be more efficient in grabbing observer's attention. A fearful person poses no real threat to us, so we are more inclined to look for the source of their fear. The same is true for the surprised person.

Stemming from these inferences is the hypothesis that **advertisement presenting a human face exhibiting approach oriented emotions will grab consumers' attention more efficiently (shorter reaction time) than advertisement presenting human face with avoidance oriented emotional expression (H1b)**.

These two categories have been confirmed by neuroscience. Two systems have been proposed to govern the relationship between emotion and behavior, a behavioral activation system (BAS) and a behavioral inhibition system (BIS) (Gray 1994; as cited in Adams & Kleck, 2005). Empirical research has shown that happiness and anger, emotions that grab attention, elicit stronger responses in the left hemisphere of the brain, whereas emotions that divert attention away from the face that emits them cause the right hemisphere to respond (Harmon-Jones & Sigelman, 2001).

Although the exact nature of this difference in involvement is somewhat unclear, Harmon-Jones & Sigelman (2001) conclude that this asymmetry is caused by motivational rather than valence-based functions. In examining the neural activity for processing the angry face, which is considered an approach oriented negative emotion, the authors concluded that the left brain region responds to approach motivation, whereas the right brain region responds more to avoidance motivation. This research provided important clarification about the nature of approach, which is not to be confused with the valence of the emotion, anger being the best example. Although anger is undoubtedly considered a negatively valenced emotion, it grabs observers' attention since the person with the angry face represents a potential and immediate danger. A sad, surprised, or frightened face, on the other hand, does not pose danger from the person expressing these emotions, but the potential danger may be somewhere nearby.

When all of these findings are placed in the context of advertising, there is rarely a need to show an angry face on an ad because the use of emotional expressions in advertising not only attracts consumer attention, but there is also the possibility of emotional contagion (Isabella & Vieira, 2020). According to the theory of emotional contagion, the manifestation of an emotion can trigger a similar emotion in an observer, in that the covert motor mimicry of said facial expression leads to a change in the emotional state of the observer (Hatfield, Cacioppo & Rapson, 1994). Several studies have shown that the presence of a person displaying certain emotions can increase the observer's self-perceived emotional state and that this can have an impact on attitudes toward advertising (Howard & Gengler, 2001; Hasford, Hardesty & Kidwell, 2015; Isabella & Vieira, 2020). Therefore, only positive emotions are considered in the present studies. More specifically, happy face representing the approach emotion category and surprise for the avoidance emotion category will be considered.

Thus, following the tenets from the emotional contagion theory, **an advertisement that shows an emotional facial expression next to a product leads to more positive advertising and product evaluations than an advertisement that shows a non-emotional cue next to a product (H2a)**. To further test this emotional contagion hypothesis, the difference in positivity between happiness and surprise should ensure that **advertisements showing a happy human face next to a product will lead to more positive advertisement and product evaluations than advertisements showing a surprised human face next to a product (H2b)**.

A stimulus that has been so extensively researched and repeatedly shown to grab people's attention is a valuable advertising tool. Although there is a lack of studies examining advertisers' motivations and reasons for using human faces in advertising, the fact is that the majority of advertisements feature human faces. The following section provides a brief overview of what assumptions exist about the relationship between emotional expression and viewer attention.

2.2.2 How does emotional expression relate to attention?

The literature on the effect of human faces in advertising draws on a variety of theories, ranging from visual attention research across the developmental and social theories to evolutionary psychology. Of the aforementioned theories, evolutionary theory is used to postulate hypotheses and to explain observed results for several reasons

First, findings from developmental theories serve as a necessary but not sufficient condition for establishing that the human face is a special category of stimuli and that humans are generally experts at processing faces, whether it is a learned skill or an innate trait. Social theories, on the other hand, provide a context in which to place the processing of faces and explain what are the benefits of processing faces efficiently. However, faces are considered as such without concerning too much with what guides this face processing. Attentional

research is not so much concerned with faces per se, but rather with any stimulus that is presented and/or attended to. Posner's (1980) and Wolfe's (1998) theories are also used as a boundary conditions within which attention in general, and thus attention to faces, operates.

The evolutionary framework provides a concise way to relate faces in general to their changeable properties (eye gaze direction and emotional expression), which can influence the attention of the observer. There is no doubt that fast orienting toward another person's face is an evolutionary adaptation and that it applies equally to all healthy people. Moreover, the evolutionary framework is also frequently used to develop new theories. It is impossible to ignore the adaptive value of attending to a human face at such an early age. If we quickly become aware of the presence of an (un)familiar individual in our vicinity, we are left with more time to decide on our next course of action. Depending on the gaze and emotional expression of the observed individuals, the observer can decide how to proceed. From an evolutionary perspective, individuals who could not efficiently perceive another's face had a greater likelihood of experiencing negative consequences (or missing out on a potential collaboration) - resulting in a lower likelihood of passing on their genes (responsible for slow face detection) to the next generation. After several thousand years of evolution, this is why we now claim that all humans are experts at processing faces - because it was important to do so, the genes responsible for this behavior became dominant in the population.

Of course, it is a challenge to relate these distant evolutionary principles to the processing of advertisements. Unlike research on the perception of human faces and the processing of their components, which is in itself a heavily researched topic, advertising involves constructs that are far removed from the mere effect of the face on attention. Initial research on this topic has varied considerably, from variable selection to study design. The present study aims to continue the path taken by a small number of studies that implement and test evolutionary principles in a marketing context (Saad, 2004, 2013; Griskevicius, Ackerman & Redden, 2012). One of the major contributions of the present study is the potential resolution of the existing conflicts in the literature on the effects of faces on advertising outcomes by controlling for these, previously ignored, alternative explanations. The approach-avoidance dichotomy may provide some insight into expresser's intentions and motivation. The amount of information about the intentions and motivation of the expresser can be increased by introducing another important facial feature - gaze direction.

2.3 Face features – gaze

Another important social stimulus to which humans are susceptible are the eyes. Both the eyes themselves and their surroundings are capable of expressing complex mental states such as beliefs, desires, and emotions (Frischen, Bayliss & Tipper, 2007). This ability is hard-coded in the human brain in the superior temporal sulcus (STS; Perret et al., 1992), which is selectively activated when both dynamic (Hooker et al., 2003) and static faces (Hoffman & Haxby, 2000) are presented. It is even independent of the presence of the face per se, as it is

sufficient to view the eyes in isolation from the face to modulate brain activity in this area (Puce, Smith & Allison, 2000). This effect should not be confused with the part-whole effect, which simply refers to the ability to recognize whose eyes one is looking at. The STS region is so well adapted that it does not respond to any kind of eye movement, such as crossing of the eyes, but only to meaningful directional information (Hooker et al., 2003)

The ability to quickly attend to another's eyes is an important skill. Leakey & Lewin (1992; as cited in Baron-Cohen, 1995) suggest that evolution has favored social skills over physical strength and/or appearance. Thus, the ability to quickly and accurately infer the intentions of others led to higher reproductive success. It is likely that individuals quick to recognize that they are the focus of another's attention had more time to prepare for fight or flight, which are two of the four major evolutionary motivators, also known as the four Fs, along with feeding and mating. The fact that not all humans are particularly strong can be taken as evidence of the importance of inferring from the other person's eye gaze. Conversely, physically strong individuals would have a greater chance of survival regardless of the other's looks or intentions.

Such behavior is observed as early as 9-18 months of age (Phillips et al., 1992). It consists of a child orienting its attention on the eyes of an adult, especially when placed in an ambiguous situation. Three-year-olds are already able to infer the intentions of the observed face simply by following its gaze. Baron-Cohen et al. (1995) showed his participants a picture of a schematic face gazing at a candy. Children were able to distinguish between what a schematic face "knows" ("Which one does Charlie say is the candy X?") and which candy it wants ("Which one does Charlie want?"). Participating children responded almost unanimously that Charlie wants the candy he is looking at. These two results suggest similar conclusions to those drawn in the face studies. The mere presence of such behaviors in children suggests that the same behavior may be exhibited by adults, in even more pronounced form. The second study is particularly important because it concluded that people as young as three years old can infer that a looked-at product is likely to be desired by the observer. Although it may seem trivial, this is an important insight.

Evolution encouraged more efficient eye processing by designing the human eye to support this quick perception, compared to the eyes of other primates (Kobayashi & Kohshima, 2001). This means that the iris and pupil of humans are relatively small compared to the white sclera, unlike primate eyes whose pupils and irises are larger. Even when other cues are available, such as head and body orientation, humans preferentially attend to the eyes for information about their counterpart's intentions (Emery, 2000). The fact that this is an innate preference must mean that it increases either the probability of survival or the probability of mating. As was pointed out in the chapter on attention, the direction in which one is gazing at usually is seen as the focus of their attention. It is important for an individual to be aware of the fact that he is the center of someone else's attention so that he can either prepare for a possible fight or efficiently engage in social interactions (Tipper and Bayliss, 2011)

For the present study, two types of gaze are distinguished. One is direct gaze, where the model looks directly at the camera (i.e., toward the participant viewing the image), and the other is averted gaze, where the model directs his or her gaze either to the left or to the right, depending on where the advertised product is placed. Expectations of what response this will lead to in participants are based on evolutionary theory (Barkow, Cosmides & Tooby, 1992).

2.3.1 Direct gaze

The ability to quickly orient to the pair of eyes gazing directly at us has been observed in several animal species (Frischen et al, 2007). Humans tend to interpret even ambiguous gaze as being directed toward them rather than away from them. Therefore, there are several folktales that people are able to tell when someone is gazing at them, even when the other person's eyes are not visible. However, this myth has been debunked (Mareschal, Calder & Clifford, 2013). The authors explain that this may be due to adaptations in the adult nervous system that prioritize direct gaze because of its importance. The visual system has a range of directions to which the visual cones respond when they perceive another person's direct gaze. However, when the gaze is ambiguous, this range expands, meaning that we tend to perceive even an averted gaze as being directed at us (Balsdon & Clifford, 2018) to play it safe.

Another important property of direct gaze is that we can perceive it even when it is outside the focus of our attention (Yokoyama et al., 2014). Using the dual-task procedure, the authors observed that participants perceived the gaze of the face stimulus without explicitly focusing their attention to it. Consistent with previous findings, the same effect was not observed when upright faces were replaced with inverted faces. The authors argue that face perception is enhanced and preferentially processed when it shows a direct gaze. This causes faces with direct gaze to pop-out, similar to color singletons (Wolfe, 2014) in a visual search task. The pop-out effect is particularly pronounced when the target face is presented amid distractors that show averted gaze (Conty et al., 2006; Doi & Shinohara, 2013; Mares et al., 2016). Therefore, we also predict that **the advertisement presenting a human face gazing at the participant (direct gaze) will grab consumers' attention more efficiently than the advertisement presenting a human face gazing at the product (averted gaze) (H1c)**.

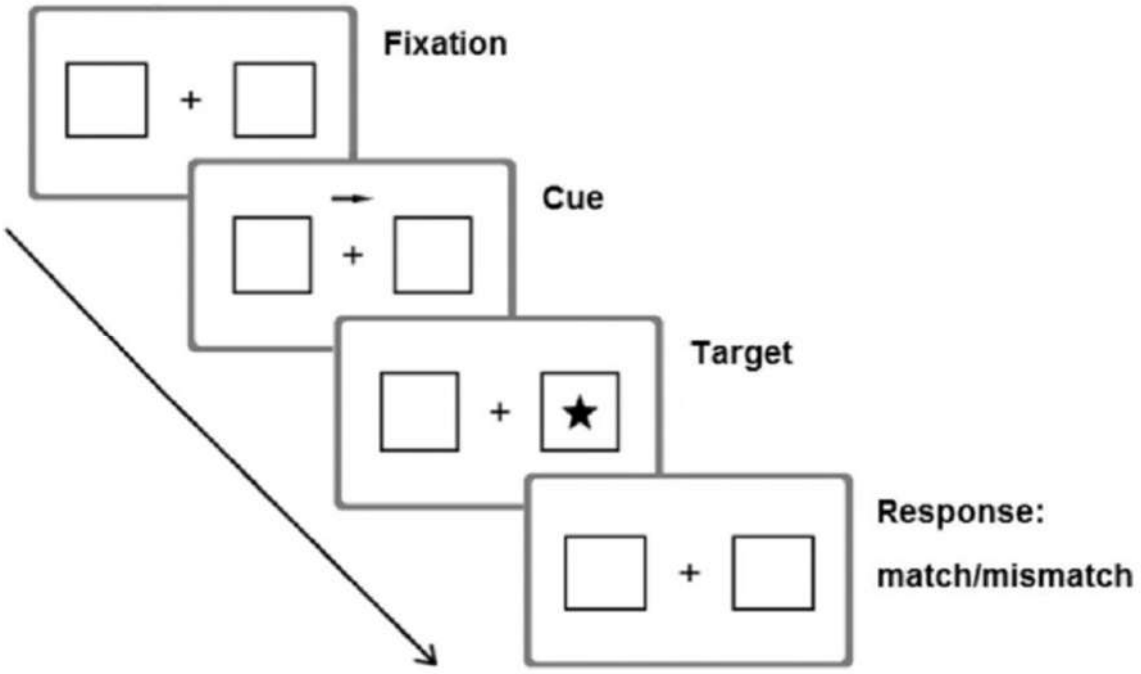
If the two facial features (direct gaze and approach oriented emotion) have the same attention grabbing properties as we expect, then **their combination should lead to the most efficient attention grabbing compared to other gaze/emotion combinations (H1d)**. Moreover, according to evolutionary theory, a happy individual gazing at us represents the highest potential reward (we are the source of someone else's happiness) - potential cooperation. No other combination of gaze and emotions leads to such a positive outcome. Thus, we hypothesize that our evolved system for rapid detection of potential cooperation should result in happiness being perceived more efficiently in conjunction with a direct gaze than other combinations of facial features.

All of these results suggest that direct gaze is an important evolutionary adaptation that can aid attending toward the face in our environment. From an advertising perspective, the notion that direct gaze will quickly orient consumers to advertisements featuring the human face is tempting, but advertisers rarely target consumers to focus on the advertising model rather than the product or message. To guide consumers' attention to the product or advertising message, another type of gaze can be used that does not grab attention to the face itself - the averted gaze.

2.3.2 Averted gaze

People tend to follow other's gaze direction. In contrast to the direct gaze which is tested with the visual search task paradigm, the averted gaze effect is tested with a different type of attentional task, the gaze cueing task. It is an adaptation of Posner's original cueing task (Posner, 1980), as shown in Figure 1. In its original form, the gaze cueing task consists of a centrally presented stimulus pointing to the left or right (usually an arrow) and a peripherally presented target stimulus to which participants must respond. The arrow can point in the direction of the target stimulus (congruent) or away from the target stimulus (incongruent).

Figure 1: Posner's cueing task procedure



Source: Adapted from Marti-Marca, Nguyen & Grahn (2020)

Participants are explicitly instructed to ignore the arrow (i.e., they are told that the arrow makes no prediction about the position where the target is presented). If the cue always pointed to the correct location, it would not be possible to infer the automaticity with which attention was guided. The difference in reaction time between the incongruent and congruent

conditions represents the ability of the arrow to guide attention. The greater the difference, the greater the effect the arrow has on the participant's attention. The task can be modified to replace the arrow with a face. Researchers can then manipulate the model's gaze to look toward or away from the target, replicating congruent and incongruent conditions. The results are consistent with those observed in an original study using arrows. The researchers observed that participants were faster to detect an object presented on the side the face was looking at or slower to respond to an object presented on the opposite side, implying that gaze is an efficient attention guide. Tipper & Bayliss (2011) summarized that the faster reaction times to stimuli appearing at the searched location were observed for cartoon faces, photographs of adults, and computer-generated faces, all of which had averted gaze.

However, researchers are still puzzled over whether this attentional shift is automatic (Stevens et al., 2008) or whether it is a controlled action (Vecera & Rizzo, 2006). The question boils down to the distinction between conscious and unconscious actions. If it is a conscious, intentional action, then people first attend to the eyes and then decide to follow the direction in which the model is looking. If, on the other hand, it is an automatic process, people should follow the gaze without conscious control. This brings us back to the question of exactly when attention kicks in. As described in the previous chapters, this debate is still ongoing. One possible solution is offered by Lavie with her Load theory (Lavie, 1995), which we will discuss in detail in the last chapter.

There is some evidence that this attentional shift is a controlled or conscious action. Unlike other automatic attentional shifts, which are quite rapid (within 100 ms), gaze cued shifts are rather slow, around 300 ms (Friesen & Kingstone, 1998). Gaze is generally not presented at the location to which attention is to be directed, implying that higher-level processing is required to derive the gaze direction (Tipper & Bayliss, 2011). However, the evidence that averted gaze leads to an automatic shift in attention is more compelling. Averted gaze may increase the speed, but not the accuracy, with which the stimulus is perceived (Stevens et al., 2008). Even when participants are motivated not to consider eye gaze as predictive of stimulus location, they still show slower reaction times in the incongruent condition (Friesen, Ristic & Kingstone, 2004), suggesting an involuntary or unconscious attentional shift.

Averted gaze may affect not only attention but also preference for the gazed-at objects, which is particularly important for the advertising context. Bayliss et al. (2006) showed that participants indicated higher liking ratings for the objects at which they had previously seen a model gazing. This result was explained by implicit processes, as participants were unaware that gaze direction was manipulated to look toward or away from certain objects. Recently, the authors replicated the original study and found that the effect does exist, but that its magnitude for the gaze-liking relationship is relatively small (Tipples & Pecchinenda, 2019).

2.3.3 Alternative attention cues

Of course, there are other ways to guide attention besides the actions of the model, such as head and body movements. These include abstract, symbolic stimuli that are commonly used to direct attention, such as arrows, explicit instructions in the form of the words "left" and "right," or symbols such as a triangle pointing in a direction (Mills & Dodd, 2016). There is even some evidence that temporal words such as "yesterday" and "tomorrow" can shift viewer's attention (Weger & Pratt, 2008). Comparing all these stimuli, Labay (2016) concluded that all observed effects were rather small. However, the least amount of time was spent looking at the advertised product when the advertising model looked away from it. No significant difference was observed between the arrow and the model looking at the product, suggesting that both are equally efficient attentional guides

Labay's (2016) findings are consistent with previous research, all of which has shown that central, nonpredictive arrow cues produce a reflexive orienting effect similar to gaze (Gibson & Kingstone, 2006; Ristic et al., 2002; Tipples, 2002, 2008). Intuitively, gaze should have a stronger effect because eyes are unique social attentional cues that are highly prioritized by evolution. Consistent with this, Birmingham et al. (2009) found that although both are similar in terms of attentional guiding efficiency, **people preferentially fixate more on eyes** than on arrows, which were never selected as the primary stimulus to which participants attended to. Thus, the eyes have a clear advantage: because they were looked at sooner, they have a higher chance of efficiently guiding attention, unlike the arrows.

The perception of faces depends in part on the direction in which a person is gazing at. This gaze effect can be enhanced when paired with certain emotional expressions. **The direct gaze was perceived most quickly when the face showed anger and happiness**, whereas **the averted gaze affected the observer's attention most when coupled with a fearful facial expression** (Adams & Kleck, 2003; Doi & Shinohara, 2013). Again, the debate is ongoing. Bindemann et al. (2008) failed to replicate the original findings on fear and averted gaze, while O'Haire (2011) showed that neural activity is higher for fear associated with averted gaze.

2.3.4 Overview of research on gaze in advertising

The literature on gaze effects in advertising is not as rich as the literature on gaze effects from other fields. A few recent studies are presented in the following section. Most of these studies were conducted using eye-tracking procedures. This gave researchers insight into more objective measures of participants' attention, such as time spent looking at the stimulus, number of fixations, etc. One such study showed that the gaze of the advertising model affected both the number of product fixations and the number of revisits when the advertising model looked at the product rather than at the camera. This type of gaze was also associated with higher recall and recognition of product and brand categories which was taken as evidence that faces are a class of stimuli that efficiently grab viewer attention (Adil

et al., 2018). One possible reason for this positive effect of gaze directed at the product is the consumers' feeling of being included in the advertising narrative, which leads them to respond more positively (To & Patrick, 2021).

One of the first studies on gaze direction in advertising was conducted by Hutton & Nolte (2011), followed by Sajjacholapunt & Ball (2014), who observed that participants tend to follow the model's gaze and look longer in the direction the model is facing, and that gaze direction has an impact on consumers' cognitive processes. When a model is presented to them with direct gaze, consumers tend to look at the model's face longer, while in the averted gaze condition, consumers spend more time looking in the model's gaze direction, leading to higher brand name recognition.

There were some methodological issues with these studies that could be taken as an opportunity for other research to consider. Hutton & Nolte (2011) manipulated not only gaze but also head orientation, which leaves room for alternative explanations, e.g., that head orientation, not gaze, influences consumer attention allocation. The study by Adil et al. (2018) manipulated the model's gaze but did not control for the model's appearance. In the *gaze toward the product* condition, there was an animated model and in the *gaze toward camera* condition, the model was a real person looking into the camera. This also leaves room for alternative explanations. Finally, Sajjacholapunt & Ball (2014) included only recognition and recall measures as attention measures. They were, however, among the first to use not just the explicit recognition/recall measures, but also an implicit recognition/recall measure (participants were asked to fill in missing letters that referred to the brand name to which they were exposed).

More recently, Ilicic & Brennan (2020) investigated how the gaze of a celebrity influencer affects the engagement of their followers. Their results showed that gaze and smile not only grab attention, but also have the power to strengthen/weaken self-perceived connection to the celebrity. Influencers who show a direct gaze in their posts are perceived as closer to their followers than influencers who show an averted gaze. A similar effect is observed for smiles. When the influencer's smile is perceived as fake, followers tend to decrease their self-perceived relationship with the influencer. For this reason, the present study pays particular attention to the selection of stimuli. In order to test the effects of emotions, the models must show real emotions. Otherwise, the results could be invalid or the advertising could be less effective.

Most of this research is based on the study by Bayliss et al. (2007), in which they showed that the model's gazing at the object can transfer the emotional expression to the viewer. This emotion transfer only occurs when the model's gaze is on the object and not on the viewer. A recent study attempted to replicate these results (Tipples & Pecchinenda, 2019) and found that the observed effect of gaze on object liking was much smaller (Cohen's d = 0.02) than previously reported by Bayliss et al. (2007) (Cohen's d = 0.94). However, the effect of gaze on reaction time was quite stable in all studies. One possible reason for the

difference in results between the Palcu et al. (2017) study and that of Bayliss et al. (2007) could be that participants inferred motivation to interact with the product rather than to evaluate it. Therefore, the face in the ad was only associated with their motivation (behavioral intentions) and not with their ratings (product attractiveness).

Although evidence of the gaze effect on consumers' experience of an advertisement is not entirely clear, there is sufficient evidence to predict that an **advertisement presenting a human face gazing at the product will lead to a more positive evaluation of the ad than if the advertisement is presenting a human face gazing at the consumer (H2c).**

If the previous two hypotheses were true, we would expect the combination of a happy face and gaze at the product to lead to the most positive ad evaluations. However, it would be equally possible to argue that emotional contagion is highest when the happy face is paired with a direct gaze indicating that the viewer is the cause of the model's happiness. In the literature published so far, there is no evidence to support the first hypothesis, except for Wang et al.'s (2018) finding that the happy face gazing at the product leads to deeper processing of the product information. On the other hand, the theory of emotional contagion (Isabella & Vieira, 2020) and another finding by Wang et al. (2018) that a smiling face in advertising leads to higher arousal when coupled with a direct gaze, suggest the prediction that **advertisement with a happy human face gazing directly at the camera leads to the highest preference for the product, purchase intention, and better evaluation of the advertisement (H2d)**.

This chapter provides a brief overview of the face as an attention grabbing stimulus and its properties. There is little doubt that faces in advertising can influence consumer attention. As has been repeatedly shown, faces can grab consumers' attention. Although it has not been explicitly mentioned before, the main motivation for these advertising researches has been to test whether faces can make advertising break through the clutter of all the stimuli consumers are surrounded with. On the other hand, surprisingly little research has been done on **the impact that a face in advertising can have in breaking through the clutter of consumer's own mind**. Ignoring this may call into question the ecological validity of the results. The occasions when consumers focus solely on processing of an ad are extremely rare. Therefore, the cognitive load of consumers must be considered when examining any type of advertising effectiveness. The advertisements to which consumers are constantly exposed are not only placed alongside various stimuli such as traffic, other advertisements, movies, etc., but they also attempt to interrupt consumers' "train of thought." The importance of this study is particularly relevant to advertising literature because consumers rarely decide to look at advertisements in order to decide which product to buy. Rather, it is common for advertising to receive only peripheral attention, if any, from consumers (Jones, 1998).

The following section introduces the two conditions under which all consumers constantly operate, namely external and internal cognitive load.

3 CONSUMERS' COGNITIVE LOAD IN THE ADVERTISING CONTEXT

Daniel Kahneman received the Nobel Prize for showing, among other things, that people do not behave rationally but tend to take shortcuts when thinking. The term "cognitive miser" refers to an unwillingness to engage in thorough cognitive processing, especially of irrelevant stimuli (Stanovich, 2009). Taken together, these two notions, which are consistent with evolutionary theory, imply that people's cognitive resources are finite and not easily invested. Not only are cognitive resources finite, but they are fueled by actual resources, energy, that are preferentially invested in those activities that increase the probability of survival and/or reproduction (Buss, 2014). Advertising rarely falls into either category. On the contrary, advertising is most often viewed as an irrelevant stimulus, one that is not preferentially processed, especially in competition with other, more relevant stimuli in people's environment. Surprisingly, the issue has not received due attention from the scientific community. Only recently have researchers begun to incorporate consumers' cognitive abilities into models of consumer behavior.

The proliferation of new media channels has resulted in consumers being exposed to a large number of advertisements presented simultaneously across multiple channels. These then compete for consumers' cognitive resources. As cognitive resources fuel attention, the new term "attention economy" has been coined, which attempts to account for the fact that cognitive resources are finite (Crawford, 2015) and are preferentially invested in processing task-relevant stimuli rather than task-irrelevant stimuli. To focus their attention on what is relevant to them, consumers learn new ways to ignore advertisements (Hervet et al., 2011). For this reason, researchers caution marketers to consider consumers' cognitive load when designing advertisements (Paas et al., 2003)

The fact that cognitive resources are finite means that we can attend to some tasks, but not all. For example, we can drive a car and think about what to buy at the market rather easily. However, in case we would like to keep track of the total number of red and blue cars on the road and recall as many capitals as possible, our ability to drive would be seriously impaired. Each of these tasks would take up a significant portion of the finite cognitive resources available to the person until they are exhausted. The more resources available to the consumer, the more likely he or she is to focus on stimuli that are not directly related to his or her goal (Goldstein, 2019).

By carefully examining this example, it can be seen that there are two types of stimuli that cost us our cognitive resources. The first type refers to external stimuli (counting red and blue cars, paying attention to street signs, searching for a friend in a crowd, etc.) and the second type relates to internal stimuli (trying to remember as many capitals as possible, or memorizing a phone number, etc.). The following chapter will present how the different cognitive capacities are defined in the literature, how they are measured, and what are the

findings of these studies. By the end of the chapter, testable hypotheses should emerge describing the impact of consumers' cognitive abilities on their behavior.

3.1 Conceptualization of different types of load

One of the main goals of advertising is to break through the clutter (Pieters, Warlop & Wedel, 2002). The definition of clutter depends largely on the viewpoint of the observer. From the advertisers' perspective, clutter is anything that makes it difficult for their ads to stand out. This includes other ads, but also more interesting stimuli such as movies, newspapers, or video games, all of which are using up consumers' cognitive resources. From the consumer's point of view, anything that is not related to the current task is seen as a distracting factor that must be ignored. Attention research has shown that not all distractors are equally easy to ignore (Wolfe, 2014), which opens a window of opportunity for advertisers. The consumer's task, to which most of his or her cognitive capacity is devoted, cannot be observed only through the behavioral aspect (i.e., what the consumer is doing), but may also consist of a cognitive process that is currently occupying their mind, which means that advertisement must break through not only the physical clutter but also the cognitive clutter to reach the consumers' awareness. Consumers' ability to focus on a task while ignoring irrelevant stimuli is controlled by their selective attention (Posner, 1980). The critical question is how and when this irrelevant information is filtered out. **This process of selective attention depends on both the external properties of the visual scene, referred to as external cognitive load, and the consumers' cognitive processes, or internal cognitive load**.

The literature on cognitive load emerged in the late 1980s with Sweller's (1988) definition of it as the **amount of working memory resources used**. It is still the most commonly used way of both defining and measuring a person's cognitive load. Since then, cognitive load has invaded various social science fields. The most comprehensible theory that addresses both types of cognitive load is Lavie's Load theory of attention (Lavie, 1995), which will serve as the basis for the present study. Unlike the previously mentioned theories, which are very specific, Lavie's work relates to a variety of real-world scenarios. Furthermore, each type of load is given equal importance, which is especially important considering how similar, but at the same time, different they are. The key assumptions of Load theory are that cognitive resources are limited in capacity, similar to Goldstein's (2018) argument; that task-relevant stimuli are processed *before* distractor stimuli (or task-irrelevant stimuli); and finally, that all cognitive resources must be used. In a practical example, this would mean that consumers engaged in a difficult task (requiring many cognitive resources) are less likely to focus on task-irrelevant stimuli (i.e. the advert) and vice versa.

Although the topic has reached a mature stage, there is still disagreement about the definitions of the two types of load. It has been argued that external cognitive load, for example, has been more clearly defined by the paradigms used to measure it (such as the

manipulation of set size in the visual search task) than by an explicit definition (Benoni & Tsal, 2013). Similar issues exist in the context of internal cognitive load (Murphy, Groeger & Greene, 2016), such as the distinction between maintenance-based memory tasks and cognitive control tasks. Murphy et al. (2016) raise the issue of an inadequate definition of internal cognitive load, arguing that studies that loaded visual working memory rather than cognitive control did not yield results consistent with the Load theory. The lack of a clear operational definition means that a clean manipulation of either construct proves to be a difficult task for researchers. This difficulty becomes even more apparent when the ecological validity of the study is increased. Murphy & Greene (2017) manipulated participants' external cognitive load with the number of vehicles on the road. It is easy to argue that this manipulation also affects consumers' internal cognitive load. Others (Bang & Wojdynski, 2016) confound cognitive load with task difficulty, but then the notion that it can be manipulated by asking participants to store numbers in their short-term memory cannot be used to manipulate it.

Alternative approaches are then taken. In one of the studies, participants were instructed to search for either facts or information on the website, with facts being the low load condition and information being the high load condition. Ambiguity is extended by Evans & Hoy (2016), whose work is often cited by advertising researchers examining cognitive load (Jing Wen et al., 2020). Evans & Hoy describe that attending to mundane tasks leads to an increase in internal cognitive load. However, one could argue that this may also affect a person's external cognitive load abilities. Researchers even explicitly mix these two aspects. Harper et al. (2009) describe internal cognitive load in the same way Lavie defines external cognitive load-as website's complexity.

The most appropriate definition used for the purposes of the present study is that of Wang et al. (2014), who distinguish the two as follows: **Internal cognitive load refers to the demand on one's executive functions, while external cognitive load is defined as the demand on visual attention to perceptually distinguish target objects from non-target objects**. An example of these two aspects is grocery shopping. The number of items to be purchased represents internal cognitive load (the more items, the higher the internal cognitive load), whereas the number of other non-target items surrounding the targets represents external cognitive load (the more non-target items, the higher the external cognitive load)

Their conceptual similarity led to research on the simultaneous effects of the two on attention (Lavie & De Fockert, 2005). The results showed that these two loads have opposite effects on attention. Most importantly, **higher external cognitive load leads to a decrease in the processing of task-irrelevant stimuli** (e.g., advertisements), whereas an **increase in internal cognitive load is associated with an increase in the processing of these task-irrelevant stimuli** (Lavie, 2005). Operationally, high external cognitive load leads to longer reaction times and higher error rates for task completion due to increased task difficulty, but interference from distractors is attenuated. The influence of external cognitive load on

resource availability is modality dependent, whereas the influence of internal cognitive load is not (Fisher, Hopp & Weber, 2019). Both processes rely on their own "pool" of resources. There are perceptual (related to visual scene complexity) and cognitive resources that are independent of each other and largely lead to opposite effects on attentional selection processes (Murphy, Groeger & Greene, 2016).

The goal of the present study is to extend the findings on these effects to the domain of digital stationary advertising. The following sections attempt to clearly delineate one from the other by summarizing advertising research that addresses both.

3.1.1 Internal cognitive load

The notion that human cognitive resources are limited can be traced back to 1955, when Miller found that human short-term memory can store 7+/-2 *chunks*. Unlike *bits of information*, a chunk is defined as the largest meaningful unit that humans can recognize. Computers process all information in terms of bits, while humans can use heuristics to make information more accessible. For example, a list of the following numbers: 3, 5, 6, 7, 8 contains a total of 10 bits of information (*Decimal to Binary Converter*, no date); should we group them into 356, 78 - this gives a total of 16 bits. However, people perceive that they are reduced from five to two chunks, which actually makes the task at hand easier.

The amount of processing resources required for cognitive operations such as controlling actions, retaining items in working memory, and others can be considered an internal cognitive load. It increases as a function of two factors: the amount of information held in working memory and the (un)familiarity, uncertainty, or error-proneness of that information (Fisher, Hopp & Weber, 2019). The most common finding from such research on internal cognitive load is that distraction by the irrelevant stimulus increases as internal cognitive load increases (Lavie et al., 2004; Lavie & De Fockert, 2005; Lavie, 2010).

Originally, Lavie was more concerned with external cognitive load issues (Lavie, 1995), but later she and her colleagues began to shift their focus to internal cognitive load issues (Lavie et al., 2004; Lavie, 2010), leading to the finding that internal cognitive load leads to decreased efficiency of attending to the relevant stimuli, meaning that irrelevant distractors interfere more efficiently with the current task (Lavie et al., 2004; Lavie, 2010). Operationally, reaction time for detecting a target stimulus was much higher when subjects' working memory was engaged with a six-digit number rather than a single-digit number or in a no-number condition. This procedure has been called the "sandwich" task. The "sandwich" in question consists of taxing working memory, usually with a series of numbers to be memorized. Alternatively, researchers may engage participants in another activity while they deal with a target task (Van Cauwenberge, Schaap & van Roy, 2014); or they may present participants with a list of words to remember during the task (Drolet & Frances Luce, 2004). Then comes the "layer" in which participants must complete a type of response-competition visual search task while holding the numbers in their memory; and finally,

participants must answer a question about the memorized object (de Fockert et al., 2001). The common finding is that the time required to retrieve a target stimulus is increased when internal cognitive capacities are exhausted compared to when there is enough to sustain goal-directed behavior (Yoon, Choi & Song, 2011; Pantoja, Rossi & Borges, 2016). Studies of internal cognitive load are quite robust. Similar results are obtained for a variety of different tasks used in the studies. One of the more recent studies (Burnham, Sabia & Langan, 2014) tested the effects of loading the central executive (participants had to count backwards from the initial number), loading the visual working memory (participants had to memorize four colors to which they had to respond), spatial working memory (participants had to memorize the position of target objects and then compare whether the change occurred), and phonological working memory (participants had to memorize two three-letter words). All of the above tasks, except phonological working memory, increased distraction. However, no effect was observed on attentional capture in the search task when phonological working memory was loaded. This result suggests that **not any type of working memory affects distraction rejection, but only the memory required to accomplish the task at hand** (in the present example, the visual search task). With regard to the advertising, the advertisement should be perceived more easily if the participants' cognitive capacities are directed toward the tasks that cause a higher internal cognitive load.

It has also been observed that not all stimuli interfere with the task in the same way. Human faces and not the other type of irrelevant stimuli such as pictures of buildings were memorized more correctly even though they were used as distractors of an experimental task Carmel et al. (2012). This result extends the proposition from the previous chapter that faces represent a special stimulus category.

The main feature of internal cognitive load is described by Bang & Wojdynski (2016), according to which cognitive resources are finite and preferentially used for encoding, processing, and retrieving task-relevant information. Task priority plays a role in the allocation of these resources, with the primary task taking up the most resources. The remaining resources can be used for attention to the non-task-relevant stimuli, such as advertisements. **When executive functions are stressed (cognitive load), distractor inhibition is more likely to fail, meaning that distractions are more likely to interfere with the actual task**. Because executive functions are allocated to holding a number in working memory, it is more difficult to maintain goal-directed behavior, leading to greater processing of non-target stimuli (Murphy, Groeger & Greene, 2016).

3.1.2 External cognitive load

External cognitive load is defined as the amount of information involved in the task processing (Macdonald & Lavie, 2011). An example of a task that has a high external load for the consumer is searching for a specific product on a shelf. If said product is placed among similar products, searching for it will take longer than if the product is placed among

distinctly different products. The consumer engaged in such a task must select, encode, and identify stimuli in his or her brain via the sensory system (Schneider & Shiffrin, 1977). The more stimuli that enter the visual field and the more similar they are, the more difficult the task (i.e., it takes longer to solve). The amount of processing resources required to complete this task can be considered an external cognitive load.

Prior to Lavie's formulation of the theory most commonly used in research on external cognitive load, there was debate in attention research (Lavie & Tsal, 1994; Lavie, 1995, 2010) about whether attention acts in a top-down or bottom-up manner. Proponents of attention as a bottom-up process (early selectionists), such as Treisman & Gelade (1980), held that people cannot perceive all stimuli in their environment but focus only on those that are relevant to them. In contrast, the late selectionists (Duncan, 1984) held that humans have an unlimited perceptual capacity and that all stimuli presented in the visual field are processed pre-attentively, whereupon humans use the process of selective attention to focus on those that are relevant to the task.

Lavie's Load Theory offers an answer according to which both currents are partially correct, defining external cognitive load as the demands placed on attention to discriminate between target and non-target objects (Lavie, 1995). This can be done in a variety of ways, such as by presenting a different number of distractor stimuli or by making the distractor stimulus and the target stimulus alike. In short, **by increasing the salience of the task-relevant stimulus, the external cognitive load on the observer is reduced**. Thus, the solution to the early vs. late selection question is a trade-off in which both sides are partially correct. Early selection is thought to work when external cognitive load is high, and late selection occurs when external cognitive load is low (irrelevant distractions are also processed and selective attention must be directed to the task-relevant stimuli while ignoring the irrelevant stimuli).

Consistent with future findings on attention economy (Crawford, 2015), Lavie's theory also assumes that human perception has a limited capacity that is used up automatically (i.e., involuntarily). More specifically, Macdonald & Lavie (2011) describe it as the amount of information involved in processing task-relevant stimuli. The predictions of this theory are usually, but not exclusively, observational. Consumers engaged in a task with high external cognitive load exhaust their perceptual capacities, which leads them to select only the relevant stimuli and not notice the irrelevant distractors. Advertising perceived by consumers as irrelevant stimuli should be attended more easily when it is salient, clear, simple, and does not exhaust perceptual capacities.

Similar to internal cognitive load, the major complaint is that it is more accurately defined by the tasks used to manipulate the amount of external load placed on the participant than by the processes that control it. External cognitive load is typically measured in one of three ways. First, by varying the number of items presented, where the greater the number of items presented, the greater the external cognitive load on the participant's cognitive system (Lavie & De Fockert, 2005). Second, by increasing the similarity between presented items, as the

salience of the target determines how difficult it is to attend to it (Beck & Lavie, 2005). Finally, the difficulty of the task may also lead to varying levels of external cognitive load (Cartwright-Finch & Lavie, 2007). These processes that use up consumer cognitive load occur over a short period of time (i.e., milliseconds), are stimulus-driven, and are outside of conscious awareness and control. Some authors even define external cognitive load in units of time as the difference in reaction time between the incongruent and congruent trial conditions. The main difference between the conditions is the similarity of the distractor to the target stimulus (Murphy & Greene, 2017). For example, it is more difficult to find a letter "N" surrounded by the same letters "N" than to find a letter "N" surrounded by the letters "X." Such studies produce robust results and consistently show that the difference between congruent and incongruent conditions is observed for the low load condition but not for the high load condition, suggesting that there is a difference in the processing of the distractor stimuli (Sy & Giesbrecht, 2010). Studies on this topic differ depending on the type of stimuli used to determine congruency.

Even when the distracting stimuli were cartoon faces (Forster & Lavie, 2008) and real faces (Jenkins, Lavie & Driver, 2005) or when the distractors were presented at the location where participants were already gazing at (Lavie et al., 2009), distractor interference was observed only in the low load condition but not in the high load condition. Not only does high external cognitive load lead to a decrease in distractor interference, but the awareness of unexpected stimuli was also observed (Macdonald & Lavie, 2008). This finding can be seen as evidence that external cognitive load is responsible for inattentional blindness (Murphy & Greene, 2016). Some argue that this inattentional blindness may be the result of the brain's weak sensory response to distractors under such conditions (Lavie, 2010).

Following the robust results of previous studies, researchers are calling for the design of more externally valid studies, as few have been conducted (Murphy & Greene, 2017). These researches, coupled with Wang et al.'s (2014) definition of external cognitive load, and the fact that target's saliency is the most important predictor of time needed for attending toward the target (Beck & Lavie, 2005; Cartwright-Finch & Lavie, 2007), lead us to hypothesize the following: **An increase in the number of distractor advertisement presented alongside the target advertisement (external cognitive load) should positively impact consumers' visual attention (higher reaction time) (H3a)**. Moreover, because faces are automatically and preferentially attended to, **external cognitive load should have a stronger effect on non-facial cues advertisement (H3b), as attention is automatically directed to the face cue stimuli** (Langton et al., 2008; Crouzet, Kirchner & Thorpe, 2010).

In summary, internal and external cognitive load have an opposite effect on distractor processing. When consumers operate under high levels of internal load, their task may be impaired by the distractor stimuli, such as advertisements. On the other hand, a higher level of external cognitive load, such as the complexity of the visual scene, leads to a lower perception of distracting stimuli. There are two ways advertisers can go about this. They can either be careful about the placement of their ads, which should increase the likelihood that

they will be noticed, or they can design the ads in such a way that consumers who choose to ignore them are put under additional strain because their attention is automatically drawn to them and they have to invest additional cognitive resources to focus on something else.

3.2 Overview of research on consumers' cognitive load in advertising

As Murphy & Greene (2017) mention, there is still a lack of studies on these effects in the more applied contexts. To our best knowledge, there are only a handful of studies looking at the effects of cognitive load on ad processing (Yoon, Choi & Song, 2011; Zimmerman & Shimoga, 2014; Bang & Wojdynski, 2016; Pantoja, Rossi & Borges, 2016; Wang & Duff, 2016; Jing Wen et al., 2020). These studies mostly focus on the effects of internal cognitive load on consumers. Authors focusing on external cognitive load usually address consumers' multiscreening behavior as the most prevalent form of media multitasking (Segijn et al., 2017; Segijn & Eisend, 2019).

One of the first consumer-related studies involving cognitive load was conducted by Drolet & Frances Luce (2004), who examined how consumers' decision making is affected by different levels of internal cognitive load. Consumers who were required to memorize a list of 20 words showed increased use of attribute trade-offs when deciding between two options from different product/service categories. More specifically, they were more inclined to use trade-offs as reasons for choosing an option and less inclined to use them as reasons against. This indicates that consumers' cognitive load may have an important effect on the relationship between their attention and their behavior. Some studies simultaneously examined the joint effect of internal and external load. The main findings of the studies were that the availability of viewers' cognitive resources can moderate the relationship between product placement and attitude (Yoon et al., 2011; Pantoja et al., 2016). **Intrusively placed products were liked less, but only in the low cognitive load condition**. When viewers' cognitive capacities are exhausted, the negative impact of intrusive product placement may be mitigated as viewers use heuristic-driven processing. However, when participants' cognitive resources were **overloaded, they showed attenuated positive attitudes toward product placement**. The explanation was that this overload impaired attentional resources to the point that participants could not adequately process either well and intrusive integrated placements. Unfortunately, the authors did not account for the biggest potential confounder - brand salience, since they used two very prominent brands whose products were placed in two popular movies. Again, this is a possibility that future research, including this one, can address. Thus, it is not clear whether the observed effects are due to the brand or to the product placement in the clip.

In addition, asking participants to memorize an eight-digit number, as done in previous researches, has not been shown to be a perfect way to manipulate internal cognitive load (Jing Wen et al., 2020), as nearly two-thirds of participants failed to remember an eight-digit number for the duration of the study. This raises the question of whether these participants

were engaged in a cognitively demanding task, as it is possible that they gave up memorizing after concluding that the task was too difficult. These two aspects should be considered in future research

Original findings published by Lavie et al. (2004) that internal and external cognitive load have an opposite effect on memory are repeatedly observed. Participants exposed to higher levels of external cognitive load showed lower familiarity with the advertisement and lower recognition, while those in the high internal cognitive load condition showed higher familiarity with the brand (Wang & Duff, 2016). The results show that **high external load strongly inhibits the processing of peripheral distractions, leading to early selection for target content**. Moreover, **low external load not only allowed distractors to reach awareness but also allowed certain parts of the advertisement to be encoded even though they were not part of the target media content**.

More recently, the issue of cognitive load has been explored in the context of social networks and native advertising (Jing Wen et al., 2020). Similar to previous studies, internal cognitive load was manipulated by asking participants to memorize a two- or eight-digit number sequence. The results suggest that participants with low cognitive load were more likely to attend toward the disclosure of native advertisement - in line with a prediction by Lavie & De Fockert (2005). The explanation for this phenomenon is also quite similar. The authors argue that **consumers who have more cognitive resources at their disposal (low load condition) are more observant to peripheral advertising content (such as the disclosure language)**. Consumers with limited cognitive resources (high load condition) were more influenced by explicit disclosure language than by implicit. This may be because processing implicit meaning requires more cognitive resources than explicit, and consumers in the high load condition had none available. This study can be viewed as an extension of the study by Yoon et al. (2011), as similar effects were observed for product-plot integration effects.

Finally, Bang & Wojdynski (2016) observed that participants who participated in the low-demanding task did not process the advertisement at all. Although this was surprising and contradicted theoretical predictions, the results were explained by the lack of motivation for any type of content processing. Participants who quickly skimmed the Web page did not "pay attention" with their cognitive resources as much as they should have, whereas participants placed in the high-demand task paid a significant amount of attention to the personalized advertisements. One possibility not reported by the authors is demand characteristics, a well-known methodological artifact responsible for the skew in the data (Klein et al., 2012). It is plausible that participants "guessed" that one of the goals of the study was to test how they responded to advertisements, especially since they were personalized and included their name and photo.

This series of studies provides a clear hypothesis for the relationship between internal cognitive load and the evaluation of advertising. **Consumers who have more cognitive resources available to them (low cognitive load condition) will process advertisements**

more deeply resulting in more positive advertisement evaluation (H4a). Following the same reasoning, an **advertisement that shows a human face instead of another cue should place lower load on consumer, since this type of stimulus is processed automatically and preferentially, leading to this effect being stronger in the face condition (H4b)**.

Research focusing exclusively on consumers' external cognitive load was reviewed in the meta-analysis (Segijn & Eisend, 2019), which found that nearly one and a half hours of one's media time is spent using more than one screen at a time-a high external cognitive load. This observation is consistent with marketing agency findings (Nielsen, 2018; as cited in Segijn et al., 2017) that nearly half of U.S. consumers use another digital device while simultaneously watching TV. This is an important observation, both from an attention research and advertising research perspective. One of the key features of multiscreening is the constant allocation of attention between the two visual tasks with temporal overlap (Segijn et al., 2017), making it a valid proxy for hypothesizing external cognitive load in general. Meta-analysis has shown that **multiscreen users (high external cognitive load condition) tend to perform worse than single-screen users on cognitive outcomes such as brand recall, recognition, and attention**; however, **viewing multiscreen ads does not affect affective advertising outcomes** such as brand attitude and purchase likelihood.

This study confirms the findings of Van Cauwenberge et al. (2014), who showed that higher levels of external cognitive load, operationalized as the use of another screen, are associated with lower cognitive performance, measured as factual recall and comprehension. The effect is also present when the second screen contains information relevant to the first screen. This type of effect has been observed repeatedly, particularly in the field of psychology of learning (Kane & Engle, 2000). **Proactive or retroactive interference** has been used to explain such results. Importantly, however, the results of Van Cauwenberge et al. (2014) suggest that the content of the interfering stimuli had no effect on cognition, implying that **burdening one's cognitive capacities can only have deleterious effects and cannot be used to facilitate processing in any case** (e.g., multichannel messages).

This review points out several gaps that future studies should fill. First, more precise manipulations should be used, i.e., comparing not only the two extreme conditions, but also subtler differences between different amounts of load (Yoon, Choi & Song, 2011). In this way, a more complete picture of how load affects processing in naturalistic tasks could emerge, especially given that some authors (Weber et al., 2018) have noted that the relationship between cognitive load and attentional resources may be curvilinear rather than linear. Another gap that recurs in the face processing literature, is the lack of consensus on whether faces represent a special stimulus category or whether they are processed preferentially because of expertise in dealing with them (Murphy, Groeger & Greene, 2016)

3.3 Advertisement's load

The entire Load theory revolves around the distinction between target and distractor perception. Target can be defined as a stimulus that is associated with an objective. For example, if our motivation is to watch a movie, then the movie itself is the target stimulus. There is not much ambiguity in defining what is a target stimulus since it depends on the task at hand. Distractors are a completely different category of stimuli whose only similarity to target stimuli is that they both compete for the same cognitive resources.

Distractors are all stimuli irrelevant to the task. They can range from truly irrelevant to response-competing distractors. Forster & Lavie (2008) have shown that both types of distractions can interfere with the task equally and that both can affect external cognitive load. This poses a potential problem for researchers because anything can be considered a distractor including the font of the text, the contrast of the image, the salience of the product, etc. All of this should be carefully controlled, both when designing a study and advertisement. The advertiser's goal should be to increase the salience of the advertisement, either by making it dissimilar to its surroundings or by designing it in such a way that it automatically grabs attention.

The previous sections should have given an insight into the fact that distractors may be external (inducing external cognitive load) or internal (inducing internal cognitive load). It has also been shown that these two types of distractions have opposite effects on consumers' perceptions of the advertisement and the advertised product. The main problem is that consumers often perceive advertisement as a distracting stimulus. This has led to a number of difficulties faced by researchers. Much of the research discussed to date on the effect of cognitive load in advertising tests the effects of cognitive load on more distant consumer experiences such as brand recall, ad recognition, attitudes toward the ad, etc. Thus, there is the possibility that the effects observed in such studies are accumulated through a series of processes operating from ad exposure to eventual ad ratings. In order to test how attention is affected by cognitive load, we consider the distinction between target and distractor to be less relevant. Although we do not claim that advertisement is rarely the target stimulus in the consumer environment, we assume that the mechanisms for guiding attention to relevant or irrelevant stimuli depend on the property of the stimulus rather than on the cognitive capacity of the observer.

To increase the attention grabbing properties of ads, advertisers can design their ads to be perceived as a target, e.g., by thinking of a promotion in which participants must find an ad or product to receive a reward. Alternatively, and more commonly, they can design the ad to increase the saliency even though it is still perceived as a distractor. For example, by implementing certain design features that are known to automatically grab attention, such as sound, brightness, size, motion, etc. (Wolfe, 2014)

As presented in the previous chapter, the human face represents a special category of stimuli. Although it has been previously found that memory for faces is far superior to other types of images such as buildings, airplanes, etc. (Hancock, Bruce & Burton, 2000), the literature examining inattentional exposure to faces and its outcomes is not as clear. Jenkins et al. (2005) examined how faces are inattentively processed in the presence of varying levels of external cognitive load manipulated by task instructions. Results showed that irrelevant faces were correctly recognized much more frequently in the low load condition than in the high load condition. This study shows that manipulating attentional load in an unrelated task can reduce recognition memory for faces, in line with the predictions of the Load theory (Lavie, 1995). It is rarely the case that faces in advertisements are what the creators of the advertisements want to be memorized. Instead, they could be defined as priority distractors. This specificity of the face has also been acknowledged by other authors (Murphy, Groeger & Greene, 2016), who suggest that it is not affected by high external cognitive load.

Another study (Lavie et al., 2003) showed that **distraction by meaningful stimuli such as fruits and musical instruments was eliminated when external cognitive load was high, but famous faces continued to distract participants in completing their task**. The same pattern was not observed when animal faces were used as distractors (Sato & Kawahara, 2014), raising the possibility that this is a consequence of expertise in face processing. It has even been suggested that attentional capacities can be divided into a capacity for faces and a capacity for non-faces (Thoma & Lavie, 2013). In their study, the authors varied the load between faces and non-face stimuli. Face load eliminated face distraction, while non-face load had no effect on face distraction. These results, as well as those already discussed, offer both advertising researchers and advertisers the opportunity to carefully design advertisements so that they are perceived positively by consumers' cognitive systems.

In summary, the above researches consistently confirm theses from theories of cognitive load. External cognitive load can be viewed as a perceptual barrier that blocks the processing of distractors; internal cognitive load, in turn, reduces the executive control capacity responsible for maintaining task priority, resulting in greater distractor processing. In practical terms, external cognitive load is exerted on the consumer when it is difficult to distinguish between task-relevant and task-irrelevant stimuli. The higher the load, the less efficient the processing of both distractors and the target. Conversely, consumers engaged in an easy task (low internal cognitive load) had sufficient cognitive resources to invest in processing the distracting stimuli and to evaluate them more positively.

However, these effects have not yet been tested in everyday advertising processing. Previously, researchers tested specific situations, such as watching a movie or playing a video game, after which consumers were asked about their advertising perceptions. These situations are too specific and participants in these studies were actively engaged in completing a task. By presenting advertisement in more real-world situations, the literature on advertising processing is enriched with additional insights into whether these exposure effects are robust or whether they are limited to a specific set of contexts.

4 RESEARCH METHODOLOGY AND RESULTS

4.1 Research questions and conceptual framework

The theoretical background presented in the previous chapter has highlighted the main gaps in the literature. The conceptual model with the hypotheses tested in each study is shown in Figure 2. Each set of hypotheses answers a specific research question:

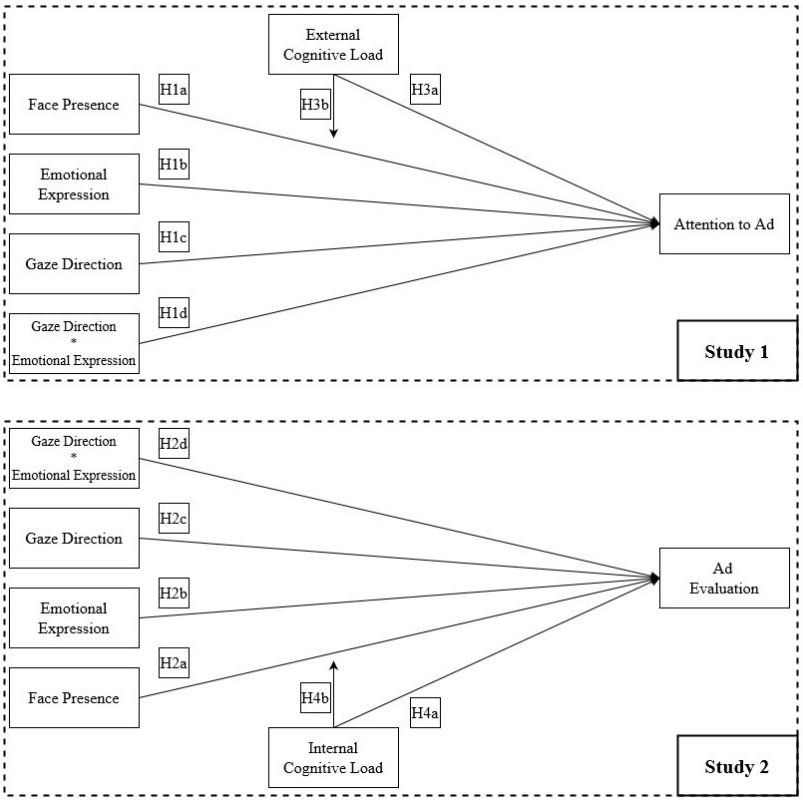
RQ1: *How does the human face, and its attributes, in advertisement, affect consumers' attention to ad? (H1a-H1d)*

RQ2: *How does the human face, and its attributes, in advertisement, affect consumers' ad evaluation? (H2a-H2d)*

RQ3: *How does cognitive load affect relationship between face presence in ad and consumers' attention to advertisement? (H3a-H3b)*

RQ4: *How does cognitive load affect relationship between face presence in ad and consumers' ad evaluation? (H4a-H4b)*

Figure 2: Conceptual model and hypotheses



Source: Own work

Two studies examine how ad design influences ad perception and consumers' attention. In each study, participants' cognitive load is manipulated. By increasing the complexity of the scene in which the advertisement stimuli were presented, the external cognitive load (i.e., the amount of information presented in the visual field) is manipulated and its effect on attention is examined for different types of advertisement stimuli (Study 1).

In the second study, we manipulate participants' internal cognitive load by presenting them with a memory task that requires them to memorize a short or a long sequence of digits for the duration of the study. This time, we test how the design of the advertisement affects not only attention to the advertised product, but also how the advertisement is perceived by the consumer as a function of the different mental effort expended in processing the advertisement.

The main outcome variable in both studies is the time in which attention is guided to the advertised product, measured in milliseconds (ms). In the introductory part of the thesis, the factors that influence attention were described and explained. There are two key factors that are tested. First, **the type of attention grabbing stimulus** used in the advertisement and **the cognitive load** imposed by both the external and internal stimuli. Given the evolutionary importance of human face perception (Batki et al., 2000), we hypothesize that the human face will grab attention more efficiently than other non-face stimuli because of its importance in everyday social interactions. Moreover, depending on the emotion shown by the face and the direction in which the model is gazing at, consumers will differ in time needed to attend toward the advertisement. Following the findings of evolutionary psychology, a human face showing an approach oriented emotion and/or a direct gaze (i.e., the model looks at the camera) should grab attention in less time than if the same model gazes away or shows an avoidance oriented emotion (Adams and Kleck, 2005).

Both studies were conducted online using Psytoolkit software (Stoet, 2010; 2016; Torbarina, 2022). Psytoolkit is a free online software that offers a variety of procedures, such as mouse tracking, reaction time measurement, random assignment of participants, and can even be integrated with eye-tracking equipment. The software has been used in more than 600 studies (according to Google Scholar) and its validity was demonstrated by comparing it to a popular proprietary software E-Prime. There were no significant differences in outcomes using either software program (Kim, Gabriel & Gygax, 2019). And although both studies were conducted online, the stability of the Internet connection did not affect the validity of the measurements because each experiment was downloaded locally to the participant's computer and thus the speed of the Internet connection did not matter (Stoet, no date). Another potential confounding factor that could have affected the validity of the results, which was methodologically controlled for, was the difference in screen size between the different participants. The size of the experiments as displayed on the participants' monitors was the same for all (1044 x 788 px for the first study and 1200 x 60 px for the second). This meant that all participants were presented with the stimuli of the same size.

All in all, the external validity of the studies is stronger than their internal validity, mainly due to the fact that the experimenter was not able to control the type of devices used by the participants. Although the Internet connection did not affect the participants' reaction time, other factors could have influenced the results, such as the processing speed of the computer or the distance from which they viewed the screen, etc. Because so many factors could not be statistically controlled, a within-subjects design was chosen in both studies to effectively control for all these individual aspects. Jhangiani et al. (2019) note that the main advantage of such a design is maximum control of extraneous factors. Since the participants in each group are the same individuals, their IQ, socioeconomic status, screen size, distance from the screen, etc. are all the same - effectively controlling for these effects. To further increase the internal validity of the studies, participants were instructed to read the instructions carefully, to ensure they were in a quiet, undisturbed environment.

4.2 Study 1 – Gaze and emotion effect on grabbing consumers' attention

The aim of the first study was to test whether the human face presented next to the product could grab consumers' attention to an ad more efficiently than the other type of cue. In addition, the effects of facial expression and gaze direction, as well as external cognitive load, were analyzed. The experiment was an adapted version of the commonly used visual search task paradigm (Wolfe & Horowitz, 2008). In the original form, the participant is presented with a grid of different stimuli and is asked to respond when they find a specific target stimulus. By increasing the number of distractors, and by varying the similarity between the target stimulus and distractors, the difficulty of the task can be varied. The key outcome measure is the time required to find a target. The basic idea is that a salient stimulus (which is easier to detect) grabs participants' attention more efficiently than a stimulus that is not so salient.

Our idea was to adapt such a task to resemble externally valid stimuli such as advertisements, which rarely contain only one stimulus. Therefore, we paired each target cue with an object (a product). The assumption is that the object coupled with a human face should grab attention more efficiently, since attention is drawn to the cue that is near the target stimulus. Based on the idea that human visual attention works like a spotlight or a zoom lens, the product next to a target cue should be captured by either a "spotlight" or a "lens".

4.2.1 Sample

Sample size was determined using an a priori sample size calculation that took into account significance (set at 95%), desired power (80%), and the expected size of the effects in question. Previous researches (Adil, Lacoste-Badie & Droulers, 2018; Tipples & Pecchinenda, 2019) addressing similar questions showed that the observed effects were small according to Cohen's (1988) guidelines for interpreting differences between groups in terms of the difference expressed in the standardized units. Along with a unit, he offered a

scale that designated a mean difference of 0.2 standard deviations as a small effect, 0.5 as a medium effect, and 0.8 as a large effect. The total of 100 subjects were sampled from an online panel app - Prolific[1].

The final sample consisted of 71 females and 29 males. Their mean age was M = 28.02 years (sd = 8.68 years). A basic description of the sample can be found in Table 2, along with their responses to the questions about the conditions under which they participated in the survey.

Table 2: Sample description

Descriptive variables	**M**	**sd**	**Range**
Total time taken for study completion (in seconds)	10.38	4.99	6.42 – 52.77
Age	28.02	8.68	18-52
Did You feel tired before starting the study?	3.02	2.69	0-10
Have You been completely focused on the study?	8.89	1.82	0-10
Have You been distracted by outside stimuli?	1.24	1.94	0-9
When was the last time You had an alcoholic drink?	0.20	0.65	0-3

Source: Own work

Participants indicated that they were slightly tired, very focused, not distracted, and that they had not been drinking before participating in the study (the scale ranged from 0 - "*More than a day ago*" to 10 - "*In the last hour*"; thus, the mean of 0.20 means that they were sober).

An attention check question was inserted into the final part of the study. In it, participants were specifically asked to click "*Agree a little*" on an unrelated statement. Two of the participants did not follow the instruction, which called into question the validity of their performance throughout the study. For this reason, they were excluded from further analyses, resulting in a final sample of 98. During the analysis process, each analysis was repeated with the two participants included in the final sample, but the results were not significantly different, so they were not included.

[1] Prolific is an online service that matches researchers with potential participants. There is a fee to participate. The app also offers a variety of different screening methods to gain access to a homogeneous sample. Participants in the present study were drawn from the population of 273 861 participants who were registered on the Prolific website at the time the study was conducted. One of the advantages of using Prolific is the ability to pre-screen participants for the study. We chose to exclude minors, participants whose native language is not English, participants who do not have normal or corrected-to-normal vision, and participants who do not engage with online shopping at least once in a few months. These screeners shrank the total participant pool to about 30 000 potential participants, 100 of whom were included in the sample. Each participant was rewarded £ 1 for their efforts.

4.2.2 Stimuli

Each advertisement contained two types of stimuli. One half of the image was occupied by the cue and the other by the target. Participants received no specific instruction to pay attention to the cue. Their task was to respond to the presentation of a target about which they were informed before the block began. There were three different cues: a circle, an arrow, and a human face (which was additionally manipulated to express different emotions paired with a different gaze direction). The target was either a smartphone or a perfume bottle (Figure 3). Both were presented in a separate block with a size of 170 x 128 pixels on the screen.

4.2.2.1 Targets

The selection of products used as stimuli for research depended on several criteria. First, they had to belong to the commonly advertised category; they had to be affordable; they had to come from the unknown brand so as not to confound brand effects; they had to be similar in size, for example, one product could not be a car and the other a toothbrush.

The commonly used advertising categorization, the FCB grid, served as a starting point. It is one of the most widely used schemes for product categorization (Cheong & Cheong, 2020). More specifically, *the updated FCB grid*, which has been extended to include a new dimension (advertising channel - place of purchase) that is better suited to the contemporary context of digitalization. With the changes caused by the advent of the pandemic, consumers are even more involved in online shopping (Sharma & Jhamb, 2020). The grid is used to design effective advertising messages depending on two factors. The first is purchase decision involvement (which is either high or low), and the other is the dimension of thinking and feeling about the purchase. Purchase decision involvement was determined by consumers' self-assessment of the importance of the purchase decision, the effort involved in making a purchase decision, and the perceived risk of making the wrong decision. Previous research has found that consumers are more engaged with advertising during high involvement purchases (Mishra & Kumar, 2012). Consumers' perceptions of the product are also responsible for the distinction between the Think and Feel product categories. If the **purchase was mainly evaluated as logical or objective and based on functionality**, the product is assigned to the *Think* dimension. If, on the other hand, the **purchase decision depends on appearance, taste, feeling and the expression of one's own personality**, the product is assigned to the *Feel* dimension

Our rationale was to include products with high purchase involvement and those that are mainly advertised and purchased online. We hypothesized that while these effects on attention may lead to an immediate purchase, the attention effects are more complex. When a consumer attention is grabbed, the likelihood that the advertisement will be noticed increases, which may lead to a purchase if the need is present. The decision to sample from products advertised online is a practical one, as the study is designed to engage participants

in an online experiment. By using stimuli advertised online we are increasing the external validity of the study.

In addition to the target products, we also needed some distractor products. For this reason, we selected another 18 products that were similar to the target products (in terms of purchase decision and think/feel dimension). It is worth noting that none of the distractor products belong to the same category as the target products, and all of the products score similarly to the target products in the Think and Feel dimensions. The entire list and images of the distractor products can be found in the Appendix.

Figure 3: Target products

Source: Own work

4.2.2.2 Cues

The human faces used as cues were sampled from the Karolinska Directed Emotional Faces database (KDEF). The database contains a total of 4900 images of human facial expressions of emotion (Lundqvist, Flykt & Ohman, 1998) expressed by 70 individuals, each showing 7 different basic emotional expressions. Each person was photographed twice from 5 different angles. The database has been used in more than 1500 research publications. The main motive for using the standardized photographs of the models was to control various extraneous factors associated with the photographs, such as the use of the same clothing, the exact positioning of each person including the same position of the eyes and mouth in the fixed image coordinates.

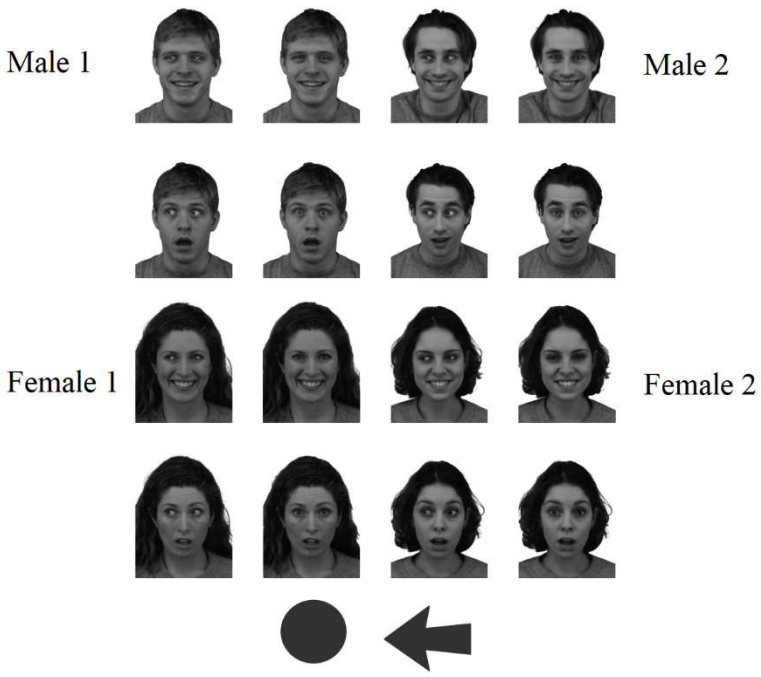
For the purposes of this study, only certain images of specific models were selected. The final selection of images used came from the population of centrally captured photographs expressing happiness (approach oriented emotion) and surprise (avoidance oriented emotion). The distractor stimuli were all neutral faces centrally photographed. This narrowed the image population to 70 subjects x 2 photos x 2 emotions x 1 angle = 280 photos. To keep the study design manageable, we also chose to use one model per target product as a cue, but varied the distractor cues. Four out of 70 subjects were selected. The main criterion for selecting the models was the size of their eyes. In some models, the eyes were rather small when they expressed happiness, so inference of the direction of their gaze was not accurate. More importantly, digital manipulation of gaze direction would be made impossible. In

addition, the models were found to be similarly attractive. Each model was associated with a distinct product. Male 1 and Female 1 were always presented with a smartphone, while Male 2 and Female 2 were presented next to perfume.

Each face was digitally manipulated to change its gaze direction. Krita software was used for this purpose. By digitally manipulating the gaze direction, we were able to control for even more extraneous factors. The faces that looked toward the center and toward the product were identical in every aspect except for the direction of their gaze. Several informal groups of students were asked if they saw anything strange or unusual in the images, and they reported nothing suspicious, which was taken as evidence of the validity of the facial stimuli.

The control stimuli were arrows and circles. The arrow served as a control for the model looking at the target, and the circle served as a central control. Both are similar in size to the faces and are colored so that the average amount of color is the same for faces and circle/arrow. The arrow can only point to the product and not away from it, as the faces are not presented to look away from the product. Figure 4 shows all the cues used in the study.

Figure 4: Cues used in a study



Source: Own work

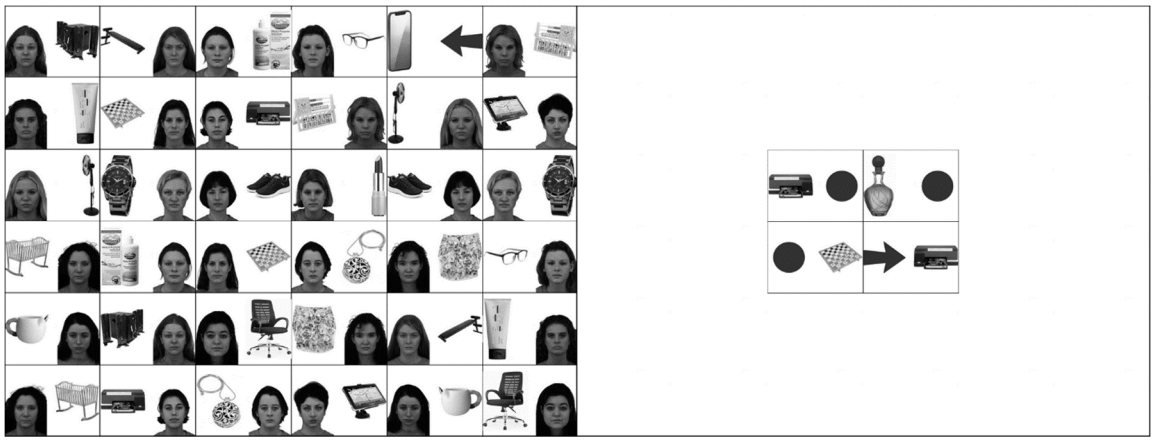
4.2.3 Measures

The measures to be collected are divided into three broad categories. The dependent variable reflecting attention is reaction time (RT), which is measured in milliseconds because it is a commonly used proxy for measuring attentional processes (Posner, Snyder & Davidson,

1980; Treisman & Gelade, 1980; Prinzmetal, McCool & Park, 2005; van Ens et al., 2019). RT is calculated from the moment the stimulus is presented on the screen until the participant has clicked on it. Due to the heavy skewness of the RT distribution, all RTs longer than 5000 ms and those longer than 2 standard deviations from the mean are excluded as non-valid responses. The reason for using RT as a measure of attention is that participants must first become aware that a particular object is present or focus their attention on it in order to click on it. The less time it takes them to do this, the more attention grabbing the product is.

The variables experimentally manipulated to test their effects on RT were amount of external cognitive load placed on the participant, the type of attention cue presented next to the product, and the characteristics of the cue. The number of ads presented on the screen indicated the level of external cognitive load. When the screen contained four ads, external cognitive load was low, and it was high when there were 36 ads on the screen. In each case, one was always the target ad, so there were always either three or 35 distractor adverts present. A comparison of the cognitive load can be found in Figure 5.

Figure 5: High (left) and low (right) external cognitive load conditions



Source: Own work

The type of cue was manipulated by presenting the target object next to an arrow (Figure 5, high cognitive load), a circle (Figure 5, low cognitive load), or next to a human face. The human face could show either an approach oriented emotional expression (happiness) or an avoidance oriented emotional expression (surprise) while gazing either at the camera (central gaze) or at the product (averted gaze).

Finally, a set of control measures was collected. These included:

- the type of target product (either a smartphone representing the “think” dimension product or the perfume, representing the “feel” dimension product, based on the updated FCB grid (Cheong & Cheong, 2020)
- model’s gender
- trial and block order (perfume first block/smartphone second block or vice versa)

- the position of the product in regards to the model (either left or right of the model) and
- the type of distractors (number of faces presented as distracting stimuli).

4.2.4 Task Procedure

The study was divided into three different parts. Upon accessing the link for the study, participants were greeted with an instruction informing them that they were participating in the study of Internet browsing behavior. They were also asked to stay in a quiet, non-disturbing environment and to read the following instructions carefully. The first instruction contained the first attention check. We asked our participants to answer "No" when asked if they had understood the instruction. 20 participants had not read the instruction carefully and were therefore redirected back to the same instruction page, but now had to answer "Yes" to the same question

Participants were then asked whether they are using the regular computer mouse or the touchpad built into the laptop. This was important because the main task required participants to click the mouse when they saw a particular stimulus on the screen. 38 participants used a regular mouse, while others used the laptop's built-in touchpad. The difference was significant. The group using the normal mouse was on average 273 milliseconds faster.

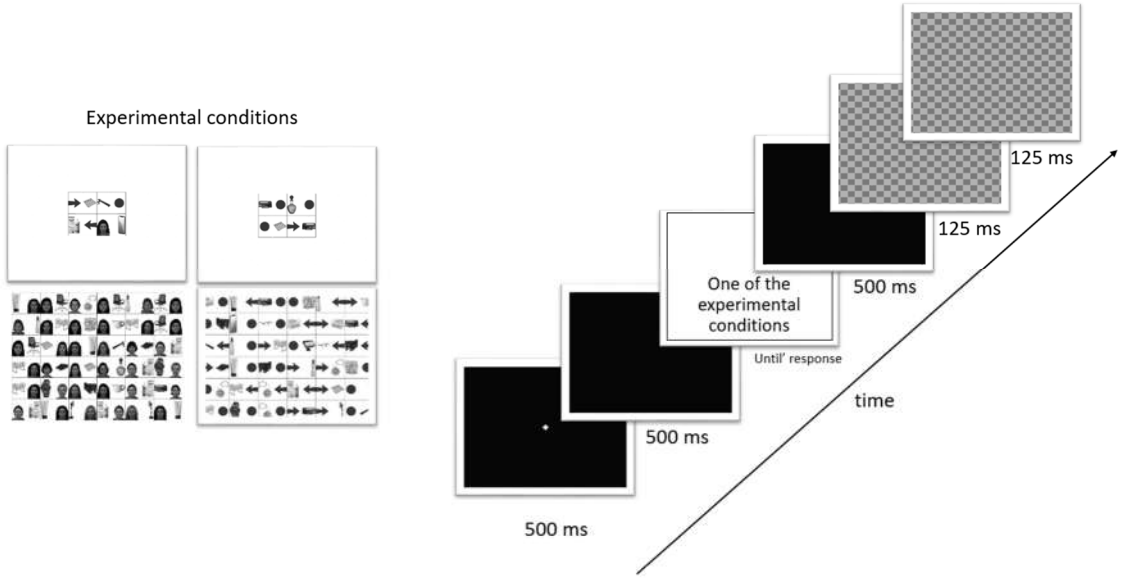
The main part of the study consisted of a visual search task, a commonly used experimental paradigm for studying attention (Wolfe & Horowitz, 2008). It took a few seconds for the experiment to compile, after which participants were presented with a new set of instructions. They were again informed that we were studying how people browse web pages. We also informed them that there was no time limit set, to relax participants. The general instruction was that they were to click on the image that contained a particular object without being provided any information about the cue.

This object was either a guitar (in the training block) or a smartphone/perfume (in the main study). The training block was used to provide participants with the hands-on experience of the study. It consisted of 16 trials. Each trial began with a fixation cross displayed for half a second (500 ms), followed by a blank screen for another 500 ms. The target, coupled with a circle, an arrow, or a face as a cue, could appear anywhere on the screen. After clicking on the image, two masks were briefly presented (for a duration of 125 ms) to clear sensory memory.

After participants completed all 16 training trials, they were informed that the actual task would now begin and that their task would remain the same: click on an image that contained a specific product. The product was introduced in the instruction, and the order of perfume or smartphone was counterbalanced so that one group of participants had to find a perfume first, while the other group had to find a smartphone first. The instruction also stated that participants should ignore all other images displayed on the screen. The target in the high

cognitive load condition could appear anywhere on the grid, while the target in the low cognitive load condition could appear in one of the four central locations on the grid (Figure 6).

Figure 6: Experimental trial sequence



Source: Own work

After completion of the first block, the same procedure was repeated, but now with a different target stimulus. There were a total of 48 trials per block. The number depended on the study design. Two cognitive load conditions times two product positions (left or right of the cue). There were also four different face cues (2 emotions x 2 gaze directions) and two different non-face cues (an arrow and a circle). In total, 24 trials were required to present each cue-target combination. We decided to repeat each trial twice, so that each block consisted of 48 trials

In the final part of the study, participants were asked to answer questions about their self-reported experience of performing the experiment. They were asked whether they thought their search was faster when the attention cue was a human face compared to the no face condition; whether they paid more attention to pictures that contained a face, etc. At the very end, participants were asked what psychophysical state they were in while participating in the study. Participants were asked whether they felt tired before the study, whether they were fully focused on the study, whether they were distracted by external stimuli, and when they had their last alcoholic beverage. The descriptive statistics can be found in Table 2.

4.2.5 Data checks and analyses

The study lasted an average of 10 minutes and 23 seconds (M = 623 seconds; sd = 300 seconds). Before testing the hypotheses, several data controls were performed. First, those trials in which participants clicked on the wrong image were excluded from analyses (1.02% of trials). Participants who failed the attention check were also excluded from the analyses (there were 2 such participants, or 1.94% of rows). All trials longer than 5000 ms were treated as errors (4.14%), following the logic proposed by Ulrich & Miller (1994) that RT beyond a certain threshold is clearly not indicative of maximal performance and should therefore be excluded and/or treated as errors. Finally, trials in which RT was longer than the mean of the condition + 2 standard deviations from the mean (Tukey, 1977) were also excluded (4.48%). Of the 11200 trials, 11.14% of trials were excluded.

Before the main analyses, we tested for possible effects of participant age, gender, and type of target stimulus. Participant age did not affect reaction time ($r = 0.15$, $p > 0.05$), nor did model gender ($t = 0.95$; $df = 96$; $p > 0.05$; $d = 0.19$). However, participant gender did influence reaction time ($t = 2.29$; $df = 95$; $p < 0.05$; $d = 0.52$), with men having shorter RTs (M = 1288.42 ms; sd = 231.99 ms) than women (M = 1399.62 ms; sd = 207.49 ms). Other factors that influenced RT were the type of target product ($t = 10.93$; $df = 97$, $p < 0.001$; $d = 0.87$), with smartphone being clicked on faster (M = 1300.65 ms; sd = 264.43 ms) than perfume (M = 1507.86 ms; sd = 211.11 ms). The difference in RT between two different products was large, even using a conservative approach of Cohen (1988). Subsequent analyses will take this important difference into account.

To determine what factors might influence future results, a final data control was performed by analyzing participants' baseline performance in the training block. For all analyses, the mean of participants RT was calculated per condition. This means that an average of all trials containing the same combination of independent variables levels was calculated.

4.2.6 Results

The results are grouped into two categories, first, we present descriptive statistics and various checks aimed at describing the data at hand. Then, we present the hypotheses testing results. The results are also grouped by the variable for which the effects are being tested on the outcome measures.

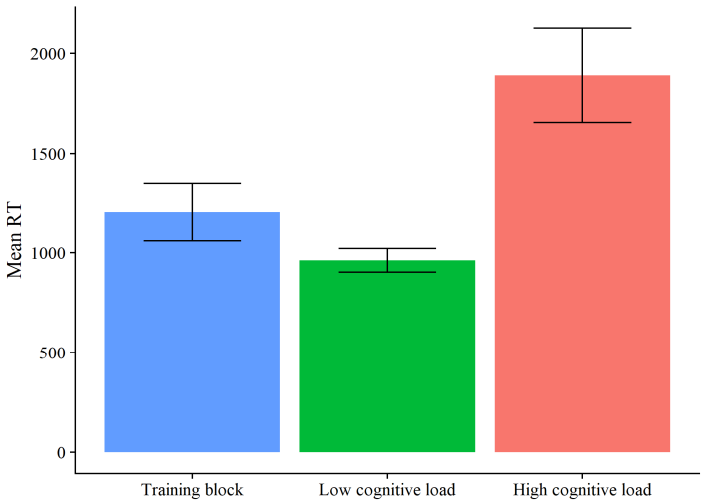
4.2.6.1 Baseline performance estimation

The baseline performance consisted of 16 trials in which an image, containing both the cue and the target stimuli, was presented randomly on screen. Participants' RT was collected. The analyses showed there was no difference in the time needed for reacting to training stimuli regardless of the cue type being face or non-face stimulus ($t = 1.17$; $df = 96$; $p > 0.05$;

d = 0.06). This was expected, since the presented images exhibited the classic pop-out effect. The participants' reaction time was affected solely by the low level characteristics of an image and his/her ability to respond as quickly as possible.

As expected, the difference between high and low external cognitive load conditions is significantly different from zero ($F_{2.194} = 769.3$; $p < 0.001$). Figure 7, and post-hoc tests revealed that all three group differ significantly from one another with the low cognitive load being the "easiest" context to find a target (M = 961.82 ms; sd = 190.24 ms) and the high cognitive load condition exerted the most demand on participants' attention, thus the longer RT (M = 1890.33 ms; sd = 279.39 ms). The training block fell right between the two (M = 1202.90 ms; sd = 327.98 ms). One possible explanation for such effect could be that the training block was the initial task and that participants were not yet familiar with the task at hand. However, this possibility is highly unlikely since the outliers were excluded by condition before the data analyses, meaning that the slowest searches were eliminated from the analysis.

Figure 7: Mean RT in each of the conditions



Source: Own work

Another possibility is that it is not only the amount of stimuli on the screen that affects attention, but also the sheer size of the search area. The implications of this result and future directions are described in the discussion. Since advertising is rarely found in a "vacuum" surrounded by nothing else, the main purpose of the training block was to prepare participants for the main study. The success of the training block was evaluated by comparing the relationship between the trial order and RT. The results indicate that the order of presentation of the training block was significantly related to RT ($r = -.27$; $p < 0.01$), while the relationship between trial order and RT was practically zero for the experimental blocks ($r = 0.07$; $p > 0.05$). In other words, participants lowered their RT solely due to learning the

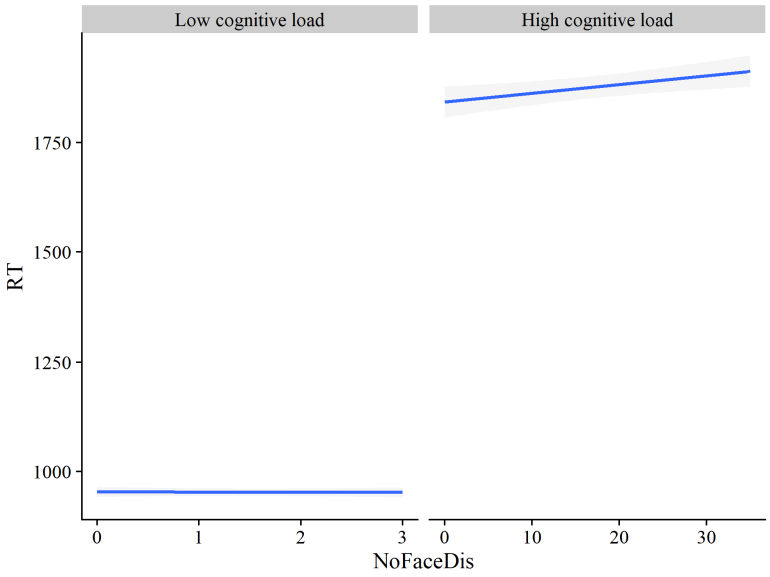
task at hand. By setting the relationship between trial order and RT equal to zero, we successfully excluded practice effects from the final analyses.

4.2.6.2 Number (and type) of distractors effect

The number of distractors was used to manipulate participants' external cognitive load. The more visually demanding the scene was, the higher the cognitive load exerted on the participant.

One way to test the effectiveness of the attention-grabbing property of the human face is to compare the search time for a target when the distractors contained a face and when none of the distractors contained a face. If the human face is a more effective attention grabber, than other non-face stimuli, the more faces on the screen - the longer the target search should take. To test this assumption, we compared the search slopes (relationship between RT and the number of distractors presented on the screen) for all distractors being faces and all distractors being non-face stimuli. The results are shown graphically in Figure 8.

Figure 8: Comparison of search slopes for the type of distractor stimuli in both the low and high cognitive load condition.

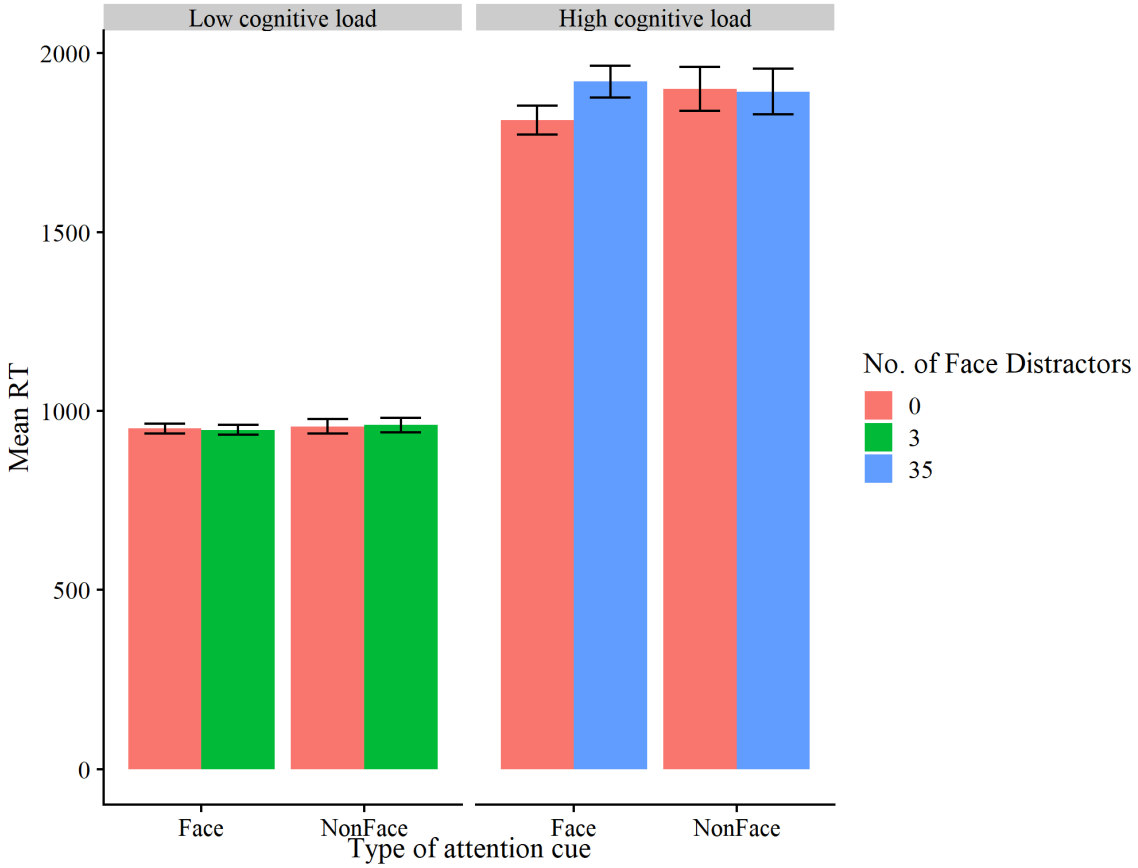


Source: Own work

Figure 8 shows two important findings. First, when only a few distractors surround the target, the type of distractor has no effect on search ($b = -0.31$ ms; $p > 0.05$). In other words, the products are found with similar speed. With an abundance of distractors, search time is affected by the type of distractor. For each face stimulus presented instead of another non-face stimulus, search time increases by almost 2 ms ($b = 1.98$ ms; $p < 0.01$).

An additional analysis examining the face effect in advertising was used to test whether there was a difference in the pop-out properties of faces and non-face stimuli. We compared the mean RT for attention to the target product presented next to a face stimulus when all distractors contained non-face cues to the mean RT for finding the target next to a non-face cue surrounded by distractors containing faces. Results presented in Figure 9, show that both external cognitive load ($F_{1,97} = 4192.23$; $p < 0.01$) and the number of faces presented as distractors ($F_{1,97} = 6.20$; $p < 0.05$) affected participants' attention. When the target ad contained a human face and was surrounded by other advertisements that did not contain a face, attention was directed to the target ad in the least amount of time (M = 1813.26 ms; sd = 764.31 ms). Every other cue combination in both conditions had similar RTs, suggesting that **the human face, when strategically placed, can lead to more efficient attention grabbing**.

Figure 9: Comparing pop-out effect of face vs non-face cues



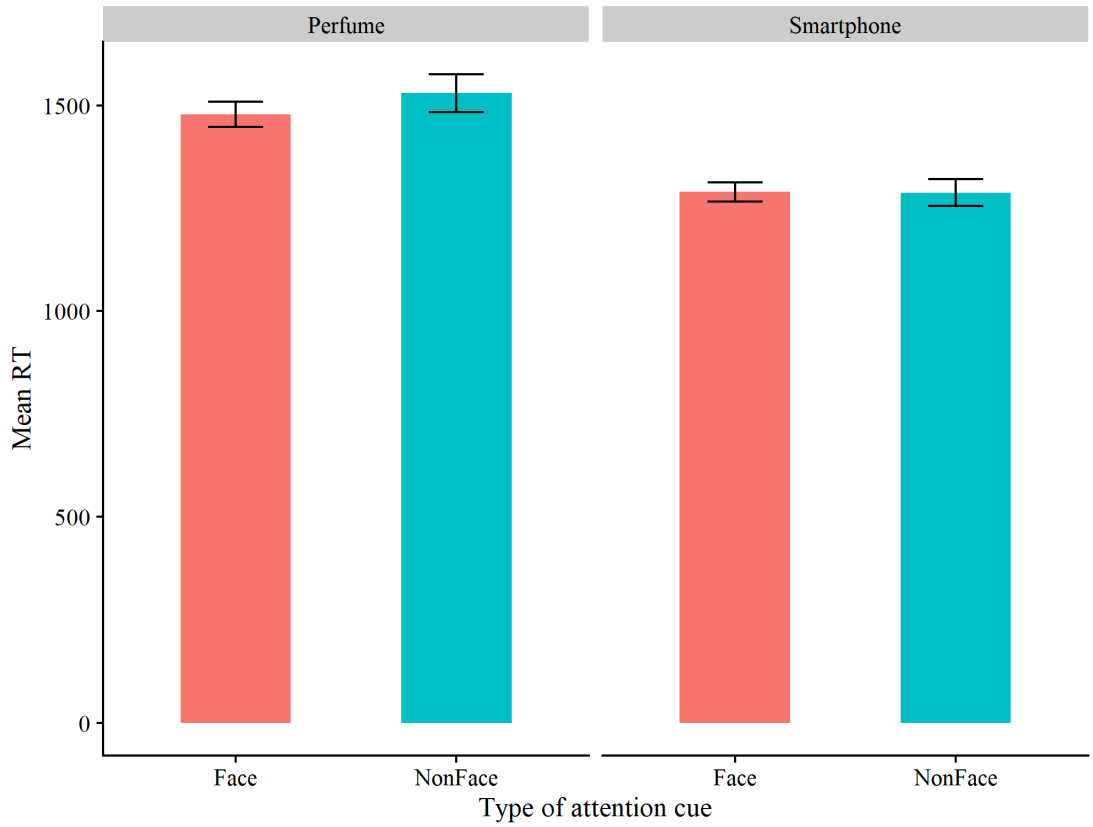
Source: Own work

4.2.6.3 Face effect

After testing for how the face makes the search more difficult, we have focused our efforts on testing the **H1a.** Mean RT needed for clicking onto the advertisement containing face was compared to the mean RT for clicking the non-face advertisement. The difference was

verging on the statistical significance (t = 1.86; df = 97; p=0.06; d = 0.10), in the predicted direction. Advertisement containing face in it was found in shorter time (M = 1389.49 ms; sd = 215.79 ms) than the ad with non-face stimulus used as attention cue (M = 1412.69 ms; sd = 245.66 ms). Even excluding the circle, and comparing arrow cue with human face cue, the difference remains, with the difference being even larger (t = 1.93; df = 97, p < .05; d = 0.13). The effect becomes even more pronounced when only the trials in which the less salient product (perfume) was the searched-for target (t = 2.45; df = 97; p<0.05; d = .22), as can be seen in Figure 10.

Figure 10: Comparing RT for face cues vs non-face cues



Source: Own work

These results point toward **accepting the proposed hypothesis that advertisements containing human face as attention cue grab consumers' attention more efficiently than advertisements containing other cue types**. Despite the overall difference being just above the threshold of 5% (p=0.06), when comparing the face effect only for the less salient (harder to process) product, the difference becomes more pronounced, with a product presented alongside human face being attended sooner.

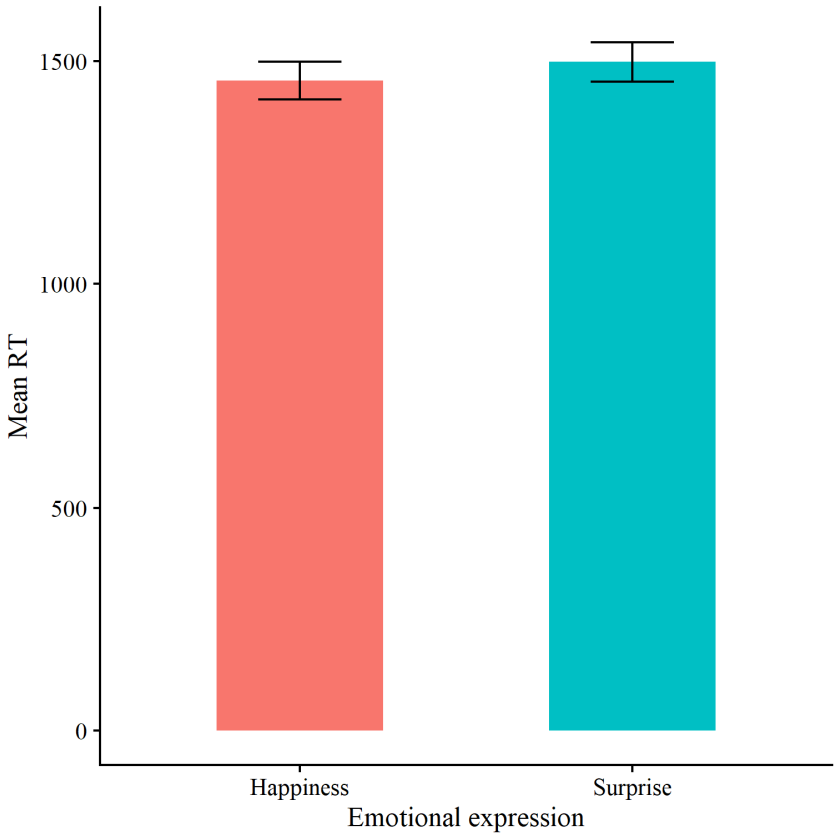
4.2.6.4 Gaze and emotion effect

Once the human face has been established, hypotheses H1b, H1c and H1d were tested next to answer whether certain face features affect attention. The key aim of the present paper was to test how some of the information exhibited by the face relates to the grabbing of consumers' attention. Two facial characteristics that were manipulated were the emotion (approach or avoidance oriented) and the gaze direction (to the viewer/camera or to the product). The hypotheses were that both approach oriented emotion (happiness – **H1b**) and gaze directed at the viewer (**H1c**) will draw consumers' attention most efficiently to the ad, thus shortening the distance to the target product.

When aggregating on all conditions, the effect is again seemingly absent, meaning that neither the emotional expression nor gaze direction affect the time needed for clicking the target advertisement. However, previous analyses showed that some form of pop-out was observed for certain product type – the smartphone. To control for this saliency of the product, separate analyses were conducted for each product. As expected, neither the emotion nor gaze affected the attention when searching for the smartphone (all Fs < .78; all p-s > 0.05) while results were significantly different when the perfume was presented as the target product.

When analyzing just the perfume ads, **emotional expression was found to affect the attention** ($F_{1.97}$ = 3.46; p < 0.06; d = .17) **while neither the gaze direction nor the interaction between the two was significant** (both Fs<.72; all p-s>0.05). As can be seen in Figure 11, **human face exhibiting happy emotional expression grabbed participants' attention more efficiently** (M = 1467.54 ms; sd = 224.02) **than human model exhibiting surprised emotional expression** (M = 1507.88 ms; sd = 249.56 ms).

Figure 11: Effect of emotional expression on RT



Source: Own work

Thus, H1b was confirmed, as happy human face presented next to a product led to shorter RT for attending to the target product, but only when the advertised product was not salient enough. When the product itself was efficient in grabbing attention both types of cues were equally effective. **Both the H1c and H1d were rejected. Neither the gaze direction, nor the interaction between emotional expression and gaze direction affected advertisement's attention grabbing efficiency.** The rejection of the proposed hypotheses concerning model's gaze direction has come as a surprise, considering the previous findings on the topic. However, the eye area size is perhaps not as salient, meaning it was easy to miss the direction of the model's eye gaze. This issue is discussed under the limitations section of the general discussion.

4.2.6.5 Cognitive load effect

External cognitive load's effect on attention was tested with two tests. Before examining whether the external cognitive load moderates the relationship between the different independent variables used in the study, we have tested how does cognitive load affect attention itself (**H3a**). The results are very straightforward. The difference in mean RT between the low and high external cognitive load is enormous, mean difference was almost

a second ($M_{difference}$ = 928.52 ms +/- 18.36; d = 3.89). **This finding gave support for the H3a that external cognitive load has a direct impact on the attention.**

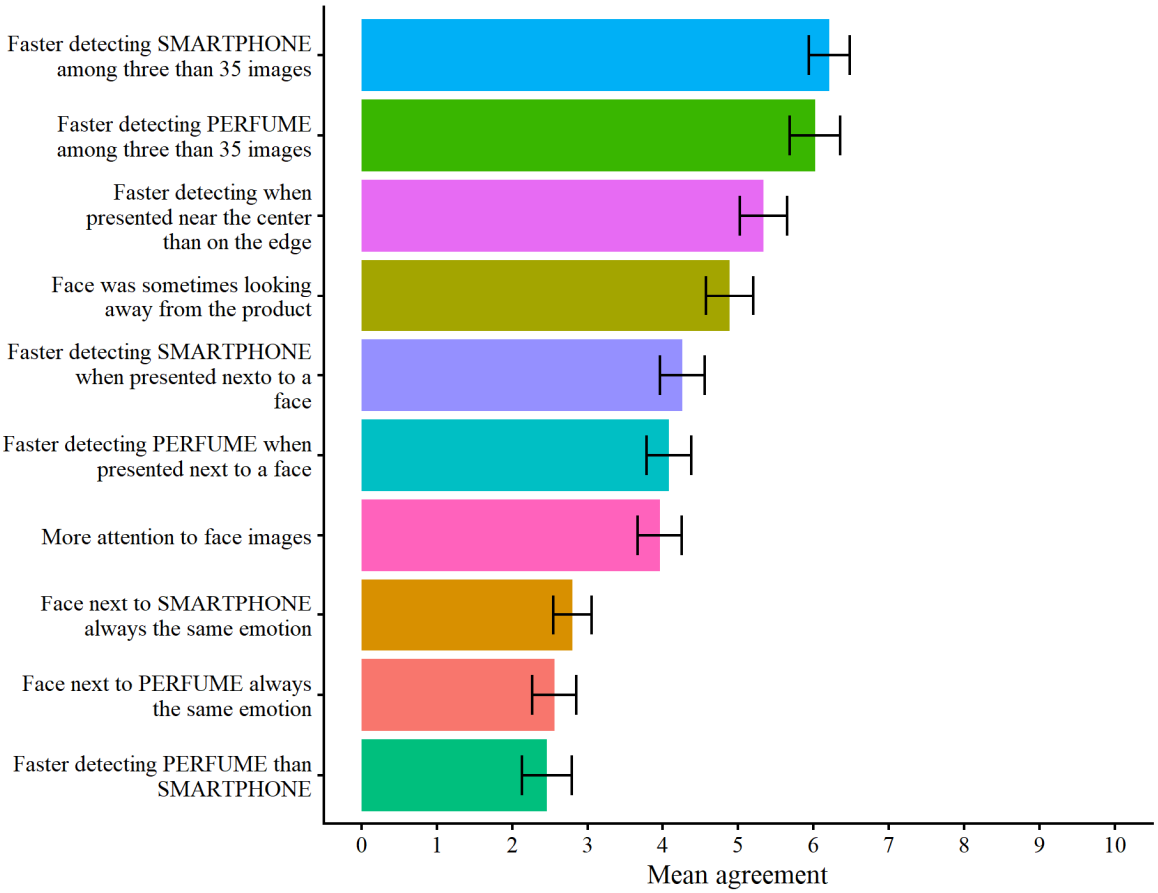
To test whether the effect is different depending on the cue type (**H3b**), we conducted two additional repeated measures ANOVA, one for each product type to control for the saliency of the product. The results are similar to the previously observed ones. **External cognitive load did moderate the relationship between the presence of a face and reaction time, but again only when the target was not salient enough (perfume)**, meaning that the cognitive load moderated the relationship only when the target product did not pop-out. The difference was larger in the high load condition than was in the low load condition ($F_{1.97}$ = 3.06; $p<0.05$). In both the low and high load, **advertisement containing face was spotted significantly quicker than advertisement containing non-face stimuli** ($F_{1.97}$ = 5.11; $p<0.05$; d = .25). Thus, the **H3b** is fully confirmed.

Additionally, we have tested whether the amount of cognitive load moderates the relationship between the emotional expression of a model and the time needed for detecting the target ad ($F_{1.97}$ = 4.26; $p<0.05$; d =.22). **The difference was significant in the high load level, where participants needed less time to detect the target ad when the model expressed the happy face** (M = 2088.59 ms; sd = 378.06 ms) **than when the model expressed the surprised face** (M = 2174.29; sd = 404.55 ms).

4.2.6.6 Participants' view of the study

At the end of the study, participants answered several questions about the task they had just finished. These questions were aimed at exploring how conscious the participants were of the study's aim, but also of the implicit attentional processes they had experienced. Their answers also served as a verification of the more objective data previously collected. Mean ratings are presented in Figure 12. Couple of interesting observations follow.

Figure 12: Mean of survey measure



Source: Own work

Participants were aware of the difference in the amount of cognitive load that was put on them with their awareness that they were faster in finding the product when presented among fewer distractors. The most interesting finding was they were unaware of the difference in speed for finding the perfume vs finding the smartphone. This contradiction can serve as an indicator of the subconscious processing that took place meaning that participants were not fully aware of the study's aim, and that they were looking to advertisements as they usually would – without conscious thought of how and why exactly they are being presented with a specific ad.

4.2.7 Discussion

With these results, we have provided the initial evidence of the effect of the human face. We have shown that a **face grabs attention more efficiently than an arrow or a circle**, since the product presented next to a face was found in a shorter time than a product presented next to an arrow or a circle. It is important to emphasize that participants were instructed to attend to the target product and not to a stimulus presented next to it.

Compared to the other non-face cue stimuli used in the present study, the human face represents a much more complex visual stimulus. While an arrow only indicates the direction in which it points, the human face conveys information about the models' gender, age, emotions, and interest (gaze direction). Nevertheless, not only are the two stimulus categories comparable in their attention grabbing properties, but faces can be more efficient in grabbing consumers' attention to the advertised product under certain conditions. This is especially true when the product does not pop- out, but is similar to the products around it. In addition, by placing a human face on the advertisement, marketers can disguise others' advertisements much more efficiently by making it difficult for consumers to browse the scenery.

The finding that a human face can serve as at least as efficient attention grabber as other attention grabbing stimuli, namely arrows, raises the additional question of whether there is a delayed effect of the human face on consumer behavior in addition to attention. The following study aims to investigate whether the human face in advertisement can influence consumers' attitudes toward the advertised product compared to other attention grabbing stimuli.

4.3 Study 2 – Gaze and emotion effect on attitudes toward advertisement

The aim of the second study was to test how does cognitive load, imposed on consumers' internal processes, affect both attention to the advertised product and subsequent ad evaluation. Previous research has shown that increased external cognitive load does not affect affective outcomes of advertising, such as brand attitudes and/or purchase likelihood (Segijn et al., 2017). Therefore, to keep the study design manageable, only the effect of internal cognitive load on advertising evaluations was tested.

The design of the study was similar to the first study. Participants were sampled from an online panel (Prolific) and their reaction time to detect an advertised product was measured. This time, Posner's cueing task was adapted to allow us to make inferences about the processing of the advertisement. Similar to the original task, a centrally presented cue is shown for a short period of time, followed by a target stimulus on either side of the cue. By varying the features of the cue, such as the direction it points or looks, we can gain insight into the efficiency of the different cues.

4.3.1 Sample S2

The sample was again obtained from the online Prolific panel, using the same exclusion criteria as in Study 1. The only addition to the criteria was that the pool of available participants was reduced by those who had participated in Study 1. Again, 100 participants (65% were female) with a mean age of 37.35 years (sd = 13.11 years) were sampled. Their

participation was rewarded with £1.10. Participants took an average of 8.02 minutes (sd = 3.08 minutes) to complete the study. A description of the sample can be found in Table 3.

Table 3: Sample description

Descriptive variables	M	sd	Range
Age	37.35	13.11	19-77
Time needed for completion (seconds)	8.02	3.08	4-26
Did You feel tired before starting the study?	2.58	2.55	0-8
Have You been completely focused on the study?	8.96	1.66	0-10
Have You been distracted by outside stimuli?	0.71	1.43	0-7
When was the last time You had an alcoholic drink?	0.43	1.1	0-6

Source: Own work

The participants were slightly older than the participants in the first study, and the study was slightly shorter. Their psychophysical condition was similar. For the most part, they were completely focused on the study, with little fatigue or distraction. None of the participants had consumed alcohol for at least one hour before the start of the study, and the majority had not consumed alcohol in the previous 24 hours.

4.3.2 Stimuli

Once again, the experimental stimuli were divided into targets and cues. This time there were no distractor stimuli, since the purpose of the study was to test how attention operates once it is grabbed by the advertisement.

4.3.2.1 Targets

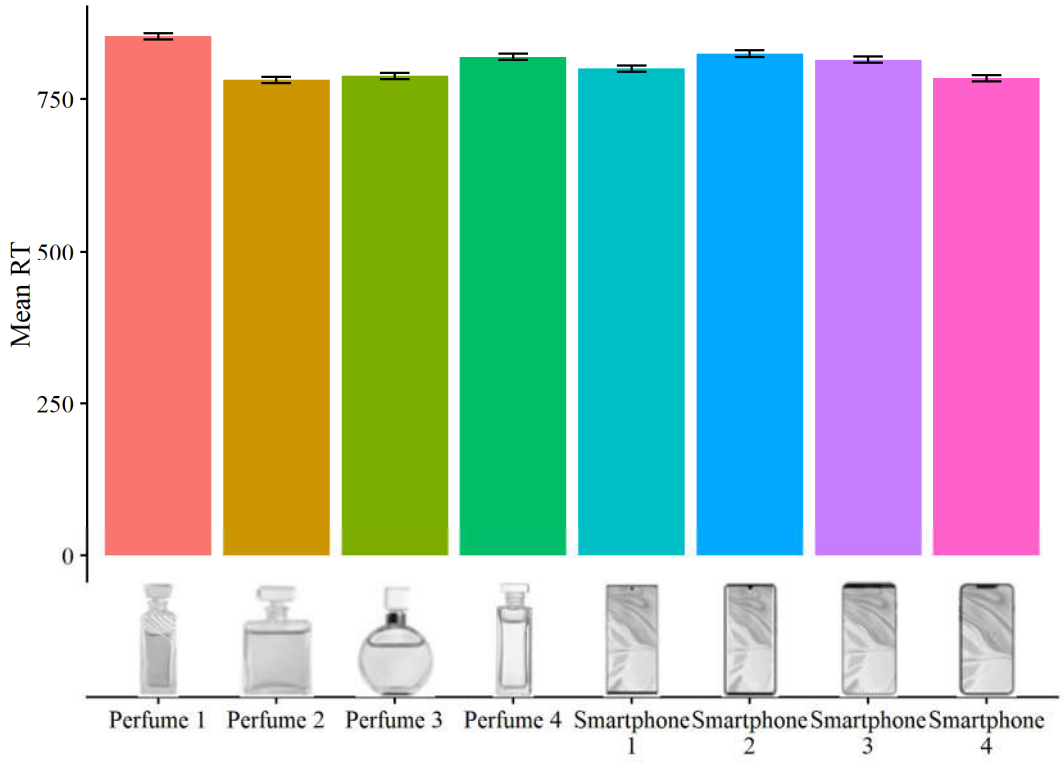
The targets used in the second study were the same products used in the first study. Each was then presented as one of the four possibilities. The target images are shown in Figure 13, and their average attention grabbing potential, operationalized as the mean RT required for clicking regardless of the trial condition, is shown in Figure 14.

Figure 13: Target products

Source: Own work

All stimuli, both cues and targets, were converted to grayscale to control for the possible influence of colors known to affect attention (Wolfe, 2014). Product size varied from 74 px to 146 px in width and was fixed at 228 px in height. The faces were 250 px wide and 339 px high, while the arrows were 250 px wide and 188 px high.

Figure 14: Mean RT for each target product



Source: Own work

4.3.2.2 Cues

The stimuli used in the second study were created in the same way as the stimuli used in the first study. The human faces were sampled from the KDEF database. This time, only two models were needed (the two used in the first study), which were rated more attractive. Their eyes were digitally manipulated so that the same face expressing the same emotion looked left, right, and center. The arrows were comparable in size to the face cues used (i.e., they occupy the same number of pixels on the screen). In order to have distinct advertisements, four different products of each type were needed

The products were sampled from Google searches for smartphones and perfumes of unknown brands. While perfume bottles can be very different (in size, shape, color, etc.), smartphones are quite similar, with the most obvious difference being the content of the screen. For this reason, each smartphone was digitally manipulated so that they all show the same screen content.

4.3.3 Measures

The key measures collected were participants' reaction time (measured in milliseconds) needed to orient their attention and click on the presented product, as a proxy for attention. The ad evaluation consisted of a series of 5 questions measuring **ad liking**, **product liking**, **purchase intention**, **recommendation intention**, and **willingness to pay**, all measured on a 7-point Likert scale. In addition, participants had to answer questions about their current psychophysical state at the end.

Aside from the measures collected directly from the participants, there were several measures that were manipulated totaling to eight different cues, six face cues, and two non-face cues:

- cue type (face vs non-face),
- approach vs. avoidance oriented emotion (happiness vs surprise),
- gaze direction (to the product, to the camera, away from the product) and finally
- internal cognitive load (low or high).

The design of the second study required that each unique cue-target combination be presented. If there were no such unique combinations, the ad evaluation phase could not be measured. The consequence of such a design is the confounding effect of the cue itself. For example, it could be argued that the observed difference in attitude toward the product is not due to the difference in emotion between the two ads, but to model-specific characteristics (perhaps Model 1 grabs attention more efficiently than Model 2). To address these issues, a randomization procedure was used. Specifically, a Latin Square was used so that each cue was presented next to each target (Jhangiani et al., 2019). To achieve this goal, a table was

created (Table 4). The table shows eight imaginary participants and a combination of cue and target combination to which they would be exposed.

Table 4: Counterbalancing of the conditions using the Latin square

Participant	Human Happy To	Human Surprised To	Human Happy Centre	Human Surprise Centre	Arrow To	Arrow Away	Human Happy Away	Human Surprised Away
John	Phone1	Phone2	Phone3	Phone4	Perfume1	Perfume2	Perfume3	Perfume4
Mary	Perfume4	Phone1	Phone2	Phone3	Phone4	Perfume1	Perfume2	Perfume3
Annie	Perfume3	Perfume4	Phone1	Phone2	Phone3	Phone4	Perfume1	Perfume2
Lisa	Perfume2	Perfume3	Perfume4	Phone1	Phone2	Phone3	Phone4	Perfume1
Steve	Perfume1	Perfume2	Perfume3	Perfume4	Phone1	Phone2	Phone3	Phone4
Joe	Phone4	Perfume1	Perfume2	Perfume3	Perfume4	Phone1	Phone2	Phone3
Matthew	Phone3	Phone4	Perfume1	Perfume2	Perfume3	Perfume4	Phone1	Phone2
Tom	Phone2	Phone3	Phone4	Perfume1	Perfume2	Perfume3	Perfume4	Phone1

Source: Own work

This method ensured that each target was presented with each cue type. Each participant had an equal probability (1/8) of being assigned to one of these conditions. After aggregating the data, we would expect product characteristics to balance across these conditions, so the only possible explanation for the observed effects may be cue type.

We also wanted to control for the gender of the model. This meant that participants not only had an equal probability of being assigned to one of these eight conditions, but also an equal probability of being presented with a male or female model. Random assignment ensures that irrelevant participant characteristics are evenly distributed across experimental conditions (Shadish & Cook, 2005). We tested whether random assignment was successful by comparing the expected to observed frequency of the number of participants in each of the 16 conditions (model gender times eight conditions). The results showed that there was no statistically significant difference between the expected proportion of participants, under the null, and the actual observed frequencies ($\chi 2 = 21.92$; $df = 15$; $p > 0.05$). In other words, each of the 16 possible conditions contained a similar number of participants.

Finally, internal cognitive load was manipulated between participants, as opposed to external cognitive load from the first study, which was manipulated within participants. Approximately half (44%) of the participants were asked to memorize a single-digit number (low internal cognitive load), while the other half were asked to memorize a four-digit number for the duration of the study (high internal cognitive load). This type of procedure is often used when a researcher wants to exert an internal cognitive load on participants (de Fockert et al., 2001; Bang & Wojdynski, 2016). Previous research has cautioned us against overloading participants' minds. When an eight-digit number is used to exert a high internal load on participants, nearly two-thirds of participants' data are lost (Jing Wen et al., 2020). Our pretests showed that holding five (or more) digit number in memory resulted in a high number of errors (i.e., participants were unable to hold a number for an extended period of time). We expected that participants who perceived a task being obviously too difficult

would not even attempt to memorize the given number. Our pretests showed that retaining a four-digit number in participants' memory ensured that the majority of them, if not all of them, are able to correctly answer which number they had to memorize. Forgetting the assigned number does not put any stress on the participants, so no conclusions can be drawn about the cognitive load effect.

4.3.4 Task Procedure

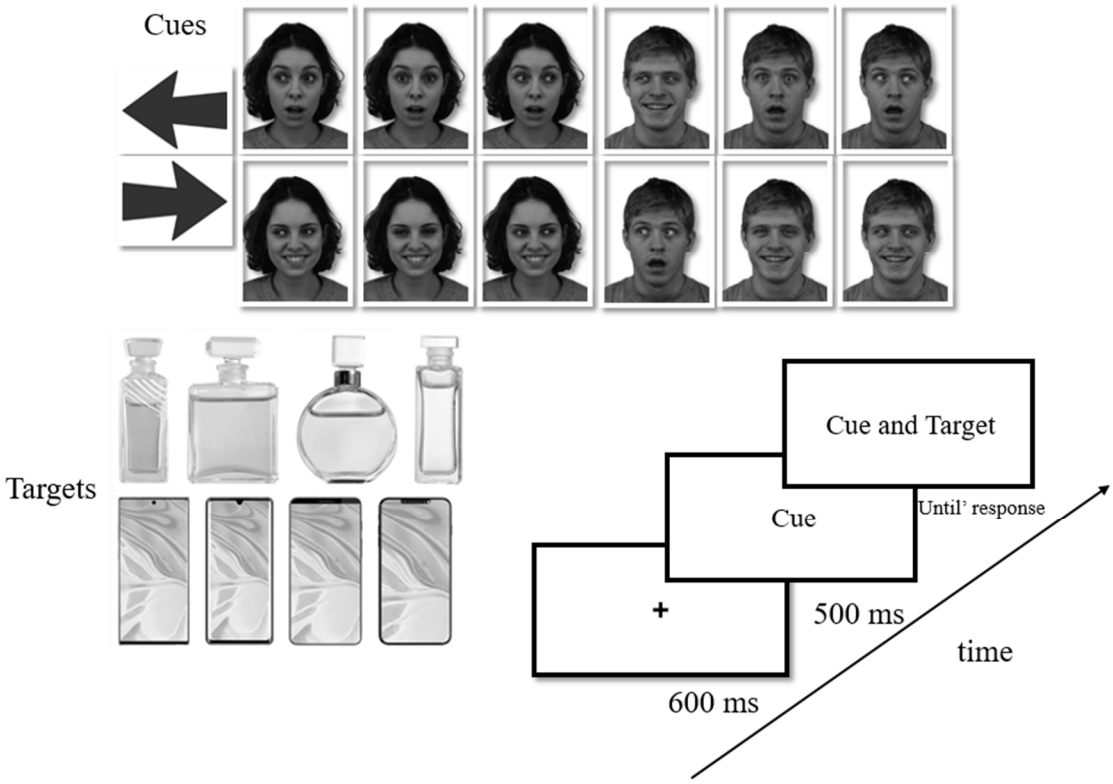
Upon enrollment in the study participants were greeted with an instruction informing them that they were participating in a perception study. The instruction also stated that they were to use the computer mouse to respond to the presentation of the stimulus on the screen while memorizing a number. It was emphasized that they were not to write down the number, but to hold it in their memory as they will be asked what number they needed to memorize. Unbeknownst to them, they were assigned to either the single-digit number condition (low internal cognitive load) or the four-digit number condition, which simulated high internal cognitive load. The numbers were randomly generated so that each participant had to memorize a different number. None of the participants from the high load condition were shown a number where all four digits were the same.

Before participating in the main study, participants were asked whether they used a regular computer mouse (58%) or the laptop's built-in touchpad (42%), as there might be a difference in speed. And indeed there was ($t = 3.95$; $df = 98$; $p < 0.01$; $d = 0.80$), with participants using a regular computer mouse being faster ($M = 804.19$ ms; $sd = 167.23$ ms) than those using the laptop's built-in touchpad ($M = 950.00$ ms; $sd = 190.61$ ms). Next, participants were presented with another set of instructions describing the experiment itself. They were informed that a set of two stimuli would be presented, one in the center and another either to the left or right of the first. The participants' task was to click on the second stimulus when it appeared. This was followed by a practice block of 8 trials in which each of the target products was presented in front of a star-shaped stimulus that appeared centrally on the screen. The star-shaped stimulus was chosen because it did not contain directional information. The main purpose of the training block was to prepare the participants for the actual task. The control block served the purpose of attenuating the training effects, a well-known problem for the within-subject design (Ličen, 2019).

The sequence of events in the experiment was the same for both the training and experimental blocks and can be seen in Figure 15. The fixation cross was presented for 600 ms, followed by a centrally presented stimulus-a star in the training block or an attentional cue in the experimental block. After another 500 ms, an object appeared on the left or right side of the cue. The experiment ended when the participant clicked on the object that appeared. The peripherally appearing object (the target) was always either a smartphone or a perfume. No incorrect response was coded in the script, meaning that all participants

eventually clicked on the target product. The longest time between the presentation of the stimulus and the eventual click was 28 seconds, which was discarded as an error.

Figure 15: Sequence of events in the experiment



Source: Own work

Once the training block was completed, the experimental block began. It included 48 trials presented in the same way as the training block, but this time, instead of a central star stimulus, it could be either an arrow (pointing to/away from the product) or a human face (looking at the product/at the camera/away from the product, expressing either happiness or surprise). Each product was presented a total of six times. The mean RT for each condition was then calculated.

After completing the RT experiment, participants were asked one final time what number they needed to memorize. Each participant answered the question correctly and was asked to answer several questions about the images to which they had been exposed. For each individual combination of centrally presented stimulus and target stimulus, the participant had to indicate:

- how much did they like the ad as a whole
- how much did they like a product depicted on ad
- how much were they willing to pay compared to other products in the same category
- how likely are they to buy the product
- how likely are they to recommend the product.

The order of the advertisements was randomized for each participant. At the very end, participants were asked some general questions regarding their own understanding of the study and their current psychophysical state.

4.3.5 Data checks and analyses

All trials with a RT, lasting longer than 2000 ms, were treated as errors rather than correct clicks (Ulrich & Miller, 1994). The design was such that the next trial followed only after the product had been clicked. Possible reasons for the prolonged RT include interference, clicking incorrectly and then waiting for the next screen, and others. Even after excluding these RTs (1.58%), the RT distribution was not normally distributed (skewness = 0.91). All RTs longer than the mean plus two standard deviations were also excluded from further analyses (another 4.53%), resulting in a distribution that resembled a normal distribution (skewness = 0.28).

The mean RT was calculated for each participant and for all conditions and then merged with the survey data. Multiple control analyses were conducted to examine whether age, gender (both participant and model), and order of presentation had an effect on RT. Results showed that age had a slightly positive relationship with RT ($r = 0.26$; $p < 0.05$), implying that older participants were, on average, slightly slower to engage with the product. On the other hand, neither participant gender ($t = 0.81$; $df = 96$; $p > 0.05$) nor model gender resulted in a significant difference in RT ($t = 0.88$; $df = 98$; $p > 0.05$)

To test whether the practice effect was attenuated by the training block, a correlation analysis was performed for the relationship between trial order and RT. This relationship was small and negative for the training block ($r = -0.24$; $p < 0.01$), while it shrank to almost zero in the experimental block ($r = -0.05$; $p < 0.01$), indicating that the practice effect was controlled by the use of the training block. The suppression of the learning effect is also evident from the difference in the mean value of RT for the training and experimental blocks ($t = 3.99$; $df = 99$; $p < 0.01$; $d = 0.30$). The mean RT was lower for the experimental block ($M = 777.23$ ms; $sd = 120.81$ ms) than for the training block ($M = 815.18$ ms; $sd = 132.64$ ms). This result can be explained from two perspectives, both of which are plausible. First, the novelty of the task could influence these results (i.e., participants spent more time learning the task, which increased their overall performance RT). Another possibility is that the difference was due to the fact that the training block did not include a directional cue, so that participants needed more time to pay attention to a newly presented stimulus. We think the first proposition is more likely because the experimental block contained two types of misleading cues (a cue pointing away from the product and a cue gazing at the camera).

The final benefit of a training block was to evaluate the baseline condition in which the neutral cue was used. By having a neutral cue, we can argue that the speed with which participants clicked on the searched product was due solely to the product's saliency. One-way ANOVA revealed that some products in the training block were clicked faster than the

others ($F_{7.92} = 2.65$; $p < 0.05$). Although the difference barely reached the significance level, two perfumes (Perfume 1 and Perfume 4) were clicked slightly slower than other products. Visual inspection of the stimuli indicated that the likely cause of this difference was the width of these stimuli, which are narrower than other

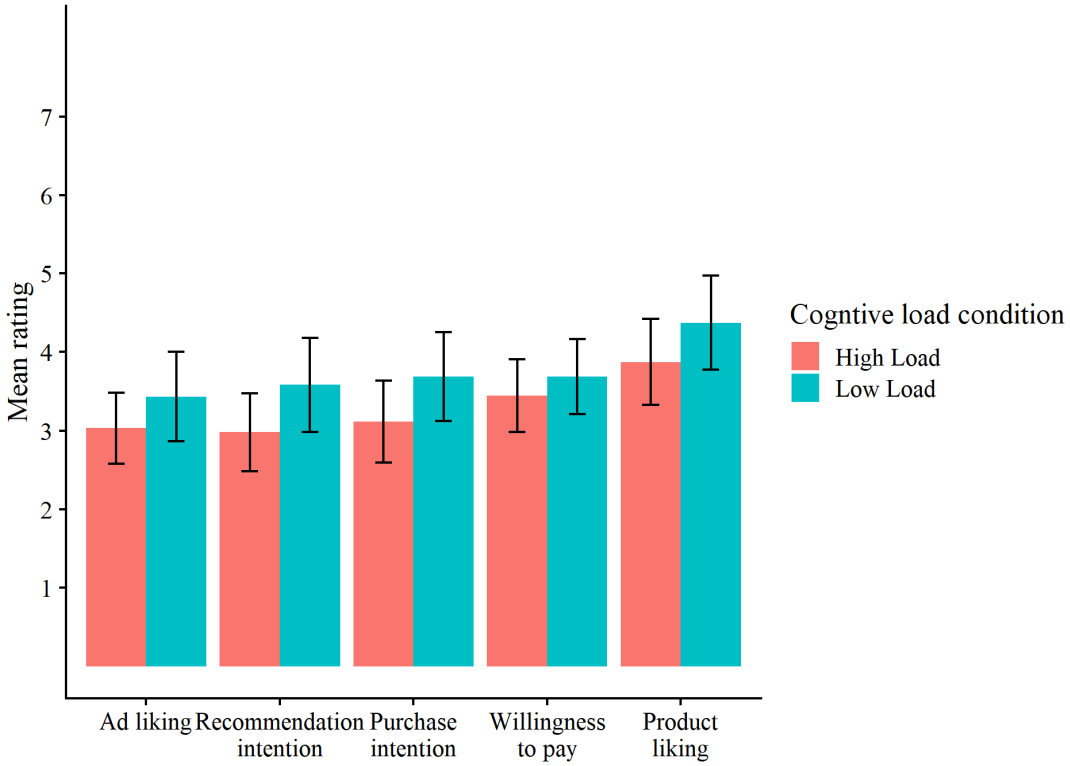
4.3.6 Results

Results are grouped according to the effects being examined. First, the role of cognitive load on both attention and ad evaluation are being presented, followed by the cue type analyses and finally the model's emotion and eye gaze effects on consumers' attention and ad evaluation.

4.3.6.1 Cognitive load

Comparison of the mean RTs between the low and high internal cognitive load conditions showed **that internal cognitive load did not have an effect on attention** ($t = 0.36$; $df = 98$; $p>0.05$; $d = 0.07$). The presented products were click in a similar amount of time ($M_{low\ load}$ = 772.24 ms; $sd_{low\ load}$ = 125.97 ms; $M_{high\ load}$ = 781.14 ms; $sd_{high\ load}$ = 117.60 ms). However, **the amount of cognitive load that was put on the participants had a positive effect on their ad evaluations**. Although neither of the tests reached the set significance level of 5% (all t-s < 1.53; all p-s > 0.13), Cohen's d values indicate the effects to be small, but significant (i.e. the average difference in the positivity of ad evaluations between participants in the low and high internal cognitive load condition ranged from 0.14 sd-s to 0.31 sd-s – indicating a small effect). For each question, the directionality of the difference was the same – participants under the low internal cognitive load provided higher (i.e. more positive) ratings on all the questions indicating that higher cognitive load may affect consumers' cognitions involved in ad evaluation (Figure 16).

Figure 16: Comparison of ad evaluation for different amounts of cognitive load



Source: Own work

The smallest difference (d = 0.14) was observed for the willingness to pay. All other differences were greater than 0.2 standard deviations. The trend seems to show that participants generally provided more positive ratings when their mind was not burdened with additional cognitive task.

Thus, **H4a stating that internal cognitive load impacts ad evaluation was partially confirmed**. Despite failing to observe statistically significant results, the differences in ad evaluation were oriented in the same, expected, direction (low load participants gave more positive evaluation) indicating a trend that must not be ignored.

One of the possibilities, left for future researchers to explore, is that participants under the high internal load condition did not pay enough attention to the presented products while clicking them which led to the lower effect of repetition. Previous work on the topic has shown that repeating the ad leads to a more positive attitude toward the ad and the advertised product (Lee Burton et al., 2019). We argue that participants under the high cognitive load used up their cognitive resources on memorizing the number which left them with insufficient resources to properly process the presented product. Another potential explanation is that the high load itself negatively affects emotions, and subsequently evaluation. These issues will be discussed in more detail in the Discussion.

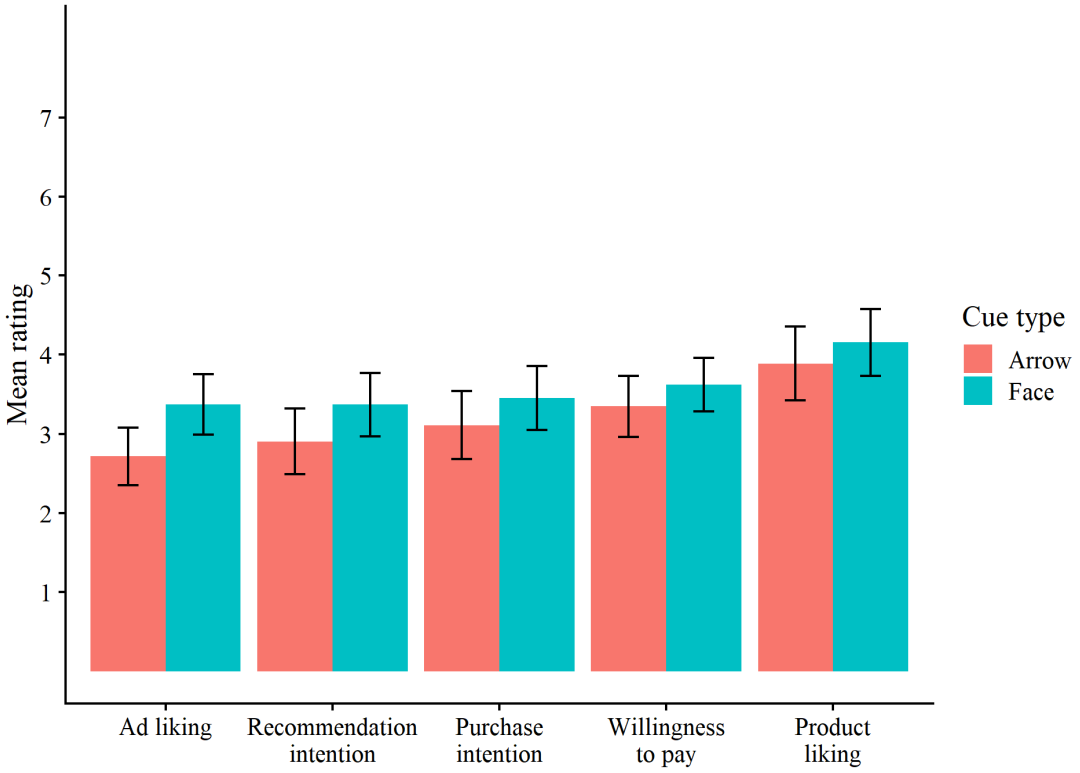
4.3.6.2 Cue type on attention

The next set of analyses was used to compare the efficiency of attention guiding between face and non-face cues. A significant difference between the two conditions ($t = 2.30$; $df = 99$; $p<0.05$; $d = 0.13$) was observed. Although by a small margin, products presented next to a human face were clicked on sooner (M = 773.20 ms; sd = 121.98 ms) than products presented next to an arrow (M = 789.17 ms; sd = 131.58 ms). We have thus extended the results from the first study by showing that the human face, although a complex visual stimulus, has the property to quickly guide attention toward the product in advertisement. Upgrading on the findings from the first study, we have also shown that the human face is not only an efficient attention grabbing stimulus, but is also capable of efficiently guiding attention toward the specific area of advertisement.

4.3.6.3 Cue type on ad evaluation

Human face effect on ad evaluation was tested next, as part of the **H2a**. **Advertisements exhibiting human face were more positively evaluated compared to advertisements with other (non-face) cue type**, thus confirming the H2a. The only question failing to reach a statistical significance was the *Product liking* ($p>0.05$). All other statistics point toward human face influencing the positivity of ad evaluations (all t-s > 2.14; all p-s<0.05). Effect sizes ranged from .12 (Product liking) to .35 (Ad liking) which, according to Cohen (1988) fall into the *small* effects category (see Figure 17).

Figure 17: Effect of cue types on attitudes toward the ad



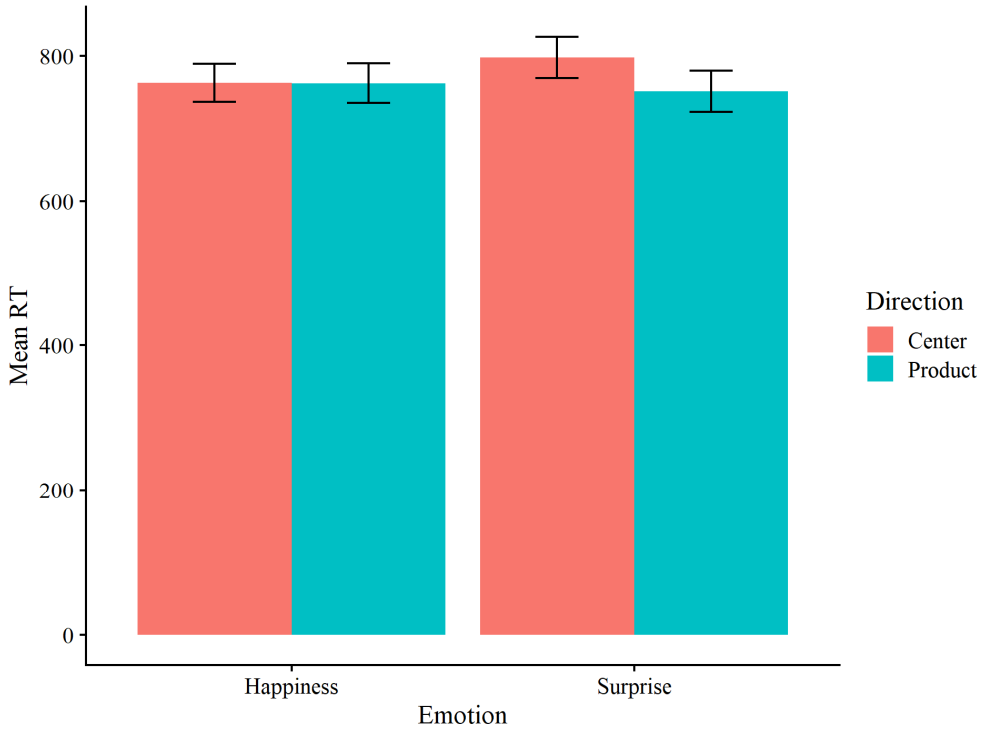
Source: Own work

4.3.6.4 Emotion and gaze effect on attention

For testing the effect of emotion and gaze direction on attention guiding, we have excluded trials in which the human face is gazing away from the product, since it is rarely the case such cue is used in advertisement. Contrary to the results observed in the first study, this time, we have shown that gaze direction affects the consumers' attention ($F_{1.99}$ = 7.23; $p<0.01$; d = 0.27). Human face gazing at the product led to the lower RTs (i.e. greater speed) (M = 757.06 ms; sd = 141.37 ms) than human face gazing at the camera (M = 780.59 ms; sd = 140.28 ms).

Another result contrary to the first study was the lack of effect of emotional expression on attention ($F_{1.99}$ = 2.31; $p>0.05$; d = 0.14) with both happy and surprised face resulting in a similar time needed for clicking on the product. However, the interaction term proved to be significant ($F_{1.99}$ = 6.81; $p<0.01$; η^2 = .024). When surprised emotional expression is paired with an averted gaze, the product is clicked on sooner (M = 751.48 ms; sd = 143.84 ms) than when surprise is paired with a central gaze (M = 798.18 ms; sd = 144.28 ms) (Figure 18). No such difference was observed in the happy face condition. Regardless of the gaze direction, the RT needed for reacting toward the presentation of a product next to a happy model was identical (M = 764 ms; sd = 138 ms).

Figure 18: Mean RT depending on the model's emotional expression and gaze direction



Source: Own work

Findings observed in the second study are complementary to those observed in the first one. Since the aim of the entire dissertation was to test both the attention grabbing and attention guiding role of the human face in advertising, by combining results from the first and second study, we can propose an explanation. Human face, especially one that is exhibiting approach oriented emotion, grabs attention efficiently toward the advertisement showing the face. Once the consumers' attention is placed onto the ad, gaze of the model is capable of guiding it toward the certain area of the advertisement.

4.3.6.5 Emotion and gaze effect on ad evaluation

Finally, H2a – H2d were tested by comparing the ad evaluations for different emotional expressions, gaze directions and their interaction. **Emotional expression had an effect on ad evaluation, with ads being evaluated more positively when the model was expressing approach oriented emotion** (happiness) than when the model was expressing avoidance oriented emotion (surprise) (all Fs > 25.50; all ps < 0.01) providing support for the H2b. **Gaze direction showed a lower effect on ad evaluation, with only purchase likelihood and willingness to pay, almost, reaching a threshold of significance** ($p<0.10$). Thus, the evidence for the gaze effect is not sufficient to support our hypothesis (**H2c**).

The same pattern of results was observed for the interaction between emotional expression and gaze direction. The only, almost-significant interaction effect emerged for the

willingness to pay, in which the ad showing happy face looking at the camera was evaluated higher than the advertisement showing a happy face looking at the product. However, due to it being the only one approaching the statistical significance, **we are rejecting the H2d or the interaction effect between emotional expression and gaze direction on advertisement attention guiding.** Results are presented in Table 5 and Figure 19.

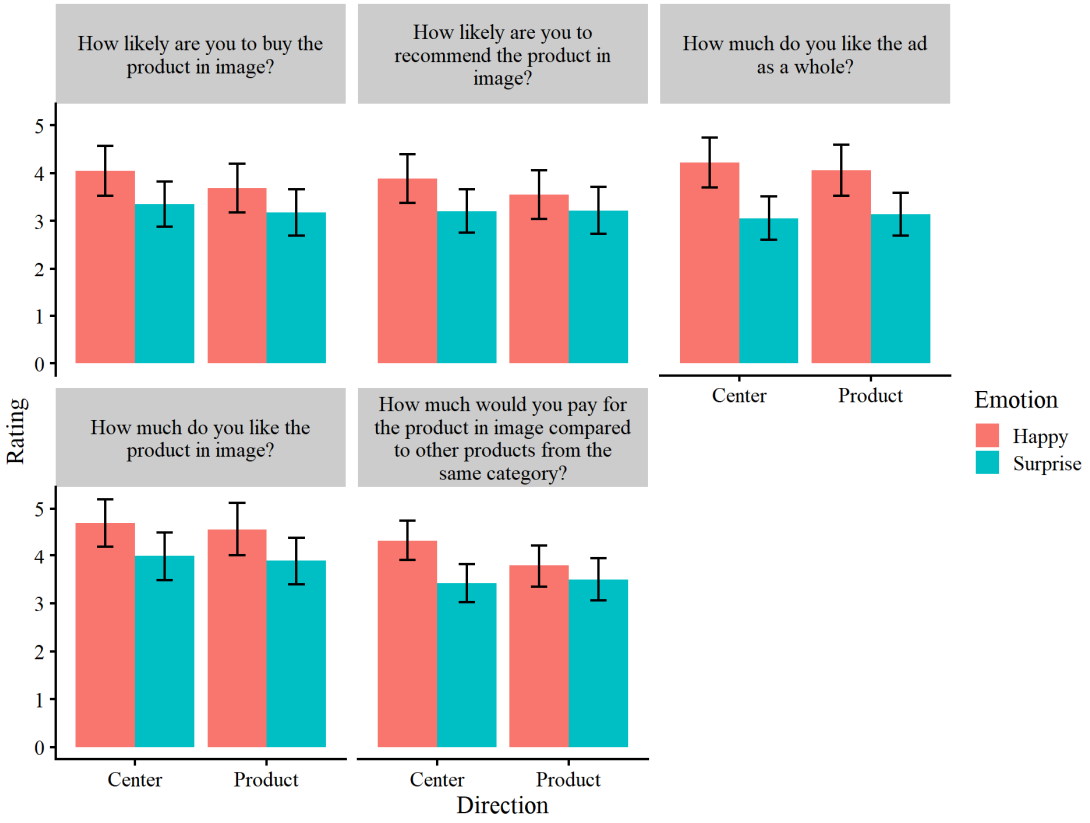
Table 5: Human face properties' effect on ad evaluations

Attitude measure	Statistic	Emotion	Direction	Emotion x Direction
Ad liking	F	**43.99**	0.06	0.59
	p-value	**<0.01**	>0.05	>0.05
	d(η^2)	**0.56**	0.02	(0)
Product liking	F	**22.74**	0.69	0.02
	p-value	**<0.01**	>0.05	>0.05
	d(η^2)	**0.47**	0.08	(0)
Willingness to pay	F	**19.91**	**2.92**	**5.31**
	p-value	**<0.01**	**<0.10**	**<0.05**
	d(η^2)	**0.42**	**0.16**	**(0.02)**
Purchase intentions	F	**18.00**	**3.45**	0.44
	p-value	**<0.01**	**<0.10**	p>0.05
	d(η^2)	**0.39**	**0.18**	(0.006)
Recommendation intentions	F	**13.11**	1.40	1.57
	p-value	**<0.01**	>0.05	<0.10
	d(η^2)	**0.32**	0.11	(0.005)

Source: Own work

The effect sizes were close to a medium size, as defined by Cohen (1988). The findings confirm that the presence of a happy human face in advertisement can lead to the favorable consumers' attitudes toward both the ad and the product.

Figure 19: Attitudes toward ad for different emotional expression of the model



Source: Own work

4.3.6.6 Attention and ad evaluation

The final analysis tested whether the attention is related to ad evaluation. For this purpose, we have summarized mean RT for each gaze-emotion combination that was presented, and correlated those values with the ad evaluation rating. There was no relationship observed. The amount of time participants needed to click on the appearing product was not related with their subsequent ad evaluation. Possible explanations for the non-significant relationship are presented in the following sections.

4.3.7 Discussion

The second study complements the findings of the first study. The human face in advertising is not only better at guiding attention to the advertised product, but also at increasing positive evaluation of the advertisement and the product. This effect can be further enhanced if the model expresses happiness.

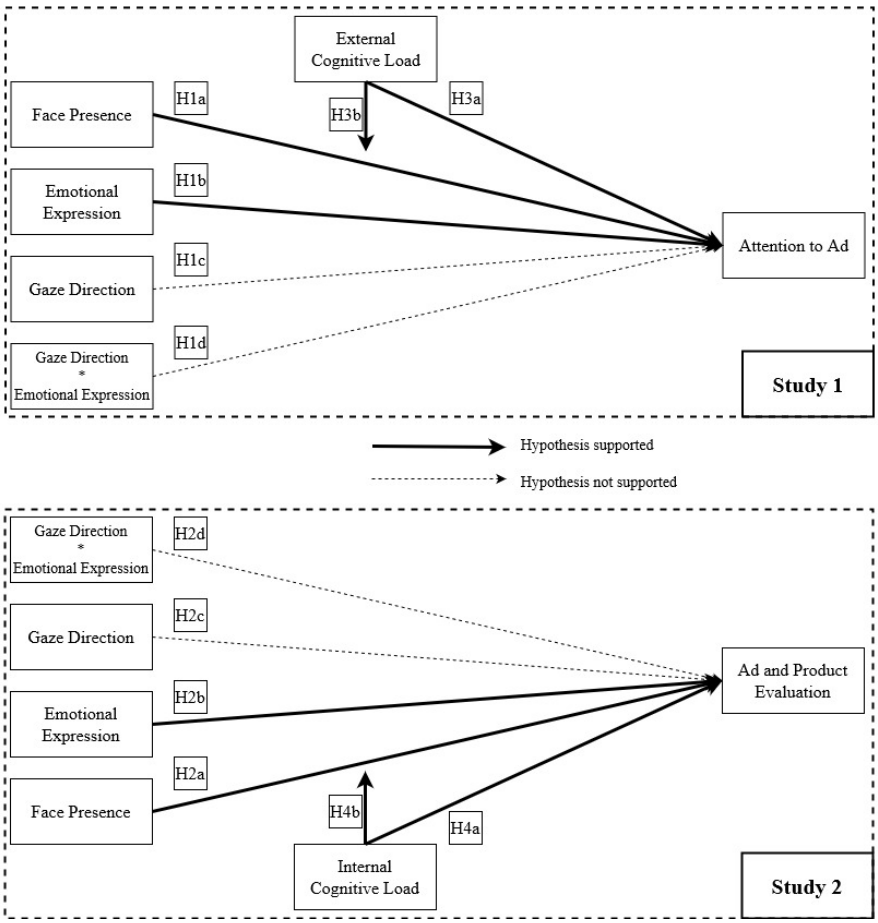
Most of the hypotheses were confirmed. The presence of the face had a positive effect on attitude (**H2a**), as did the emotional expression of happiness (**H2b**). Neither gaze direction

(**H2c**) nor the interaction between emotional expression and gaze direction (**H2d**) was supported by our data. However, it is important to note that the observed differences, although they did not reach the established significance levels, occurred in the predicted direction (**H2c**, gaze toward the product was related to a more positive ad evaluation) and that the combination of happiness and direct gaze was also associated with more positive ad evaluation (**H2d**).

A significant effect of internal cognitive load on ad evaluation was observed (**H4a**), and it was stronger when the ad contained a face (**H4b**). When consumers' cognitive resources are readily available, they may invest them in deeper processing of the ad, which could lead to a more positive ad evaluation. If consumers' cognitive resources are depleted, they will not process the advertisement deeply enough to evaluate the advertisement positively.

A summary of the final results and the results of all the hypotheses tests can be found in Figure 20. The implications of both studies are presented in more detail in the general discussion.

Figure 20: Final results



Source: Own work

5 GENERAL DISCUSSION

The primary goal of advertising is to grab consumer attention, regardless of the implicit intentions to reinforce brand image or promote purchase (Bellman et al., 2019). All of these secondary objectives depend on successfully achieving the first one. For this reason, marketers are constantly trying to make their advertisements as salient as possible, using different techniques and basing them in different arguments. These behaviors have led scholars to empirically test the effectiveness of different techniques, such as using popular individuals (Ferguson & Mohan, 2020), anthropomorphizing the advertised product (Aggarwal & McGill, 2007), ad placement (Yoon, Choi & Song, 2011), using a human model in advert (Sajjacholapunt & Ball, 2014; Xiao & Ding, 2014; Droulers & Adil, 2015; Guido et al., 2019), to name a few.

The main objective of the dissertation was to **test how advertisements' attention grabbing efficiency can be manipulated by using a specific, evolutionarily important stimulus such as the human face**. In doing so, we follow up on previous researches (Oehman, Flykt & Esteves, 2001; Adams & Kleck, 2003) which have shown that those stimuli which have been relevant as long as humans have existed are processed sooner than novel stimuli with which we are just recently started to interact with. In addition, we wanted **to test the notion that such a stimulus category is more easily processed, leading to both the quicker orienting of attention toward the advertisement (RQ 1) and a more positive evaluation of that advertisement (RQ 2)**. We reasoned that the ease and preference of processing of the human face would impose less constraint on the consumers' cognitive resources, which are already stretched by external and internal cognitive load, leaving him or her with more resources to attend toward the ad (**RQ 3**), but also to evaluate the ad on a deeper level in order to evaluate it more positively (**RQ 4**).

These RQs were tested in two experiments. In the first, participants had to find the ad for a particular product presented alongside an attention grabbing stimulus in a scene with a varying number of other ads (external cognitive load was manipulated). In the second study, we focused on a particular ad and how consumers' focus (internal cognitive load was manipulated) affected attention and ad evaluation as a function of the attention cue used. Participants' task was to respond to the presentation of a product alongside an attention guiding stimulus. We compared how not only the face itself, but also its changeable properties such as emotional expression and eye gaze direction, affect consumer attention compared to stimuli without a face, such as an arrow and a circle.

Our research was unique in several ways, including the experimental manipulation of the eye gaze, and not of the overall head/body orientation; the use of validated human face stimuli that were similar in ratings of attractiveness, trustworthiness, and other potentially confounding aspects such as clothing; the use of a mouse-tracking equipment that was an improvement over previously obtained self-reports. Finally, the main contribution of this study is to extend the results of previous work by examining how this effect is moderated by

consumers' mind set, operationalized as cognitive load. External cognitive load was manipulated by experimentally mimicking the real-world scenario in which consumers often operate - placing the advertisement in a crowded environment. Conversely, participants' internal cognitive load was manipulated by loading their working memory with a series of numbers that they had to memorize for the duration of the study

The incremental contribution of the dissertation, which distinguishes it from previous ones, is the finding that **the mere presence of a face in an advertisement has a positive advertising effect on both the ad evaluation and the orientation of consumers' attention to said advertisement, even when the advertisement is placed in a visually demanding scenery and even when the consumers' thoughts are focused on another task**. Moreover, these effects can be enhanced by careful manipulation of facial features such as the direction of gaze and the emotional expression shown by the face.

The role of the human face in advertising can be divided into three functions that a face performs in an advertisement. First, unlike other stimulus categories, perception of the human face is prioritized by our cognitive system due to its evolutionary importance. The second function, which follows from the previous one, is that it can also reduce attention devoted to the surrounding ads, that is, to the ads of the competition. Finally, and most importantly, faces can also be used to guide the viewer's attention to the location where the central advertising message or product is presented. The mechanism by which the face acts as an efficient attention grabber is the increased salience of the ad

When the saliency of the advertised product is significantly higher than the saliency of the surrounding stimuli, all other design features become less important. This can be achieved in a variety of ways, such as varying the color, luminosity, size, orientation, etc. of the product (Wolfe, 2014). Assuming that the ad is similar to the other ads in the environment, the design of an ad becomes a much more important factor in determining the attention grabbing efficiency of the ad. In this case, an ad that shows a human face will be noticed faster than the ad showing other stimuli such as an arrow or a circle. Moreover, this effect is further enhanced when a human face expressing happiness is shown. This adds to previous research on what kind of emotional expression is prioritized by our cognitive system (Švegar, Kardum & Polič, 2013). At the same time, the number of distractor ads showing a human face increased the search time for the target. The increase in time was even more prominent when neither the target included human face as an attention cue, supporting the claim that the human face in the ad suppresses other ads in the scene.

Having established that a human face in an ad can effectively grab attention, the focus of the study shifted to consumer interaction with a single ad. The effectiveness of the face in guiding attention to a specific part of the ad was tested next. As expected, both emotional expression (surprise) and eye gaze (toward the product) were most effective in guiding consumers' attention to the product. However, ad evaluation was primarily influenced by the emotional expression of the model; a happy face was associated with the most positive

evaluations. The effect of eye gaze was significantly weaker, but still significant. Interestingly, no relationship was found between attention and ad evaluation. This peculiarity could be an artifact of the study design, in which products that were clicked on more quickly spent less being observed by participants, reducing the association between attention and ad evaluation.

Finally, unlike external cognitive load, internal cognitive load was not associated with a difference in the time taken to click on the advertised product. Instead, ad evaluations was more positive when participants' consciousness had more resources available. The following sections present both the theoretical and practical contributions of the studies.

5.1 Theoretical contribution

The present studies made several important theoretical contributions. The literature on advertising effectiveness is rich. However, it is only recently that the effect of the human face in advertising has attracted the attention of researchers (Adil, Lacoste-Badie & Droulers, 2018). Since research on this topic is still in its infancy, several potential avenues were identified on which this dissertation can build to produce generalizable results. These include confounding the model's gaze with the model's head orientation (Hutton & Nolte, 2011; Sajjacholapunt & Ball, 2014), failing to account for differences across models (Adil, Lacoste-Badie & Droulers, 2018), and using only self-report (Sajjacholapunt & Ball, 2014) rather than obtaining more objective measures of consumer behavior.

The main theoretical contribution of the dissertation is the empirical evidence that the human face is a special category of stimuli, even in an advertising context. In a review of attention grabbing stimuli, the face was identified as a potential automatic attention grabbing stimulus (Wolfe, 2014). In the past, cognitive (Schwaninger, Carbon & Leder, Helmut, 2003; McKone & Robbins, 2011) and neuroscience (Sergent, Ohta & Macdonald, 1992) researchers concluded that the human face represents a stimulus that has a specialized neural basis responsible for responding to it, but their findings were rarely studied outside the laboratory setting. As expected, the human face proved to be an important advertising tool. Research on human face processing has now been extended to the real-world context of advertising. The face's ability to grab attention automatically serves a dual function. On the one hand, it helps to increase attention to one's own advertisement, but on the other hand, it also diverts attention from surrounding advertisements. These findings are consistent with other advertising research that has also concluded that the human face is an important aspect of advertising (Watson et al., 2021).

This importance of a face is further underscored by the fact that attention grabbing can be enhanced by manipulating another evolutionarily important stimulus category-the emotional expression of the face. Similar to how some fears are more common and easier to acquire, such as the fear of spiders and snakes, which is related to survival (Seligman, 1970), the same can now be surmised for attending to certain stimulus categories in advertising. This

effect extends not only to the attention grabbing phase but also to the cognitive and emotional phases of advertisement processing. The present study contributes to resolving the debate about the emotional expression that most efficiently grabs attention. In the first study, it was shown that a happy face grabs the attention most efficiently compared to a surprised emotional expression and non-face stimuli. Previous research on this topic has shown that a happy human face is found faster than other emotional expressions in a grid containing only faces (Švegar, Kardum & Polič, 2013). But now we have preliminary evidence that this effect exists even when each face is paired with a product, which is especially important for the advertising context. One could argue that advertisers should not benefit too much from this finding, since their task is to draw attention to their product. However, **participants' task was to find a product on the screen, not the specific face**. We therefore believe that this is an important finding that should lead to further investigation of the specifics of this effect.

Our finding about the importance of the human face as an advertising element confirms the results of Droulers & Adil (2015) that the human face provides an advertising advantage. On the other hand, the eye-tracking study by Palcu et al. (2017) did not find a difference in the amount of time spent looking at the ad or the face. When we compare our results with the two studies that offer opposing conclusions, we tend to agree with the results of Droulers & Adil (2015), because the study of Palcu et al. (2017) differs from our study in several important aspects. Their study showed the same model expressing happiness throughout the study, but at a lower intensity than the models in our study. This limitation was mentioned by the authors, who urge other researchers to extend their findings by using more diverse models that express different levels of happiness.

The effect of gaze direction on both attention and ad evaluation, in contrast to the emotional expression of the model, could not be confirmed in the observed data. In our study, we attempted to account for potential confounding factors observed in previous research, such as the manipulation of head orientation rather than eye gaze (Hutton & Nolte, 2011; Sajjacholapunt & Ball, 2014). When the head orientation of the model is manipulated, two important problems arise. First, the face is not presented centrally, reducing its ability to automatically grab observer's attention because the key facial features (simple T-shaped schematic face with two eyes, nose, and mouth) are not fully visible (Tsao & Livingstone, 2008). Second, the model's intentions toward the product are much more pronounced when the model's entire posture is facing the product. Interestingly, our results are inconclusive. Although we did not find a statistically significant difference between the different gaze orientations in both reaction time and ad evaluation, almost all tests were on the edge of statistical significance, with the observed differences going in the expected direction. Perhaps the eyes of the model used in our study were too small for consumers to accurately assess which direction the model was looking. This shortcoming can be addressed by future studies in which the size of the eye region of the model could be varied. Our confidence in the presence of such effects is strengthened by our research design, which accounts for

potential confounding factors observed in previous studies, such as the lack of control for the model's appearance (Adil, Lacoste-Badie & Droulers, 2018). In their study, two models differed significantly from each other. One was a digitized version of the woman with short hair, while the other (central gaze) was an attractive real woman with long hair

Finally, unlike others, our study showed that the design of the advertisement, particularly the attention grabbing features and the product image, had a significantly smaller impact on the perception of the advertisement than the cognitive load (both external and internal) imposed on consumers. This is not surprising, as the impact of advertising on consumer behavior tends to be small (Eisend, 2015; Eisend & Tarrahi, 2016). The path from product perception to ultimate purchase is long and involves cognitive and emotional interactions with the advertised product. However, this does not mean that they should be ignored. Especially knowing that there is something marketers can directly influence other than consumers' state of mind. We have shown that a cluttered environment causes attention to be drawn more slowly to the target ad, and that the availability of consumers' cognitive resources affects their overall evaluation of the ad

In contrast to previous research on the effects of cognitive load on advertising, our studies considered ads as both distractors (first study) and targets (both studies). This made an important theoretical contribution that had previously been ignored – **establishing these effects in their most basic form**. Previous researches usually presented an ad as a distracting stimulus that interferes with the seemingly unrelated task to which participants' attention is directed. This results in two major limitations. The data are limited because participants rarely glance at the ad, but also the explanation of why participants look at the ad is beyond the scope of such studies. **Our study explains the background of why the human face in the ad has a positive impact on the attention the ad receives. We argue that the reason is increased saliency of the ad**. Our argument is based not only on the fact that an ad showing a face is found more quickly than an ad without a face, but also on the fact that the saliency of the ad is the most important feature that ensures efficient attention grabbing. The smartphone used as the target product in the first study was found significantly faster than the perfume bottle in the same study for some reason. The most likely reason is the contrast of the smartphone screen. A bold black frame borders a rather bright screen, making it pop-out in the scenery. Another possible explanation is that the smartphone has become an inseparable part of our daily lives, meaning that the frequency with which we are exposed to it has been crucial in making the smartphone practically pop-out. When the ad's saliency is high enough, no other ad design can improve on its attention grabbing property. It follows that the face in the ad increases saliency of the ad through the evolutionary importance that human face perception has.

Although the present study differs in design from the previous ones, some comparative conclusions can still be drawn. First, all previous studies have shown that increasing the number of stimuli presented on the screen leads to a decrease in their processing. In other words, less attention is paid to them. Initially, our results clearly contradict this notion. This

becomes clear when we compare the mean RT between the low external cognitive load (about 1000 ms) and the high external cognitive load (about 2000 ms). However, if we control for the number of stimuli presented on the screen by dividing the mean RT by the number of distractors on the screen, we can see a difference by a factor of 6 between the low and high external cognitive load conditions

There is no linear relationship between the number of distractors and the amount of attention they receive. As Lavie (2005) suggests, the time required to complete the task is higher, but the distractor interference is lower in a perceptually demanding scene than in a perceptually less demanding scene. In our case, when the screen contained four stimuli (three distractors and one target), the average time required to process each stimulus was about 250 ms. In contrast, when the screen contained 36 stimuli (35 distractors and one target), each stimulus was processed in about 50 ms on average. This result can be taken as further confirmation of the theory proposed by Lavie (2005). The result is nevertheless interesting because it suggests that some form of early selection is still occurring, as 50 ms is not sufficient to fully perceive everything in each image on the screen. It would be interesting to test when the ceiling effect occurs. For example, there must be a certain number of stimuli on the screen after which the average time devoted to each distractor remains constant. Although advertising is often perceived as a distractor stimulus (Vakratsas & Ambler, 1999; Sundar & Kalyanaraman, 2004), our results suggest that the presence of a human face on ad warrants the increase in saliency of the advertisement which can in turn lead to reduction in distracting properties making the consumers attend to an ad. This is perfectly consistent with older findings that the human face, rather than the other stimulus categories, distracts consumers more efficiently (Lavie, Ro & Russell, 2003).

We also observed no effect of internal cognitive load on attention. However, in the advertising literature dealing with such phenomena, proxy measures of attention are usually used. The most common being recall and recognition (Wang & Duff, 2016). One could argue that both are experienced further down the line from attention. In this regard, we observed that participants in the low cognitive load condition made more positive evaluations of the advertisement. However, no relationship was found between the time needed for attending to a product and the amount of cognitive resources occupied by the task irrelevant activity. Previous authors (Wang & Duff, 2016) observed that higher cognitive load led to higher brand familiarity, suggesting better processing of advertisements under higher cognitive load.

Others (Lavie & De Fockert, 2005; Yoon, Choi & Song, 2011; Evans & Hoy, 2016) have also observed that participants who had additional cognitive resources available to them evaluated the advertisement more positively than those whose cognitive resources were depleted. The explanation for such effects is that participants had more resources available to evaluate the advertisement. It is important to note a possible limitation of the study, namely that the two target products were rather favorable. Participants who were under low cognitive load were more inclined to attend to the disclosure of the native advertisements

(Evans & Hoy, 2016). Given that both the perfume and the smartphone can be used as a sign of status, it is not surprising that the increased availability of cognitive resources led to more positive perceptions of the products. It is also possible that in the case of a less pleasing product design or less desirable products, advertisers may not benefit from having additional cognitive resources available to their consumers to properly evaluate the ad. This possible suggestion for future research is described in detail later.

Although this is not a direct contribution to theory, but perhaps more to research methodology, results were obtained by using the mouse tracking equipment. The use of the mouse tracker can be viewed as a compromise between self-report (entirely subjective) and eye-tracking measures (almost entirely objective). By replicating previous eye-tracking results, the mouse tracker can be validated as an important tool, especially for researchers who cannot use eye-tracking technology. A one-to-one relationship cannot be established because the number of measures is somewhat limited for the mouse tracker compared to the eye tracker. Nonetheless, the key finding of Sajjacholapunt & Ball (2014) that online advertisements with a face grab more attention was replicated in our first study. Researchers wishing to collect such measures can use readily available and free programs such as Psytoolkit (Stoet, 2010), for which a variety of reference manuals are available (Torbarina, 2022).

5.2 Managerial implications

This paper can support the decision-making process of marketing managers in several important ways, all of which stem directly from the present studies. While the literature review is comprehensive, it only provides the basis for the two studies. It is reasonable to assume that at least half of advertisements already depict a human face, with some reporting that certain brand categories display a human face in more than 80% of their ads (Adil, Lacoste-Badie & Droulers, 2018). The present results can be seen as empirical validation for their choice. Those still struggling to find the optimal ad design could potentially start incorporating images of human faces into their ads for two reasons. First, to increase the saliency of their ads. Our results show not only that the human face is an important attention grabbing element of the ad, but also that advert's saliency is the most important predictor of the ad being noticed by the potential consumer. Another reason for including a human face in the ad could be to disrupt consumers' processing of competitors' ads in the vicinity. There are other beneficial reasons for including a human face in the ad, such as increasing positive evaluation of the ad or guiding attention to the advertised product.

Unfortunately, similar to the previous ones, our research also confirmed that there is no way to make consumers immediately buy a product just by exposing them to the advertisement. However, as all advertising models describe, in order to build a product perception, the key is for the advertised product to be perceived by the consumer. One could draw a parallel with professional sports, where any gain, no matter how small, can lead to subsequent success.

The mechanics who build formula cars spend millions of dollars to improve a lap time by thousandth of a second. Our studies have shown that attention is measured with the same units – milliseconds. Advertising with a human face is perceived a few tenths of a second earlier than advertising without a face. With each repeated exposure, the advertising is more likely to reach the threshold needed for consumers to build brand image, positive feelings, and attitudes toward the brand/product.

Managers can take these results into account when deciding where to place advertising. The results of the first study indicate that advertisement placed in an unobtrusive environment should be noticed more quickly. This is not surprising, as participants have nowhere else to look but at the advertisement. The situation is more common when the ad is placed in a visually demanding scene. Then the features of the ad design are more important. If the ad is presented in isolation, such as on TV or on an entire newspaper page, advertisers may devote much of their effort to making their message the most salient stimulus on the ad. But even in such a situation, the human face gazing at the ad message can increase consumer dwell time, as it has been proven that the model's gaze can quickly guide consumers' attention in the desired direction.

Finally, marketers interested in the theoretical underpinnings of their decision-making process can study the literature on evolutionary psychology, which received the most support in the two studies. By showing that one evolutionarily important stimulus (the human face) is an important attention grabber and that its efficiency can be increased by using another evolutionarily important stimulus (emotional expression), marketers can try to generalize these results by using other types of stimuli. For example, they can design advertisements to resemble commonly experienced stimuli that people have been exposed to for tens of thousands of years.

Marketers could also consider the attention literature when designing ads, particularly the Load theory of attention (Lavie et al., 2004). This study has shown that both external and internal cognitive load have an important and significant impact on the way consumers experience and potentially interact with advertisements.

5.3 Limitations and future research

Throughout the two studies, a rigorous approach was taken to control for as many confounding factors as possible. Nevertheless, there are some limitations in this work that future research should consider when designing a study. These fall into two categories, sample and design related. The sample used for the study comes from the online panel Prolific. Although the validity of the sample has been demonstrated in previous research (Palan & Schitter, 2018) and although it is an improvement over the student sample typically used (Peer et al., 2017), the present sample was not perfect.

In an effort to obtain the most representative sample possible, we selected only participants whose native language was English, increasing the likelihood of obtaining the so-called WEIRD sample (Gosling et al., 2010), which consists of white, educated, industrialized, wealthy, and democratic participants who are not fully representative of the entire population. In contrast to the laboratory experiments, the conditions under which participants took part in the study were also different. We attempted to control for these conditions by asking participants to isolate themselves in a quiet and undisturbing environment before the study began, but there were also a series of questions at the end of the study to help us control for these unequal conditions under which the study took place. The study sample was, as usual, predominantly female, though this ratio is much closer to 50-50 than a student sample. Finally, all participants were proficient enough in using the Internet to apply for the online study, further limiting the generalizability of the results to the general population.

The design of both studies ensures that there are some potentially important limitations that could be addressed with further studies. The most obvious is that advertising was treated as a target rather than a distractor, as is the case in the majority of studies (Bang & Wojdynski, 2016; Wang & Duff, 2016). This decision was made by weighing the usefulness of the results and the practicality of the study. We argue that having participants search for the ad, rather than presenting it as a distraction, was necessary to determine the baseline attention grabbing property of the ad. Since we found no difference in attention grabbing property when participants are motivated to find the ad, one might question whether such an effect exists in the more extreme case in which the ad is actively ignored. This is not to say that we completely ignored the stimuli used as distractors. By keeping data on the number of distractor stimuli with faces, we were able to show that this made participants' task more difficult than when all distractor stimuli did not present faces.

Another limitation caused by the study design was the size of the ads. In order to increase the number of stimuli presented on the screen, we were forced to adjust the size of the ads so that all advertisements fit on one screen. The main consequence was that participants may not have been able to correctly identify the gaze direction of the model, as the eyes occupied a total of about 10 out of 21760 pixels. We used large stimuli for the following study, which demonstrated that gaze direction can be used to effectively guide participants' attention. Therefore, in subsequent studies, either the size of the advertisements used as stimuli or the size of the screen on which the study is presented should be adjusted.

A few minor points: The human face presented next to the target product was not varied in the different trials, which is not surprising from a practical point of view, since the advertisement is presented in the same way on several occasions. From a methodological point of view, however, this could lead to the alternative explanation that participants quickly recognized a familiar face rather than the face itself. However, we consider this possibility highly unlikely, as the time required to pay attention to the target advertisement differed

significantly between the different emotional expressions of the model. Thus, the features of the model proved to be more important than the model itself.

We have no conclusive evidence that the internal cognitive load manipulation was as successful as the external cognitive load manipulation. Neither the time it took participants to direct their attention nor the total study time differed between participants in the low and high cognitive load conditions. We did, however, observe an expected difference in ad evaluation, with participants with low cognitive load providing more positive evaluations. Because of the random assignment of participants to the two experimental conditions, there is no reason other than our manipulation that could have led to this difference. In our view, this can be taken as evidence of a successful manipulation of the independent variable.

Finally, there are some obvious limitations, such as the self-report measures of the ad evaluation, the limited number of product categories tested, and the limited number of products from the category tested. Self-assessments could be replaced by more objective measures, such as observing actual behavior after exposure to an advertisement or by introducing implicit measures and thus controlling for participants' views and expectations of the study. Both the product categories and the products within each category can be expanded, which would increase the external validity of the study. The products used in the studies were two commonly advertised products that were affordable, similar in size, and similar in other potentially important aspects, such as consumer involvement (Cheong & Cheong, 2020). Unfortunately, the two products used in the first study were not equally salient, with the smartphone popping-out much more quickly than the perfume. Although this is not a critical limitation, a future study could include products' saliency as a control variable.

Future research can build on the results of the current study. Successful studies usually raise more questions than they answer. For example, researchers who wish to pursue this avenue could begin by examining the simultaneous effects of internal and external cognitive load on the attention an ad receives and the subsequent evaluation. This can be done by asking the participants to solve a puzzle presented in the center of the screen, while ads can be placed around it. In this way, ads could be analyzed as truly distracting stimuli. The problem of the number of ads presented should also be considered, because the biggest challenge is still the trade-off between the number of ads presented and the time and exhaustion of the participants in evaluating each ad.

Another question that needs to be answered is whether the way the ad was (explicitly) evaluated influenced the observed results. Unlike attention, which was measured implicitly (without participants knowing that the ads' attention grabbing efficiency was operationalized as the amount of time they spent searching for the ad), the evaluation of the ad was more explicit ("How likely are you to purchase a product?"). As previous research has shown, the association between exposure to the ad and future behavior toward the advertised product is quite low, leaving room for interpretation that mere exposure to the ad might have greater

effects on implicit attitudes that should emerge in the future than on immediate evaluation of the ad.

It would be very interesting to explore an idea that emerges from this research, although the exact hypothesis is difficult to formulate. Previous research has shown that pretty faces not only grab attention, but also hold the attention of viewers. In other words, we like to look at pretty things. On the other hand, recent research has shown that a face gazing at the product can guide attention in the direction the gaze is directed. A face that is too beautiful can then hijack participants' attention away from the product again. For this reason, it would be very interesting to see how the attractiveness of the model moderates consumers' attention devoted to the advertised product.

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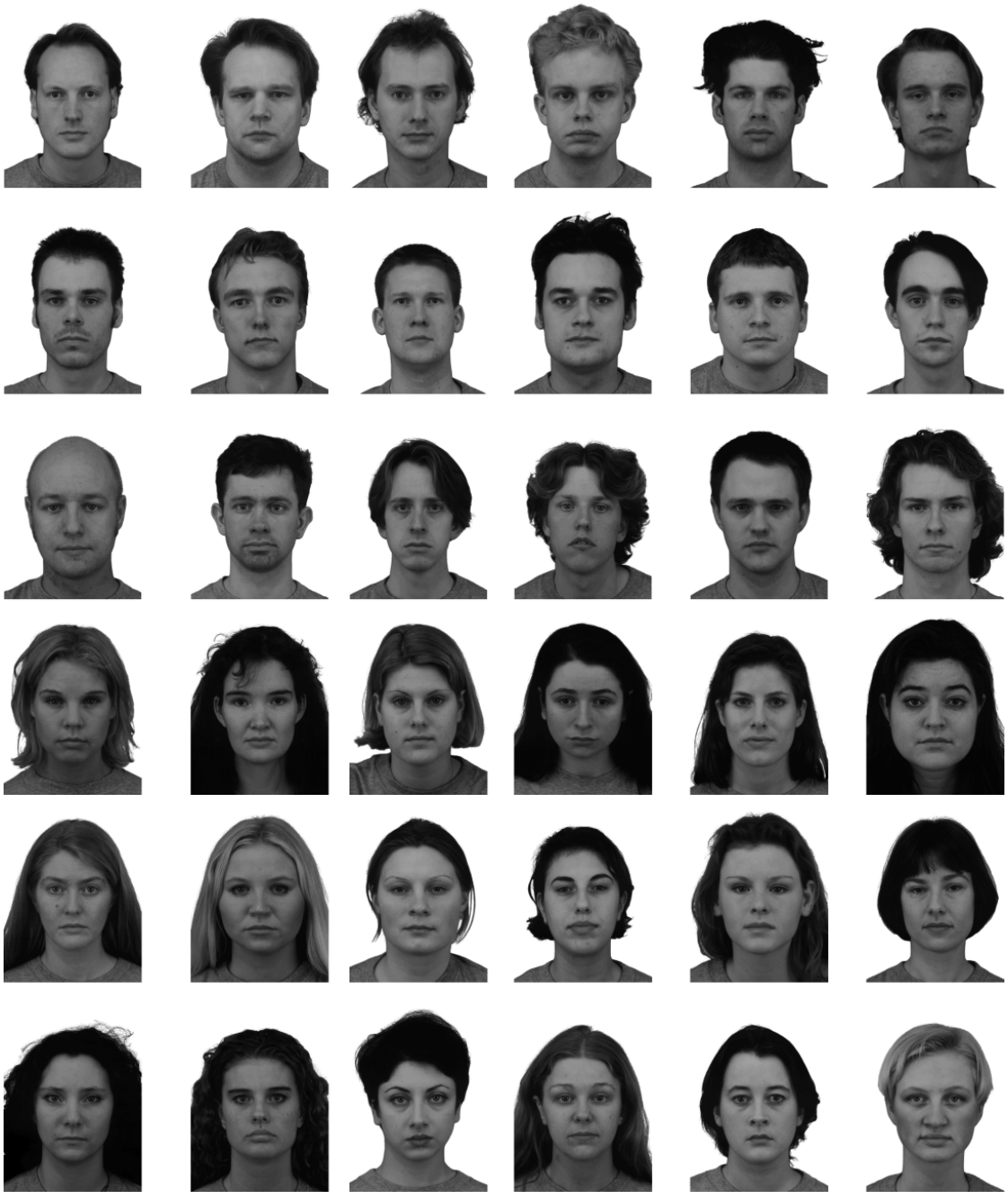
APPENDICES

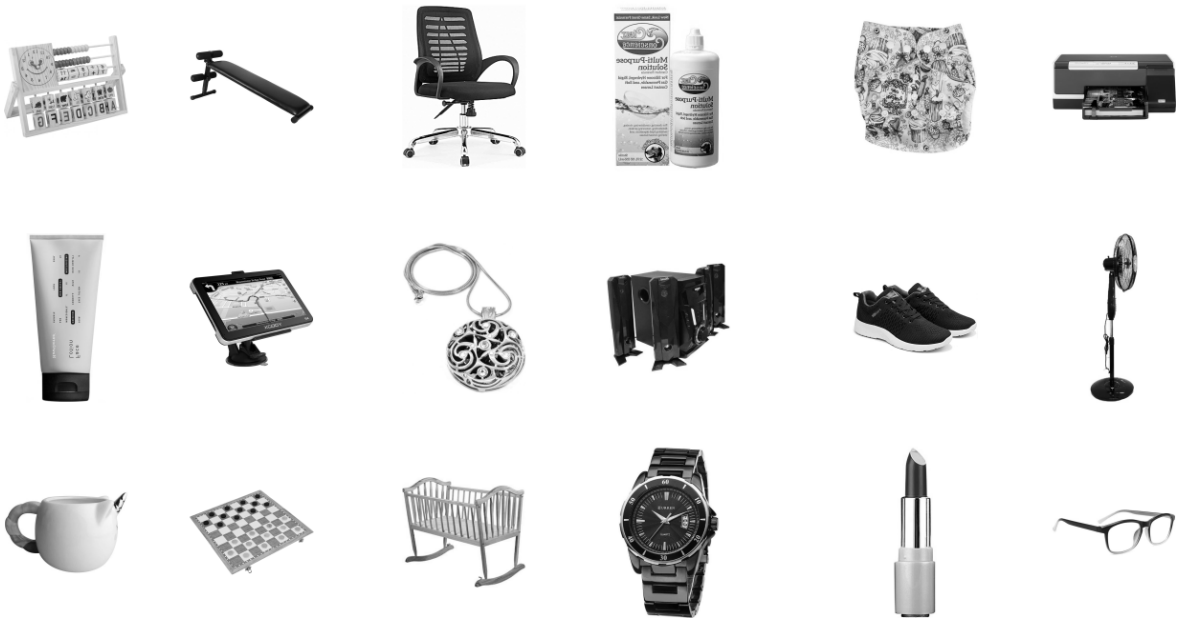
Appendix A: Stimuli used

Figure 21: Study 1 - Distractor faces



Source: Adapted from (Lundqvist, Flykt & Ohman, 1998)

Figure 22: Study 1 - Distractor products



Source: Adapted from various web-pages

Appendix B: Daljši povzetek doktorske disertacije

Cilji in učinkovitost oglaševanja

Oglaševanje se nenehno razvija, način, na katerega se uporablja danes, pa je bistveno drugačen od tistega, ki je veljal nekoč (Wijaya, 2012; Dahlen & Rosengren, 2016; Fortenberry & McGoldrick, 2020). Razlika je sicer zgolj kontekstualna in se odraža v naboru kanalov, prek katerih se predstavlja, samo bistvo oglaševanja pa se ni tako zelo spremenilo. To nenazadnje dokazuje tudi dejstvo, da je oglaševanje še vedno opredeljeno kot plačana oblika komuniciranja blagovne znamke s svojimi potrošniki (Duff, Faber & Nan, 2019). Pred približno pol stoletja je to definicijo formaliziral Alexander (1960), ki je oglaševanje opredelil kot vsako plačano obliko neosebnega komuniciranja v zvezi z organizacijo, storitvijo, izdelkom ali idejo za znanega naročnika, običajno blagovno znamko samo.

Kotler & Keller (2006) povzemata štiri glavne cilje oglaševanja: obveščati, prepričati, opomniti in potrditi. Oglaševanje, namenjeno obveščanju potrošnika, povečuje prepoznavnost blagovne znamke, tisto, ki se uporablja za prepričevanje potrošnika, ustvarja všečnost, preferenco in nakupne namere. Oglaševanje, ki kupce opominja na različne prednosti uporabe določenega izdelka ali storitve, je namenjeno spodbujanju ponovnega nakupa, nekateri oglasi pa kupcu potrjujejo, da se je pravilno odločil.

Neposredni učinki oglaševanja pa so precej skromni. Eisend & Tarrahi (2016) navajata, da je skupni učinek približno r = 0,20. Druge promocijske dejavnosti in kontekstualni dejavniki, kot so vztrajnost, zvestoba in predhodni nakupi, pojasnjujejo skoraj dve tretjini variabilnosti vedenja potrošnikov na trgih, zato je pomembnejši meta-meta-analitični pristop (Eisend, 2015).

Modeli oglaševanja

Učinki oglaševanja so odvisni tudi od stališča raziskovalcev o tem, kaj je oglaševanje in na kakšen način lahko vpliva na prodajo. Ekonometrični modeli oglaševanja se na primer ukvarjajo z napovedovanjem tržnega deleža blagovne znamke na podlagi izdatkov za oglaševanje v določenem času z uporabo podatkov na ravni trga in ne podatkov na ravni potrošnikov. Po drugi strani se raziskovalci, ki se osredotočajo na potrošnikovo dojemanje oglasa, manj ukvarjajo z nekaterimi makro spremenljivkami, ki vplivajo na to razmerje, kot so tržni delež, država porekla blagovne znamke itd. Čeprav obe skupini preučujeta učinke oglaševanja, se njune poti le redko križajo in predstavljata dva povsem ločena pristopa. Različni modeli oglaševanja so v pričujoči doktorski disertaciji kategorizirani kot kombinacija predhodnih pregledov modelov, ki so jih pripravili Vakratsas & Ambler (1999), Barry & Howard (1990), Werder (2009) in drugi.

Dejstvo, da dogovor o končni kategorizaciji še vedno ni dosežen, kaže na to, da področje še vedno ni dovolj zrelo in da obstaja veliko potencialnih vrzeli, ki čakajo na zapolnitev s prihodnjimi raziskavami. Werder (2009) na primer modele kategorizira glede na teme, s

katerimi se ukvarjajo. Sem spadajo teorije, ki se osredotočajo na funkcionalna področja oglaševanja, tiste, ki se nanašajo na oglaševalski proces ali na rezultate oglaševanja, in umetniške teorije, pri čemer je največji poudarek na hierarhiji modelov učinkov in njeni razširitvi s kontekstualnimi koncepti. S psihološkega vidika sledijo teorije osebnosti in motivacije, ki izražajo povsem drugačne vrste modelov, na koncu pa so kot najmanj uporabljene predstavljene teorije asociacij in teorije preobrata.

Drugi avtorji (Vakratsas & Ambler, 1999) modele kategorizirajo na podlagi vmesnih učinkov med oglaševanjem in prodajo. Njihova kategorizacija sledi predlaganemu okviru, v skladu s katerim oglaševanje najprej vpliva na miselno izkušnjo potrošnika in šele nato na njegovo vedenje. Prav ta miselna izkušnja, ki jo Vakratsas & Ambler (1999) opredeljujeta kot izkušnja, občutenje in spoznanje, je tisto, kar razlikuje posamezne modele oglaševanja, začenši z najpreprostejšim, ki se z miselno izkušnjo potrošnika ne ukvarja, prek tistih, ki predpostavljajo obstoj le spoznanja ali le občutenja, pa vse do tistih, pri katerih omenjene faze potekajo v točno določenem ali prostem zaporedju. Tisto, kar najbolj razlikuje posamezne modele oglaševanja, je predpostavka, da je med začetno izpostavljenostjo oglaševanju in končnim vedenjskim odzivom prisotna določena hierarhija (Barry & Howard, 1990; Vakratsas & Ambler, 1999; Werder, 2009; Eisend & Tarrahi, 2016; Rodgers & Thorson, 2019).

Pozornost potrošnikov

Ne glede na to, kako je model usmerjen, je izhodišče vpliva na vedenje potrošnikov pozornost, ki je tudi prvi cilj oglaševanja (Duff, Faber & Nan, 2019). Pozornost je osnova za doseganje višjih rezultatov oglaševanja (Bellman et al., 2019). Teixeira et al. (2010) pojasnjujejo, da je cilj oglaševalcev usmeriti pozornost potrošnikov na določene dele oglasa, obseg, v okviru katerega oglas pritegne pozornost potrošnikov, pa pozitivno vpliva na njihovo vedenje.

Od devetdesetih let prejšnjega stoletja je na voljo veliko raziskav, ki proučujejo, kako najučinkoviteje pritegniti pozornost potrošnikov. Rosbergen et al. (1997) na primer ugotavljajo, da so potrošniki različno pozorni na oglase, kar je odvisno od njihove vpletenosti v blagovno znamko, odnosa do blagovne znamke in priklica oglasa. Študije s strukturnimi značilnostmi spletnega mesta, kot so hitrost animacije in pojavna okna, kažejo, da učinkovito pritegne pozornost gledalcev in poveča možnost priklica oglasa v prihodnje tisti oglas, ki ga dojemajo kot vsiljivega in motečega (Sundar & Kalyanaraman, 2004). Predpostavlja se, da na stopnjo pozornosti, ki jo potrošniki namenijo procesiranju oglasa, poleg trenutne naloge vplivajo naslednji trije dejavniki: motivacija, priložnost in sposobnost (Batra & Ray, 1986; MacInnis & Jaworski, 1989).

Na sposobnost zbujanja pozornosti vplivajo različne značilnosti oglasov. Costa et al. (2019) ugotavljajo, da velikost oglasa, število črk in oddaljenost od ceste pritegnejo pozornost voznika, zaradi česar postane bolj dovzeten za nesrečo, saj svojo pozornost porazdeli med

vožnjo in procesiranje oglasa. To predvideva tudi teorija obremenitve, ki bo predstavljena v tretjem poglavju. Predhodne raziskave obcestnega oglaševanja so pokazale, da oglasi, postavljeni na ovinkih, pritegnejo več pozornosti kot oglasi na ravnih delih ceste (Beijer, Smiley & Eizenman, 2004).

Zaznavanje človeškega obraza in njegovo procesiranje v oglasih

Človeški obraz je precej priljubljen element oglaševanja, saj je na splošno prisoten v več kot 50 % vseh oglasov (Xiao & Ding, 2014), pri določenih kategorijah izdelkov pa se človeški obraz skoraj izključno prikazuje v več kot 80 % oglasov (Adil, Lacoste-Badie & Droulers, 2018). Človeški obraz povezujejo tudi z lažjim priklicem oglasov (Droulers & Adil, 2015) ter bolj pozitivnim odnosom in nakupnimi namerami (Xiao & Ding, 2014).

Raziskave tržnega komuniciranja v digitalnih medijih so pokazale tudi, da je človeški obraz pogosto predstavljen na družbenih omrežjih in da lahko njegova uporaba pritegne tako vsakodnevne uporabnike Instagrama (Bakhshi, Shamma & Gilbert, 2014) kot tudi sledilce vplivnežev (Torbarina, Jelenc & Brkljačić, 2020). Obe skupini avtorjev opažene učinke pojasnjujeta s trditvijo, da sposobnost človeškega obraza, da zbudi pozornost sledilcev, podaljša čas pregledovanja vsebine objave, kar posledično vodi do večje verjetnosti, da jo všečkajo.

Kljub omenjenim rezultatom tovrstni učinki prisotnosti obraza na pozornost potrošnikov niso dosledni. Palcu et al. (2017) na primer poročajo, da zgolj prisotnost obraza v oglasu ne poveča verjetnosti ogleda oglasa niti ne podaljša časa, porabljenega za proučevanje določenega oglasa. Udeleženci raziskave, ki so gledali oglas, v katerem je bil model obrnjen proti izdelku in ne stran od njega, so izkazovali višje nakupne namere (Guido et al., 2019).

Ta študija bo temeljila na dokazih iz literature o vizualnem zaznavanju, da so obrazi posebna kategorija dražljajev, ki povzročajo bolj samodejne usmerjene odzive (Hershler & Hochstein, 2005; Van Rullen, 2006). Predpostavljeno bo, da že sama prisotnost obraza v oglasu vpliva na verjetnost, da se bo potrošnik posvetil celotnemu oglasu. Pri tem bomo nadaljevali in razširili dosedanje raziskave učinkov prisotnosti človeškega obraza v maloprodajnem marketingu (Lindström et al., 2016), tržnem komuniciranju (Bakhshi, Shamma & Gilbert, 2014; Torbarina, Jelenc & Brkljačić, 2020) in oglaševanju (Sajjacholapunt & Ball, 2014; Xiao & Ding, 2014; Droulers & Adil, 2015; Guido et al., 2019).

Lastnosti obraza – pogled

Oči so verjetno eden najpomembnejših socialnih dražljajev. Tako oči same kot predel okoli oči so sposobni izražati kompleksna duševna stanja, kot so prepričanja, želje in čustva (Frischen, Bayliss & Tipper, 2007). Ta sposobnost je v človeških možganih čvrsto zakodirana v zgornjem temporalnem sulkusu (STS; Perret et al., 1992), ki se selektivno

aktivira ob prikazu dinamičnih (Hooker et al., 2003) ali statičnih obrazov (Hoffman & Haxby, 2000). Zaradi tega pozornost avtomatično usmerjamo v oči drugega.

Študija razlikuje med dvema vrstama pogleda: neposrednim, kjer model gleda neposredno v kamero (tj. v opazovalca), in odvrnjenim pogledom, kjer model svoj pogled usmerja levo ali desno, odvisno od postavitve oglaševanega izdelka.

Pričakovanja o tem, kako se bodo odzvali udeleženci, bodo v glavnem temeljila na evolucijskem okviru (Barkow, Cosmides & Tooby, 1992) in teoriji uma (Chalmers, 1996). Po evolucijski hipotezi neposredni pogled pritegne pozornost na sam obraz, saj je opazovalec tarča zanimanja modela, v primeru odvrnjenega pogleda pa opazovalec sledi pogledu modela v eno ali drugo smer, saj ta označuje potencialno lokacijo grožnje/nagrade.

Literatura o učinkih pogleda v oglaševanju ni tako bogata kot literatura o učinkih pogleda na drugih področjih. Večina teh študij je bila opravljena z uporabo postopkov za sledenje očem. Tako so raziskovalci dobili vpogled v precej objektivna merila pozornosti udeležencev, kot so količina časa, ki ga porabijo za gledanje dražljaja, število fiksacij itd. Ena od študij je pokazala, da je, ko je oglasni model gledal proti izdelku namesto v kamero, njegov pogled vplival tako na število fiksacij kot na število ponovnih ogledov. Ta vrsta pogleda je povezana tudi z višjo stopnjo priklica in prepoznavnosti določene kategorije izdelkov ali blagovne znamke, kar služi kot dokaz, da obraz zagotovo spada med dražljaje, ki učinkovito pritegnejo pozornost gledalca (Adil et al., 2018).

Omenjena študija je ponovila ugotovitve Hutton & Nolte (2011) in Sajjacholapunt & Ball (2014), da obraz učinkovito pritegne pozornost. Poleg tega sta Hutton & Nolte (2011) proučila tudi smer pogleda modela in ugotovila, da udeleženci običajno sledijo pogledu modela in dalj časa gledajo v smer, v katero je model obrnjen. Sajjacholapunt & Ball (2014) ugotavljata, da smer pogleda vpliva na kognitivne procese potrošnikov. Ko jih model z oglasa gleda neposredno, potrošniki dlje gledajo v obraz modela, v primeru odvrnjenega pogleda pa tudi potrošniki dalj časa gledajo v smer pogleda modela, kar poveča prepoznavnost blagovne znamke.

Značilnosti obraza – čustveni izraz

Druga značilnost obraza, ki lahko vpliva na pozornost potrošnikov, je čustveni izraz. Čustveno izražanje velja za glavni kanal, prek katerega se izražajo čustva (Ekman, 1970). Iz čustvenega izraza lahko razberemo pomembne informacije o motivaciji in vedenjskih namerah izraževalca (Adams & Kleck, 2003). Oseba, ki zna učinkovito razbrati čustva z obraza, lahko dobi vpogled v motivacijske težnje izraževalca (Reis & Gray, 2008; Lowe & Ziemke, 2011) in njegove vedenjske namere (Seidel et al., 2010). Predvidevanje vedenjske namere drugega lahko posameznika spodbudi, da se mu približa ali se ga izogiba, tako v smislu pozornosti kot v smislu vedenja.

Podobno kot smer pogleda, ki lahko različno vpliva na pozornost opazovalca, lahko tudi čustveno izražanje pozornost pritegne ali odvrne, odvisno od čustva, ki se izraža. Tako naj bi bila na primer jezen ali srečen obraz učinkovitejša pri pritegovanju pozornosti, ker predstavljata neposredno grožnjo (jeza) ali priložnost (sreča), če je vzrok za čustva izraževalca opazovalec. Tem čustvom zato rečemo čustva, usmerjena v pristop.

Druga skupina čustvenih izrazov, ki so po učinku nasprotni od zgoraj predstavljenih, so čustveni izrazi, ki opazovalca motivirajo, da odvrne pogled od obraza, ki mu je prikazan. Sem spadajo presenečenje, strah in gnus, ki ne predstavljajo niti grožnje niti priložnosti, ampak kažejo na možno nevarnost v okolici (Adams & Kleck, 2005). Ker se ljudje manj osredotočajo na obraz, ki izraža ti dve čustvi, jih imenujemo čustva, usmerjena v izogibanje. Razlikovanje med čustvi, usmerjenimi v pristop, in čustvi, usmerjenimi v izogibanje, predlagajo in potrjujejo številne študije (Adams & Kleck, 2003; Bindemann, Burton & Langton, 2008; O'Haire, 2011). S pomočjo modela pristopa/izogibanja (Bindemann, Burton & Langton, 2008) lahko potrdimo, da so čustveni izrazi, kot sta strah in presenečenje, učinkovitejši pri odvračanju pozornosti od obraza, ki izraža čustvo, jeza in sreča pa sta čustvi, ki običajno bolj učinkovito pritegneta pozornost opazovalca. Strah vzbujajoč model nam ne predstavlja resne nevarnosti, zato se raje posvetimo iskanju vira njegovega strahu. Enako velja za modela, ki izraža presenečenje.

Ker so za uspešno procesiranje obraza potrebni kognitivni viri, pri raziskovanju pozornosti potrošnikov ne smemo zanemariti količine teh virov, ki so potrošnikom na voljo. S tem razlogom v študiji predstavljamo učinek kognitivne obremenitve potrošnikov na procesiranje oglasa.

Kognitivna obremenitev potrošnikov v kontekstu oglaševanja

S širjenjem novih medijskih kanalov so potrošniki izpostavljeni veliki količini oglasov, ki se hkrati pojavljajo prek različnih kanalov, prav vsak pa se poteguje za isti vir – pozornost potrošnika. Oblikovan je bil celo nov izraz »ekonomija pozornosti«, po katerem je pozornost vir in je, kot vsi viri, pri človeku na voljo v omejenem obsegu (Crawford, 2015). Procesiranje dražljajev, ki niso pomembni za določeno nalogo, na primer oglaševanje, od potrošnikov zahteva več kognitivnih zmogljivosti (Bardhi, Rohm & Sultan, 2010; Brasel & Gips, 2011), ki jih sicer raje vlagajo v procesiranje dražljajev, pomembnih za nalogo. Da bi ohranili osredotočenost na tisto, kar je zanje pomembno, se potrošniki učijo novih načinov ignoriranja oglasa (Hervet et al., 2011). Iz tega razloga raziskovalci tržnike opozarjajo, naj pri ustvarjanju oglasov upoštevajo kognitivno obremenitev potrošnikov (Paas et al., 2003).

Na sposobnost potrošnika, da se osredotoči na nalogo, hkrati pa ignorira nepomembne dražljaje, vpliva njihova selektivna pozornost (Posner, 1980). Ključno vprašanje je, kako in kdaj se nepomembne informacije izločijo. Proces selektivne pozornosti je odvisen tako od zunanjih lastnosti vizualnega prizora, ki jih za namen te študije imenujemo zunanja

kognitivna obremenitev, kot od notranjih miselnih procesov potrošnika ali notranje kognitivne obremenitve.

Definicijo, ki se zdi najprimernejša za namen pričujoče raziskave, so predstavili Wang et al. (2014), ki kognitivno obremenitev ločijo na: notranjo kognitivno obremenitev, ki se nanaša na obremenitev posameznikovih izvršilnih funkcij, in zunanjo kognitivno obremenitev, ki je opredeljena kot zahteva po vizualni pozornosti, s katero bi razlikovali med ciljnimi in motečimi dražljaji.

Njuna konceptualna podobnost je spodbudila raziskave o njunih učinkih na pozornost (Lavie & De Fockert, 2005). Rezultati kažejo, da je njun učinek na pozornost nasproten. Večja zunanja kognitivna obremenitev pomeni manj procesiranja za nalogo nepomembnih dražljajev (tj. oglasov), večja notranja kognitivna obremenitev pa vodi k več procesiranja za nalogo nepomembnih dražljajev (Lavie, 2005).

Oblikovanje hipotez

V sklopu doktorske disertacije se izvajata študiji, katerih glavna spremenljivka je čas usmerjenosti pozornosti na oglaševani izdelek, merjen v milisekundah (ms). V uvodnem delu so opisani in pojasnjeni dejavniki, ki vplivajo na pozornost. Testirana sta dva ključna dejavnika: vrsta dražljaja, uporabljenega v oglasu, in kognitivna obremenitev, ki jo povzročajo zunanji in notranji dražljaji. Glede na evolucijski pomen zaznave človeškega obraza (Batki et al., 2000) pričakujemo, da bo obraz zaradi svojega pomena v vsakdanjih družbenih interakcijah bolj učinkovito pritegnil pozornost kot oglasi, ki obraza ne prikazujejo. Poleg tega se glede na čustva, ki jih obraz izraža, in smer, v katero gleda model, razlikuje čas, ki ga potrošniki potrebujejo, da oglas ozavestijo. Če izhajamo iz ugotovitev evolucijske psihologije, bi moral torej človeški obraz, ki izraža čustva in/ali v katerem model gleda neposredno v kamero, hitreje pritegniti pozornost kot oglas, v katerem model gleda stran ali izraža čustva, usmerjena v izogibanje (Adams & Kleck, 2005).

Kako torej človeški obraz in njegove lastnosti v oglaševanju vplivajo na pozornost potrošnikov? Glede na evolucijski pomen usmerjanja pozornosti na prisotnost drugega bi moral imeti človeški obraz prednost pred drugimi kategorijami dražljajev. Nekateri avtorji (Hershler & Hochstein, 2005; Harel, 2016; Yzer, Han & Choi, 2018) so v laboratorijskem okolju dokazali, da lahko človeški obraz na nek način stopi iz ozadja in samodejno pritegne pozornost (Tsao & Livingstone, 2008). Tako se prva hipoteza glasi:

H1a: *Oglasi, v katerih je prikazan obraz, bodo učinkoviteje pritegnili pozornost udeležencev (krajši reakcijski čas (RČ)) kot oglasi, ki vsebujejo druge vrste dražljajev za pridobivanje pozornosti.*

Predvideva se, da lahko človeški obraz v izolaciji učinkovito pritegne pozornost, še vedno pa ostaja odprto vprašanje, ali je ta učinek odvisen od nekaterih spremenljivih lastnosti obraza, kot je smer, v katero gleda model, ali čustveni izraz na obrazu. Po sklepanju Švegarja

et al. (2013) ima izražanje sreče na obrazu prednost pri kognitivnem procesiranju, ker signalizira pozitiven učinek. Gre za dragocen mehanizem za oblikovanje in vzdrževanje kooperativnih odnosov. Oseba, ki v naši bližini izraža srečo, lahko pritegne k sodelovanju, zato so ljudje motivirani, da k takšni osebi pristopijo. Po drugi strani pa izražanje strahu in/ali presenečenja – tj. čustev, usmerjenih v izogibanje (Adams & Kleck, 2005), ne pritegne k sodelovanju niti ne predstavlja grožnje, ampak se zaznava kot nevarnost za izraževalca.

Ker se iz evolucijske perspektive opazovalec hitreje odziva na obraz, ki izraža srečo, kot na obraz, ki izraža presenečenje, se naslednja hipoteza glasi:

H1b: *Čustvo, usmerjeno v pristop, bo pritegnilo pozornost udeležencev učinkoviteje (krajši RČ) kot čustvo, usmerjeno v izogibanje.*

Naslednji, morda celo natančnejši način za prepoznavanje posameznikove namere, je smer, v katero gleda. Podobno kot izražanje čustev lahko tudi smer pogleda kategoriziramo kot usmerjeno v pristop (obraz pritegne več pozornosti, ko model gleda neposredno v opazovalca) ali usmerjeno v izogibanje (kjer model gleda drugam in ne v nas). Omenjeni način se je razvil že zelo zgodaj v evoluciji, saj je premik pozornosti proti paru oči, ki v nas zrejo neposredno, mogoče opaziti celo v živalskem svetu (Frischen, Bayliss & Tipper, 2007). Pomen hitrega usmerjanja pozornosti na neposredni pogled je okrepljen z našo sposobnostjo zaznavanja, da nas nekdo gleda, tudi kadar je zunaj fokusa naše pozornosti (Yokoyama et al., 2014). S hitrim usmerjanjem pozornosti na posameznika, ki gleda neposredno v nas, podaljšamo čas, ki ga imamo na voljo za odločitev o našem nadaljnjem ravnanju (boj ali beg). Kadar pa opazujemo model, ki gleda stran, svojo pozornost učinkoviteje preusmerimo z njegovega obraza na točko, proti kateri je usmerjen njegov pogled. Tako se tretja hipoteza glasi:

H1c: *Oglas, v katerem model gleda neposredno v opazovalca, bo učinkoviteje pritegnil njegovo pozornost (krajši RČ) kot oglas, v katerem model gleda stran.*

Ker lahko obraz izkazuje oba predhodno opisana načina vedenja, domnevamo, da bi morala kombinacija pristopov (neposreden pogled in čustvo, usmerjeno v pristop) učinkoviteje pritegniti pozornost na oglas kot posamezni pristopi.

H1d: *Kombinacija neposrednega pogleda in izražanja čustva, usmerjenega v pristop, vodi do najkrajšega RČ.*

Drugo raziskovalno vprašanje, na katerega smo želeli odgovoriti, je, kako prisotnost obraza in njegovih atributov vpliva na vrednotenje oglasov s strani potrošnikov? Za vrednotenje oglaševanja so na voljo različni miselni procesi. Kognitivni procesi vključujejo posvečanje pozornosti določenim vidikom oglasa, razmišljanje o izdelku, predstavljanje, da izdelek imamo ali ga priporočamo itd., čustveni procesi pa vključujejo vrednotenje všečnosti oglasa in izdelka. Ko je pozornost potrošnika enkrat usmerjena na določen oglas, se glede na predhodno raziskovalno vprašanje predvideva, da je kategorija dražljajev, kjer obraz ni

prikazan, še učinkovitejša pri preusmerjanju pozornosti na oglaševani izdelek, vendar se obenem pričakuje, da bo tak oglas ovrednoten manj pozitivno kot oglas, ki prikazuje človeški obraz. Tako zastavimo naslednjo hipotezo:

H2a: *Izdelek, predstavljen ob prikazu človeškega obraza, bo povečal naklonjenost izdelku, okrepil nakupno namero in dosegel boljšo oceno za oglas kot izdelek, predstavljen z drugimi vrstami dražljajev za zbujanje pozornosti.*

Zaradi t. i. čustvene nalezljivosti bi lahko pričakovali, da bo prisotnost pozitivnih čustev vplivala na odnos potrošnikov do oglasa. V bližini srečnega posameznika lahko tudi opazovalec občuti močnejši občutek sreče (Isabella & Vieira, 2020). Čeprav presenečenja ne moremo zlahka kategorizirati kot pozitivno ali negativno čustvo, je zagotovo manj pozitivno kot sreča, zato ga nekateri avtorji opisujejo kot rahlo negativno čustvo (Noordewier & Breugelmans, 2013). Tako se predlaga naslednja hipoteza:

H2b: *Predstavitev izdelka ob človeškem obrazu, ki izraža čustvo, usmerjeno v pristop (sreča), poveča naklonjenost izdelku, okrepi nakupno namero in doseže boljšo oceno oglasa kot predstavitev izdelka ob človeškem obrazu, ki izraža čustvo, usmerjeno v izogibanje (presenečenje).*

Za razliko od čustvenega izražanja smer pogleda opazovalcu ne razkrije trdnosti posameznikove namere, vendar lahko v kombinaciji z določenim čustvom zagotovi vsaj kakšen namig o viru čustvenega izražanja. Tako smer pogleda modela ne bi smela vplivati na odnos do oglasa, saj ne vsebuje nobenih informacij o tem, ali opazovalec izdelek dojema pozitivno ali negativno. Vendar pa bi lahko udeleženec zaradi domnevno krajšega časa, potrebnega za odziv na predstavljeni izdelek, povečal pozitivnost svojega dojemanja izdelka preprosto na podlagi nižje težavnosti naloge.

H2c: *Oglas, ki predstavlja izdelek ob človeškem obrazu, ki ima pogled usmerjen v izdelek, bo povečal naklonjenost izdelku, okrepil nakupno namero in zagotovil boljšo oceno oglasa kot oglas, ki izdelek predstavlja ob človeškem obrazu, ki gleda stran od izdelka ali neposredno v kamero.*

Končna predpostavka je, da kombinacija srečnega obraza in neposrednega pogleda (ki kaže, da bi lahko potrošnik bil vir čustvenega stanja modela) vodi do največjega prenosa čustev, kar lahko posledično izboljša odnos potrošnika tako do oglasa kot do oglaševanega izdelka.

H2d: *Kombinacija neposrednega pogleda in čustev, usmerjenih v pristop, bo povečala naklonjenost izdelku, okrepila nakupno namero in zagotovila boljšo oceno oglasa.*

Zadnji dve vprašanji sta namenjeni ugotavljanju vloge kognitivne obremenitve pri zaznavanju oglasov. Pri tem sta uporabljeni dve različni vrsti kognitivne obremenitve. Proučevanje notranje in zunanje kognitivne obremenitve poveča zunanjo relevantnost raziskave. Na notranjo kognitivno obremenitev potrošnikov vplivamo z dodatnimi

zahtevami, na primer z zahtevo, da si zapomnijo niz številk. Pričakovali bi, da bo to vplivalo na njihov odnos do oglasa, ne pa tudi na pozornost, saj so predhodne študije pokazale, da ima zunanja kognitivna obremenitev močnejši učinek na kognicijo, npr. pomnjenje in priklic (Lavie & De Fockert, 2005), medtem ko je notranja kognitivna obremenitev pogosteje preučevana v povezavi z zaznavanjem oglaševanega izdelka (Drolet & Frances Luce, 2004). Za odgovor na vprašanje, kako kognitivna obremenitev vpliva na razmerje med prisotnostjo obraza v oglasu in pozornostjo potrošnikov na oglas, sta predlagani naslednji dve hipotezi:

H3a: *Notranja kognitivna obremenitev ne vpliva na pozornost (tj. med nizko in visoko stopnjo notranje kognitivne obremenitve ne bo razlike v RČ) ne glede na to, kakšen način za zbujanje pozornosti je uporabljen v oglasu.*

H3b: *Zunanja kognitivna obremenitev pozitivno vpliva na pozornost (tj. čas, potreben za iskanje ciljnega oglasa, bo daljši, ko se bo število motečih oglasov povečalo).*

Na koncu želimo odgovoriti na raziskovalno vprašanje, kako kognitivna obremenitev vpliva na razmerje med prisotnostjo obraza v oglasu in vrednotenjem oglasov s strani potrošnikov. Iz več razlogov je bila proučena samo vloga notranje kognitivne obremenitve pri določanju vrednotenja oglasov. Prvič, predhodne študije so pokazale, da količina notranjih kognitivnih virov, ki so na voljo potrošnikom, vpliva na to, kako globoko procesirajo oglas (Evans & Hoy, 2016). Drugič, menimo, da se oglas procesira v dveh ločenih fazah. Da bi potrošnik lahko zaznal in ovrednotil oglas, ga mora najprej opaziti. Težava pri iskanju oglasa (zunanja kognitivna obremenitev) neposredno vpliva na usmerjenost pozornosti na oglas. Ko je pozornost usmerjena na oglas, se lahko začne druga faza – faza pripisovanja, v kateri udeleženec opazuje in vrednoti vsebino oglasa. Na ta proces vpliva količina kognitivnih virov, ki so na voljo potrošniku. Sklepamo lahko, da bi potrošniki, če imajo na razpolago več kognitivnih virov (nizka obremenitev), več virov namenili vrednotenju tako izdelka kot oglasa, kar daje bolj pozitivno oceno. Nasprotno pa lahko udeleženci, katerih kognitivni viri so obremenjeni z nepomembno nalogo, zaradi povečane težavnosti naloge oglas in izdelek zaznajo kot manj ugodna.

H4a: *Notranja kognitivna obremenitev bo vplivala na vrednotenje oglasa, zaradi česar bodo imeli potrošniki z manj težavno nalogo bolj pozitiven odnos do oglasa.*

H4b: *Notranja kognitivna obremenitev bo imela večji učinek na vrednotenje oglasov, ki prikazujejo dražljaje na človeškem obrazu, kot tistih, ki prikazujejo druge vrste dražljajev za zbujanje pozornosti.*

Metodologija ter rezultati in ugotovitve raziskave

Študija 1 – Vpliv pogleda in čustev na usmerjanje pozornosti in odnos

Cilj prve študije je bil preveriti, ali človeški obraz, prikazan ob izdelku, učinkoviteje pritegne pozornost potrošnikov na oglas kot enak oglas brez prikazovanja obraza. Dodatno so bili analizirani še učinki obraznega izraza in smeri pogleda ter zunanje kognitivne obremenitve.

Rezultati študije potrjujejo učinek prisotnosti človeškega obraza. Pokazali so, da obraz bolj učinkovito pritegne pozornost opazovalca kot puščica ali krog, saj je bil izdelek, predstavljen ob obrazu, zaznan hitreje kot izdelek, predstavljen poleg puščice ali kroga. Pomembno je poudariti, da je bilo udeležencem naročeno, naj se posvetijo izdelku in ne dražljaju, prikazanem ob njem.

V primerjavi z drugimi dražljaji, ki so bili tudi uporabljeni v tej raziskavi, predstavlja človeški obraz veliko bolj zapleten vizualni dražljaj. Medtem ko je edina informacija, ki jo ponuja puščica, smer, v katero kaže, pa lahko človeški obraz prenaša informacije o spolu, starosti, čustvih in interesih modela (smer pogleda). Čeprav sta obe kategoriji dražljajev po svojih lastnostih zbujanja pozornosti primerljivi, lahko obraz v določenih pogojih učinkoviteje pritegne pozornost potrošnikov na oglaševani izdelek. To še posebej velja, če izdelek ne izstopa, ampak je precej podoben drugim izdelkom, ki ga obkrožajo. Poleg tega lahko tržniki s prikazovanjem obraza precej bolj učinkovito zakrijejo oglase drugih in potrošnikom otežijo njihovo iskanje.

Ugotovitev, da lahko človeški obraz vsaj enako učinkovito pritegne pozornost kot drugi dražljaji, na primer puščice, postavlja dodatno vprašanje, ali ima poleg zbujanja pozornosti človeški obraz tudi zapoznel učinek na vedenje potrošnikov.

Študija 2 – Vpliv pogleda in čustev na odnos do oglaševanja

Cilj druge študije je bil preveriti, kako kognitivna obremenitev notranjih procesov potrošnika vpliva na njegovo pozornost na oglaševani izdelek in naknadno vrednotenje oglasa.

Rezultati poglabljajo ugotovitve študije 1. Prikazovanje človeškega obraza v oglasu bolj uspešno usmerja pozornost k oglaševanemu izdelku in krepi pozitiven odnos do oglasa in izdelka. Učinek se lahko še poveča, če model izraža srečo.

Za razliko od zunanje kognitivne obremenitve, ki je vplivala na hitrost usmerjanja pozornosti v zadevni oglas, notranja kognitivna obremenitev ni vplivala na pozornost potrošnika, je pa pomembno vplivala na njegovo vrednotenje oglasa. Če so potrošniku kognitivni viri na voljo, jih lahko vloži v globlje procesiranje oglasa, kar bi lahko vodilo do ugodnejšega odnosa do oglasa in izdelka. Ko pa so kognitivni viri izčrpani, potrošnik oglasa ne procesira na dovolj globoki ravni, da bi lahko oblikoval pozitiven odnos do njega.

Prispevek disertacije

Najpomembnejše rezultate lahko strnemo v dve kategoriji. Prva se nanaša na uporabo obraza v oglaševanju, druga pa na vpliv kognitivne obremenitve na učinkovitost oglasa. Rezultati

nedvoumno kažejo, da lahko človeški obraz, prikazan v oglasu, pozitivno vpliva tako na pozornost potrošnika kot na odnos do samega oglasa.

Zaradi njegovega evolucijskega pomena daje človekov kognitivni sistem človeškemu obrazu prednost pred drugimi kategorijami dražljajev, zaradi česar ga tudi hitreje zazna. Posledično je lahko manj pozornosti namenjene drugim, konkurenčnim oglasom. Najpomembneje pa je, da lahko obraz uporabimo tudi za usmerjanje pozornosti gledalca na določeno mesto v oglasu, kjer je prikazano ključno oglasno sporočilo ali izdelek. Obraz je torej učinkovit mehanizem za povečanje relevantnosti oglasa.

Kadar je relevantnost oglaševanega izdelka bistveno višja od relevantnosti okoliških dražljajev, so druge značilnosti oglasa manj pomembne. To lahko popravimo na več načinov, na primer s spreminjanjem barve izdelka, osvetljenosti, velikosti, usmerjenosti itd. (Wolfe, 2014).

Čustveno izražanje modela (sreča) je znatno povečalo opaznost oglasov, zaradi česar jih potrošnik opazi prej kot oglase z drugačnimi čustvenimi izrazi in drugimi vrstami namigov. Čustveno izražanje je bilo pozitivno povezano tudi z oceno oglasa. Neposredni pogled se ni izkazal za tako močan dražljaj kot čustveno izražanje. Čeprav je bil čas, potreben za odziv na oglaševani izdelek, nekoliko krajši, je bil učinek vseeno precej majhen. Kar zadeva notranjo kognitivno obremenitev, ta za razliko od zunanje ni bila povezana s časom, potrebnim za klik na oglaševani izdelek, imela pa je pomemben vpliv v fazi vrednotenja oglasov, saj so bili oglasi ovrednoteni bolj pozitivno, kadar so imeli potrošniki na voljo več svojih kognitivnih virov (nižja notranja obremenitev).