Zeppelin University

Bachelor Thesis

Investigating Bottom-Up and Top-Down Processes of Visual Attention in a Social Media Context

Evidence from an Eye-Tracking Experiment

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Abstract

Prior research has identified several bottom-up and top-down processes that can influence the distribution of visual attention. Bottom-up effects derive their effects from exogenous dimensions such as the colour, luminosity or salience of the environment. In contrast, top-down effects are endogenous and stem from voluntary shifts in attention. Despite extensive research, the interaction of the opposing processes has not yet been conclusively clarified. Closing this gap, we investigate the interaction of bottom-up and top-down processes of attention in the context of sponsored social media posts. Top-down processes are manipulated through a sponsorship disclosure for social media influencer advertising, while bottom-up processes are activated by a salience manipulation. The work thus simultaneously deals with the concrete questions of attentional changes through disclosures and image manipulation in a realistic Instagram context, and with the theoretical explanation of the interaction of the dichotomy of attention allocation processes. We find no evidence for an effect of a sponsorship disclosure on visual attention, whereas a salience manipulation led to robust and significant results. In the investigation of early attention, no interaction effect between the top-down and bottom-up processes could be found. Conversely, strong interaction effects could be identified concerning the relative visual attention distribution. This suggests that top-down effects have no influence on the attention distribution within the first fixations. In addition, we find indications of significant differences in attention distribution depending on the user's experiences with social networks. Regular social media users show shorter fixations, and focus on non-commercial image elements. Practical implications for policy makers in designing consumer protection mechanisms include the drastic difference in visual attention to the different types of disclosure and the lack of effect of a disclosure for non-prominent product placements. This work contributes to the current state of research by demonstrating strong interaction effects of the dichotomy of attentional allocation processes and by providing evidence that attentional processes do not operate consistently across the observation space of a stimulus. While bottom-up effects already influence early attention, the effects of top-down processes only become visible after the first fixations.

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1 Introduction

1.1 Motivation

More and more of the time consumers spend on the internet is allocated on social networks. With the migration of consumers from linear entertainment products such as television to social media feeds, advertisers must adapt their marketing strategies (Kirchhoff, 2009). In doing so, advertisers are competing for a single valuable resource: attention. Simon coined the term attention economy in 1971. In his economic model, attention is seen as a scarce resource that the consumer wants to allocate efficiently and for which information senders constantly compete (Simon, 1996). In this picture the consumers are the users of the social media platform and the information senders are the advertisers. With the growth of social media networks, the competition for this resource is also intensifying (Lee et al., 2018). For advertisers this leads to the question: Which content has the best chance of attracting attention? The attention that is generated must have a higher monetary value than the costs of the advertisement. Knowing the factors that will determine the monetary success of an advertisement is therefore of utmost importance. From the consumer's point of view, however, it is relevant to know how the stimuli shift attention and what effects a shift of attention has. If not to counteract any unwanted manipulations, consumers have the right and should be able to know when someone is trying to persuade or manipulate them (Cain, 2011). Consequently, the effects of social media marketing have clear implications for consumers. Finally, the shift of attention is relevant for a third agent. Policy makers need to know if and how the effects of social media advertising strategies differ significantly from more known and researched strategies. The necessity to understand the implications of new advertising strategies on social media stems from the fact that policy makers are bound to protect the user from unwanted influences and undue manipulation (Cain, 2011). To that end regulations have already been put into effect in many countries. For example the Federal Trade Comission and the European Comission both instated laws regulating the proper disclosure of advertising content (Federal Trade Comission, 2015; Council of European Union, 2018). While much research on the ef-

fectivness of disclosures has been published in recent years (for a review see Boerman and van Reijmersdal, 2016) many authors have called for more research on the exact effects and boundary conditions of disclosures (For example: De Jans et al., 2018; Boerman, 2020). The relevance of the question as to which image manipulations generate a shift of attention in a social media context among consumers is thus motivated from the perspective of consumers, advertisers and regulators.

New social media platforms are built around visual content. This implies that the majority of the content produced consists of images and videos. Therefore, the advantages of creating image-based advertisements are apparent. Liu et al. emphasised that image-based analysis will become more important than text-based analysis in the future as it promises to encode a higher density of information than text (Liu et al., 2020). This implies, that the analysis of changes in attention is of great importance especially with such visual stimuli which contain a higher information density (Hartmann et al., 2019).

As more and more brands move away from traditional marketing strategies and look for alternatives that go along with the consumers' media usage behaviour, they increasingly strive for cooperations with influencers. Social media influencers are people who have managed to build a sizeable social network (De Veirman et al., 2017). Cooperations with influencers seem to be especially lucrative for brands as it causes significantly stronger effects on the consumer due to perceived higher authenticity and credibility of the message which leads to less resistance against the advertising content (De Vries et al., 2012). In the work presented we will examine the determinants of attentional shifts in a social media context. To this end, an experiment was designed using the social media site Instagram for multiple reasons. Instagram is a primarily image-based social media platform that enables users to connect with different brands and facilitates social interaction between users and brands alike (Blight et al., 2017). The primary reason to employ Instagram is that it is one of the largest social media sites in the world, having more than one billion active monthly users, and therefore is intuitively understandablle for a large part of the population (Hartmann et al., 2019).

Furthermore, Instagram is the largest mainly image-based social media site. It stands in clear contrast to social media sites like Whatsapp where text content plays a much greater role. Importantly, Instagram is also the center for influencer marketing, which will be the focus of this work (Mediakix, 2019). Lastly, Instagram introduced a standardised disclosure of commercial partnerships in 2017. Since then a disclosure is placed above the picture which reads: "Paid Partnership with [Brand]". This disclosure is well understood and well known by Instagram users (Boerman, 2020).

It is questionable to what extent image manipulations can trigger changes in the visual attention of the user. Image manipulations cause an increase or decrease in the exogenous factors influencing the distribution of attention of observers. The reactions this elicits in the viewer are called bottom-up processes. It is unclear how these so-called bottom-up processes interact with other goals of the observer. In the literature goal driven processes such as the voluntary decision to ignore advertising are called top-down processes. The interaction of both directions of processes is relevant because if bottom-up processes could completely override top-down processes, social media consumers would no longer be able to respond appropriately to advertising. Their goal to ignore advertising or protect themselves from unwanted manipulation becomes unachievable as they would be solely controlled by the physical properties of the image. Similarly, if bottom-up processes would become unimportant in the presence of strong top-down processes, image manipulation would become moot. Any insights into the interaction of top-down and bottom-up effects are therefore of relevance for consumers, but also for advertisers, influencers and policy makers.

1.2 Research Questions

Thus, we are now able to state the research questions of the thesis.

1. What effect does a disclosure have on the distribution of attention?
2. What effect does an increase in the conspicuity of a promoted product have on the distribution of attention?
3. Do the effects of a disclosure and an increased conspicuity of a promoted product interact?

In order to clarify these questions, we will structure the following work as follows.

1.3 Structure

First, we will provide a theoretical background for the concepts necessary to answer our research questions and present the current state of research. We will begin by focusing on the environmental conditions of social media, namely the visual ecology of Instagram, and how the environment differs from more traditional avenues of advertising. After explaining the dichotomy of processes which influence attention in detail we will proceed by summarising their interactions. Next, the effects and the necessity of a disclosure will be derived from theory and compared with current empirical results. Having provided a theoretical foundation for all important concepts of this thesis, we will then be able to derive our research hypotheses. Subsequently, the experiment will be explained and the results of the hypotheses tests presented. Some further results, regarding brand memory and learning effects will be listed and discussed. Both practical and theoretical implications will be made available in the last section.

2 Theoretical Background

2.1 Visual Ecology of Social Media

An increasing amount of social and economic interactions are shifting to the internet. Social media sites are gaining in importance, as 3.96 billion people now use them (Clement, 2020). Before we demonstrate our theoretical deductions, we will begin to define the term "Visual Ecology of Social Media". Neil Postman defined media ecology as the matter of how media of communication affects human interaction and perception (Postman & Eurich, 1970). The term Media Ecology has become a widely accepted concept since the 1980s. As a second element of our definition we define what "visual ecology" is. The term comes from biology and describes how visual systems work to meet the ecological needs of animals and how these animals have adapted and specialized (Cronin et al., 2014, page 2). The concept of visual ecology has already been established by Orquin et al. in a decision making context in consumer research. They define visual ecology as the type and structure of the visual features humans and animals respond to (Orquin et al., 2020). They note that a major distinction between the visual ecology of animals and humans is that humans live in a visual environment which has been designed by others to garner (or distract) their attention. It therefore is a product of the culture that they live in (Orquin et al., 2020). By extending this definition to a social media context we can state that the visual ecology of social media is defined as the matter of how specific social media platforms have adapted to the visual needs of their consumers and that consumers are steered by the platform and their behaviour adapts to it. Indeed, there is convincing evidence that users of social media sites alter their behaviour and the content they produce to the visual characteristics of the social media platform (Duffy et al., 2017). There is evidence and testimony to suggest that social media platforms design features to actively try to control and direct the attention of their users in the pursuit to increase their engagement with other users, brands, advertisement or simply to keep them on the site (Singer, 2015). It is therefore important to explore how the visual ecology of social media platforms changes the attention distribution of users in an advertising context.

2.2 Influencer Marketing

Influencer marketing refers to the non traditional channel of marketing where advertisers and brands engage in commercial partnerships with social media influencers to promote branded content to both the influencers and the brands target consumers (Lou & Yuan, 2019). Social media influencers are people who have managed to build a sizeable social network (De Veirman et al., 2017). In the last decades influencer marketing assumed an ever larger portion of the advertising expenditures in the internet. Influencer marketing expenditures have been projected to grow rapidly as more and more firms expand their influencer marketing budgets and new firms enter the market (Mediakix, 2019). This increase in the expenditure for such alternative marketing strategies is due to the fact that the media consumption of the customers shifts ever further into the internet, where advertisements such as banners receive less and less attention (Cho, 2004), causing companies to search for alternative channels to reach their audience.

The key characteristic of influencer advertisement is that they are effective in spreading messages about new products, starting and popularizing new trends and driving up sales (Jin et al., 2019). All types of native advertisement are characterised by the fact that they are integrated into their digital environment. The content can easily be embedded as it is "supposedly interesting, relevant and engaging enough to be proposed as editorial content" (Matteo & Dal Zotto, 2015, page 76). Another objective of non-brand generated advertising strategies is to only minimally disrupt the user experience (C. Campbell & Marks, 2015). Because it is put in the same context as other content, it becomes more difficult to distinguish between advertising and normal editorial content. A number of studies have shown that users may not be able to differentiate with much confidence or accuracy between content with a commercial or without a commercial interest when no clear disclosure of such an interest is provided (Boerman et al., 2017). Therefore, the persuasive intent of the paid cooperation can be disguised and misinterpreted as an unbiased message of the medium itself and not as a persuasion attempt of the sponsor (Bhatnagar et al., 2004). Hereby the ability of consumers to react appropriately to the persuasion attempt of the advertisers is hindered. The concern is that advertisers may be enabled to

disguise the true source of the information, to disguise the true intention of the source or to device by omission of relevant facts (Cain, 2011).

2.3 Eye-Mind Hypothesis

The aim of this study is to understand the change in attention stemming from both exogenous (bottom-up) and endogenous (top-down) stimuli. Before we can deduce how attention distribution occurs, we must first define the concepts of attention, bottom-up processes and top-down processes. Orquin and Müller-Loose define attention as "selectivity in perception" (Orquin & Loose, 2013). But because attention is merely a psychological construct it cannot be observed directly (Meißner & Oll, 2019). Therefore a different variable must be measured which in turn predicts attention. The methodology of this thesis rests on the Eye-Mind Hypothesis which was put forth by Just and Carpenter in their work on reading comprehension in 1976. They state that "there is no appreciable lag between what is being fixated and what is being processed" (Just & Carpenter, 1976, page 331). This implies that there is a causal relationship, or at least a strong correlation, between where one is looking and what one is processing. If a person fixates something she will also process it (Anderson et al., 2004). Therefore a fixation can be interpreted as a person paying active attention. While some limitations to this hypothesis have been published over the years (for example: Reichle and Reingold, 2013; Underwood and Everatt, 1992; Anderson et al., 2004) the statement has largely stood uncontested since it was first proposed and many studies have shown strong correlations between eye movements and visual attention (Deubel, Schneider, et al., 1996; Hoffman and Subramaniam, 1995; Kowler et al., 1995).

2.4 Determinants of Visual Attention

Fixations as Attention To define attention in terms of fixations we first need to understand what a fixation is. Visual perceptions in humans are classified in three distinct types (foveal, parafoveal and peripheral) of vision (Kapitaniak et al., 2015). The potential for information gathering is highest

where the eye possesses the most sensory neurons. Not suprisingly, this information intake is maximised in the center of the eye, which translates to the foveal vision. From there on out the density of sensory neurons decreases towards the outer parts of the field of vision. Therefore much less information can be gathered via parafoveal or peripheral vision (Kapitaniak et al., 2015). Thus, to maximise the amount of information that an observer can extract from a given stimulus she has to move her eyes towards that stimulus which corresponds to the foveal region. A fixation is then a relatively stable positioning of the eye within the foveal vision (Meißner & Oll, 2019). The eye is never completely still, it always moves a little bit. These tremors of the eye are called nystagmus. The exact function of this tremor remains unclear although the most widespread belief is that eye tremor can improve the ability to absorb information through continuous new stimulation of the sensory neurons and help to stabilize the retinal image (Cohen et al., 1977). Only when the gaze direction is relatively stable and within the foveal region the observer is able to efficiently extract information. The length of fixation normally falls into the range of 200ms to 300ms (Rayner, 1998). In contrast, a saccade is a rapid eye movement occuring between two fixations. The eye can move at a velocity of up to 500 degrees per second which is the fastest movement the human body is capable of (Rayner, 1998). No information is gathered within a saccade. A phenomenom that was coined as saccadic suppression (Matin, 1974).

To interpret fixations as attention one needs to operationalise these concepts into quantitative variables. Early attention can be operationalised as the time to first fixation within the Area of Interest (AOI) and relative attention as the relative accumulated duration of all fixations to the AOI relative to all other fixations on the image. In line with previous research we will investigate the effects of disclosures and saliency on both the effects on time to first fixation and relative accumulated fixation duration, as both measures have frequently been applied in previous research (Meißner & Oll, 2019). Other variables that could be used to measure psychological concepts of visual attention include but are not limited to the dilation of the pupil of the observer and the frequency of eye blinks (Meißner & Oll, 2019). Both

indicate the extent to which the oberserver is processing the information gathered in the current fixation. The exact operationalisation of all variables that are used in this thesis will be described in section 4.3.

Before a framework of attention can be presented, the mechanisms that influence an observer to distribute her attention in a certain way must be defined. In the literature, a distinction is made between two directions of processes. Those that influence attention that are derived from the physical properties of the image, processes which are thus exogenous and those that are derived from the state of mind, the intentions and goals, namely endogenous properties of the observer.

2.4.1 Bottom-Up Processes

We will start by defining the bottom-up processes. At its core, processes are called bottom-up when they derive from the physical properties of the environment and automatically and rapidly affect the observer. The processes steer the observer by focusing her attention on regions of the image/environment that are independent of her goals (Theeuwes, 2010). Bottom-up processes are usually operationalised by salience. Regions are salient, also called conspicuous, when they differ significantly from their environment by one or a combination of several dimensions. Examples of dimensions that influence the observer in such a way are colour, edge orientation, luminance, or motion direction (Itti et al., 1998). More recently Orquin and Müller-Loose listed saliency, surface size, visual clutter and the positioning of the object as examples (Orquin & Loose, 2013).

We encounter bottom-up processes in our everyday life. An example of a bottom-up process is the involuntary fixation of attention on a wearer of a red cap in the background of a soccer game. Even if the spectator has entered the stadium with the intention to watch the game attentively, this red cap is so significantly different from the people around her that it attracts her attention.

2.4.2 Top-Down Processes

The bottom-up processes are contrasted by the top-down processes. It should seem obvious that an observer is not fully driven by the salience of the individual regions of an environment. People are able to consciously and intentionally direct their attention to pursue certain goals and purposes. An example is the routine search for the car keys before leaving to work. Based on experience, we can assign probabilities to individual regions of the house that we have misplaced the key there. The probability that the key is on the very salient new refrigerator is much lower than that it is behind the non-salient chest of drawers where it would more reasonable to place a key. A number of top-down processes have already been identified in previous studies. For example, goals, task instruction, preferences and mood are considered to be factors that can activate top-down processes (Orquin & Loose, 2013). In summary, bottom-up processes can be characterised as exogenous, automatic, reflexive, or peripherally cued as processes are independent of the observer (Egeth & Yantis, 1997). In contrast top-down processes are voluntary, slow, endogenous and centrally cued (Pinto et al., 2013). In the next part we will summarise models of attention based on this dichotomy.

Previous research has identified a wide range of top-down factors that influence attention such as goals, task instructions, preferences, decision style, cognitive load, involvement, task complexity and mood

2.5 Framework of Attention

Models of attention are all based on the assumption that a complete perception of the environment is impossible. Estimates of how much information is absorbed by the eye vary between studies but tend to be in the order of $10^7 \frac{Bits}{second}$ (Koch et al., 2006), a quantity that the human brain cannot possibly process. In experimental contexts the information intake capacity of the human visual system has been experimentally estimated in the range of a single digit amount of bits per second (Rayner, 1998). Not only in computer science, a situation where one component of a complex system is unable to process information sufficiently fast is figuratively called a bot-

tleneck. The concept is applicable to many fields of study. For example Henry Ford applied the concept to the maximum output of a workstation which will constrain the total output of a factory (Mukherjee & Chatterjee, 2007). The models of attention which will be illustrated in the following review all deal with the question of how the human brain is able to bridge this bottleneck and thus enable it to process this vast amount of information effectively.

2.5.1 Visual Saliency Hypothesis

The initial model is called the Visual Saliency Hypothesis and originates from the Feature Integration theory formulated by Treisman in 1980 (Treisman and Gelade, 1980; Itti et al., 1998; Van Gompel, 2007). Fixation sites of viewers are determined by bottom-up features of the image. Bottom-up features of an image are also called stimulus-driven or exogenous and represent inherent features of the image which are not influenced by outside parameters (Egeth & Yantis, 1997). Thus, fixation sites are controlled exclusively by the properties of the image. The viewer reacts to exogenous cues.

2.5.2 Interaction of Bottom-Up and Top-Down Processes

However, there is no empirical evidence for a pure bottom-up control of attention. Already in the 1960s it was demonstrated that top-down processes have an effect on attention. Yarbus showed experimentally in 1967 that the task assigned to participants of an experiment leads to strong shifts in attention (Yarbus, 1967). Studies even found indications that top-down processes are exclusively responsible for the shift in the field of vision. For example, Hayhoe et al. discovered in a study on change blindness that the visual system only takes in information that is relevant to the task at hand (Hayhoe, 2000). Change blindness describes the phenomenon that people who are given a task in which they have to focus on specific features of an image do not notice obvious changes in said image (Jensen et al., 2011). Other examples of evidence for the importance of top-down effects include the detection of traffic signs in a driving simulator, where the detection was moderated by the context and the goals of the observer and not merely visual char-

acteristics of the scene (Shinoda et al., 2001). Similarly, Parkhurst found evidence to suggest that bottom-up features dominate the process of visual attention in early viewing but their importance fades over time as top-down processes become more important (Parkhurst et al., 2002). Further, there is evidence that top-down processes are more important in the distribution of attention than bottom-up processes. Orquin and Lagerkvist found that top-down processes have 1.5 times stronger effects than bottom-up effects or that top-down effects are responsible for 2/3 of the attention distribution (Orquin and Lagerkvist, 2015; Wedel and Pieters, 2006). A final example of the influence of top-down effects is the evidence found for behavioural changes through expertise. In experiments on reading, it was shown that experts had shorter fixation durations, and fewer repeated fixations (Ashby et al., 2005), an indicator that attention was not exclusively driven by the exogenous factors of the text. This observation is of great relevance in a social media context as users who often use social media become experts in the visual ecology of the site and should therefore show similar, strong learning effects.
Top-down processes of attention stem from the prior knowledge of the observer. This prior knowledge leads to a shift in the focus of attention which enables the observer to only look at information that is presumed to be relevant for the task at hand. Thus, the amount of information that is processed is reduced by a prior selection (Buschman & Miller, 2007). Even though there is ample evidence that top-down and bottom-up effects interact in some way, the process by which they interact has not been finally clarified.

The best-known model that describes the interaction of bottom-up and top-down processes is the "Guided Search Model" first described by Jeremy Wolfe in 1989. The Guided Search Model is based on feature maps that are calculated for individual bottom-up processes, just like in Feature Integration Theory. At the same time, the intentions of the observer are taken into account. Experimentally, he found strong evidence for his theory that the spotlight of attention is controlled by preattentive mechanisms. Preattentive mechanisms are top-down processes, i.e. prior knowledge or attitudes that lead the observer to make certain assumptions even before beginning to

examine the environment in detail (J. M. Wolfe, 1994). The set of all items that can be seen on the image is then divided into candidate and distraction targets by this top-down process. Candidate-items have features which have been identified as relevant to the target. This implies that there is a parallel process which operates on the entire environment but is only able to extract a limited amount of information. The information from the parallel process is then used to restrict a serial process, meaning that only one region at a time is examined, to maximise the efficiency of the entire system. What was called a saliency map in the previous section is now called a guidance map or an activation map which is the noisy, weighted sum of top-down and bottom-up components (J. M. Wolfe, 1994). The information is then examined serially by looking at the most conspicuous item until the target is found. This constitutes the serial processor, in contrast to the previously discussed parallel processor.

Wolfe himself stated that the Guided Search Model does not have to be independent of the Feature Integration Theory, i.e. the Visual Saliency Hypothesis. He points out that the two theories are only compatible if not merely physical properties (exogenous, bottom-up processes) are included in the saliency map but also top-down processes (J. Wolfe et al., 1989). In a series of experiments, the representatives of the Guided Search theory found that preattentive mechanisms, i.e. top-down processes, lead to different bottom-up channels being weighted more heavily (J. M. Wolfe et al., 1992). For example, if a participant in an experiment has to find a red, vertically rotated pen in a set of coloured, randomly oriented pens, the channel for red and the channel for vertical orientation will be weighted more heavily. As a result, regions with red but not vertical pens and vertical but not red pens will be weighted more heavily. But the subjects activation map will peak in the region where the combination of both features is present (J. M. Wolfe, 1994).

The guided search model has since then been updated many times. In 1997 Wolfe published the Guided Search Model 2.0 which refined many aspects of the information processing of the parallel process introduced in his first publication and added an account of the termination decision in a search task absent of features. The Guided Search Model 3.0 incorporated

a new feature to account for the central bias of human visual attention (J. M. Wolfe & Gancarz, 1997). The Guided Search Model 4.0 tackles the problem of eliminating the need for memory in serial processing (J. M. Wolfe, 2001). Nevertheless, the authors concede that the Guided Search Model is not yet a comprehensive explanation of human attention and will need some further upgrading (J. M. Wolfe et al., 1989, pages 99-155). While the question how the two processes interact in a two-feature framework of attention recent evidence points to a mechanism where top-down processes direct the observer to a relevant region wherein the exact focus of attention is determined by a bottom-up winner-takes-all algorithm (Theeuwes, 2010).

2.5.3 Bottom-up and Top-down processes over time

Although it is generally agreed that top-down and bottom-up processes both influence attention, this is not entirely unchallenged. In a series of experiments in the 1990s Theuwees showed that top-down processes may not have had any influence on the distribution of early attention (Theeuwes, 1991; Theeuwes, 1992; Theeuwes, 1994; Theeuwes et al., 2000). The experiments proceeded as follows. Subjects were asked to identify an item that had a different shape than the other items in the picture. As a distraction, an superfluous item was added that differed only by bottom-up factors such as colour but not by shape. Subjects confronted with this additional distraction item needed significantly more time to identify the correct item. Theuwees explains this by stating that at the beginning of the attention distribution top-down processes do not play any role thus implying that the first fixations are determined purely by bottom-up processes steered by the salience of the distraction item (Theeuwes, 2010). This link has also been experimentally documented by other authors (see for example: Caputo and Guerra, 1998; Joseph and Optican, 1996). This view is also shared by other authors, such as Itti & Koch who said about their bottom-up driven model of attention, that it may only be able to accurately predict the observer's fixations within the first few hundred milliseconds after the presentation of a new scene (Itti & Koch, 2001).

2.6 Computational Models of Attention

Since the mid 1980s, various statistical models have been developed to predict fixations and thus to emulate the presumed behaviour (Itti & Koch, 2000). These models are insightful in two ways. On the one hand, these models allow us to calculate the saliency of individual regions and thus make predictions about the relevance of the regions. We will employ such a model for this exact reasoning later on. Possible deviations from the prediction can then be investigated. On the other hand, these models provide insight into the functioning of human attention by formalizing the processes and making them testable.

In these computational models, different properties of the image are extracted and weighted. From the two-dimensional image features such as: orientation of edges, colour, disparity and direction of movement are extracted into new individual matrices which can be thought of as many new two-dimensional matrices (Maunsell & Vaina, 1987, page 119). The algorithm then performs center-surround operations on each of the extracted images which determines the relative conspicuity of each region. The center-surround operations ensure that the magnitude of the effects are determined by the differences between a region and its surroundings. They are simple convolutions which transform the image by weighting neighboring pixels by a kernel and taking the sum (Kavukcuoglu et al., 2010). These different properties are then weighted via a linear combination and give each pixel a salience value. The linear combination which results from adding all individual maps, each corresponding to one aspect of the image, with constant weights is called a saliency map (Duchowski & Duchowski, 2017, page 231). The assumption of constant and equal weights has long been criticised. Experiments have already been conducted to determine the weights of the individual image properties by means of supervised learning (Itti et al., 1996). A winner-takes-all algorithm is then used to determine the next fixation location. The winner-takes-all algorithm ensures that of all the regions competing for attention the most salient one is fixated first. After the most salient feature has been fixated an inhibition-of-return algorithm reduces its salience which leads to a new global maximum on the saliency map and thus a new fixation (Itti & Koch, 2001). While these models are

based solely on exogenous features of the image there is research on the implementation of top-down features into computational models of attention. These models weigh task relevant regions higher than non relevant regions by biasing the visual attention system with the previously learned features that distiguish the relevant regions (Navalpakkam and Itti, 2005; Sprague et al., 2007). With this algorithm top-down processes can be emulated in a similar way to bottom-up features.

2.7 Disclosure

A modeling of the behaviour of people when confronted by a persuasion attempt was designed in 1994 by Friestad and Wright in the form of the Persuasion Knowledge Model. In this model, two agents face each other, one of whom wants to convince the other of his or her point. After the first agent has initiated a persuasion attempt, the second agent will adopt a coping behaviour based on either her experience in the topic, the opposing agent or her persuasion knowledge. Here persuasion knowledge represents the ability to notice an attempt to persuade, to interpret it and to react to it with an appropriate coping strategy. Thus increasing persuasion knowledge leads to an improved ability to resist persuasion attempts (Friestad & Wright, 1994). As coping can only take place when the agent realises that there has been a persuasion attempt (i.e. in form of advertisement), being able to differentiate between a persuasion and other communication is considered the first level of persuasion knowledge (Rozendaal et al., 2011). Therefore, consumers can react appropriately to a persuasion attempt of a brand (i.e. advertising) if they recognise it as such. This may explain why consumers tend to disbelieve advertising claims, dislike advertising itself, and generally try to avoid the messages (Rotfeld, 2008).

To ensure that consumers are able to recognise commercial partnerships in a social media context and therefore activate their persuasion knowledge to react appropriately, it must be ensured that paid partnerships are clearly marked, as consumers have the right to know when they are being subjected to advertising (Cain, 2011). This has led both the Federal Trade Commission of the United States of America (FTC) and the European Commission

to adopt regulations that necessitate a clear disclosure of any advertising content (Federal Trade Comission, 2015; Council of European Union, 2018, Article 10 1c; IAB Europe, 2016). To that end disclosures are, in contrast to native or covert advertisement, not integrated into the program and thus explicit (Dens et al., 2018). Because of this direct and explicit nature of the sponsorship disclosure the observer has ample opportunity to process the message as it stands in stark contrast with the rest of the editorial content or program (d'Astous & Seguin, 1999).

3 Derivation of the Research Hypotheses

In this section we will consolidate the existing theoretical findings by formulating our hypotheses.

3.1 The Effect of Disclosures on Attention

The question of how disclosures alter the level of attention paid to a product placement has not been conclusively clarified. Therefore, we will first explain the theoretical rationale for diametrically opposed effects and then present studies from the literature to corroborate both arguments.

Higher Levels of Attention: Disclosure of sponsorship when viewing an advertisement will result in more information about the environment being available to the observer. The observer knows that there is a product placement in the picture. Hence, the disclosure represents an alert or a prime (Matthes & Naderer, 2016). A prime is a stimulus that activates a certain category in the mind of the observer. The person that is being primed may be unaware of the prime itself or of the influence that the prime will have on her behaviour (Fransen & Fennis, 2014). Since the prime activates a category in the memory of the observer, the probability that later signals are evaluated with this activated category in mind increases (Herr, 1986). This translates to the observer activating a top-down or goal driven processes that can simplify the systematic processing of the image (Guo et al., 2018; Balasubramanian et al., 2006) increasing the relative salience of the product placement. More precisely, the prime is a bottom-up process that is implicitly processed and subsequently causes a top-down process that may result in a shift of attention (Folk & Remington, 2008). The observer of the image to whom the disclosure is available will not base the allocation of her visual attention only on bottom-up processes, given that no other goal driven processes are present while completing the task. She will therefore not be steered exclusively by exogenous, physical properties of the image. In summary, the prime of the disclosure activates a top-down process, which increases the conspicuity of the product placement for the observer and thus

leads to more allocation of attention onto the promoted product (Guo et al., 2018). In addition, since the conspicuity of each region entirely determines the fixation sequence, the product placement should be viewed not only longer but also faster. However, this argumentation assumes that the viewer of the image is actively pushed to search for the product by the top-down process. This is based on the assumption that the viewer has an interest in finding and identifying the product placement.

Lower Levels of Attention: In contrast, a disclosure can theoretically also produce the opposite effect. Laran et. al. showed that under certain circumstances primes can turn in the opposite direction if consumers or observers perceive the prime as a marketing tactic, i.e. as an attempt to persuade (Laran et al., 2011). In this case all expected effects of the prime will be reversed because the consumer subconsciously (over-)corrects as a reaction to the persuasion attempt. This kind of reaction to a persuasion attempt is one of the coping strategies in Friestad's Persuasion Knowledge Model (Friestad & Wright, 1994). The agent avoids the persuasion actively. This phenomenon is described as reverse priming (Laran et al., 2011). The prime will not have the intended influence but rather will lead the observer to adopt the unconscious goal of resisting the product placement (i.e. resistance to the persuasion attempt) which will decrease the visual attention allocated onto the product (Fransen & Fennis, 2014).

We will now proceed to review the empirical results collected from the literature on the relationship between a sponsorship disclosure and attention distribution. The first studies that tried to answer the question whether disclosure increases attention to product placement were conducted with a proxy for attention. It was assumed that brand memory is a sufficiently good instrumental variable. The stronger the brand memory, the more the product placement was perceived and processed by the observer (Tessitore and Geuens, 2013; M. C. Campbell et al., 2013; Boerman, 2020; Pieters et al., 2002). Therefore, it is assumed that if a disclosure before the video or image sequence increases brand memory, more attention has been paid

to the product placement itself. Several studies based on this methodological assumption were found in the literature review. Despite the wealth of previous research, no clear conclusion can be drawn. For example, Boerman, Dens, De Pelsmacker & Verhellen, Tessitore & Geuens and Reijmersdal showed that a disclosure can significantly increase recognition while Chan, Lowe & Petrovici observed an insignificant negative relationship and Tewksbury, Jensen & Coe and were unable to demonstrate clear effects with similar designs (Van Reijmersdal et al., 2015Tessitore and Geuens, 2013M. C. Campbell et al., 2013 Van Reijmersdal, 2011; Dens et al., 2018; Kim et al., 2001; Chan et al., 2016; Tewksbury et al., 2011; Boerman et al., 2015). Cameron and Curtin showed a significant negative marginal effect of a disclosure on brand recognition. Readers of a particular newspaper were less likely to remember the contents of an advertisement if the advertisement was labelled as such (Cameron & Curtin, 1995). Campbell, Mohr and Verlegh similarly found a significant negative effect of a disclosure on brand recognition, operationalised as top of mind awareness (M. C. Campbell et al., 2013). Meanwhile a study by Uribe and Fuentes-Garcia found a positive effect of a disclosure on top of mind awareness (Uribe & Fuentes-Garcıa, 2020). When measuring top of mind awareness, participants are asked to list all brands they can recognise. The first brand listed is coded as 1 and all other brands are disregarded. The measurement thus gives a value for the placement of the brand within the list of brands that are remembered (Romaniuk & Sharp, 2004).

Although brand memory and brand recognition have been established as a proxy for attention in the literature, attention can also be operationalised as fixations and measured explicitly with the help of an eye tracker. The focus of attention of the observer is tracked and the exact coordinates of each fixation are stored. With the help of this information the attention to an Area of Interest (AOI) can be measured exactly. The AOI is in this case a product placement. This method for investigating the effect of a single disclosure on attention has also been performed several times. Although the measurement method is capable of measuring attention more precisely which translates to an increase in the validity of the results, no clearer picture emerges. Guo et al. and Smink, van Reijmersdal & Boermann

found significant positive effects of a disclosure on the attention given to the product placement, while Boermann and Spielvogel could not replicate this effect (Smink et al., 2017; Guo et al., 2018; Boerman et al., 2015; Spielvogel et al., 2020).

Using the visual media ecology definition that we initially introduced, it can be stated that as consumers adapt to the medium and the visual characteristics of the medium (Postman & Eurich, 1970), the effects of a standardised disclosure in the social media context can be more readily emulated by a repeated disclosure experiment. In a social media context, a user is exposed to a variety of influencer posts and other native advertising content during a social media session. Therefore, users may become accustomed to the visual characteristics of these stimuli. This could alter the response to the disclosure. Hence, the experimental design and results of studies that employ repeated disclosures are of great importance for the purpose of this study. Repeated exposure to a disclosure significantly reduced the visual attention to product placement in a study by Spielvogel et al. (Spielvogel et al., 2020). In this study Spielvogel et al. presented a movie segment with three conditions related to the disclosure. In the control group no disclosure was shown. The multiple disclosure condition displayed the disclosure three times, once at the beginning of the segment, once in the middle and once after the show had finished. The single disclosure condition displayed the disclosure merely once. In a study by Uribe and Fuentes-Garcia, children were also repeatedly shown disclosures. There was a positive effect of a disclosure on brand recognition but no difference between the single and multiple disclosure condition (Uribe & Fuentes-Garcıa, 2020). This contradiction to the study of Spielvogel et al. can potentially be clarified by the limitations listed in the study. Uribe's study was carried out in Chile where disclosures are not yet uniformly implemented. Therefore, the authors speak of a "novelty effect" that could change the effects of the stimulus. Furthermore, Uribe's disclosure was not a standardised disclosure due to the lack there of in Chile (Uribe & Fuentes-Garcıa, 2020). Spielvogel et al. standardised their disclosure with the common Austria's public broadcasting disclosure (Spielvogel et al., 2020). Hence, the repeated disclosure effect based on habituation could vary among both studies. In a meta study on the effects of sponsor-

ship disclosures published in 2020, Eisend concluded that no unambiguous effect can be identified (Eisend, 2020). In summary, no clear direction of the effect can be derived from the current state of research. The cited studies will be summarised in table 1.

Table 1: Literature Review of Disclosure Effects

	Author	Year	Context	Attentionmeasure	Effect
1	Dens et al.	2017	Television show & Real campaigns	Brand Recall	+
2	Chan et al.	2016	Movie segment	Depth of Processing	ns.
3	Campbell et al.	2012	Television show	Brand Recall	-
4	Cameron & Curtin	1995	Newspaper advertisments	Brand Recall & Brand Recognition	-
5	Spielvogel et al.	2020	Movie Single Disclosure	Standardised Dwell Time	ns.
6	Spielvogel et al.	2020	Movie Repeated Disclosure	Standardised Dwell Time	-
7	Guo et al.	2018	Movie segment	Fixation Time	+
8	Smink et al.	2017	Television show segment	Fixation Time	+
9	Boermann et al.	2015	Television show segment	Fixation Time	ns.
10	Kim et al.	2001	Advertorial	Self-Reported Attention & Recall	ns.
11	Tewksbury et al.	2011	News Story	Brand Recall	ns.
12	Tessitore & Geuens	2013	Movie Segment	Brand Recall	+
13	Van Reijmersdal et al.	2015	Advergames	Brand Recall	+
14	Boermann et al.	2012	Television show segment	Brand Recall	+

3.2 The Effect of Salience on Attention

In a marketing context salience is defined as "the extent to which the appearance of the brand possesses characteristics designed to make it the central focus of audience attention" (Gupta & Lord, 1998, page 48). As discussed in section 2.4.1 salience increases attention through bottom-up processes. Exogenous factors control the attention of the observer in such a way that the most salient region in an environment is looked at first. Regions are salient if they differ significantly from their surroundings. Although the literature on a framework of attention provides different approaches to weighting bottom-up and top-down factors, bottom-up processes are nevertheless of great importance in all models. Thus, it can be assumed that more salient regions receive more attention, regardless of the theoretic assumptions (Itti and Koch, 2000; J. M. Wolfe, 1994).

In the literature there are many examples of increased attention through salience manipulation. For example, in 1997 Lohse showed that larger and more colourful advertisements in print media received significantly more attention (Lohse, 1997). Similarly Bialkova and van Trijps showed that salient product attributes attracted increased attention (Bialkova & van Trijp, 2010). Using a vote count procedure, Smit and Boerman aggregated various studies on the characteristics of advertising in magazines. They found overwhelming evidence for a positive effect on attention of a number of different saliency based measures such as ad- size, colour and position (Smit et al., 2015). While these studies were conducted in a non-technological context, the results were also consistent in an internet-/social media- based context. Simola et al. showed that animated and salient graphs led to a greater shift in attention than monotone or static graphs (Simola et al., 2011). Peng showed that the more conspicuous a politician's face appears on a Instagram post, the more engagement it attracts (Peng, 2020).

In summary, the theory and the empirical literature are unanimous in their conclusion that more salient regions of an image will experience more attention. In addition, salient features will be attended faster, since the visual processing of an image is serially based on the amount of salience assigned. Therefore the most salient regions sites on the image will be visited first which means that there will be a faster time to first fixation within the

salient AOI (Itti et al., 1998).

3.3 Interaction of Saliency and Disclosure on Attention

The need to investigate the interaction effect of a disclosure and the salience of a product placement arises from the fact that the boundary conditions (i.e. salience, frequency, duration, timing) for effective disclosures are still not well understood. Therefore several authors have stated that more research is needed (Balasubramanian et al., 2006; Van Reijmersdal et al., 2013; Matthes and Naderer, 2016). Although there are studies that manipulate the prominence of a product placement in a laboratory setting, these studies do not provide clear results. For example, Matthes & Naderer manipulated the frequency of product placement within a video, but found no significant difference in brand processing between the different frequency conditions (Matthes & Naderer, 2016). Furthermore, no studies were found in the literature research that investigate static salience manipulation within a social media context. This study aims to fill this research gap. The interaction of a disclosure and a salient product placement is based on the assumptions of interaction between bottom-up and top-down processes. In the Feature Integration Theory or Visual Saliency Hypothesis, where fixations are purely bottom-up, no interaction between top-down and bottom-up processes is predicted. A statement that seems extraneous, since no top-down processes are included in the decision-making processes. However, this is not the case if the assumptions of the Guided Search Model are accepted. Here, top-down processes determine early on which regions are assumed to be candidates for the task (J. M. Wolfe & Gancarz, 1997). Since this is also based on the properties of the image, i.e. on bottom-up processes, an interaction can take place here. If a product placement becomes more salient by manipulating the image, the detection of this region is easier. Thus, top-down processes caused by a disclosure are enhanced because the observer can identify product placements earlier and more precisely. To answer the question which effect an interaction between a disclosure and a salient product placement has on the attention allocated by the observer to the AOI, the question which

effect a disclosure has must be answered first, as saliency has a purely reinforcing effect. From the literature, as described in section 3.1, two equally valid lines of argumentation can be developed. Therefore, we must resort to providing two justifications for the theoretical prediction of the interaction effect. To reiterate, if the disclosure has a negative effect on the allocation of attention due to the reverse-priming theory, there will be a negative interaction effect of salience with the disclosure condition on attention (Laran et al., 2011). The opposite is true if the priming theory is confirmed and a positive effect of a disclosure on attention is observed. In this case, the salience of the product placement will have a positive interaction effect with the disclosure condition (Fransen & Fennis, 2014).

3.4 The Hypothesis

Disclosure As described in section 3.1, the effects of a disclosure on early and late attention are ambiguous. Positive effects which are described by the priming theory in line with Fransen and Fenni (Fransen & Fennis, 2014) as well as negative effect directions stemming from the reverse-prime theory in line with Laran et al. (Laran et al., 2011) can be derived from the literature. Thus, we will formulate our first hypothesis accordingly.

H1: A disclosure leads to a significant change in visual attention towards the subsequently presented product placement compared to no disclosure.

The same reasoning as for the Hypothesis 1 holds for early attention (i.e. the time to first fixation) as the salience determines the fixation order which will lead to a faster fixation onto the product placement.

H2: A disclosure leads to a significant change in the allocation of early visual attention towards the subsequently presented product placement compared to no disclosure.

Salience The effect of a salience manipulation on attention can easily be deduced from the literature. It is generally accepted that salience manipulation leads to more relative and more early attention.

H3: An increase in the salience of a product placement will lead to more visual attention towards it compared to no increase in salience.

H4: An increase in the salience of a product placement will lead to a faster allocation of visual attention towards it compared to no increase in salience.

Interaction of a Disclosure and Salience As in the description of effects for the disclosure, it must be noted that no clear direction of effects can be deduced from the literature. It seems plausible that a salience manipulation will increase the effect of a disclosure because it assists in the early detection of the candidate object. However, the direction of the effect of the disclosure has not been clarified. Therefore, we formulate our hypothesis as follows:

H5: An increase in the salience of a product placement and a disclosure will lead to a change in the allocation of relative visual attention towards the subsequently presented product placement.

The same holds true for early attention. This is again due to the fact that the conspicuity of the region, determined by both top-down and bottom-up processes will determine the ordering of the fixation points by means of the winner-takes-all algorithm.

H6: An increase in the salience of a product placement and a disclosure will lead to a change in the allocation of early visual attention towards the subsequently presented product placement.

4 Methodology

4.1 Experimental Design & Description of the experiment

To test the hypotheses derived from theory, a laboratory experiment was conducted at Zeppelin University. The experiment was part of a larger study on the effects of Instagram images of social media influencers on the behaviour of social media users. The study was carried out in collaboration with Jasper David Brüns. The experiment took place during the COVID-19 pandemic in 2020, which made the recruiting of subjects significantly more difficult. In total 113 participants were recruited of which 109 yielded valid data. The study was designed as a 2 (within: salience, no salience) x 2 (within: sponsorship disclosure condition, no sponsorship disclosure) factorial design. It therefore had 4 experimental conditions. Although concerns may be expressed about the learning effects associated with a within-subject design (Hayhoe, 2000) especially relating to the disclosure condition, this design was chosen because it was the only one that produced a satisfactory quantity of data and because in reality a user will see several disclosures in succession while using Instagram. In addition the inclusion of a number of heterogeneous stimuli will reduce the overall bias of the estimators as effects will no longer be stimulus specific (Orquin & Holmqvist, 2018). An exemplary estimation of the overall bias in the experiment is shown in section 7 of the appendix.

In the experiment we employed a questionnaire developped in Sawtooth Lighthouse Studio which was then added as a web stimulus into the eye tracking software (Tobii Pro Lab). Due to this seamless integration of the questionnaire into the eye tracking software the gaze measurements of the participant was never interrupted. The stimuli presented to the subjects were manipulated Instagram posts. The exact process of manipulation will be described in the section 4.1. In the course of the experiment, each participant was presented with all of the eight different Instagram posts used in the experiment. The stimuli were therefore 8 images that were either preceded by a sponsorship disclosure or not and additionally either manipulated in

their saliency or not. This results in 32 stimulus combinations ($8 \cdot 2 \cdot 2$). Of these 32 stimulus combinations each participant saw exactly 8. Within these 8 pictures exactly four were manipulated in their saliency and 4 had a sponsorship disclosure. Nevertheless, each participant saw every original Instagram post once. An exemplary stimulus combination is shown in the next table.

Table 2: Exemplary stimulus combination

Task Order	Brand	Disclosure	Saliency
1	Louis Vuitton	1	1
2	Häagen-Dasz	0	0
3	Voss	1	0
4	Fjällraven	0	1
5	Gucci	1	0
6	Levis	0	1
7	Starbucks	0	0
8	Corona	1	1

Image selection The Instagram posts used in the experiment were gathered from publicly available accounts. Care was taken to ensure that all images were in the same format and with a resolution of at least 700x690 pixels. Since the images were real influencer posts from Instagram, we could be sure that they were perceived as authentic social media influencer posts in an experimental context.

Furthermore, the images had to offer enough content to not force the observers to fixate the product placement. This is based on the consideration that in an image where the AOI occupies large amount, say 80%, of the space and no other distractors are present, there may not be sufficient variance in the distribution of attention. In a picture without any visual clutter or an AOI which covers 80% of the original image no effects of the manipulation can ever be oserved (Rosenholtz et al., 2007).

To that end, only images with at least one central face were selected. Several studies have shown that faces attract a lot of attention. For example Hartman showed that the face in a consumer selfie serves as a distractor

reducing the amount of fixations to a product placement (Hartmann et al., 2019). The distractor effect of faces is well established in the literature and has been tested in a multitude of different studies (for examples see: Thoma and Lavie, 2013; Ro et al., 2007; Bakhshi et al., 2014; Xiao and Ding, 2014). It was therefore reasonable to assume that each participant always had ample choices of regions to fixate on the Instagram post.

In order to ensure a sufficient variance in the scattering of the AOIs sizes, Instagram images were obtained under this constraint. The advertised products should not be too small (i.e. a watch) so that the observer can identify the AOI and not too large so that the observer can look at other regions of the image. The final sample contained AOIs which only took up 3.6% of the image while also including AOIs which took up 22.2% of the image. On average the AOI covered 9.92% of the image. In addition the promoted product should not be too central or too peripheral. Centrality has been identified as a factor that induces a bias in the allocation of visual attention in several studies (Orquin & Loose, 2013). To that end we calculated the euclidian distance of the center of the AOI and the center of the image and compared it to the euclidian distance of the center of the image and the corner of the image. A distance from center of 100% indicates that the center of the AOI was exactly in the corner of the image, while a distance from center of 0% indicates that the AOI was positioned completely central. The most central promoted product was 46% of the longest diagonal from the center of the image while the least central promoted product was 72% of the way from the center. This confirmed our goal not to use images where the promoted product was extremely central or peripheral.

In addition, only images with a single brand name or logo were selected. There could therefore be no ambiguity or confusion as to which brand was referred to by the disclosure. Hence, even in the unlikely case that a participant did not know the name of the brand or the corresponding logo she could identify the promoted product merely by searching for any logos or branded products in the image. Even though a second logo of the same brand is not uncommon in influencer advertising we restricted our analysis to images which did not include more than one product, slogan or logo. We did this for two reasons. Firstly, the manipulation and data analysis would

have been more impure if several logos had been used which would lead to a loss of validity. Secondly, the distribution of attention between the two AOIs would have been an additional variable that would not have contributed to clarify the actual research questions of the experiment.

We decided to not only include brands which are market leaders as the high degree of familiarity with these brands might induce a ceiling effect, limiting the amount of cognitive and affective responses (Van Reijmersdal et al., 2012). Nevertheless brands had to be sufficiently known so that participants would be able to recognise the products. In addition the products had to be known to the participants to guarantee that the purchase intentions of the participants would not be zero. Lastly, no celebrities were allowed to appear in the posts as this might have induced biases due to individual experiences with the social media influencer or more broadly a preexisting parasocial relationship (Yuan & Lou, 2020).

Disclosure condition The first stimulus of the experiment was the presence of a sponsorship disclosure. In designing the disclosure it was paramount to find a solution that does not limit the validity of the results, so that the experienced social media user is not torn out of his familiar environment, but to still design the disclosure in such a way that it would be conspicuous enough to minimize the probability that it is overlooked. This is important as noticing the disclosure is a precondition for its effectivness in changing the way in which consumers react to a persuasion attempt (Boerman et al., 2015). Therefore, the conspicuousness of the disclosure is of great importance. Amazeen et al. showed that the odds of recognising a native advertisement as such are 3.8 times higher when a disclosure is prominent (compared to a non disclosure condition) and almost twice as high when compared to a low prominence condition (Amazeen & Wojdynski, 2018). The effects of the prominence of the disclosure can be seen in the literature. The phrase "Sponsored" increased recognition by 13.5% or 6.6% relative to a no disclosure condition, while "Advertising" resulted only in a recognition of 12% (Boerman et al., 2017; Evans et al., 2017; C. Campbell and Grimm, 2019). While no studies could be found which investigated the effectiveness of the standardised sponsorship disclosure outside of an experimental con-

text, Boerman was able to show in 2019 that the standardised Instagram disclosure did significantly increase advertisement recognition (Boerman, 2020).

To ensure both validity and sufficient conspicuity, a two-part repeated disclosure was chosen. First, a text was displayed on a questionnaire page before the image was shown, explicitly stating that the following image either represents a paid partnership with a company or not. There was no other information on the page and the words "a paid partnership" or "no paid partnership" were written in bold. Both the lack of clutter and the bold text that stood out from the rest of the page increased the probability that the disclosure message is recognised. An Instagram post was then presented in which the image of the post was hidden. This drew the attention of the observer to the frame of the image. Within the frame of the image the standardised Instagram disclosure was authentically inserted. In addition to the standardised disclosure in the header of the image, two widely used hashtags were inserted in the description of the image, namely "sponsored" and "advertising". The combination of several disclosure styles and disclosure types has been identified in the literature as a good strategy for increasing the attention to the disclosure (for example: Boerman et al., 2015; Uribe and Fuentes-Garcıa, 2020).

With three disclosures present in the manipulated Instagram image and an additional disclosure before the picture was shown we are confident that most people will fixate the disclosures. Following the Instagram frame another manipulated Instagram picture was shown. Herein only the picture was seen within a blank frame. Therefore the salience of the picture was uncontested by additional features of the post. This design ensured that the post was as valid as possible while the disclosure was highly conspicuous and furthermore ensuring that no additional or unwanted features influenced the observation process of the image.

Salience manipulation To understand the effects of bottom-up processes in a social media context, the salience of the images was manipulated. There are several ways to manipulate salience. Among them are surface size, colour, edge orientation, luminance, or motion direction (Itti et al., 1998;

Orquin and Loose, 2013). To make sure that the participants of the experiment would not notice the manipulation and the images look like real social media influencer posts, a manipulation was preferred that required the least possible intervention in the image. Most studies which manipulated the saliency of an AOI in a marketing context manipulated the size of the AOI (Van Reijmersdal et al., 2012; Valentini et al., 2018). While this process might yield the largest increase in the saliency of the promoted product this manipulation would lead to a big distortion in the image which would become obvious immediately. We therefore adopted a procedure implemented by Milaosavljevic et al. who increased the relative brightness of the AOI by decreasing the local brightness of the rest of the image by 35% (Milosavljevic et al., 2012). This manipulation could not be adopted unreservedly and unchanged, as it would have been identified as an obvious alteration to the images. Hence we increased the local brightness of the promoted product by 20% while the local brightness of the background of the image was decreased by 20%. This variation of the manipulation applied by Milosavljevic et al. was not perceptible to participants in the experiment. Section 5.1 includes more information about the relative change in visual saliency.

To render the two manipulations more comprehensiple, all 4 conditions are shown in Figure 7. In the upper row both Instagram frames are shown, without images, once with a disclosure and once without a disclosure. In the bottom row, one of the images is not manipulated while in the other image the saliency of the promoted product is increased by increasing the local brightness the promoted product.

4.1.1 Further Aspects of the Experiment

For a second study the influence of a disclosure onto the activation of persuasion knowledge was investigated. After each Instagram image was presented, three constructs were queried, the first two variables being: conceptiual persuasion knowledge (cPK) and attitudinal persuasion knowledge (aPK). Finally, questions about electronic word of mouth (ewom) were asked. We further examined the effects of the activation of persuasion knowledge on changes in the behaviour of participants in the experiment. We therefore

Figure 1: Graphical illustration of experimental conditions

measured brand familiarity, purchase intention and brand memory in the form of brand recognition as the final variables in our experiment. In addition to the investigation related to the activation of persuasion knowledge we aimed to understand the effects of cognitive depletion on social media usage. Therefore, half of the participants in the experiment performed a depletion task involving the transcription of a neutral text from a science textbook, leaving out the most common letters of the German language ("e" and "n"). The transcription part was adopted from an experiment conducted by Betrams et al.(Bertrams et al., 2010). This depletion task had preciously been tested and applied in various different studies (Furley et al., 2013). The control group also had to transcribe the text, but they had no additional tasks to perform during the transcription. The task was limited to 7 minutes. To make sure that the depletion manipulation did not have any unintended consequences, the positive and negative affect scale (PANAS) was queried. Particpants had to rate how well 10 positive items and 10 negative items described their current mood on a 5 points Likert scale. This additional measure is often used as a control variable in depletion studies (Hagger et al., 2010).

4.2 Summary of the Procedure

The experiment was conducted in two parts using the Sawtooth Lighthouse Studio questionnaire software. Both questionnaire parts were implemented as web stimuli within the eye tracking software. First, the test subjects were greeted and then had to fill out a COVID-19 self-disclosure form to track infections on the university campus. Afterwards the functionality of the eye tracker was explained and the sitting position of the respondent was adjusted. As soon as it could be ensured that the subject was seated correctly and had no further questions, an initial calibration of the eye tracker was carried out. A calibration was chosen in which the test person had to follow nine randomly appearing points with her eyes. The calibration was automatically validated by the eye tracking software. This procedure was only completed when the inaccuracies became sufficiently small. In the first part of the questionnaire the ego depletion manipulation was performed. Then a second, identical calibration was performed. Subsequently, the subject was

then shown the Instagram posts. The participant was instructed to look at the images for as long as she wanted to avoid unnecessary time pressure biases in the distribution of attention (Reutskaja et al., 2011). If a fixed time for the observation period is provided, it is difficult to predict when the participant would have stopped the task if there had been no time limits. (Orquin & Holmqvist, 2018) Otherwise either idleness (Hsee et al., 2010), i.e. exceeding the intended observation time, or time pressure (Reutskaja et al., 2011), i.e. falling below the intended observation time, can occur. Both can lead to distortions of the measurement metrics of the experiment.

Following each of the 8 Instagram posts, ewom, cpk and apk and upon seeing all eight stimuli purchase intention, brand recognition and brand attitude were queried. Finally, demographic questions were asked and the participant was given the opportunity to clarify any uncertainties about the experiment. The participants were thanked and released after receiving their pay (7 Euro). On average, the experiment lasted for 35 minutes, of which 5 minutes were needed for the initial briefing and the adjustment of the eye-tracking.

4.3 Operationalisation of Constructs

As this thesis aims to investigate the effects of bottom-up and top-down effects on attention we need to define the constructs measuring attention and operationalise them. The attention of observers is gauged by two constructs. The constructs are early attention and relative attention. Early attention is operationalised as the time to first fixation ($TTFF$) within the AOI, i.e. how long it takes for the subject to fixate onto the AOI for the first time. The computer timestamp of the URL change is extracted from the eye tracking data on a microsecond basis. Afterwards the timestamp for the first fixation within the AOI is extracted. The difference between these two data points represents the time the observer needed to fixate the AOI for the first time. This operationalisation of early attention is widely used in the literature. The next construct to be operationalised is relative attention. It will be defined as the accumulated fixation duration within the AOI compared to the total accumulated duration of fixations that occurred on the image. From the eye tracking data, all fixations on the entire image were extracted and

their respective durations aggregated. Then a subset of all fixations within the AOI was created and the sum of the fixation duration was calculated. The relative accumulated duration of fixations within the AOI ($RAFD$) is thus the division of these two values. This operationalisation of relative attention is also common in the literature and has been used in similar contexts. Meißner and Oll provide a further overview of other eye tracking measures that can be used (Meißner & Oll, 2019).

The next variable that requires operationalisation is the the saliency of the images. Each image was binary coded as 1 = salient or 0 = unedited. Additionally there was a binary variable for the diclosure condition (1 = sponsorship disclosure present or 0 = no sponsorship disclosure present). This results in two binary variables whose interaction represents the interaction between top-down and bottom-up processes.

Further eye tracking data was collected to validate the results. First the *total time* spent on an image was collected. This variable can be used to identify possible errors in the data. A very short total time could indicate that the participant did not in fact look at the image at all due to problems with the software or unintended clicks that skipped a page. In addition, too long an observation period could indicate other problems such as loading errors of the questionnaire which could have prevented a further click.

Another resulting variable is the *total dwell time* which is also named the *accumulated fixation duration*. The total dwell time is the result of multiplying the relative accumulated fixation duration with the total time. The total dwell time is also mentioned by Meißner and Oll as a relevant eye tracking variable and has been used in studies with a similar design.

An additional variable that was collected was the *average duration of fixation on the AOI*. This variable indicates how long the eyes were relatively still on the AOI on average. Depending on the characteristics of the presented stimulus, a fixation lasts between $100ms$ and $500ms$ (Meißner & Oll, 2019). This was also used to check if the fixation detection algorithm used provided valid measurement results. The length of a fixation can be taken as a proxy for the level of processing. Shorter fixations represent automatic processes while longer fixations are an indication of higher levels of cognitive processing (Velichkovsky et al., 2002). Another use of the variable is that

experts make significantly longer saccades, have shorter fixations and fewer repeated fixations in tasks (Rayner and Clifton Jr, 2009; Rayner, 1998). Thus, the initial assumption that increased exposure to social media will lead to becoming an expert within the visual ecology of the social media site can be tested.

To further validate the results, all variables collected for the promoted product were also collected for the distractor, i.e. the face. This results in several additional variables. (*time to first fixation on the distractor, relative accumulated fixation duration on the distractor, total dwell time on the distractor, average duration of a fixation on the distractor*)

4.4 Data Preparation

Measurement of Eye Movements The eye tracking data was collected using a Tobii Pro Fusion Eye tracker. The eye tracker measures the eye movements of the participant of the experiment at 120 Hz. (Tobii, 2019). The accuracy of the eye tracker is specified by the manufacturer as 0.13 degrees in optimal conditions and up to 0.3 degrees under the worst circumstances. The accuracy is 0.09 degrees in optimal conditions and 0.2 degrees at the very least (Tobii, 2019). The eye tracker does not restrict the freedom of movement of the participants and is inconspicuous. The manufacturer indicates the optimal distance a participant may sit away from the eye tracker between is 50 and 80 cm. During the execution of the experiment, care was taken to ensure that the distance between the participants and the eye tracker was never more than 70 cm or less than 60 cm (Tobii, 2019).

The questionnaire was designed with the software Sawtooth Lighthouse Studio in two parts. The splitting of the questionnaire was necessary to allow a second calibration of the eye tracker, because the calibration accuracy might decrease with the duration of the experiment (Vadillo et al., 2015). Furthermore, a Cascading Style Sheets script, implemented throughout the entire questionnaire on all pages with an AOI, prohibited participants to scroll within the page. This served to prevent moving AOIs which might become problematic in the gaze measurement process.

From the software with which the eye tracker was operated, namely Tobii

Pro Lab, two eye tracking data sets were exported after each completion of the experiment. These eye tracking data sets corresponded to the first and second part of the questionnaire. In addition to the eye tracking data sets, the results of both questionnaires were exported from Sawtooth. Thus four data sets were created for each participant.

Tobii Pro Lab analyses the raw data before it is exported and applies one of several filters to classify the eye movements. Depending on the user's objectives, different filters are relevant. In human behaviour studies, such as this one, a fixation filter is usually used to calculate fixation points from the raw eye tracking data and classify all eye movements into different categories. During fixation, the eye is never completely still, so the exact coordinates of the eye tracking vary. The center of this variance is relevant because it indicates the exact fixation point and thus the point being processed. The fixation filter of Tobii aggregates the raw data to determine the exact fixation points that will later be used as the sole basis for data analysis (Olsen, 2012). With the aggregated fixation data of Tobii the hits in the AOI could be calculated. For this purpose, the AOIs on each post were manually defined as rectangular regions on the image. The area of interest results in a set of x & y coordinates (i.e. pixels). For each fixation, it must be tested afterwards whether the fixation coordinate falls within the AOI. If this is the case, the variable AOI hits is coded as 1, otherwise as 0. With the help of this new variable all eye tracking variables can now be calculated.

5 Results

5.1 Descriptive Statistics

The sampling of the participants was carried out during the COVID-19 pandemic of 2020. It was therefore difficult to achieve a representative sample of the population. Out of the 113 people who took part in the experiment in the laboratory, 109 data sets were evaluable. Data points of 4 persons could not be extracted due to problems with the questionnaire software. Within the sample, 56% of the test persons were female and 44% male. The average age was 29.25 years with a distribution mode at 25 years. ($min = 18, max = 58, sd = 10.16$) Most of the participants were employees or students of the university, as the general COVID-19 regulations restricted external access to the campus. Fifty-six percent of the subjects indicated that they were currently students.

Social media usage The study aimed to investigate the interaction of bottom-up processes and top-down processes in a social media context. It was therefore paramount that we were able to discern effects which stem from knowledge about the social media platforms from effects that were independent of the participants social media usage. The participants were therefore asked to indicate in minutes how much time they spend on a variety of different social media platforms. The results are summarised in table 3.

Table 3: Social Media Usage

Plattform	N	Mean	Min	Max	%	SD
Facebook	109	21.92	0	320	83%	38.2
Instagram	109	34.44	0	300	73%	45.9
Youtube	109	36.73	0	240	83%	51.7
Whatsapp	109	50.03	1	240	100%	44.7

A large fraction of all participants used social media regularly. To ensure that our results were reliable we defined anybody as a social media who used Instagram or Facebook for at least one minute per day. Youtube as a social media platform shows the biggest differences to other social media

platforms because it is not based on images or text but exclusively on videos. Accordingly, static salience manipulations are not possible and the interface, including the placement of disclosures, is significantly different. The joint probability of a participant either using Facebook or Instagram is 92%. As Facebook and Instagram show the largest similarities, we decided to use both in the experiment. The eight percent of participants who had little or no experience with social media sites were not included in the final analysis but were used for the purpose of robustness checks.

Salience Manipulation To ensure that the salience manipulation did indeed lead to an increase in the relative salience of the AOIs, a saliency map of all images was calculated using OpenCV in Python. Afterwards the summed normalised saliency for the AOIs was calculated and compared. The applied algorithm is an implementation of a model developed by Hou and Zhang for the determination of salience using a spectral residual approach (Zhang & Hou, 2007). The results of the first model were validated using the Adaptive Whitening Saliency model in Matlab (Garcia-Diaz et al., 2012). The lighter bars represent the relative increase of the salience of the AOI compared to the previous image for the AWS model, while the darker bars indicate the change calculated with the spectral residual approach. The dark lines which are overlayed over both bars indicates the average change in saliency calculated by both models.

Although the relative change in saliency did not affect all images to the same extent, it is clear that the average change was always positive. Thus the salience manipulation worked sufficiently well. For the spectral residual model the minimum change in relative salience was 3.9%, the maximum 38.5% and the average change was 23.9%. The results were then validated using the Adaptive Whitening Saliency Model (AWS) in Matlab based on a paper published by Garcia-Diaz et al. (Garcia-Diaz et al., 2012). Comparable results were obtained here. In one of the images the AWS model predicted a reduction in saliency of the AOI. Although the average of both models still indicates a substantial increase.

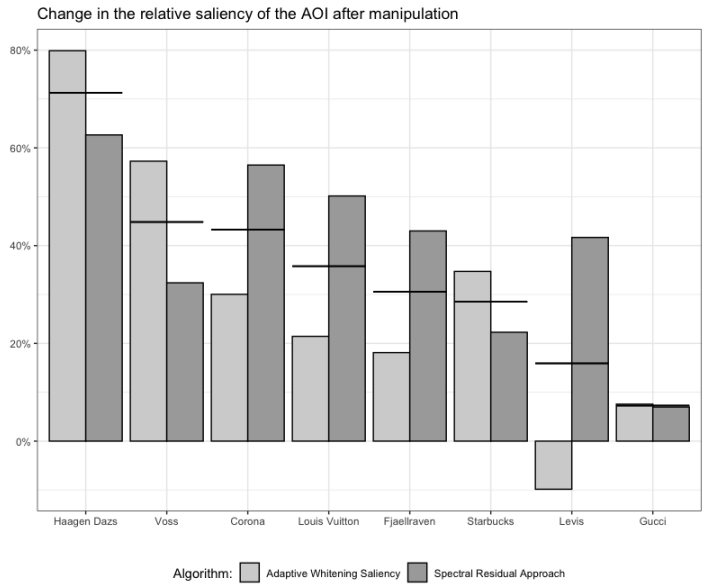


Figure 2: Salience differences after manipulation

As previously discussed our goal was not to use images where the promoted product was entirely central or peripheral. Table 4 summarises the saliency of the image before the manipulation, the relative increase, the size of the AOI and the euclidean distance of the center of the AOI from the center of the image in terms of the longest diagonal of the image. To reiterate, a value of 0% in the centrality column indicates that the center of the AOI was exactly at the center of the image and a value of 100% indicates that it was in a corner of the image. The column Increase shows the relative increase in the predicted saliency of the AOI compared to the initial value. As an example, the Corona picture had a previous saliency of 9.99% and later on an increased saliency of $9.99\% \cdot 157.94\% = 15.78\%$. All values are displayed in terms of percent.

The correlation of the individual dimensions is shown in table 5. In addition in the appendix Figure 7 visualizes the correlation between some image features.

To test whether the values generated by the spectral residual approach actually led to the effects expected in the analysis, the relative salience numbers were regressed in a multilevel regression, correcting for the behaviour of each individual, onto the two attention variables. A ten percent increase in

Table 4: Quantitative picture description

Brand	Size	Centrality	Original Salience	Increase
Corona	5.56	46	9.99	57.94
Fjaellraven	22.2	51	28.22	42.77
Gucci	7.06	36	21.22	6.97
Haagen Dazs	3.6	72	4.21	62.64
Levis	9.35	64	4.73	41.68
Louis Vuitton	16.72	62	11.93	50.16
Starbucks	9.47	58	20.17	22.27
Voss	5.82	35	7.33	32.39

Table 5: Correlation matrix of picture dimensions

	Size	Centrality	Original Salience	Increase
Size	1			
Centrality	0.10	1		
Original Salience	0.63**	-0.35	1	
Increase	-0.24	0.31	-0.37	1

Note: *p<0.05; **p<0.01

the predicted saliency of the AOI led to a 3.26% increase in the relative accumulated fixation duration allocated onto the AOI ($\beta = 0.326, p < 0.001$). Similarly, an increased saliency prediction of 10% led to significant decrease in the time to first fixation ($\beta = -0.277, p = 0.002$). We were satisfied with the saliency manipulation due to the agreement between the two saliency prediction models and the successful empirical verification of the manipulation.

In order to graphically represent the increase in salience, a saliency map was placed over the manipulated image and the untouched one. In Figure 3 lighter regions correspond to a higher saliency while darker regions do not possess any characteristics which might attract attention according to the algorithm. The AOI was subsequently added to the image using a red rectangle. The left image is the manipulated image while the right image is untouched. More regions appear to be relatively salient in the right picture which indicates that the salience of the image is distributed more heterogeneously over the entire image. As a corollary there are less or less extreme peaks on the saliency map of the untouched image.

Figure 3: Salience difference visualization

Attention to disclosure messages To measure the effects of the disclosure conditions we needed to ensure that the disclosures would be sufficiently conspicuous to be noticed. To that end we checked whether enough participants fixated the disclosures actively. We found that 96.6% of participants in the disclosure condition saw at least one of the disclosures. The attention paid to the disclosure is summarised in the graphic 4.

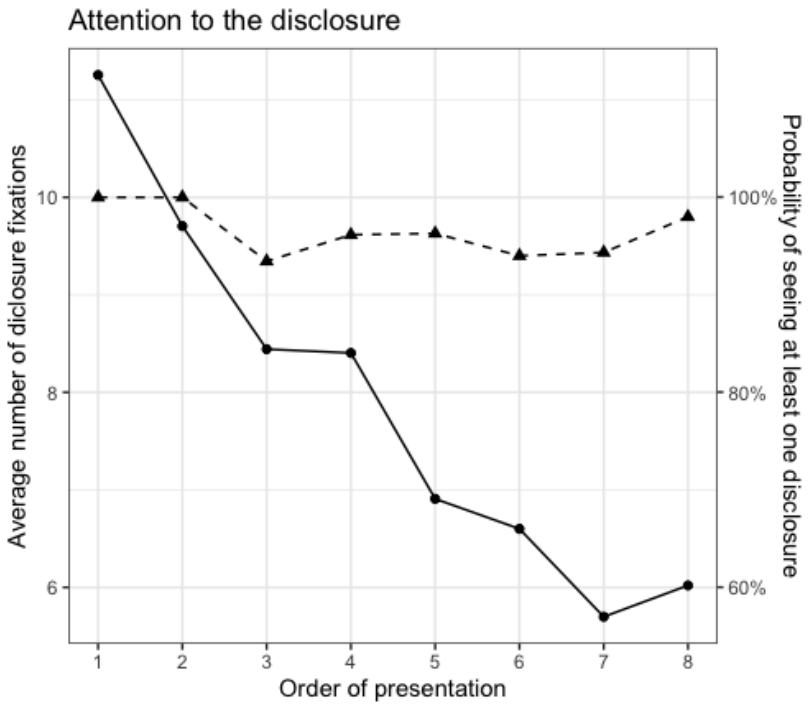


Figure 4: Percent of participant noticing the disclosure & Average number of fixations on disclosure

The graph only shows the participants who were in the Disclosure Condition group. On the left y-axis the average number of fixations to all disclosures is summarised based on the order of the stimulus. On the right hand axis the probability of seeing at least one of the disclosures is displayed. While the solid line represents the average number of fixations, the dashed line with triangles represents the probability of seeing at least one of the dislosures. It can be clearly seen that the number of fixations on the disclosure decreased during the experiment. The probability to fixate the disclosure remained the same. It hovered around 95% of all cases for

most of the experiment. Hence, we can say that over time fewer fixations on the disclosure were necessary to process it. Although the magnitude of the effect was quite suprising the direction was to be expected. Learning effects have been extensively studied in an eye tracking context. Orquin notes that in within-subject designs repeated exposures to decision tasks will increase decision efficiency (Orquin & Loose, 2013). To confirm this visual intuition two regressions were performed with both the average number of AOI fixations and the probability of seeing at least one disclosure as the dependent variable and the order as the independent variable. There was no significant effect of the order onto the probability ($\beta = -0.005, t = -1.25, p = 0.26$) while there was a significant effect of the order onto the number of AOI fixations ($\beta = -0.76, t = -8.6, p < 0.001$). Confirming, that while the number of fixations per task onto the disclosures was reduced significantly the probability of seeing at least one disclosure remained constant.

Randomisation To make sure that the randomisation was successful, multiple tests were performed on the stimulus combinations. There was no dependence between the order of presentation of the images and the stimulus combination ($\chi^2 = 20.153, df = 21, p = 0.511$). This is relevant because if certain combinations of stimuli had appeared in predictable order, even if by pure luck, biases might have been introduced because of any halo or learning effects. Furthermore, there was no dependence between gender and the probability of seeing a particular combination. ($\chi^2 = 10.724, df = 15, p = 0.7719$) There was no correlation between student status, economic situation or age and the stimulus combinations. ($Student : \chi^2 = 9.6699, df = 15, p = 0.84, Economic : \chi^2 = 0, df = 30, p = 1, Age : t = 0, df = 870, p = 1$).

Eye tracking validation Due to the immense size of the dataset the eye tracking data cannot be fully validated manually. Nevertheless, some tests can be done to ensure that no major eye tracking errors have occurred. First of all, every recording of the eye tracking software was checked for unrealistic deviations. For example, each participant had to fixate the standalone next button to get to the subsequent page. If the fixations on the next button in a dataset deviated significantly and in a systematic fashion from the

actual position of the button, this would have been a strong indicator that measurement errors have been incorporated into the eye tracking dataset. No deviations were found. An aggregated heat map of the eye tracking data also showed that the fixations of the subjects remained largely within the presented Instagram image. Further we had to check if the fixation detection algorithm of Tobii worked. The duration of a fixation depends on the complexity of the task and previous experience of the participants. Nevertheless it can be stated that the length of a fixation should remain in the range of $80ms$ to $500ms$. The average fixation duration should fall into the range of $200ms - 300ms$ (Boerman et al., 2015; Rayner, 1998). This is in line with the data gathered. In our dataset the interquartile range was $84ms$ $(25\% = 239ms, mean = 287ms, 75\% = 324ms)$.

Task Order As we have seen, the order of the stimuli did not influence the probability that the disclosure was noticed. However, it became obvious that the first stimulus is observed differently than the following ones. Since participants might think that they are asked about image-specific elements after the first stimulus, their attention might be allocated significantly differently. Therefore, multiple t-tests were performed to check if the first stimulus was significantly different from the other stimuli. The most obvious variable is the time that is spent looking at one stimulus. Participants spent on average 9.82 seconds looking at the first picture while they only looked on average 7.3 seconds on other pictures. This difference was significant ($t = 4.8391, p < 0.0001$). To measure whether the change in time spent yielded a different attention allocation pattern we performed a t-test comparing the relative accumulated fixation duration to the AOI for both groups. Similarly, in the first stimulus 24.03% of time was spent fixating the AOI of the product while the average for all other pictures was 29.46% ($t = 4.01, p < 0.0001$). Therefore, the participants not only spent more time on the stimulus, they also distributed their attention more homogeneously. To ensure that the difference in the distribution of attention was significant only for the first stimulus we conducted an Anova of the relative accumulated fixation duration by the ordering of the pictures. As expected there was a significant difference in the variances across groups

($F - value = 5.145, df = 1, p = 0.023$). Therefore, we needed to confirm our intuition with a post-hoc test. In the post-hoc test we calculated a mean difference test for each combination of task orders. In table 6 the unadjusted p-values are reported in parenthesis while the Bonferroni adjusted p-values are reported without parenthesis. With a leave-one-out procedure we subsequently calculated the mean differences for each group compared to the rest of the dataset.

Table 6: Bonferroni adjusted comparison for remaining groups

	Task Order							
	1	2	3	4	5	6	7	8
2	0.52 (0.02)							
3	0.74 (0.03)	1.00 (0.89)						
4	0.01 (0.00)	1.00 (0.20)	1.00 (0.15)					
5	0.38 (0.01)	1.00 (0.91)	1.00 (0.80)	1.00 (0.24)				
6	0.00 (0.00)	1.00 (0.08)	1.00 (0.06)	1.00 (0.63)	1.00 (0.10)			
7	0.06 (0.00)	1.00 (0.48)	1.00 (0.40)	1.00 (0.56)	1.00 (0.56)	1.00 (0.28)		
8	1.00 (0.07)	1.00 (0.60)	1.00 (0.70)	1.00 (0.07)	1.00 (0.52)	0.60 (0.02)	1.00 (0.22)	
Entire:	0.001	0.85	0.72	0.07	1	0.03	0.37	0.35
Bonf. adjusted	(0.001)	1.00	1.00	0.54	1	0.27	1	1

In table 6 we are able to see that number one and number six seem to be significantly different. But due to the fact that we are testing more than one t-test we need to adjust the p-values. Correcting for this with the Bonferroni adjustment yields only one significant difference for the first stimulus. Therefore, the exclusion of the first picture seems appropriate. We therefore decided to run the analysis without the first task. This reduced the size of the dataset from 872 observations to 763 (109 x 7) observations.

Time course of attention In order to better understand the way the images are observed, a graph of the proportion of fixations on the AOI over the course of the observation was created. As the duration of the observation was not limited to avoid biases due to time pressure, the data series were of different lengths for each viewer and task. The data series is in this case a string of zeros and ones that indicate whether a fixation was inside or outside of the AOI. The differing lengths imply that at some point in time only a few participants were still watching the post. This problem can be avoided by splitting each data vector per image of each respondent

into 1000 chunks, regardless of the length of the viewing time. The average of these individual chunks thus indicates the percentage of fixations within the AOI for a certain timeperiod, for a certain participant and task. After this procedure has been repeated for each participant and each task, the average of the now equally long data series of all participants can be taken. We can now make assertions about the percentage of all fixations which hit the AOI after $x\%$ of the observation time. However, this technique is not without problems. If the course for each participant has a similar pattern, only that this pattern is shifted by a factor for each participant, this can lead to the cancellation of the individual maxima and minima and we lose a large amount of information. Therefore we will present both graphs in the following. One graph shows the percentage of AOI fixations over time and the other the percentage of AOI depending on the percentage of time that has already passed.

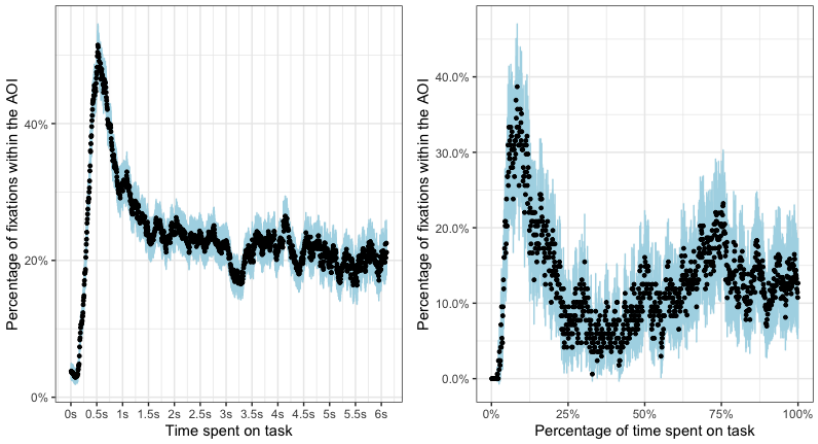


Figure 5: Graphical illustration of the time course of attention towards the AOI

While the graph which averaged the AOI fixations into chunks does indeed have a much higher variation both yield similar results. The blue area surrounding the line is the 95% confidence interval for each observation. We see that after around 0.7 seconds there is a sharp peak of fixations onto the AOI. This is in line with the average time to first fixation which is 0.77 seconds. Following the peak at the beginning after 0.7 seconds, the percentage of AOI fixations starts falling exponentially.

5.2 Model Selection

The hypotheses derived in section 3 cannot be tested by means of normal ordinary least squares regression. Due to the within-subject design of the study the data gathered had a multilevel data structure. This stems from the fact that the stimuli were nested within two higher level variables (the participants and the Instagram post). Therefore, the assumption of the independence of the observations is not given. Hence, we need to test the hypotheses with a multilevel regression analysis. Multilevel regressions are applied to unobserved heterogeneity in the relationships between variables at different levels (in other groups e.g. students and school) (Goldstein, 2003).

To test whether a multilevel model is appropriate we estimated multiple null models only containing a fixed intercept and a random intercept to calculate the intraclass correlation coefficient (ICC) for both higher level variables (i.e. participant and picture). Estimating the model only containing an fixed intercept and a random intercept dependent on the picture led to an ICC of 0.2 for relative accumulated fixation duration and 0.13 for the time to first fixation. Meanwhile the ICC for both nullmodels only containing a random intercept for the participant led to ICCs of 0.13 for relative accumulated fixation duration and 0.06 for the time to first fixation. Combining both random intercepts into one nullmodel finally yielded even higher ICCs. The intraclass correlation coefficients and the subsequent model comparison via a likelihood ratio test is summarised in table 7.

As we can see for both variables the Akaike Information Criterion (AIC) is steadily trending downwards indicating that the linear mixed models fit the data better. This is confirmed by the significant p-values of the likelihood ratio tests. In both cases the model containing both the participant and the picture as random intercepts turned out to be significantly better than all other models. While the addition of random slopes for the salience condition would have improved the model there is no obvious theoretical interpretation of their inclusion. Therefore we will refrain from estimating models with random slopes. The resulting model is shown once for illustration purposes. In subsequent regressions we will use the same model and therefore we will not include more regression formulas.

Table 7: Model Comparison

Model	AIC	ICC (Participant)	ICC (Picture)	χ^2	p-value
Relative accumulated fixation duration					
Null	-732.36	-	-	-	-
Participant	-755.42	0.13	-	-	-
Picture	-842.30	-	0.20	86.88	0
Participant and Picture	-888.14	0.15	0.20	47.84	0
Time to first Fixation					
Null	1349.41	-	-	-	-
Participant	1345.00	0.06	-	-	-
Picture	1285.40	-	0.13	59.64	0
Participant and Picture	1273.40	0.08	0.14	14.03	0.0001

$$RAFD_{ijk} = \beta_{000} + \beta_{100} disclosure_{ijk} + \beta_{200} saliency_{ijk} + \beta_{300} disclosure_{ijk} \cdot saliency_{ijk} + \gamma_{0j0} + \gamma_{00k} + e_{ijk} \quad (1)$$

$$TTF_{ijk} = \beta_{000} + \beta_{100} disclosure_{ijk} + \beta_{200} saliency_{ijk} + \beta_{300} disclosure_{ijk} \cdot saliency_{ijk} + \gamma_{0j0} + \gamma_{00k} + e_{ijk} \quad (2)$$

The subscript j indicates which post was presented and the subscript k refers to the participant. We will retain this structure for the rest of the analysis. The results of both regressions are summarised in the tables 8 and 9.

5.3 Regression Assumptions

To justify the use of a linear mixed model, three assumptions are necessary. The validity of all three assumptions was confirmed visually. The diagnostic graphs can be found in the appendix in Figures 8 & 11. The first assumption which needs to be fulfilled for the regression to yield unbiased results is the linearity assumption. If linearity is given, the residuals are normally distributed around the predicted values. Other patterns in the data would indicate that the regression is over or under- estimating certain values due to a non normal relationship of the independent and dependent variables.

Furthermore, there must be no non-normal deviation in the distribution of the predicted values around the outcome variable. Both these assumptions are met for both regressions models. Therefore the assumption of linearity may be assumed as given. The second assumption which is necessary for a linear mixed model is the assumption of homoscedastic error terms. To check the data for heteroskedasticity one has to check if the variance of the residuals is constant. During the examination we found signs of a non-constant variance, i.e. heteroskedasticity. Therefore, instead of a simple linear mixed model we will estimate a robust linear mixed model using the *robustlmm* package in R (Koller, 2016). Finally, it must be tested whether the residuals are normally distributed. The appendix shows the QQ-plot for both regressions and a histogram of the distribution of residuals for both regressions. For the first regression, there are no deviations that would call into question the assumption of a normal distribution of the residuals. In the regression with the dependent variable time to first fixation it is noticeable that the distribution exhibits a large kurtosis. Therefore, a deviation in the QQ-plot arises, when the values of time to first fixation increase. However, linear mixed-effects models are surprisingly robust and show little bias even if the distribution assumptions are objectively violated (Schielzeth et al., 2020). In summary, we violate the assumption of homogeniety of residuals, but correct for this error by means of robust standard errors. In addition, the assumption of linearity as well as the normal distribution of the residuals are seemingly given for both models. Since the residuals only exhibit a small deviation from the optimum and due to the robustness of mixed-effects models we will continue with the further analysis.

5.4 Testing of Research Hypotheses

We will now proceed to test the hypothesis.

Disclosure The first hypotheses to be tested investigate the effects of a disclosure onto attention.

H1: A disclosure leads to a significant change in visual attention towards the subsequently presented product placement compared to no disclosure.

Table 8: Effects of Salience and Disclosure onto Relative accumulated fixation duration

	Dependent variable:	
	RAFD	
	(LMM)	*(RLMM)*
Salience	0.051^{***}	0.052^{***}
	(0.012)	(0.012)
Disclosure	0.003	-0.002
	(0.013)	(0.012)
Salience:Disclosure	-0.046^{***}	-0.048^{***}
	(0.018)	(0.017)
Constant	0.277^{***}	0.269^{***}
	(0.025)	(0.023)
Observations	700	700
Log Likelihood	444.934	-
Akaike Inf. Crit.	-875.868	-
Bayesian Inf. Crit.	-844.011	-
Note:	*p<0.1; **p<0.05; ***p<0.01	

We therefore ran a robust multilevel regression analysis with relative accumulated fixation duration as the dependent variable and the binary disclosure condition as the independent variable. Participants and picture IDs were used as random effects. Herein, picture ID refers to the brand which was presented in the image and not the stimulus combination. As we can see in table 8 the regression yielded a non significant main effect of the disclosure onto relative accumulated fixation duration ($\beta = -0.002, p = 0.536$). We do find a significant effect of the disclosure onto relative accumulated fixation duration in the parsimonious model. But this effect vanishes upon controlling for the salience increase and the interaction of both effects. The results do not provide evidence for a main effect of disclosure on relative product attention. We will proceed by using the same regression setup for the second hypothesis.

Table 9: Effects of Salience and Disclosure onto Time to first fixation

	Dependent variable:	
	Time to first Fixation	
	(LLM)	*(RLMM)*
Salience	-0.190^{***}	-0.111^{***}
	(0.0586)	(0.030)
Disclosure	-0.012	-0.021
	(0.059)	(0.031)
Salience:Disclosure	0.052	0.044
	(0.085)	(0.044)
Constant	0.829^{***}	0.701^{***}
	(0.097)	(0.077)
Observations	683	683
Log Likelihood	-633.079	-
Akaike Inf. Crit.	1,280.159	-
Bayesian Inf. Crit.	1,311.844	-
Note:	*p<0.1; **p<0.05; ***p<0.01	

H2: A Disclosure leads to a significant change in the allocation of early visual attention towards the subsequently presented product placement compared to no disclosure.
The regression yielded no significant main effect of the disclosure onto time to first fixation ($\beta = -0.021, p = 0.915$). Thus, the results do not provide evidence for a main effect of a disclosure onto early attention.

Salience manipulation Having tested the hypotheses for a disclosure we will proceed by testing the effects of a salience manipulation.
H3: An increase in the salience of a product placement will lead to more visual attention towards it compared to no increase in salience.
The regression yielded a significant main effect of a salience manipulation

onto relative accumulated fixation duration. A disclosure increased relative accumulated fixation duration by 5.2% on average ($\beta = 0.052, p < 0.001$).
H4: An increase in the salience of a product placement will lead to a faster allocation of visual attention towards it compared to no increase in salience.
The regression yielded a significant main effect of a salience manipulation onto time to first fixation. An increase in the saliency decreased the time to first fixation by $111ms$ on average ($\beta = -0.111, p < 0.0001$). Having tested the main effects of both variables we will continue by investigating their interactions.

Interaction of a disclosure and salience Both $H5$ and $H6$ investigate the effects of an interaction onto the different attention variables.
H5: An increase in the salience of a product placement and a disclosure will lead to a change in the allocation of relative visual attention towards the subsequently presented product placement.
The regression yielded a significant effect of the interaction of a salience manipulation and a disclosure onto relative accumulated fixation duration. A salient promoted product and a disclosure lead to a reduction in the relative accumulated fixation duration of 4.8% ($\beta = -0.048, p < 0.001$).
H6: An increase in the salience of a product placement and a disclosure will lead to a change in the allocation of early visual attention towards the subsequently presented product placement.
The regression yielded no significant effect of the interaction of a salience manipulation and a disclosure onto time to first fixation ($\beta = 0.044, p = 0.538$).
The interaction effect between the salience manipulation and the disclosure condition can also be displayed graphically in Figure 6. This makes the effect directions somewhat more clear.

The left part of the Figure 6 shows the relative accumulated fixation duration in percent as a dependent variable while the right part shows the early attention operationalised by the time to first fixation in milliseconds (ms). The darker bars are the conditions without the salience manipulation while the lighter ones represent the salience manipulation. As we can see the

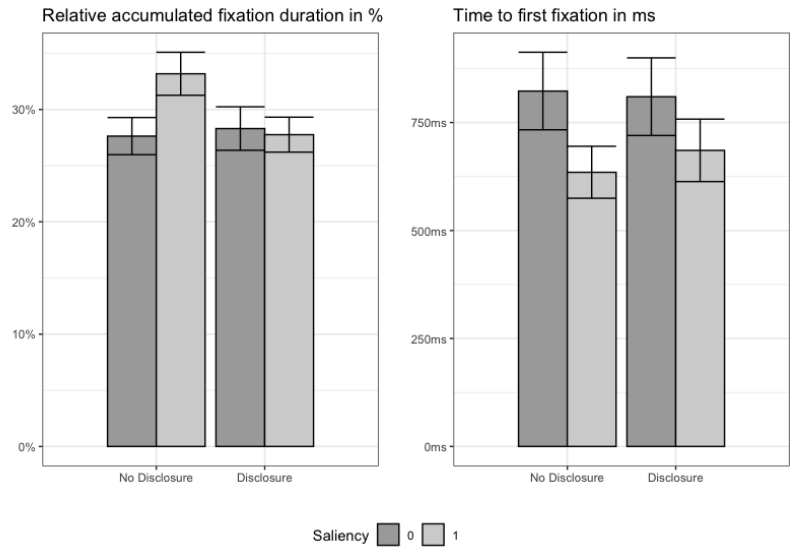


Figure 6: Graphical illustration of interaction effects

light bars - the salience manipulation conditions bars - are on average higher for relative accumulated fixation duration than the darker bars. This indicates a positive effect of the salience manipulation on relative accumulated fixation duration. The same argumentation could be used to show that the disclosure has a negative effect on relative accumulated fixation duration. But the regressions from Table 8 shows, that this effect is not caused by the disclosure. Meanwhile, the only bar that is significantly different from the other bars is the condition where salience is manipulated but no disclosure is present for relative accumulated fixation duration (the second bar from the left). This clearly shows the negative interaction effect of the two variables. The interaction effect of disclosure and salience completely compensates the positive effect of salience. (From Table 8 $+0.052$ for salience and -0.048 for the interaction for relative accumulated fixation duration). There is no significant interaction visible on the right hand side of the graph. Nevertheless, the salience manipulation clearly reduced the time to first fixation.

5.5 Extended Validation of the Eye Movement Data

Expert fixation duration As discussed in section 2.5.2, experts show significantly shorter fixations on stimuli and fewer unnecessary fixations (Ashby

et al., 2005). In order to evaluate whether we are able to replicate this result we will perform a t-test comparing the average duration of a fixation on the AOI of the product placement for Instagram users and for non-Instagram users. We deviate from the previous definition of a social media user and focus exclusively on the Instagram users because they are especially interesting for the analysis and because otherwise there would not be a sufficient sample size for a mean value comparison, since the group of participants who do not use Instagram or Facebook make up only 8 % of the total sample. Nevertheless, the results of the first stimulus are still excluded from the analysis. To calculate the mean value comparison, the average of the AOI fixation duration and the number of fixations to the AOI are calculated for each participant. The results of the test meet our expectations. Instagram users fixate the AOI significantly shorter than non-Instagram users ($t = 2.535, df = 39.396, p = 0.01$). On average the fixation of an Instagram onto the AOI is 43.5 ms shorter than a fixation of a non-Instagram user. Instagram users fixated the AOI for $273ms$ on average while non-Instagram users fixated it for $317ms$. This reflects the results of research on the reading behaviour of experts. Similarly, they fixate the AOI significantly less than non social media users. ($t = -3.548, df = 306, p = 0.0001$). On average they allocated 1.39 fixations less than non social media users onto the AOI. Accounting for the nested structure of the data, we will perform a multi level regression analysing the effects of social media usage onto the relative accumulated fixation duration allocated onto the product and the distractor. The results are displayed in table 10.

We find that there is a significant difference in the attention allocation between both groups. On average social media users fixate the distractor 4.6% more than non social media users. Interestingly, this pattern does not hold for the attention allocated onto the AOI. In addition social media users seem to look at more specific elements of the picture as the relative accumulated fixation duration increase towards the distractor is not reflected in a diametrically opposed decrease in the promoted product variable. It follows from the fact that there was a significant difference in the absolut number of fixations onto the AOI but no difference in the relative accumulated fixation duration, that there must be a difference in the total time spent on each

Table 10: Relative accumulated fixation duration to promoted product and the distractor

	Dependent variable:	
	RAFD (Promoted Product)	RAFD (Distractor)
Social Media	−0.0340	0.046**
	(0.023)	(0.025)
Constant	0.314***	0.217***
	(0.033)	(0.042)
Observations	763	731
Note:	*p<0.1; **p<0.05; ***p<0.01	

picture between the social media users and the non social media users. The mean time allocated per task for social media users was 7.057 seconds while the group of participants who did not use social media spent 7.917 seconds. The difference of $860ms$ was significant($t = -2.532, df = 307.91, p = 0.011$).

Brand Memory and Attention Variables In section 2.7 on the effects of disclosure on attention, several studies on brand memory, in the form of brand recognition, brand recall or top of mind awareness, were cited. Brand memory is intended to serve as a proxy for attention variables (Tessitore and Geuens, 2013; M. C. Campbell et al., 2013; Boerman, 2020; Pieters et al., 2002). This relationship will be discussed in more detail in this section. After all stimuli were presented, a number of different brand names were shown to the observers. Subsequently, subjects were asked to rate on a scale of 1-100% how certain they were that they saw this brand in the pictures. If they were certain that they did not see the brand, they had to indicate 0%. Sixteen brands were presented, eight actually corresponded to a stimulus during the experiment and eight were randomly selected and had no relation to the presented brands. The eight arbitrarily selected brands corresponded to the same product categories as the images actually presented (e.g. Gucci and Chanel or Fjällraven and Eastpak). The first step

was to test if there was a significant difference in brand recognition between the presented and non-presented images. For this purpose a t-test was performed which compared the stated probabilities of the two samples. The brands that were not presented received an average value of 12.67% that they were seen while the presented brands had an average recognition of 90.63%. ($t = -70.773, df = 1103.2, p < 0.0001$) To measure the influence of attention on brand memory, a logistic multilevel regression was performed using the previously mentioned boundary conditions on the participants' brand memory. Still excluding the first picture, we ran the regression on the binary variable brand recognised operationalised as 1 if the participant stated that the probability of having seen the brand was larger than 50%. The regression was repeated for early attention and relative accumulated fixation duration.

Table 11: Multilevel Logistic Regression of visual Attention onto Brand Recognition

	Dependent variable:	
	Brand Recognised	
RAFD	0.544	
	(1.292)	
TTFF		-0.434^{**}
		(0.199)
Constant	3.405^{***}	3.936^{***}
	(0.908)	(0.844)
Observations	763	746
Log Likelihood	-196.259	-187.915
Akaike Inf. Crit.	400.517	383.830
Bayesian Inf. Crit.	419.067	402.289
Note:	*p<0.1; **p<0.05; ***p<0.01	

The results are summarised in table 11. The only variable that exerted a significant effect onto the probability of correctly recognizing a brand was time to first fixation. While the direction of the effect of relative accumu-

lated fixation duration was as expected we did not find any significant effects. Meanwhile for every increase in the time to first fixation by $1000ms$ the odds of recognizing the brand correctly decreased by 35.23%. This is consistent with the results of a number of studies which say that the meaning of an object is already determined in the early inspection of a scene and therefore more processing is applied (Stirk and Underwood, 2007; Loftus and Mackworth, 1978) As an example Simola et al. showed that an increase in early attention significantly increased logo recognition. (Simola et al., 2013)

5.6 Robustness Check

In section 5.5, we examined the effects of the use of social media on the attention distribution of the respondents to the promoted product. The results showed that social media users allocated significantly less attention to the promoted product. In order to test whether the previously observed effects of the two manipulations (salience and disclosure) are robust even if the sample is extended to all participants, including non-social media users, we performed a robust multilevel regression with the same boundary conditions as in table 5.4.

Comparing table 12 with tables 8 & 9 shows that all effects still remain similiar. All estimators have maintained their direction, order of magnitude and significance and the maximum deviation from the previously calculated values is 5 %. Therefore we can assume that the previously estimated regression is robust. Subsequently, the regression was repeated including a numeric measure for the self reported time that each participant spent on social media sites (Instagram or Facebook) per day.

Again, the effects remained qualitatively similar and showed no great deviations from the previously calculated estimators. Nevertheless, the second regression now included a significant effect of social media usage onto the time to first fixation. For every self reported hour that a participant spent on social media per day she needed $30ms$ more time to first fixate the promoted product.

Table 12: Full sample regression

	Dependent variable:	
	RAFD	TTFF
Salience	0.053^{***}	-0.103^{***}
	(0.011)	(0.030)
Disclosure	-0.0008	-0.020
	(0.011)	(0.030)
Salience:Disclosure	-0.044^{***}	0.041
	(0.017)	(0.044)
Constant	0.269^{***}	0.688^{***}
	(0.0224)	(0.0758)
Observations	763	746
Note:	*p<0.1; **p<0.05; ***p<0.01	

Table 13: Full sample regression and social media

	Dependent variable:	
	RAFD	TTFF
Salience	0.058^{***}	-0.113^{***}
	(0.012)	(0.041)
Disclosure	0.003	-0.021
	(0.018)	(0.030)
Social Media Usage	-0.0001	0.0005^{***}
	(0.0001)	(0.0001)
Salience:Disclosure	-0.049^{***}	0.045
	(0.017)	(0.044)
Constant	0.270^{***}	0.663^{***}
	(0.023)	(0.088)
Observations	763	746
Note:	*p<0.1; **p<0.05; ***p<0.01	

6 Discussion

6.1 Theoretical Implications

6.1.1 Discussion of Disclosure Effects

As described in section 3.1, the effects of a disclosure on the distribution of attention are controversial. The argumentation is usually based on the priming or anti-priming theories discussed in section 3.1. Proponents of the priming theory argue that by priming a disclosure, the observer actively seeks the promoted product and therefore looks at it faster and longer (Matthes & Naderer, 2016). In contrast, proponents of the anti-priming theory argue that the priming of persuasion can have exactly the opposite effect, namely that the observer takes longer to fixate the promoted product and allocates less attention onto the promoted product (Laran et al., 2011). Neither of these arguments could be substantiated in the present study. Although the conspicuity of the disclosure was high due to the repeated presentation and the disclosure was realistic due to the multiple presentation and standardised integration in the social media post, we could not replicate any main effects of the disclosure onto relative accumulated fixation duration and time to first fixation. The disclosures had effects in a parsimonious models but these effects disappeared as soon as we controlled for the salience manipulation of the image. (see: 8 & 9) However, this result is not entirely surprising, as a number of studies have already found no effects of disclosure on attention. In section 3.1, we empirically examined why studies based on brand memory as a proxy for attention are not necessarily an appropriate comparison. In table 1 studies have been compiled that have investigated the effects of a disclosure by means of eye tracking. Of the 5[1] identified that use eye tracking, 3 found significant effects, 2 of which were positive. In contrast, two of the studies found no effects. We can therefore conclude that the results are not unexpected and do not contradict the current state of research.

[1]One study is counted twice as they find diverging effects depending on the exact specifications of the disclosure.

6.1.2 Discussion of Salience Effects

The basis of many models of attention are the exogenous factors of the presented image. By manipulating the local brightness of the AOI we were able to study the direct effect of salience, i.e. bottom-up processes, on attention. Increasing the salience of a region in a picture increases the priority of that region for the viewer. The viewer will thus fixate the AOI faster. The same argumentation also applies to a longer viewing of the AOI. In all tests carried out in this thesis the effects of the salience manipulation did not change qualitatively. A more salient region was always fixated significantly faster (time to first fixation or early attention) and longer (relative accumulated fixation duration or relative attention). This corresponds to the current state of research for bottom-up processes.

6.1.3 Discussion of Interaction Effects

To investigate the interaction of bottom-up and top-down processes we manipulated a disclosure condition and the salience of the images. The literature is almost unanimous in its opinion that both process directions interact with each other. However, this interaction is not entirely uncontroversial, for example, the thesis that bottom-up effects dominate early attention and gradually make way for top-down processes that dominate later is widely supported (Theeuwes et al., 2000). In the present study, the interaction of a disclosure and a salience manipulation was investigated with respect to time to first fixation and relative accumulated fixation duration.

Time to First Fixation Regarding time to first fixation, no significant interaction effect could be identified. Our initial hypothesis was that the priming (anti priming) of the disclosure is enhanced by the increased saliency of the promoted product. The increased saliency allows the observer to identify the promoted product more quickly and accurately when first viewing the image, the time period in which Wolfe's preattentive mechanisms are at work (J. M. Wolfe, 1994). Therefore, depending on the main effects of the disclosure, the time to first fixation should change significantly. However, no indications were found to support this hypothesis. In early attention, only the bottom-up processes dominated, while neither the main effect of the

disclosure nor the interaction of both variables was significant. The result of this analysis may thus be a validation of the time dependence of the strength of bottom-up and top-down processes, which Theuwees has illustrated in a series of experiments.

Relative accumulated fixation duration The same mechanism that were presumed to influence time to first fixation gave reason to the formulation of the hypotheses regarding relative accumulated fixation duration. An increase in the saliency of a region of the image leads to more accurate and earlier detection, increasing the effect that top-down processes might have. In our analysis we found a significant negative marginal effect of the interaction of the presence of a sponsorship disclosure and a salience manipulation. One explanation for a negative interaction effect was put forth by Van Reijmersdal et al. who argued with respect to brand memory that prominent brand placements already has a large positive effect which cannot be further increased by a disclosure condition (Van Reijmersdal et al., 2013). While this argumentation would corroborate the results of our study the argumentation hinges on the premise that a disclosure has a significant positive main effect onto relative accumulated fixation duration. No such effect was detected in the present study. In contrast, in the parsimonious model a negative direct effect of the disclosure condition was found. Therefore, the argumentation of Van Reijmersdal et al. is not a valid explanation of our results. Our results support the findings of Laran et al. that a persuasion attempt can have unintended, diametrically opposed, effects on consumer behaviour (Laran et al., 2011). The recognition of a persuasion attempt by the social media in connection with a salient promoted product could lead to her coping with the persuasion attempt by avoiding the advertising altogether to protect herself (Friestad & Wright, 1994).

6.1.4 Discussion of Further Results

Are Social Media User Experts? In section 2.5.2 we mentioned that experts show significantly shorter fixations on stimuli and fewer unnecessary fixations (Ashby et al., 2005). These statements were tested in section 5.5.

We first tested whether Instagram users fixated stimuli significantly shorter than non-Instagram users. In line with research on the fixations patterns of experts we found that Instagram users fixated the AOI on average for $43.5ms$ less than non-Instagram users. This difference was significant. In addition we ran a multilevel regression comparing the relative accumulated fixation duration allocated by social media users and non social media user allocated onto the promoted product and the distractor. Social media user allocated significantly more attention to the distractor (on average 4.6% see table 10). In contrast, we found no significant difference in the relative accumulated fixation duration allocated onto the promoted product between both groups. This is interesting for two reasons. First, social media user do indeed seem to be experts in the visual ecology of their environment as their attention allocation differs significantly from non social media user in both the duration of their fixations and the spacial distribution of their attention. Second, the fact that social media user pay more attention towards regions of an image where no brand related content is present may indicate that they avoid product placements. This could suggest a trained behaviour to protect oneself from persuasion attempts. In addition the shift in the distribution of attention towards the distractor was not reflected in an opposing effect onto the promoted product. This implies that social media user may have a more homogeneous distribution of attention or unexpected peaks in the distribution of their attention that could not be identified in this thesis.

Brand Memory as a Proxy for Visual Attention In section 5.5 we examined the relationship of visual attention and brand memory. The relationship between both variables has been cited in many studies and it has even been used as a proxy variable for attention. The reasoning is that increased attention leads to an increase in brand memory (Tessitore and Geuens, 2013; M. C. Campbell et al., 2013 Boerman, 2020; Pieters et al., 2002). While we were able to corroborate the result that visual attention does indeed increase brand recognition, this result did not hold for all dimensions of visual attention. While early attention, in the form of time to first fixation, significantly increased brand recognition, relative accumulated fixation duration did not. This result is interesting as the argumentation

why brand memory reflects visual attention normally is based on the time that the observer spent processing the stimulus. We were not able to find evidence for this. The increase in brand recognition due to a faster time to first fixation on the other hand is in line with research. According to a number of studies the meaning of an object is already determined in the early inspection of a scene (Stirk and Underwood, 2007; Loftus and Mackworth, 1978). Similarly, Simola et al. showed that an increase in early attention significantly increased logo recognition (Simola et al., 2013).

6.2 Limitations

Although the study was designed with great care, there are some limitations. We will first identify the main limitations, and discuss possible implications and possible solutions and finally make recommendations for future research.

Because the study was part of a larger study, stimuli were used before the experiment was conducted. In particular, some participants were cognitively exhausted by an ego depletion task. This could have had unobserved influences on all the downstream effects. However, since the randomisation was successful and there was no dependence between the ego depletion condition and other variables, our estimators are not biased. In reality, some Instagram users are also cognitively exhausted. Another consequence of the large study was the length of the experiment. Overall, the study lasted on average 35 minutes per participant. Although the participants were paid a standard wage of 7 Euros, it cannot be ruled out that the length of the study led to the fact that in later parts of the surveys the answers were given with less care. This may explain why the total time used for each Instagram post pro participant has steadily decreased. Each participant observed the first post for 9.83 seconds on average. Meanwhile, the last image was observed for just 6.63 seconds. On average, the total observation time for participants decreased by $430ms$ per additional task. Another limitation is that the observation of Instagram posts in a laboratory context may be significantly different than the real behaviour of users. For instance, it is likely that users differ significantly in real usage behaviour based on the

time allocated per post. This could increase the relevance of the effects on early attention compared to relative attention as any measurements related to time to first fixations constrain themselves to the first few $100ms$. In this study it was assumed that the experiences with the social media platform Facebook can be transferred to an Instagram context. Although the two platforms are similar in design and as they belong to the same parent company, the assumption is not necessarily fully justified. In order to investigate how different platform users differ from each other, stimuli will need to be incorporated into different contexts in the future. For example, this study could easily be repeated in a Facebook context. Several learning effects were identified in the course of data analysis. For example, the duration of the observation or the time to first fixation on the AOI decreased significantly. However, the inclusion of the sequence as a numerical covariate in the regression had no influence on the significance or direction of the effects. In principle, learning effects are not necessarily negative, as they can also occur in real contexts. The repeated viewing of individual posts, the repetition of tasks, leads to learning effects that reduce the time to first fixation or the number of unnecessary fixations, not only in a laboratory context but also in the real usage behaviour of social media of the subjects (Hayhoe, 2000). Learning effects therefore do not necessarily lead to biased estimators, but one should be aware of them. Since the sample was collected at a university and consists almost exclusively of prospective academics with a good to very good economic situation, it is questionable whether the results are transferable to a broader context. The design of the disclosure condition in our experiment was selected to optimize the relationship between validity and conspicuity of the sponsorship disclosure. Since the number of disclosures was higher than in a real context, the conspicuity was significantly increased. Under certain circumstances this could have led to excessively large effects.

6.3 Practical Implications

It was not the aim of the work to investigate the effects of attentional shifts on human behaviour. Therefore, many questions arising from the results of the work cannot be conclusively clarified. However, some implications can nevertheless be derived.

First of all, our results regarding the processing of sponsorship disclosures should be taken into account by platform operators and policy makers. While the absolute number of fixations on the disclosure decreased steadily during the experiment, the number of individual disclosures ensured that users were still aware of the commercial interest of the images at all times. The individual probabilities of noticing each individual disclosure decreased steadily by on average one fixation during the experiment while the joint probability of seeing one of the disclosures remained relatively stable [2]. This leads to the necessity for platform operators and policy makers to not only prominently place disclosures but also to display them multiple times.

Although the visual attention is only a precondition for a successful marketing campaign, the effects described in the paper should be taken into account. An increase in salience of the promoted product actually increases the visual attention to the product. At the same time, a disclosure has no direct effect on attention. Finally, it should be noted that in situations where sponsorship disclosure is necessary, an overly prominent presentation of the promoted product is not necessarily beneficial. The interaction of a disclosure and an increase in the saliency of the Instagram post can lead to the complete elimination of the elevated visual attention to the promoted product due to the salience manipulation.

6.4 Future Research

A variety of different bottom-up mechanisms influence the allocation of attention of all participants. Although the selection of the individual pictures was subject to strict criteria it was ultimately arbitrary. Many dimensions of images that might have had an influence (e.g. the centrality of the distractor, the amount of visual clutter and the gender of the distractor etc.) were not taken into account. In order to investigate the effects of other dimensions of images, a larger sample of images must be examined that vary with more dimensions. Investigating how different bottom-up processes interact with

[2] figure 4 displays the probabilty of seeing one disclosure and the average number of fixations onto all disclosures while a more detailed visualization of both the probabilty of seeing a specific disclosure and the average number of fixations onto each disclosure is displayed in the appendix in Figure 14

top-down effects such as the disclosure condition in a social media context should be investigated in more detail in future research. This would also reduce the estimator bias resulting from the fact that stimulus-specific effects may correlate with other variables. A correlation matrix of the individual dimensions can be found in Table 5, while Figure 7 in the appendix is a visualization of the picture element correlations. Finally, a stimulus-specific bias-estimation was also performed in the appendix in the section stimulus dependent bias estimation.

The operationalisation of early and relative attention corresponded to the common definitions from the literature (Meißner & Oll, 2019). Nevertheless, especially the time to first fixation is a highly variable measure to operationalise the concept of early attention. In future research, other measures of early and relative attention could be used to test the robustness of the results.

This work provides evidence for the assumption that participants behave differently if they are repeatedly confronted with a sponsorship disclosure or a promoted product. In the majority of studies on the effects of disclosure, only a single sponsorship disclosure or product placement is integrated into the experiment. Not only in a social media context does this not correspond to the real consumer experience. In addition we found empirical evidence that the number of fixations onto a disclosure is reduced after some time. Meanwhile, the probability of seeing at least one disclosure remained largely constant. It should be noted that individual disclosures without combinations with other disclosures may lead to a reduced awareness of the sponsored content. This is because the probability of seeing a single disclosure decreased for each of the individual disclosures. Nevertheless, the joint probability of seeing a disclosure remained relatively stable. This should be taken into account by future research projects investigating the effectiveness of disclosure and also by policy makers when drafting regulations on native advertising. Furthermore, the first experimental condition differed significantly from the remaining conditions, which is a further motivation for the integration of several posts. Social media users see several sponsored posts in succession. Therefore, future research should also focus

on measuring the effects of repeated product placements integrated in a real context, i.e. including non-sponsored posts. Therefore, we recommend that future research be based on the repeated-measure within-subject design to more validly measure the effects of a disclosure in a social media context.

Declaration of honour

I hereby declare on my honour that I have written this thesis with the title:

Investigating Bottom-up and Top-Down Processes of Visual Attention in a Social Media Context

independently and without outside help.
I have indicated the use of literal quotations as well as the thoughts of other authors at the appropriate places of the work. I am aware that a false declaration will have legal consequences.

Hiermit erkläre ich ehrenwörtlich, dass ich die Arbeit mit dem Titel:

Investigating Bottom-up and Top-Down Processes of Visual Attention in a Social Media Context

eigenständig und ohne fremde Hilfe geschrieben habe.
Ich habe die Verwendung von wörtlichen Zitaten sowie die Gedanken anderer Autoren an den entsprechenden Stellen der Arbeit angegeben. Ich bin mir bewusst, dass falsche Angaben rechtliche Konsequenzen nach sich ziehen.

Dorian Quelle	January 21, 2021

References

Amazeen, M. A., & Wojdynski, B. W. (2018). The effects of disclosure format on native advertising recognition and audience perceptions of legacy and online news publishers. *Journalism*, 1464884918754829.

Anderson, J. R., Bothell, D., & Douglass, S. (2004). Eye movements do not reflect retrieval processes: Limits of the eye-mind hypothesis. *Psychological Science*, *15*(4), 225–231.

Ashby, J., Rayner, K., & Clifton Jr, C. (2005). Eye movements of highly skilled and average readers: Differential effects of frequency and predictability. *The Quarterly Journal of Experimental Psychology Section A*, *58*(6), 1065–1086.

Bakhshi, S., Shamma, D. A., & Gilbert, E. (2014). Faces engage us: Photos with faces attract more likes and comments on instagram, In *Proceedings of the sigchi conference on human factors in computing systems*.

Balasubramanian, S. K., Karrh, J. A., & Patwardhan, H. (2006). Audience response to product placements: An integrative framework and future research agenda. *Journal of advertising*, *35*(3), 115–141.

Bertrams, A., Englert, C., & Dickhäuser, O. (2010). Self-control strength in the relation between trait test anxiety and state anxiety. *Journal of Research in Personality*, *44*(6), 738–741.

Bhatnagar, N., Aksoy, L., & Malkoc, S. A. (2004). Embedding brands within media content: The impact of message, media, and consumer characteristics on placement efficacy. *The psychology of entertainment media: Blurring the lines between entertainment and persuasion*, 99–116.

Bialkova, S., & van Trijp, H. (2010). What determines consumer attention to nutrition labels? *Food quality and preference*, *21*(8), 1042–1051.

Blight, M. G., Ruppel, E. K., & Schoenbauer, K. V. (2017). Sense of community on twitter and instagram: Exploring the roles of motives and parasocial relationships. *Cyberpsychology, Behavior, and Social Networking*, *20*(5), 314–319.

Boerman, S. C. (2020). The effects of the standardized instagram disclosure for micro-and meso-influencers. *Computers in Human Behavior*, *103*, 199–207.

Boerman, S. C., Van Reijmersdal, E. A., & Neijens, P. C. (2015). Using eye tracking to understand the effects of brand placement disclosure types in television programs. *Journal of Advertising*, *44*(3), 196–207.

Boerman, S. C., & van Reijmersdal, E. A. (2016). Informing consumers about hidden advertising. a literature review of the effects of disclosing sponsored content. *Advertising in new formats and media: Current research and implications for marketers*, 115–146.

Boerman, S. C., Willemsen, L. M., & Van Der Aa, E. P. (2017). this post is sponsored": Effects of sponsorship disclosure on persuasion knowledge and electronic word of mouth in the context of facebook. *Journal of Interactive Marketing*, *38*, 82–92.

Buschman, T. J., & Miller, E. K. (2007). Top-down versus bottom-up control of attention in the prefrontal and posterior parietal cortices. *science*, *315*(5820), 1860–1862.

Cain, R. M. (2011). Embedded advertising on television: Disclosure, deception, and free speech rights. *Journal of Public Policy & Marketing*, *30*(2), 226–238.

Cameron, G. T., & Curtin, P. A. (1995). Tracing sources of information pollution: A survey and experimental test of print media's labeling policy for feature advertising. *Journalism & Mass Communication Quarterly*, *72*(1), 178–189.

Campbell, C., & Grimm, P. E. (2019). The challenges native advertising poses: Exploring potential federal trade commission responses and identifying research needs. *Journal of Public Policy & Marketing*, *38*(1), 110–123.

Campbell, C., & Marks, L. J. (2015). Good native advertising isn'ta secret. *Business Horizons*, *58*(6), 599–606.

Campbell, M. C., Mohr, G. S., & Verlegh, P. W. (2013). Can disclosures lead consumers to resist covert persuasion? the important roles of disclosure timing and type of response. *Journal of Consumer Psychology*, *23*(4), 483–495.

Caputo, G., & Guerra, S. (1998). Attentional selection by distractor suppression. *Vision research*, *38*(5), 669–689.

Chan, F. F. Y., Lowe, B., & Petrovici, D. (2016). Processing of product placements and brand persuasiveness. *Marketing Intelligence & Planning*.

Cho, C.-H. (2004). Why do people avoid advertisment on the internet? *Journal of Advertising*, *33*(4), 89–97. https://doi.org/10.1080/00913367.2004.10639175

Clement, J. (2020). Topic: Social media. https://www.statista.com/topics/1164/social-networks/

Cohen, B., Matsuo, V., & Raphan, T. (1977). Quantitative analysis of the velocity characteristics of optokinetic nystagmus and optokinetic after-nystagmus. *The Journal of physiology*, *270*(2), 321–344.

Council of European Union. (2018). Directive 2010/13/eu of the european parliament and of the council consolidated in 2018 [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02010L0013-20181218].

Cronin, T. W., Johnsen, S., Marshall, N. J., & Warrant, E. J. (2014). *Visual ecology*. Princeton University Press.

d'Astous, A., & Seguin, N. (1999). Consumer reactions to product placement strategies in television sponsorship. *European journal of Marketing*.

De Jans, S., Vanwesenbeeck, I., Cauberghe, V., Hudders, L., Rozendaal, E., & van Reijmersdal, E. A. (2018). The development and testing of a child-inspired advertising disclosure to alert children to digital and embedded advertising. *Journal of advertising*, *47*(3), 255–269.

De Veirman, M., Cauberghe, V., & Hudders, L. (2017). Marketing through instagram influencers: The impact of number of followers and product divergence on brand attitude. *International Journal of Advertising*, *36*(5), 798–828.

De Vries, L., Gensler, S., & Leeflang, P. S. (2012). Popularity of brand posts on brand fan pages: An investigation of the effects of social media marketing. *Journal of interactive marketing*, *26*(2), 83–91.

Dens, N., De Pelsmacker, P., & Verhellen, Y. (2018). Better together? harnessing the power of brand placement through program sponsorship messages. *Journal of Business Research*, *83*, 151–159.

Deubel, H., Schneider, W. X. Et al. (1996). Saccade target selection and object recognition: Evidence for a common attentional mechanism. *Vision research*, *36*(12), 1827–1838.

Duchowski, A. T., & Duchowski, A. T. (2017). *Eye tracking methodology: Theory and practice*. Springer.

Duffy, B. E., Pruchniewska, U., & Scolere, L. (2017). Platform-specific self-branding: Imagined affordances of the social media ecology, In *Proceedings of the 8th international conference on social media & society*.

Egeth, H. E., & Yantis, S. (1997). VISUAL ATTENTION: Control, Representation, and Time Course. *Annual Review of Psychology*, *48*(1), 269–297. https://doi.org/10.1146/annurev.psych.48.1.269

Eisend, M. (2020). *Metaanalyse*. Rainer Hampp Verlag.

Evans, N. J., Phua, J., Lim, J., & Jun, H. (2017). Disclosing instagram influencer advertising: The effects of disclosure language on advertising recognition, attitudes, and behavioral intent. *Journal of Interactive Advertising*, *17*(2), 138–149.

Federal Trade Comission. (2015). Native advertising: A guide for businesses. https://www.ftc.gov/tips-advice/business-center/guidance/native-advertising-guide-businesses

Folk, C. L., & Remington, R. W. (2008). Bottom-up priming of top-down attentional control settings. *Visual Cognition*, *16*(2-3), 215–231.

Fransen, M. L., & Fennis, B. M. (2014). Comparing the impact of explicit and implicit resistance induction strategies on message persuasiveness. *Journal of Communication*, *64*(5), 915–934.

Friestad, M., & Wright, P. (1994). The persuasion knowledge model: How people cope with persuasion attempts. *Journal of consumer research*, *21*(1), 1–31.

Furley, P., Bertrams, A., Englert, C., & Delphia, A. (2013). Ego depletion, attentional control, and decision making in sport. *Psychology of Sport and Exercise*, *14*(6), 900–904.

Garcia-Diaz, A., Fdez-Vidal, X. R., Pardo, X. M., & Dosil, R. (2012). Saliency from hierarchical adaptation through decorrelation and variance normalization. *Image and Vision Computing*, *30*(1), 51–64.

Goldstein, H. (2003). Multilevel modelling of educational data, In *Methodology and epistemology of multilevel analysis*. Springer.

Guo, F., Ye, G., Duffy, V. G., Li, M., & Ding, Y. (2018). Applying eye tracking and electroencephalography to evaluate the effects of placement disclosures on brand responses. *Journal of Consumer Behaviour*, *17*(6), 519–531.

Gupta, P. B., & Lord, K. R. (1998). Product placement in movies: The effect of prominence and mode on audience recall. *Journal of Current Issues & Research in Advertising*, *20*(1), 47–59.

Hagger, M. S., Wood, C., Stiff, C., & Chatzisarantis, N. L. (2010). Ego depletion and the strength model of self-control: A meta-analysis. *Psychological bulletin*, *136*(4), 495.

Hartmann, J., Heitmann, M., Schamp, C., & Netzer, O. (2019). The power of brand selfies in consumer-generated brand images. *Columbia Business School Research Paper Forthcoming*.

Hayhoe, M. (2000). Vision using routines: A functional account of vision. *Visual Cognition*, *7*(1-3), 43–64.

Herr, P. M. (1986). Consequences of priming: Judgment and behavior. *Journal of personality and social psychology*, *51*(6), 1106.

Hoffman, J. E., & Subramaniam, B. (1995). The role of visual attention in saccadic eye movements. *Perception & psychophysics*, *57*(6), 787–795.

Hsee, C. K., Yang, A. X., & Wang, L. (2010). Idleness aversion and the need for justifiable busyness. *Psychological Science*, *21*(7), 926–930.

IAB Europe. (2016). How to comply with eu rules applicable to online native advertising. https://iabeurope.eu/wp-content/uploads/2020/06/20161207_IAB-Europe-Online-Native-Advertising-Guidance.pdf

Itti, L., Niebur, E., Braun, J., & Koch, C. (1996). A trainable model of saliency-based visual attention, In *Soc. neurosci. abstr.* Washington, DC, Society for Neuroscience.

Itti, L., & Koch, C. (2001). Feature combination strategies for saliency-based visual attention systems. *Journal of Electronic imaging*, *10*(1), 161–169.

Itti, L., & Koch, C. (2000). A saliency-based search mechanism for overt and covert shifts of visual attention. *Vision Research*, *40*(10-12), 1489–1506. https://doi.org/10.1016/S0042-6989(99)00163-7

Itti, L., Koch, C., & Niebur, E. (1998). A model of saliency-based visual attention for rapid scene analysis. *IEEE Transactions on pattern analysis and machine intelligence*, *20*(11), 1254–1259.

Jensen, M. S., Yao, R., Street, W. N., & Simons, D. J. (2011). Change blindness and inattentional blindness. *Wiley Interdisciplinary Reviews: Cognitive Science*, *2*(5), 529–546.

Jin, S. V., Muqaddam, A., & Ryu, E. (2019). Instafamous and social media influencer marketing. *Marketing Intelligence & Planning*.

Joseph, J. S., & Optican, L. M. (1996). Involuntary attentional shifts due to orientation differences. *Perception & Psychophysics*, *58*(5), 651–665.

Just, M. A., & Carpenter, P. A. (1976). Eye fixations and cognitive processes. *Cognitive psychology*, *8*(4), 441–480.

Kapitaniak, B., Walczak, M., Kosobudzki, M., Jozwiak, Z., & Bortkiewicz, A. (2015). Application of eye-tracking in drivers testing: A review of research. *International journal of occupational medicine and environmental health*, *28*(6), 941.

Kavukcuoglu, K., Sermanet, P., Boureau, Y.-L., Gregor, K., Mathieu, M., Cun, Y., Et al. (2010). Learning convolutional feature hierarchies for visual recognition. *Advances in neural information processing systems*, *23*, 1090–1098.

Kim, B.-H., Pasadeos, Y., & Barban, A. (2001). On the deceptive effectiveness of labeled and unlabeled advertorial formats. *Mass Communication & Society*, *4*(3), 265–281.

Kirchhoff, S. M. (2009). *Advertising industry in the digital age*. Congressional Research Service.

Koch, K., McLean, J., Segev, R., Freed, M. A., Berry II, M. J., Balasubramanian, V., & Sterling, P. (2006). How much the eye tells the brain. *Current Biology*, *16*(14), 1428–1434.

Koller, M. (2016). Robustlmm: An r package for robust estimation of linear mixed-effects models. *Journal of statistical software*, *75*(6), 1–24.

Kowler, E., Anderson, E., Dosher, B., & Blaser, E. (1995). The role of attention in the programming of saccades. *Vision research*, *35*(13), 1897–1916.

Laran, J., Dalton, A. N., & Andrade, E. B. (2011). The curious case of behavioral backlash: Why brands produce priming effects and slogans produce reverse priming effects. *Journal of Consumer Research*, *37*(6), 999–1014.

Lee, D., Hosanagar, K., & Nair, H. S. (2018). Advertising content and consumer engagement on social media: Evidence from facebook. *Management Science*, *64*(11), 5105–5131.

Liu, L., Dzyabura, D., & Mizik, N. (2020). Visual listening in: Extracting brand image portrayed on social media. *Marketing Science*, *39*(4), 669–686.

Loftus, G. R., & Mackworth, N. H. (1978). Cognitive determinants of fixation location during picture viewing. *Journal of Experimental Psychology: Human perception and performance*, *4*(4), 565.

Lohse, G. L. (1997). Consumer eye movement patterns on yellow pages advertising. *Journal of Advertising*, *26*(1), 61–73.

Lou, C., & Yuan, S. (2019). Influencer marketing: How message value and credibility affect consumer trust of branded content on social media. *Journal of Interactive Advertising*, *19*(1), 58–73.

Matin, E. (1974). Saccadic suppression: A review and an analysis. *Psychological bulletin*, *81*(12), 899.

Matteo, S., & Dal Zotto, C. (2015). Native advertising, or how to stretch editorial to sponsored content within a transmedia branding era, In *Handbook of media branding*. Springer.

Matthes, J., & Naderer, B. (2016). Product placement disclosures: Exploring the moderating effect of placement frequency on brand responses via persuasion knowledge. *International Journal of Advertising*, *35*(2), 185–199.

Maunsell, J., & Vaina, L. (1987). Matters of intelligence: Conceptual structures in cognitive neuroscience.

Mediakix. (2019). Influencer marketing survey results: 2019 industry benchmarks. https://mediakix.com/influencer-marketing-resources/influencer-marketing-industry-statistics-survey-benchmarks/

Meißner, M., & Oll, J. (2019). The promise of eye-tracking methodology in organizational research: A taxonomy, review, and future avenues. *Organizational Research Methods*, *22*(2), 590–617.

Milosavljevic, M., Navalpakkam, V., Koch, C., & Rangel, A. (2012). Relative visual saliency differences induce sizable bias in consumer choice. *Journal of Consumer Psychology*, *22*(1), 67–74. https://doi.org/10.1016/j.jcps.2011.10.002

Mukherjee, S., & Chatterjee, A. (2007). The concept of bottleneck, In *International conference on multi-echelon*.

Navalpakkam, V., & Itti, L. (2005). Modeling the influence of task on attention. *Vision research*, *45*(2), 205–231.

Olsen, A. (2012). The tobii i-vt fixation filter algorithm description. https://www.tobiipro.com/siteassets/tobii-pro/learn-and-support/analyze/how-do-we-classify-eye-movements/tobii-pro-i-vt-fixation-filter.pdf/?v=2012

Orquin, J. L., Bagger, M. P., Lahm, E. S., Grunert, K. G., & Scholderer, J. (2020). The visual ecology of product packaging and its effects on consumer attention. *Journal of Business Research*, *111*, 187–195.

Orquin, J. L., & Holmqvist, K. (2018). Threats to the validity of eye-movement research in psychology. *Behavior research methods*, *50*(4), 1645–1656.

Orquin, J. L., & Lagerkvist, C. J. (2015). Effects of salience are both short- and long-lived. *Acta psychologica*, *160*, 69–76.

Orquin, J. L., & Loose, S. M. (2013). Attention and choice: A review on eye movements in decision making. *Acta psychologica*, *144*(1), 190–206.

Parkhurst, D., Law, K., & Niebur, E. (2002). Modeling the role of salience in the allocation of overt visual attention. *Vision Research*, *42*(1), 107–123. https://doi.org/10.1016/S0042-6989(01)00250-4

Peng, Y. (2020). What makes politicians' instagram posts popular? analyzing social media strategies of candidates and office holders with computer vision. *The International Journal of Press/Politics*, 1940161220964769.

Pieters, R., Warlop, L., & Wedel, M. (2002). Breaking through the clutter: Benefits of advertisement originality and familiarity for brand attention and memory. *Management science*, *48*(6), 765–781.

Pinto, Y., van der Leij, A. R., Sligte, I. G., Lamme, V. A., & Scholte, H. S. (2013). Bottom-up and top-down attention are independent. *Journal of vision*, *13*(3), 16–16.

Postman, N., & Eurich, A. C. (1970). High school 1980: The shape of the future in american secondary education. Pitman.

Rayner, K. (1998). Eye movements in reading and information processing: 20 years of research. *Psychological bulletin*, *124*(3), 372.

Rayner, K., & Clifton Jr, C. (2009). Language processing in reading and speech perception is fast and incremental: Implications for event-related potential research. *Biological psychology*, *80*(1), 4–9.

Reichle, E. D., & Reingold, E. M. (2013). Neurophysiological constraints on the eye-mind link. *Frontiers in Human Neuroscience*, *7*, 361.

Reutskaja, E., Nagel, R., Camerer, C. F., & Rangel, A. (2011). Search dynamics in consumer choice under time pressure: An eye-tracking study. *American Economic Review*, *101*(2), 900–926.

Ro, T., Friggel, A., & Lavie, N. (2007). Attentional biases for faces and body parts. *Visual Cognition*, *15*(3), 322–348.

Romaniuk, J., & Sharp, B. (2004). Conceptualizing and measuring brand salience. *Marketing theory*, *4*(4), 327–342.

Rosenholtz, R., Li, Y., & Nakano, L. (2007). Measuring visual clutter. *Journal of vision*, *7*(2), 17–17.

Rotfeld, H. J. (2008). The stealth influence of covert marketing and much ado about what may be nothing. *Journal of public policy & marketing*, *27*(1), 63–68.

Rozendaal, E., Lapierre, M. A., Van Reijmersdal, E. A., & Buijzen, M. (2011). Reconsidering advertising literacy as a defense against advertising effects. *Media Psychology*, *14*(4), 333–354.

Schielzeth, H., Dingemanse, N. J., Nakagawa, S., Westneat, D. F., Allegue, H., Teplitsky, C., Réale, D., Dochtermann, N. A., Garamszegi, L. Z., & Araya-Ajoy, Y. G. (2020). Robustness of linear mixed-effects mod-

els to violations of distributional assumptions. *Methods in Ecology and Evolution*, *11*(9), 1141–1152.

Shinoda, H., Hayhoe, M. M., & Shrivastava, A. (2001). What controls attention in natural environments? *Vision research*, *41*(25-26), 3535–3545.

Simola, J., Kivikangas, M., Kuisma, J., & Krause, C. M. (2013). Attention and memory for newspaper advertisements: Effects of ad–editorial congruency and location. *Applied Cognitive Psychology*, *27*(4), 429–442.

Simola, J., Kuisma, J., Öörni, A., Uusitalo, L., & Hyönä, J. (2011). The impact of salient advertisements on reading and attention on web pages. *Journal of Experimental Psychology: Applied*, *17*(2), 174.

Simon, H. A. (1996). Designing organizations for an information-rich world. *International Library of Critical Writings in Economics*, *70*, 187–202.

Singer, N. (2015). Can't put down your device? that's by design. *The New York Times*, *5*.

Smink, A. R., van Reijmersdal, E. A., & Boerman, S. C. (2017). Effects of brand placement disclosures: An eye tracking study into the effects of disclosures and the moderating role of brand familiarity, In *Advances in advertising research viii*. Springer.

Smit, E. G., Boerman, S. C., & van Meurs, L. (2015). The power of direct context as revealed by eye tracking: A model tracks relative attention to competing editorial and promotional content. *Journal of Advertising Research*, *55*(2), 216–227.

Spielvogel, I., Naderer, B., & Matthes, J. (2020). Again and again: Exploring the influence of disclosure repetition on children's cognitive processing of product placement. *International Journal of Advertising*, *39*(5), 611–630.

Sprague, N., Ballard, D., & Robinson, A. (2007). Modeling embodied visual behaviors. *ACM Transactions on Applied Perception (TAP)*, *4*(2), 11–es.

Stirk, J. A., & Underwood, G. (2007). Low-level visual saliency does not predict change detection in natural scenes. *Journal of vision*, *7*(10), 3–3.

Tessitore, T., & Geuens, M. (2013). Pp for 'product placement'or 'puzzled public'? the effectiveness of symbols as warnings of product placement and the moderating role of brand recall. *International Journal of Advertising*, *32*(3), 419–442.

Tewksbury, D., Jensen, J., & Coe, K. (2011). Video news releases and the public: The impact of source labeling on the perceived credibility of television news. *Journal of Communication*, *61*(2), 328–348.

Theeuwes, J. (1991). Exogenous and endogenous control of attention: The effect of visual onsets and offsets. *Perception & psychophysics*, *49*(1), 83–90.

Theeuwes, J. (1992). Perceptual selectivity for color and form. *Perception & psychophysics*, *51*(6), 599–606.

Theeuwes, J. (1994). Stimulus-driven capture and attentional set: Selective search for color and visual abrupt onsets. *Journal of Experimental Psychology: Human perception and performance*, *20*(4), 799.

Theeuwes, J. (2010). Top–down and bottom–up control of visual selection. *Acta psychologica*, *135*(2), 77–99.

Theeuwes, J., Atchley, P., & Kramer, A. F. (2000). On the time course of top-down and bottom-up control of visual attention. *Control of cognitive processes: Attention and performance XVIII*, 105–124.

Thoma, V., & Lavie, N. (2013). Perceptual load effects on processing distractor faces indicate face-specific capacity limits. *Visual Cognition*, *21*(8), 1053–1076.

Tobii, T. (2019). Weiträumiger forschen mit dem tobii pro fusion eye tracker. https://www.tobiipro.com/de/produkte/fusion/

Treisman, A. M., & Gelade, G. (1980). A feature-integration theory of attention. *Cognitive psychology*, *12*(1), 97–136.

Underwood, G., & Everatt, J. (1992). The role of eye movements in reading: Some limitations of the eye-mind assumption, In *Advances in psychology*. Elsevier.

Uribe, R., & Fuentes-Garcıa, A. (2020). Disclosing product placements of fast food to children: The importance of reinforcing the use of disclosures and the age of children. *Health communication*, *35*(11), 1415–1425.

Vadillo, M. A., Street, C. N., Beesley, T., & Shanks, D. R. (2015). A simple algorithm for the offline recalibration of eye-tracking data through best-fitting linear transformation. *Behavior research methods*, *47*(4), 1365–1376.

Valentini, C., Romenti, S., Murtarelli, G., & Pizzetti, M. (2018). Digital visual engagement: Influencing purchase intentions on instagram. *Journal of Communication Management*.

Van Gompel, R. P. G. (Ed.). (2007). *Eye movements: A window on mind and brain* (1st ed) [Meeting Name: European Conference on Eye Movements OCLC: ocm82671634]. Amsterdam ; Boston, Elsevier.

Van Reijmersdal, E. A. (2011). Mixing advertising and editorial content in radio programmes: Appreciation and recall of brand placements versus commercials. *International Journal of Advertising*, *30*(3), 425–446.

Van Reijmersdal, E. A., Rozendaal, E., & Buijzen, M. (2012). Effects of prominence, involvement, and persuasion knowledge on children's cognitive and affective responses to advergames. *Journal of Interactive Marketing*, *26*(1), 33–42.

Van Reijmersdal, E. A., Tutaj, K., & Boerman, S. C. (2013). The effects of brand placement disclosures on skepticism and brand memory. *Communications*, *38*(2), 127–146.

Van Reijmersdal, E. A., Lammers, N., Rozendaal, E., & Buijzen, M. (2015). Disclosing the persuasive nature of advergames: Moderation effects of mood on brand responses via persuasion knowledge. *International Journal of Advertising*, *34*(1), 70–84.

Velichkovsky, B. M., Rothert, A., Kopf, M., Dornhöfer, S. M., & Joos, M. (2002). Towards an express-diagnostics for level of processing and hazard perception. *Transportation Research Part F: Traffic Psychology and Behaviour*, *5*(2), 145–156.

Wedel, M., & Pieters, R. (2006). Chapter 6: A theory of attention to visual marketing.". *Foundations & Trends In Marketing*, *1*(4).

Wolfe, J. M. (1994). Guided search 2.0 a revised model of visual search. *Psychonomic bulletin & review*, *1*(2), 202–238.

Wolfe, J. M. (2001). Guided search 4.0: A guided search model that does not require memory for rejected distractors. *Journal of Vision*, *1*(3), 349–349.

Wolfe, J. M., Cave, K. R., & Franzel, S. L. (1989). Guided search: An alternative to the feature integration model for visual search. *Journal of Experimental Psychology: Human perception and performance*, *15*(3), 419.

Wolfe, J. M., Friedman-Hill, S. R., Stewart, M. I., & O'Connell, K. M. (1992). The role of categorization in visual search for orientation. *Journal of Experimental Psychology: Human Perception and Performance*, *18*(1), 34–49. https://doi.org/10.1037/0096-1523.18.1.34

Wolfe, J. M., & Gancarz, G. (1997). Guided search 3.0, In *Basic and clinical applications of vision science*. Springer.

Wolfe, J., Cave, K., & Franzel, S. (1989). Guided search: An alternative to the feature integration model for visual search. *Journal of experimental psychology. Human perception and performance*, *15*, 419–33. https://doi.org/10.1037/0096-1523.15.3.419

Xiao, L., & Ding, M. (2014). Just the faces: Exploring the effects of facial features in print advertising. *Marketing Science*, *33*(3), 338–352.

Yarbus, A. L. (1967). Eye movements during perception of complex objects, In *Eye movements and vision*. Springer.

Yuan, S., & Lou, C. (2020). How social media influencers foster relationships with followers: The roles of source credibility and fairness in parasocial relationship and product interest. *Journal of Interactive Advertising*, (just-accepted), 1–42.

Zhang, L., & Hou, X. (2007). Saliency detection: A spectral residual approach, In *2007 ieee conference on computer vision and pattern recognition*. IEEE.

7 Appendix

Image Dimension Visualization

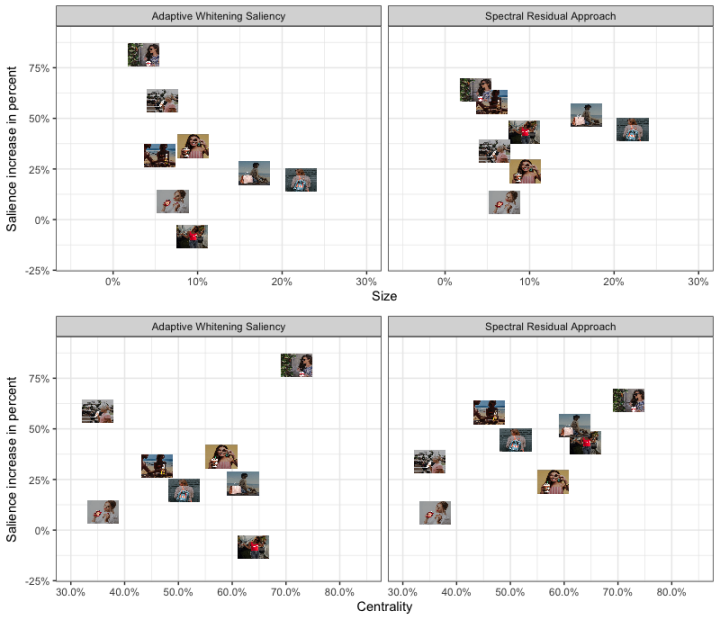


Figure 7: Correlation of Image Dimensions

As already discussed, there are many dimensions that determine and influence bottom-up processes. Since we have only manipulated the local brightness of the images it is important to ensure that the individual dimensions of the images do not correlate too strongly. For this purpose, a correlation matrix (table 5). was specified in section 5.1. An appealing visualisation of the individual image dimensions is presented at this point. In the upper row of the graph the salience increase is placed against the size of the AOIs. In the left section, the results of the adaptive whitening saliency model are given, while the estimates of the spectral residual approach for salience determination are assumed in the right section. In the lower row of the graph, the difference in salience is plotted on the y axis while on the x axis the Euclidean distance, normalised by the longest half diagonal of the image, is plotted. As we can see no clear pattern emerges that would call into question the validity of the anaylsis.

Diagnostic Graphs for Linear Mixed Model

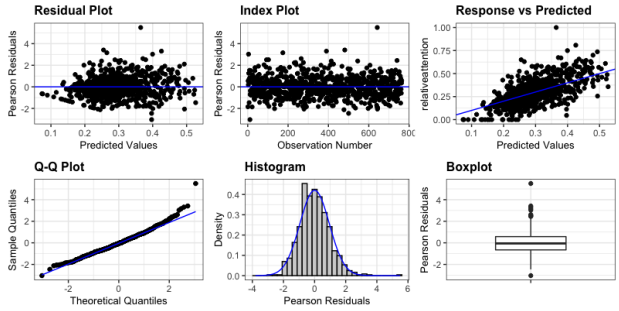


Figure 8: Diagnostic plots for relative accumulated fixation duration

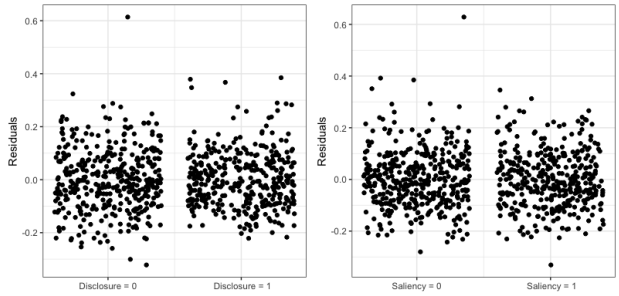


Figure 9: Linearity assumption for relative accumulated fixation duration

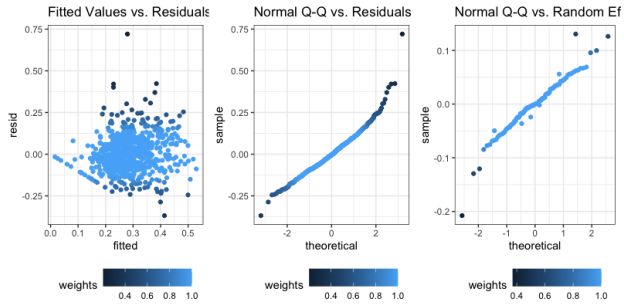


Figure 10: Diagnostic plots of robust linear mixed model

Diagnostic Graphs for Linear Mixed Model

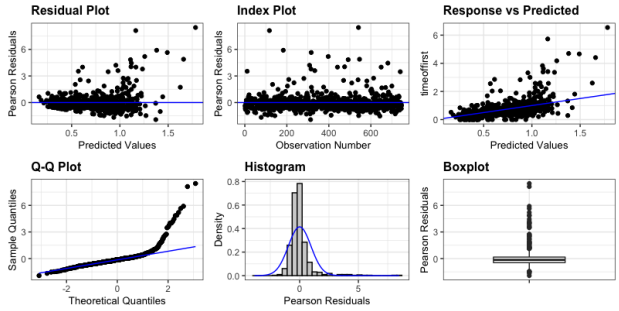


Figure 11: Diagnostic plots for time to first fixation

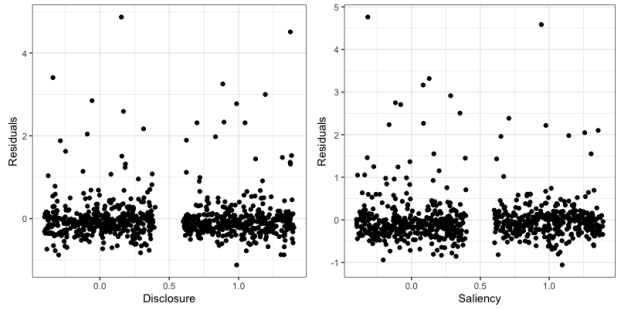


Figure 12: Linearity Assumption

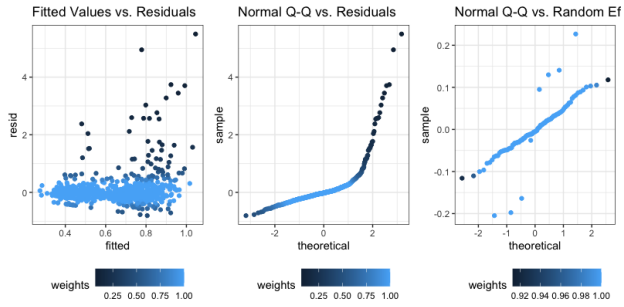


Figure 13: Diagnostic plots of robust linear mixed model

Further Analyses regarding behavioural Variables

Table 14: Effects of Salience and Disclosure on Purchase Intention

	Dependent variable:
	Purchase Intention
Salience	−0.108
	p = 0.519
Disclosure	0.037
	p = 0.826
Salience:Disclosure	0.234
	p = 0.340
Constant	3.180***
	p = 0.000
Observations	763
Log Likelihood	-1,506.220
Akaike Inf. Crit.	3,026.440
Bayesian Inf. Crit.	3,058.901
Note:	*p<0.1; **p<0.05; ***p<0.01

Towards the end of the questionnaire the purchase intention of the test persons was queried for all brands. The regression shows that neither the salience manipulation nor the disclosure condition had a significant effect on the purchase intention.

Further Analyses regarding behavioural Variables

Table 15: Effects of Salience and Disclosure on Purchase Intention

	Dependent variable:
	Brand Attitude
Salience	−0.218
	p = 0.159
Disclosure	−0.054
	p = 0.733
Salience:Disclosure	0.268
	p = 0.240
Constant	4.143***
	p = 0.000
Observations	763
Log Likelihood	−1,458.762
Akaike Inf. Crit.	2,931.523
Bayesian Inf. Crit.	2,963.984
Note:	*p<0.1; **p<0.05; ***p<0.01

Subsequently, the brand attitude of each participant was surveyed for each brand. Again, neither salience nor disclosure had an effect on the brand attitude.

Stimulus dependent Bias Estimation

In section 4.1 we talked about the fact that the task had to be repeated several times in the experiment and a number of different stimuli had to be used because the bias of the estimators depends on how large and variable the characteristics of the stimuli are. In line with Orquin we calculated the expected deviation $\mathbf{E}[d]$ which is dependent on the number of stimuli $\mathbf{N}$ and the standard deviation $\sigma = \frac{s}{\sqrt{N}}$ of the stimulus sample, where s is the populations standard deviation (Orquin & Holmqvist, 2018).

$$\mathbf{E}[d] = \int_0^\infty 2x \frac{1}{\sigma\sqrt{2\pi}} e^{-(x)^2/2\sigma^2} dx$$

For both the original salience, the salience increase, the size of the AOI and the centrality of the AOI the calculation yielded an average bias of $\mathbf{E}[d] \leq 0.2$. As a result, biased estimators resulting because of stimulus specific elements have become unlikely. Nevertheless, if we conclude that the stimuli might differ along more than one dimension the probability of having biased estimators is one minus the probability that one estimator is biased raised to the number of possible dimensions. This again confirms the importance of including many stimuli in eye tracking experiments.

Table 16: Variable description by Instagram post

Brand	Relative Attention (not Salient)	Relative Attention (Salient)	Time to first Fixation (not Salient)	Time to first Fixation (Salient)
Starbucks	0.231	0.261	0.921	1.012
Levis	0.231	0.348	0.527	0.422
Gucci	0.263	0.295	0.528	0.492
Fjaellräven	0.438	0.421	0.462	0.444
Corona	0.356	0.322	0.729	0.622
Häagen-Dazs	0.241	0.257	1.124	0.833
Voss	0.215	0.234	1.071	0.901
Louis Vuitton	0.228	0.250	1.461	0.931
Average	0.276	0.299	0.853	0.707

Variable Description by Post

The selection of individual Instagram Posts is described in detail in section 4.1. Nevertheless, many dimensions have been ignored. Since the image-specific effects have been corrected in all regressions using a random intercept, they do not affect the estimates of the effects of our independent variables. Nevertheless, in this table a summary statistic is presented to illustrate the image-specific effects in terms of relative accumulated fixation duration and time to first fixation.

Graphical illustration of visual attention towards disclosure types

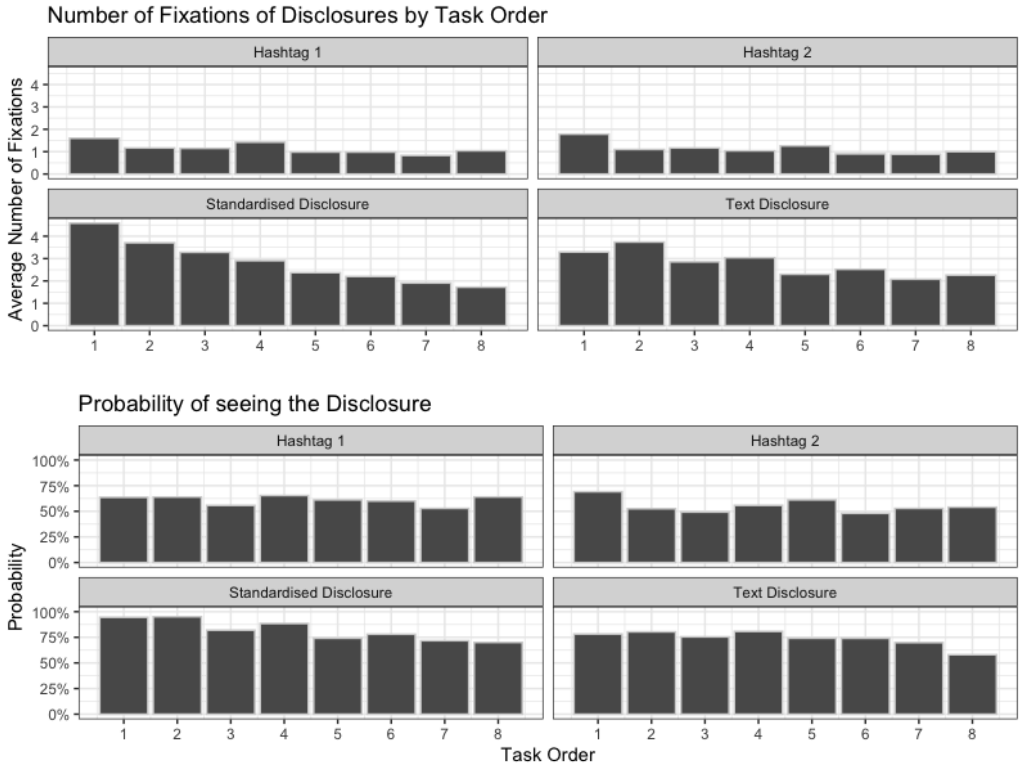


Figure 14: Attention to disclosures by type

Questionnaire

The questionnaire employed in the experiment is shown on the following pages.

Start

Begruessung

Herzlich willkommen,

im Rahmen eines Forschungsprojektes führen wir dieses Laborexperiment durch. Die Ergebnisse des Experimentes werden ausschließlich zu wissenschaftlichen Zwecken genutzt.

Alle Daten werden in anonymisierter Form ausgewertet und sind nicht für Dritte zugänglich. Rückschlüsse auf einzelne Personen sind nicht möglich.

Das Experiment wird etwa 25 Minuten dauern.

Für Fragen, Anregungen und weitere Informationen können Sie uns jederzeit unter j.bruens@zeppelin-university.net erreichen.

Vielen Dank für Ihre Teilnahme am Experiment!
Prof. Dr. Martin Meißner, Dorian Quelle und Jasper Brüns

Intro

Das Experiment umfasst zwei Teile. Im ersten Teil geht es darum, Ihre Augenbewegungen im Rahmen einer Leseaufgabe mittels Blickbewegungsmessung (Eyetracking) zu messen.

Das Eyetracking-Gerät ist an dem Computer angebracht und funktioniert via Infrarot-Messung, die absolut ungefährlich ist. Ihnen muss keine zusätzliche Ausrüstung angelegt werden, sodass Sie die Inhalte des Experimentes uneingeschränkt und natürlich wahrnehmen können.

Bitte versuchen Sie, während des Experimentes möglichst still zu sitzen, sich so wenig wie möglich zu bewegen und Ihre Sitzposition nicht zu verändern.

ID1

Bitte geben Sie die Anfangsbuchstaben des ersten Vor- und aktuellen Nachnamens Ihrer Mutter, die Anfangsbuchstaben des ersten Vor- und aktuellen Nachnamens Ihres Vaters sowie Ihr Geburtsjahr an.

Bitte benutzen Sie Großbuchstaben und verwenden Sie keine Leerzeichen.

Beispiel:
Mutter - Lara Croft
Vater - Frodo Beutlin
Geburtsjahr - 1992

-> LCFB1992

DepletionTask

Bitte übertragen Sie den folgenden Text in das Textfeld. Beachten Sie bitte Groß- und Kleinschreibung und halten Sie sich nicht lange mit der Korrektur von Fehlern auf.
Lassen Sie dabei jedes "e" und jedes "n" aus.

Beispiel: "Einundzwanzig" wird zu "iudzwazig".

Die Aufgabe, diese Fragmente zusammenzustückeln, ist heikel und kann hier nicht unternommen werden. Jedoch ist die grundlegende Idee klar genug. Das schichtenbildende Prinzip besteht im Eigentum – oder im Ausschluß vom Eigentum – an den Produktionsmitteln, wie Fabrikgebäuden, Maschinen, Rohstoffen und den Konsumgütern, die ins Budget des Arbeiters übergehen. Grundsätzlich haben wir damit zwei und nur zwei Klassen, – die einen Eigentümer, Kapitalisten, die andern Habenichtse, die gezwungen sind, ihre Arbeitskraft zu verkaufen, die arbeitende Klasse oder das Proletariat. Das Bestehen von Zwischengruppen, wie sie von den Bauern oder von den Handwerkern, die Arbeitskräfte beschäftigen, aber selbst auch mit ihren Händen arbeiten, und von den Angestellten und den freien Berufen gebildet werden, wird selbstverständlich nicht in Abrede gestellt. Sie werden jedoch als Anomalien behandelt, die dazu neigen, im Verlaufe des kapitalistischen Prozesses zu verschwinden. Die beiden Grundklassen sind, kraft der Logik ihrer Stellung und gänzlich unabhängig von jeglichem individuellen Wollen, ihrem Wesen nach gegenseitig antagonistisch. Es kommen Spaltungen innerhalb einer jeden Klasse und Zusammenstöße zwischen den Gruppen vor; sie können sogar von geschichtlich entscheidender Bedeutung sein. Aber für die letzte Analyse sind solche Spaltungen oder Zusammenstöße nur Zufälle. Der eine Antagonismus, der kein Zufall, sondern dem Grundriß der kapitalistischen Gesellschaft inhärent ist, beruht auf der privaten Verfügung über die Produktionsmittel: die Beziehung zwischen der Kapitalistenklasse und dem Proletariat ist ihrer tiefsten Natur nach Streit, – Klassenkampf.

Wie wir gleich sehen werden, versucht Marx zu zeigen, wie in diesem Klassenkampf Kapitalisten sich gegenseitig vernichten und letzten Endes auch das kapitalistische System vernichten werden. Er versucht auch zu zeigen, wie der Besitz von Kapital zu weiterer Akkumulation führt. Aber diese Art der Begründung sowie auch die Definition selbst, die aus dem Eigentum an einer Sache das konstituierende Charakteristikum einer sozialen Klasse macht, dient nur dazu, die Bedeutung der Frage nach der «ursprünglichen Akkumulation» noch zu steigern, das heißt der Frage, wie die Kapitalisten dazu kamen, überhaupt einmal Kapitalisten zu sein oder wie sie diesen Vorrat an Gütern erwarben, der

gemäß der Marxschen Lehre notwendig war, um sie zum Beginn der Ausbeutung zu befähigen. Über diese Frage äußert sich Marx weniger ausführlich[4].

DepletionTaskControl

Bitte übertragen Sie den folgenden Text in das Textfeld. Beachten Sie bitte Groß- und Kleinschreibung und halten Sie sich nicht lange mit der Korrektur von Fehlern auf.

Die Aufgabe, diese Fragmente zusammenzustückeln, ist heikel und kann hier nicht unternommen werden. Jedoch ist die grundlegende Idee klar genug. Das schichtenbildende Prinzip besteht im Eigentum – oder im Ausschluß vom Eigentum – an den Produktionsmitteln, wie Fabrikgebäuden, Maschinen, Rohstoffen und den Konsumgütern, die ins Budget des Arbeiters übergehen. Grundsätzlich haben wir damit zwei und nur zwei Klassen, – die einen Eigentümer, Kapitalisten, die andern Habenichtse, die gezwungen sind, ihre Arbeitskraft zu verkaufen, die arbeitende Klasse oder das Proletariat. Das Bestehen von Zwischengruppen, wie sie von den Bauern oder von den Handwerkern, die Arbeitskräfte beschäftigen, aber selbst auch mit ihren Händen arbeiten, und von den Angestellten und den freien Berufen gebildet werden, wird selbstverständlich nicht in Abrede gestellt. Sie werden jedoch als Anomalien behandelt, die dazu neigen, im Verlaufe des kapitalistischen Prozesses zu verschwinden. Die beiden Grundklassen sind, kraft der Logik ihrer Stellung und gänzlich unabhängig von jeglichem individuellen Wollen, ihrem Wesen nach gegenseitig antagonistisch. Es kommen Spaltungen innerhalb einer jeden Klasse und Zusammenstöße zwischen den Gruppen vor; sie können sogar von geschichtlich entscheidender Bedeutung sein. Aber für die letzte Analyse sind solche Spaltungen oder Zusammenstöße nur Zufälle. Der eine Antagonismus, der kein Zufall, sondern dem Grundriß der kapitalistischen Gesellschaft inhärent ist, beruht auf der privaten Verfügung über die Produktionsmittel: die Beziehung zwischen der Kapitalistenklasse und dem Proletariat ist ihrer tiefsten Natur nach Streit, – Klassenkampf.

Wie wir gleich sehen werden, versucht Marx zu zeigen, wie in diesem Klassenkampf Kapitalisten sich gegenseitig vernichten und letzten Endes auch das kapitalistische System vernichten werden. Er versucht auch zu zeigen, wie der Besitz von Kapital zu weiterer Akkumulation führt. Aber diese Art der Begründung sowie auch die Definition selbst, die aus dem Eigentum an einer Sache das konstituierende Charakteristikum einer sozialen Klasse macht, dient nur dazu, die Bedeutung der Frage nach der «ursprünglichen Akkumulation» noch zu steigern, das heißt der Frage, wie die Kapitalisten dazu kamen, überhaupt einmal Kapitalisten zu sein oder wie sie diesen Vorrat an Gütern erwarben, der gemäß der Marxschen Lehre notwendig war, um sie zum Beginn der Ausbeutung zu befähigen. Über diese Frage äußert sich Marx weniger ausführlich[4].

ConfoundDepletion

Inwiefern treffen die folgenden Aussagen auf die soeben absolvierte Aufgabe zu?

	Trifft überhaupt nicht zu	Trifft nicht zu	Trifft eher nicht zu	Teils teils	Trifft eher zu	Trifft zu	Trifft voll und ganz zu
Die Aufgabe war schwierig.	ConfoundDepletion_r1=1	ConfoundDepletion_r1=2	ConfoundDepletion_r1=3	ConfoundDepletion_r1=4	ConfoundDepletion_r1=5	ConfoundDepletion_r1=6	ConfoundDepletion_r1=7
Die Aufgabe war mühsam.	ConfoundDepletion_r2=1	ConfoundDepletion_r2=2	ConfoundDepletion_r2=3	ConfoundDepletion_r2=4	ConfoundDepletion_r2=5	ConfoundDepletion_r2=6	ConfoundDepletion_r2=7
Die Aufgabe hat mich erschöpft.	ConfoundDepletion_r3=1	ConfoundDepletion_r3=2	ConfoundDepletion_r3=3	ConfoundDepletion_r3=4	ConfoundDepletion_r3=5	ConfoundDepletion_r3=6	ConfoundDepletion_r3=7

PANAS

Bitte geben Sie an, wie sehr die folgenden Ausdrücke auf Ihre derzeitige Gefühlslage zutreffen.

	Trifft überhaupt nicht zu	Trifft nicht zu	Teils teils	Trifft zu	Trifft voll und ganz zu
Wach	PANAS_r8=1	PANAS_r8=2	PANAS_r8=3	PANAS_r8=4	PANAS_r8=5
Erschrocken	PANAS_r14=1	PANAS_r14=2	PANAS_r14=3	PANAS_r14=4	PANAS_r14=5
Feindselig	PANAS_r15=1	PANAS_r15=2	PANAS_r15=3	PANAS_r15=4	PANAS_r15=5
Ängstlich	PANAS_r20=1	PANAS_r20=2	PANAS_r20=3	PANAS_r20=4	PANAS_r20=5
Freudig erregt	PANAS_r3=1	PANAS_r3=2	PANAS_r3=3	PANAS_r3=4	PANAS_r3=5
Verärgert	PANAS_r12=1	PANAS_r12=2	PANAS_r12=3	PANAS_r12=4	PANAS_r12=5

Durcheinander	PANAS_r19=1	PANAS_r19=2	PANAS_r19=3	PANAS_r19=4	PANAS_r19=5
Gereizt	PANAS_r16=1	PANAS_r16=2	PANAS_r16=3	PANAS_r16=4	PANAS_r16=5
Schuldig	PANAS_r13=1	PANAS_r13=2	PANAS_r13=3	PANAS_r13=4	PANAS_r13=5
Nervös	PANAS_r18=1	PANAS_r18=2	PANAS_r18=3	PANAS_r18=4	PANAS_r18=5
Begeistert	PANAS_r7=1	PANAS_r7=2	PANAS_r7=3	PANAS_r7=4	PANAS_r7=5
Beschämt	PANAS_r17=1	PANAS_r17=2	PANAS_r17=3	PANAS_r17=4	PANAS_r17=5
Entschlossen	PANAS_r9=1	PANAS_r9=2	PANAS_r9=3	PANAS_r9=4	PANAS_r9=5
Stolz	PANAS_r6=1	PANAS_r6=2	PANAS_r6=3	PANAS_r6=4	PANAS_r6=5
Angeregt	PANAS_r5=1	PANAS_r5=2	PANAS_r5=3	PANAS_r5=4	PANAS_r5=5
Aktiv	PANAS_r1=1	PANAS_r1=2	PANAS_r1=3	PANAS_r1=4	PANAS_r1=5
Aufmerksam	PANAS_r10=1	PANAS_r10=2	PANAS_r10=3	PANAS_r10=4	PANAS_r10=5
Stark	PANAS_r4=1	PANAS_r4=2	PANAS_r4=3	PANAS_r4=4	PANAS_r4=5
Bekümmert	PANAS_r11=1	PANAS_r11=2	PANAS_r11=3	PANAS_r11=4	PANAS_r11=5
Interessiert	PANAS_r2=1	PANAS_r2=2	PANAS_r2=3	PANAS_r2=4	PANAS_r2=5

Start

ID2

Bitte geben Sie die Anfangsbuchstaben des ersten Vor- und aktuellen Nachnamens Ihrer Mutter, die Anfangsbuchstaben des ersten Vor- und aktuellen Nachnamens Ihres Vaters sowie Ihr Geburtsjahr an.

Bitte benutzen Sie Großbuchstaben und verwenden Sie keine Leerzeichen.

Beispiel:
Mutter - Lara Croft
Vater - Frodo Beutlin
Geburtsjahr - 1992

-> LCFB1992

Next

CoverStory

Im zweiten Teil unseres Experimentes geht es um Influencer.

Influencer sind Personen, die in sozialen Netzwerken oft und regelmäßig Inhalte veröffentlichen. Charakteristisch ist ihre in der Regel große Reichweite über die hohe Anzahl an Followern (Personen, die aktiv über neue Inhalte benachrichtigt und informiert werden möchten).

Wir werden Ihnen eine Reihe von Fragen dazu stellen, wie Sie diese Influencer wahrnehmen.

Anweisungen1

Im Folgenden werden Ihnen mehrere Posts von Instagram Influencern gezeigt.
Bitte schauen Sie sich diese Bilder genau an, da wir Ihnen im Anschluss einige Fragen zu diesen Bildern stellen werden.

Sie können die Bilder solange ansehen, wie Sie möchten.

Bitte beantworten Sie alle Fragen!

Falls Sie nicht alle Fragen beantwortet haben, werden Sie nicht auf die nächste Seite gelassen und es wird ein entsprechender Hinweis eingeblendet.
Bitte beachten Sie, dass Sie nicht auf vorherige Seiten zurückgehen können, um nachträgliche Änderungen vorzunehmen.

AnweisungBilder

Im Folgenden werden Sie Posts von Influencern sehen.

Jeder Post besteht aus zwei Teilen:
Im ersten Teil sehen Sie den Rahmen des Posts (siehe linkes Bild).
Im zweiten Teil sehen Sie das Bild des Posts (siehe rechtes Bild).

Rahmen des Posts

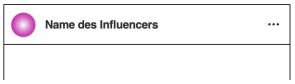
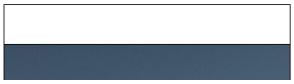
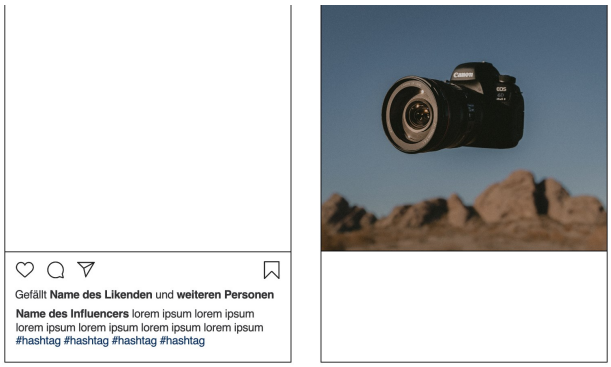


Bild des Post





Picture1DiscText
[Script]

Picture1disc
[Script]

Picture1
[Script]

EWOM1

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich würde den Post dieses Influencers teilen.	EWOM1_r1=1	EWOM1_r1=2	EWOM1_r1=3	EWOM1_r1=4	EWOM1_r1=5	EWOM1_r1=6	EWOM1_r1=7
Ich würde den Post dieses Influencers liken (auf "Gefällt mir" drücken, in Instagram ein Doppelklick).	EWOM1_r3=1	EWOM1_r3=2	EWOM1_r3=3	EWOM1_r3=4	EWOM1_r3=5	EWOM1_r3=6	EWOM1_r3=7
Ich würde den Post dieses Influencers kommentieren.	EWOM1_r2=1	EWOM1_r2=2	EWOM1_r2=3	EWOM1_r2=4	EWOM1_r2=5	EWOM1_r2=6	EWOM1_r2=7

APK1

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich empfinde den Inhalt des Posts als glaubwürdig.	APK1_r3=1	APK1_r3=2	APK1_r3=3	APK1_r3=4	APK1_r3=5	APK1_r3=6	APK1_r3=7
Ich empfinde den Inhalt des Posts als überzeugend.	APK1_r2=1	APK1_r2=2	APK1_r2=3	APK1_r2=4	APK1_r2=5	APK1_r2=6	APK1_r2=7
Ich empfinde den Inhalt des Posts als	APK1_r1=1	APK1_r1=2	APK1_r1=3	APK1_r1=4	APK1_r1=5	APK1_r1=6	APK1_r1=7

vertrauenswürdig.	◯ ◯ ◯ ◯ ◯ ◯ ◯

CPK1

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Der Post hat das Ziel, den Absatz eines Unternehmens zu erhöhen.	CPK1_r2=1 ◯	CPK1_r2=2 ◯	CPK1_r2=3 ◯	CPK1_r2=4 ◯	CPK1_r2=5 ◯	CPK1_r2=6 ◯	CPK1_r2=7 ◯
Neben dem Influencer gibt es eine weitere Partei, die an der Veröffentlichung des Posts beteiligt war.	CPK1_r3=1 ◯	CPK1_r3=2 ◯	CPK1_r3=3 ◯	CPK1_r3=4 ◯	CPK1_r3=5 ◯	CPK1_r3=6 ◯	CPK1_r3=7 ◯
In dem Post ging es hauptsächlich um Werbung.	CPK1_r1=1 ◯	CPK1_r1=2 ◯	CPK1_r1=3 ◯	CPK1_r1=4 ◯	CPK1_r1=5 ◯	CPK1_r1=6 ◯	CPK1_r1=7 ◯

Picture2DiscText
[Script]

Picture2disc
[Script]

Picture2
[Script]

EWOM2

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich würde den Post dieses Influencers teilen.	EWOM2_r1=1 ◯	EWOM2_r1=2 ◯	EWOM2_r1=3 ◯	EWOM2_r1=4 ◯	EWOM2_r1=5 ◯	EWOM2_r1=6 ◯	EWOM2_r1=7 ◯
Ich würde den Post dieses Influencers liken (auf "Gefällt mir" drücken, in Instagram ein Doppelklick).	EWOM2_r3=1 ◯	EWOM2_r3=2 ◯	EWOM2_r3=3 ◯	EWOM2_r3=4 ◯	EWOM2_r3=5 ◯	EWOM2_r3=6 ◯	EWOM2_r3=7 ◯
Ich würde den Post dieses Influencers kommentieren.	EWOM2_r2=1 ◯	EWOM2_r2=2 ◯	EWOM2_r2=3 ◯	EWOM2_r2=4 ◯	EWOM2_r2=5 ◯	EWOM2_r2=6 ◯	EWOM2_r2=7 ◯

APK2

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich empfinde den Inhalt des Posts als glaubwürdig.	APK2_r3=1 ◯	APK2_r3=2 ◯	APK2_r3=3 ◯	APK2_r3=4 ◯	APK2_r3=5 ◯	APK2_r3=6 ◯	APK2_r3=7 ◯

Ich empfinde den Inhalt des Posts als überzeugend.	APK2_r2=1	APK2_r2=2	APK2_r2=3	APK2_r2=4	APK2_r2=5	APK2_r2=6	APK2_r2=7
Ich empfinde den Inhalt des Posts als vertrauenswürdig.	APK2_r1=1	APK2_r1=2	APK2_r1=3	APK2_r1=4	APK2_r1=5	APK2_r1=6	APK2_r1=7

CPK2

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Der Post hat das Ziel, den Absatz eines Unternehmens zu erhöhen.	CPK2_r2=1	CPK2_r2=2	CPK2_r2=3	CPK2_r2=4	CPK2_r2=5	CPK2_r2=6	CPK2_r2=7
In dem Post ging es hauptsächlich um Werbung.	CPK2_r1=1	CPK2_r1=2	CPK2_r1=3	CPK2_r1=4	CPK2_r1=5	CPK2_r1=6	CPK2_r1=7
Neben dem Influencer gibt es eine weitere Partei, die an der Veröffentlichung des Posts beteiligt war.	CPK2_r3=1	CPK2_r3=2	CPK2_r3=3	CPK2_r3=4	CPK2_r3=5	CPK2_r3=6	CPK2_r3=7

Picture3DiscText

[Script]

Picture3disc

[Script]

Picture3

[Script]

EWOM3

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich würde den Post dieses Influencers liken (auf "Gefällt mir" drücken, in Instagram ein Doppelklick).	EWOM3_r3=1	EWOM3_r3=2	EWOM3_r3=3	EWOM3_r3=4	EWOM3_r3=5	EWOM3_r3=6	EWOM3_r3=7
Ich würde den Post dieses Influencers teilen.	EWOM3_r1=1	EWOM3_r1=2	EWOM3_r1=3	EWOM3_r1=4	EWOM3_r1=5	EWOM3_r1=6	EWOM3_r1=7
Ich würde den Post dieses Influencers kommentieren.	EWOM3_r2=1	EWOM3_r2=2	EWOM3_r2=3	EWOM3_r2=4	EWOM3_r2=5	EWOM3_r2=6	EWOM3_r2=7

APK3

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

Stimme

	überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich empfinde den Inhalt des Posts als vertrauenswürdig.	APK3_r1=1	APK3_r1=2	APK3_r1=3	APK3_r1=4	APK3_r1=5	APK3_r1=6	APK3_r1=7
Ich empfinde den Inhalt des Posts als überzeugend.	APK3_r2=1	APK3_r2=2	APK3_r2=3	APK3_r2=4	APK3_r2=5	APK3_r2=6	APK3_r2=7
Ich empfinde den Inhalt des Posts als glaubwürdig.	APK3_r3=1	APK3_r3=2	APK3_r3=3	APK3_r3=4	APK3_r3=5	APK3_r3=6	APK3_r3=7

CPK3

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Neben dem Influencer gibt es eine weitere Partei, die an der Veröffentlichung des Posts beteiligt war.	CPK3_r3=1	CPK3_r3=2	CPK3_r3=3	CPK3_r3=4	CPK3_r3=5	CPK3_r3=6	CPK3_r3=7
Der Post hat das Ziel, den Absatz eines Unternehmens zu erhöhen.	CPK3_r2=1	CPK3_r2=2	CPK3_r2=3	CPK3_r2=4	CPK3_r2=5	CPK3_r2=6	CPK3_r2=7
In dem Post ging es hauptsächlich um Werbung.	CPK3_r1=1	CPK3_r1=2	CPK3_r1=3	CPK3_r1=4	CPK3_r1=5	CPK3_r1=6	CPK3_r1=7

Picture4DisclosureText

[Script]

Picture4disc

[Script]

Picture4

[Script]

EWOM4

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich würde den Post dieses Influencers liken (auf "Gefällt mir" drücken, in Instagram ein Doppelklick).	EWOM4_r3=1	EWOM4_r3=2	EWOM4_r3=3	EWOM4_r3=4	EWOM4_r3=5	EWOM4_r3=6	EWOM4_r3=7
Ich würde den Post dieses Influencers teilen.	EWOM4_r1=1	EWOM4_r1=2	EWOM4_r1=3	EWOM4_r1=4	EWOM4_r1=5	EWOM4_r1=6	EWOM4_r1=7
Ich würde den Post dieses Influencers kommentieren.	EWOM4_r2=1	EWOM4_r2=2	EWOM4_r2=3	EWOM4_r2=4	EWOM4_r2=5	EWOM4_r2=6	EWOM4_r2=7

APK4

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich empfinde den Inhalt des Posts als vertrauenswürdig.	APK4_r1=1	APK4_r1=2	APK4_r1=3	APK4_r1=4	APK4_r1=5	APK4_r1=6	APK4_r1=7
Ich empfinde den Inhalt des Posts als glaubwürdig.	APK4_r3=1	APK4_r3=2	APK4_r3=3	APK4_r3=4	APK4_r3=5	APK4_r3=6	APK4_r3=7
Ich empfinde den Inhalt des Posts als überzeugend.	APK4_r2=1	APK4_r2=2	APK4_r2=3	APK4_r2=4	APK4_r2=5	APK4_r2=6	APK4_r2=7

CPK4

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Neben dem Influencer gibt es eine weitere Partei, die an der Veröffentlichung des Posts beteiligt war.	CPK4_r3=1	CPK4_r3=2	CPK4_r3=3	CPK4_r3=4	CPK4_r3=5	CPK4_r3=6	CPK4_r3=7
In dem Post ging es hauptsächlich um Werbung.	CPK4_r1=1	CPK4_r1=2	CPK4_r1=3	CPK4_r1=4	CPK4_r1=5	CPK4_r1=6	CPK4_r1=7
Der Post hat das Ziel, den Absatz eines Unternehmens zu erhöhen.	CPK4_r2=1	CPK4_r2=2	CPK4_r2=3	CPK4_r2=4	CPK4_r2=5	CPK4_r2=6	CPK4_r2=7

Picture5DisclosureText

[Script]

Pictur5disc

[Script]

Picture5

[Script]

EWOM5

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich würde den Post dieses Influencers teilen.	EWOM5_r1=1	EWOM5_r1=2	EWOM5_r1=3	EWOM5_r1=4	EWOM5_r1=5	EWOM5_r1=6	EWOM5_r1=7
Ich würde den Post dieses Influencers liken (auf "Gefällt mir" drücken, in Instagram ein Doppelklick).	EWOM5_r3=1	EWOM5_r3=2	EWOM5_r3=3	EWOM5_r3=4	EWOM5_r3=5	EWOM5_r3=6	EWOM5_r3=7

Ich würde den Post dieses Influencers kommentieren.	EWOM5_r2=1	EWOM5_r2=2	EWOM5_r2=3	EWOM5_r2=4	EWOM5_r2=5	EWOM5_r2=6	EWOM5_r2=7

APK5

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich empfinde den Inhalt des Posts als vertrauenswürdig.	APK5_r1=1	APK5_r1=2	APK5_r1=3	APK5_r1=4	APK5_r1=5	APK5_r1=6	APK5_r1=7
Ich empfinde den Inhalt des Posts als überzeugend.	APK5_r2=1	APK5_r2=2	APK5_r2=3	APK5_r2=4	APK5_r2=5	APK5_r2=6	APK5_r2=7
Ich empfinde den Inhalt des Posts als glaubwürdig.	APK5_r3=1	APK5_r3=2	APK5_r3=3	APK5_r3=4	APK5_r3=5	APK5_r3=6	APK5_r3=7

CPK5

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Der Post hat das Ziel, den Absatz eines Unternehmens zu erhöhen.	CPK5_r2=1	CPK5_r2=2	CPK5_r2=3	CPK5_r2=4	CPK5_r2=5	CPK5_r2=6	CPK5_r2=7
In dem Post ging es hauptsächlich um Werbung.	CPK5_r1=1	CPK5_r1=2	CPK5_r1=3	CPK5_r1=4	CPK5_r1=5	CPK5_r1=6	CPK5_r1=7
Neben dem Influencer gibt es eine weitere Partei, die an der Veröffentlichung des Posts beteiligt war.	CPK5_r3=1	CPK5_r3=2	CPK5_r3=3	CPK5_r3=4	CPK5_r3=5	CPK5_r3=6	CPK5_r3=7

Start

Picture6DisclosureText
[Script]

Picture6disc
[Script]

Picture6
[Script]

EWOM6

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

Next

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich würde den Post dieses Influencers liken (auf "Gefällt mir" drücken, in Instagram ein Doppelklick).	EWOM6_r3=1	EWOM6_r3=2	EWOM6_r3=3	EWOM6_r3=4	EWOM6_r3=5	EWOM6_r3=6	EWOM6_r3=7
Ich würde den Post dieses Influencers teilen.	EWOM6_r1=1	EWOM6_r1=2	EWOM6_r1=3	EWOM6_r1=4	EWOM6_r1=5	EWOM6_r1=6	EWOM6_r1=7
Ich würde den Post dieses Influencers kommentieren.	EWOM6_r2=1	EWOM6_r2=2	EWOM6_r2=3	EWOM6_r2=4	EWOM6_r2=5	EWOM6_r2=6	EWOM6_r2=7

APK6

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich empfinde den Inhalt des Posts als vertrauenswürdig.	APK6_r1=1	APK6_r1=2	APK6_r1=3	APK6_r1=4	APK6_r1=5	APK6_r1=6	APK6_r1=7
Ich empfinde den Inhalt des Posts als glaubwürdig.	APK6_r3=1	APK6_r3=2	APK6_r3=3	APK6_r3=4	APK6_r3=5	APK6_r3=6	APK6_r3=7
Ich empfinde den Inhalt des Posts als überzeugend.	APK6_r2=1	APK6_r2=2	APK6_r2=3	APK6_r2=4	APK6_r2=5	APK6_r2=6	APK6_r2=7

CPK6

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu

Neben dem Influencer gibt es eine weitere Partei, die an der Veröffentlichung des Posts beteiligt war.	CPK6_r3=1	CPK6_r3=2	CPK6_r3=3	CPK6_r3=4	CPK6_r3=5	CPK6_r3=6	CPK6_r3=7
Der Post hat das Ziel, den Absatz eines Unternehmens zu erhöhen.	CPK6_r2=1	CPK6_r2=2	CPK6_r2=3	CPK6_r2=4	CPK6_r2=5	CPK6_r2=6	CPK6_r2=7
In dem Post ging es hauptsächlich um Werbung.	CPK6_r1=1	CPK6_r1=2	CPK6_r1=3	CPK6_r1=4	CPK6_r1=5	CPK6_r1=6	CPK6_r1=7

Picture7DisclosureText

[Script]

Picture7disc

[Script]

Picture7

[Script]

EWOM7

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich würde den Post dieses Influencers kommentieren.	EWOM7_r2=1	EWOM7_r2=2	EWOM7_r2=3	EWOM7_r2=4	EWOM7_r2=5	EWOM7_r2=6	EWOM7_r2=7
Ich würde den Post dieses Influencers liken (auf "Gefällt mir" drücken, in Instagram ein Doppelklick).	EWOM7_r3=1	EWOM7_r3=2	EWOM7_r3=3	EWOM7_r3=4	EWOM7_r3=5	EWOM7_r3=6	EWOM7_r3=7
Ich würde den Post dieses Influencers teilen.	EWOM7_r1=1	EWOM7_r1=2	EWOM7_r1=3	EWOM7_r1=4	EWOM7_r1=5	EWOM7_r1=6	EWOM7_r1=7

APK7

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich empfinde den Inhalt des Posts als überzeugend.	APK7_r2=1	APK7_r2=2	APK7_r2=3	APK7_r2=4	APK7_r2=5	APK7_r2=6	APK7_r2=7
Ich empfinde den Inhalt des Posts als glaubwürdig.	APK7_r3=1	APK7_r3=2	APK7_r3=3	APK7_r3=4	APK7_r3=5	APK7_r3=6	APK7_r3=7
Ich empfinde den Inhalt des Posts als vertrauenswürdig.	APK7_r1=1	APK7_r1=2	APK7_r1=3	APK7_r1=4	APK7_r1=5	APK7_r1=6	APK7_r1=7

CPK7

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Der Post hat das Ziel, den Absatz eines Unternehmens zu erhöhen.	CPK7_r2=1	CPK7_r2=2	CPK7_r2=3	CPK7_r2=4	CPK7_r2=5	CPK7_r2=6	CPK7_r2=7
In dem Post ging es hauptsächlich um Werbung.	CPK7_r1=1	CPK7_r1=2	CPK7_r1=3	CPK7_r1=4	CPK7_r1=5	CPK7_r1=6	CPK7_r1=7
Neben dem Influencer gibt es eine weitere Partei, die an der Veröffentlichung des Posts beteiligt war.	CPK7_r3=1	CPK7_r3=2	CPK7_r3=3	CPK7_r3=4	CPK7_r3=5	CPK7_r3=6	CPK7_r3=7

Picture8DisclosureText

[Script]

Picture8disc

[Script]

Picture8

[Script]

EWOM8

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich würde den Post dieses Influencers kommentieren.	EWOM8_r2=1	EWOM8_r2=2	EWOM8_r2=3	EWOM8_r2=4	EWOM8_r2=5	EWOM8_r2=6	EWOM8_r2=7
Ich würde den Post dieses Influencers teilen.	EWOM8_r1=1	EWOM8_r1=2	EWOM8_r1=3	EWOM8_r1=4	EWOM8_r1=5	EWOM8_r1=6	EWOM8_r1=7
Ich würde den Post dieses Influencers liken (auf "Gefällt mir" drücken, in Instagram ein Doppelklick).	EWOM8_r3=1	EWOM8_r3=2	EWOM8_r3=3	EWOM8_r3=4	EWOM8_r3=5	EWOM8_r3=6	EWOM8_r3=7

APK8

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich empfinde den Inhalt des Posts als vertrauenswürdig.	APK8_r1=1	APK8_r1=2	APK8_r1=3	APK8_r1=4	APK8_r1=5	APK8_r1=6	APK8_r1=7
Ich empfinde den Inhalt des Posts als überzeugend.	APK8_r2=1	APK8_r2=2	APK8_r2=3	APK8_r2=4	APK8_r2=5	APK8_r2=6	APK8_r2=7

Ich empfinde den Inhalt des Posts als glaubwürdig.	APK8_r3=1	APK8_r3=2	APK8_r3=3	APK8_r3=4	APK8_r3=5	APK8_r3=6	APK8_r3=7

CPK8

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
In dem Post ging es hauptsächlich um Werbung.	CPK8_r1=1	CPK8_r1=2	CPK8_r1=3	CPK8_r1=4	CPK8_r1=5	CPK8_r1=6	CPK8_r1=7
Der Post hat das Ziel, den Absatz eines Unternehmens zu erhöhen.	CPK8_r2=1	CPK8_r2=2	CPK8_r2=3	CPK8_r2=4	CPK8_r2=5	CPK8_r2=6	CPK8_r2=7
Neben dem Influencer gibt es eine weitere Partei, die an der Veröffentlichung des Posts beteiligt war.	CPK8_r3=1	CPK8_r3=2	CPK8_r3=3	CPK8_r3=4	CPK8_r3=5	CPK8_r3=6	CPK8_r3=7

Anweisungen2

Im Folgenden werden Ihnen einige Fragen zu den vorherigen Bildern gestellt.

Bitte beantworten Sie alle Fragen!

BrandRecognition

Bitte geben Sie für jede der unten stehenden Marken in Prozent an, wie sicher Sie sich sind, dass Sie die Marken in den vorangegangenen Bildern gesehen haben.

Start

BALevis

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich habe einen positiven Eindruck von der Marke Levi's.	BALevis_r3=1	BALevis_r3=2	BALevis_r3=3	BALevis_r3=4	BALevis_r3=5	BALevis_r3=6	BALevis_r3=7
Ich finde die Marke Levi's gut.	BALevis_r1=1	BALevis_r1=2	BALevis_r1=3	BALevis_r1=4	BALevis_r1=5	BALevis_r1=6	BALevis_r1=7
Ich mag die Marke Levi's.	BALevis_r2=1	BALevis_r2=2	BALevis_r2=3	BALevis_r2=4	BALevis_r2=5	BALevis_r2=6	BALevis_r2=7

Next

BAStarbucks

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich habe einen positiven Eindruck von der Marke Starbucks.	BAStarbucks_r3=1	BAStarbucks_r3=2	BAStarbucks_r3=3	BAStarbucks_r3=4	BAStarbucks_r3=5	BAStarbucks_r3=6	BAStarbucks_r3=7
Ich finde die Marke Starbucks gut.	BAStarbucks_r1=1	BAStarbucks_r1=2	BAStarbucks_r1=3	BAStarbucks_r1=4	BAStarbucks_r1=5	BAStarbucks_r1=6	BAStarbucks_r1=7
Ich mag die Marke Starbucks.	BAStarbucks_r2=1	BAStarbucks_r2=2	BAStarbucks_r2=3	BAStarbucks_r2=4	BAStarbucks_r2=5	BAStarbucks_r2=6	BAStarbucks_r2=7

BAGucci

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich habe einen positiven Eindruck von der Marke Gucci.	BAGucci_r3=1	BAGucci_r3=2	BAGucci_r3=3	BAGucci_r3=4	BAGucci_r3=5	BAGucci_r3=6	BAGucci_r3=7
Ich finde die Marke Gucci gut.	BAGucci_r1=1	BAGucci_r1=2	BAGucci_r1=3	BAGucci_r1=4	BAGucci_r1=5	BAGucci_r1=6	BAGucci_r1=7
Ich mag die Marke Gucci.	BAGucci_r2=1	BAGucci_r2=2	BAGucci_r2=3	BAGucci_r2=4	BAGucci_r2=5	BAGucci_r2=6	BAGucci_r2=7

BAFjaellraven

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich habe							

einen positiven Eindruck von der Marke Fjällraven.	BAFjaellraven_r3=1	BAFjaellraven_r3=2	BAFjaellraven_r3=3	BAFjaellraven_r3=4	BAFjaellraven_r3=5	BAFjaellraven_r3=6	BAFjaellraven_r3=7
Ich finde die Marke Fjällraven gut.	BAFjaellraven_r1=1	BAFjaellraven_r1=2	BAFjaellraven_r1=3	BAFjaellraven_r1=4	BAFjaellraven_r1=5	BAFjaellraven_r1=6	BAFjaellraven_r1=7
Ich mag die Marke Fjällraven.	BAFjaellraven_r2=1	BAFjaellraven_r2=2	BAFjaellraven_r2=3	BAFjaellraven_r2=4	BAFjaellraven_r2=5	BAFjaellraven_r2=6	BAFjaellraven_r2=7

BACorona

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich finde die Marke Corona gut.	BACorona_r1=1	BACorona_r1=2	BACorona_r1=3	BACorona_r1=4	BACorona_r1=5	BACorona_r1=6	BACorona_r1=7
Ich habe einen positiven Eindruck von der Marke Corona.	BACorona_r3=1	BACorona_r3=2	BACorona_r3=3	BACorona_r3=4	BACorona_r3=5	BACorona_r3=6	BACorona_r3=7
Ich mag die Marke Corona.	BACorona_r2=1	BACorona_r2=2	BACorona_r2=3	BACorona_r2=4	BACorona_r2=5	BACorona_r2=6	BACorona_r2=7

BAHaagenDazs

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich habe einen positiven Eindruck von der Marke Häagen-Dazs.	BAHaagenDazs_r3=1	BAHaagenDazs_r3=2	BAHaagenDazs_r3=3	BAHaagenDazs_r3=4	BAHaagenDazs_r3=5	BAHaagenDazs_r3=6	BAHaagenDazs_r3=7
Ich mag die Marke Häagen-Dazs.	BAHaagenDazs_r2=1	BAHaagenDazs_r2=2	BAHaagenDazs_r2=3	BAHaagenDazs_r2=4	BAHaagenDazs_r2=5	BAHaagenDazs_r2=6	BAHaagenDazs_r2=7
Ich finde die Marke Häagen-Dazs gut.	BAHaagenDazs_r1=1	BAHaagenDazs_r1=2	BAHaagenDazs_r1=3	BAHaagenDazs_r1=4	BAHaagenDazs_r1=5	BAHaagenDazs_r1=6	BAHaagenDazs_r1=7

BAVoss

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich habe einen positiven Eindruck von der Marke Voss.	BAVoss_r3=1	BAVoss_r3=2	BAVoss_r3=3	BAVoss_r3=4	BAVoss_r3=5	BAVoss_r3=6	BAVoss_r3=7
Ich finde die Marke Voss gut.	BAVoss_r1=1	BAVoss_r1=2	BAVoss_r1=3	BAVoss_r1=4	BAVoss_r1=5	BAVoss_r1=6	BAVoss_r1=7
Ich mag die Marke Voss.	BAVoss_r2=1	BAVoss_r2=2	BAVoss_r2=3	BAVoss_r2=4	BAVoss_r2=5	BAVoss_r2=6	BAVoss_r2=7

BALouisVuitton

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich finde die Marke Louis Vuitton gut.	BALouisVuitton_r1=1	BALouisVuitton_r1=2	BALouisVuitton_r1=3	BALouisVuitton_r1=4	BALouisVuitton_r1=5	BALouisVuitton_r1=6	BALouisVuitton_r1=7
Ich habe einen positiven Eindruck von der Marke Louis Vuitton.	BALouisVuitton_r3=1	BALouisVuitton_r3=2	BALouisVuitton_r3=3	BALouisVuitton_r3=4	BALouisVuitton_r3=5	BALouisVuitton_r3=6	BALouisVuitton_r3=7
Ich mag die Marke Louis Vuitton.	BALouisVuitton_r2=1	BALouisVuitton_r2=2	BALouisVuitton_r2=3	BALouisVuitton_r2=4	BALouisVuitton_r2=5	BALouisVuitton_r2=6	BALouisVuitton_r2=7

PILevis

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Es ist wahrscheinlich, dass ich ein Produkt der Marke Levi's kaufen werde.	PILevis_r3=1	PILevis_r3=2	PILevis_r3=3	PILevis_r3=4	PILevis_r3=5	PILevis_r3=6	PILevis_r3=7
Ich bin daran interessiert, ein Produkt der Marke Levi's zu kaufen.	PILevis_r2=1	PILevis_r2=2	PILevis_r2=3	PILevis_r2=4	PILevis_r2=5	PILevis_r2=6	PILevis_r2=7
Ich habe vor, ein Produkt der Marke Levi's zu kaufen.	PILevis_r1=1	PILevis_r1=2	PILevis_r1=3	PILevis_r1=4	PILevis_r1=5	PILevis_r1=6	PILevis_r1=7

PIStarbucks

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich bin daran interessiert, ein Produkt der Marke Starbucks zu kaufen.	PIStarbucks_r2=1	PIStarbucks_r2=2	PIStarbucks_r2=3	PIStarbucks_r2=4	PIStarbucks_r2=5	PIStarbucks_r2=6	PIStarbucks_r2=7
Es ist wahrscheinlich, dass ich ein Produkt der Marke Starbucks kaufen werde.	PIStarbucks_r3=1	PIStarbucks_r3=2	PIStarbucks_r3=3	PIStarbucks_r3=4	PIStarbucks_r3=5	PIStarbucks_r3=6	PIStarbucks_r3=7
Ich habe vor, ein Produkt der Marke Starbucks zu kaufen.	PIStarbucks_r1=1	PIStarbucks_r1=2	PIStarbucks_r1=3	PIStarbucks_r1=4	PIStarbucks_r1=5	PIStarbucks_r1=6	PIStarbucks_r1=7

PIGucci

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich bin daran interessiert, ein Produkt der Marke Gucci zu	PIGucci_r2=1	PIGucci_r2=2	PIGucci_r2=3	PIGucci_r2=4	PIGucci_r2=5	PIGucci_r2=6	PIGucci_r2=7

kaufen.

Es ist wahrscheinlich, dass ich ein Produkt der Marke Gucci kaufen werde.	PIGucci_r3=1	PIGucci_r3=2	PIGucci_r3=3	PIGucci_r3=4	PIGucci_r3=5	PIGucci_r3=6	PIGucci_r3=7
Ich habe vor, ein Produkt der Marke Gucci zu kaufen.	PIGucci_r1=1	PIGucci_r1=2	PIGucci_r1=3	PIGucci_r1=4	PIGucci_r1=5	PIGucci_r1=6	PIGucci_r1=7

PIFjaellraeven

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich bin daran interessiert, ein Produkt der Marke Fjällraven zu kaufen.	PIFjaellraeven_r2=1	PIFjaellraeven_r2=2	PIFjaellraeven_r2=3	PIFjaellraeven_r2=4	PIFjaellraeven_r2=5	PIFjaellraeven_r2=6	PIFjaellraeven_r2=7
Ich habe vor, ein Produkt der Marke Fjällraven zu kaufen.	PIFjaellraeven_r1=1	PIFjaellraeven_r1=2	PIFjaellraeven_r1=3	PIFjaellraeven_r1=4	PIFjaellraeven_r1=5	PIFjaellraeven_r1=6	PIFjaellraeven_r1=7
Es ist wahrscheinlich, dass ich ein Produkt der Marke Fjällraven kaufen werde.	PIFjaellraeven_r3=1	PIFjaellraeven_r3=2	PIFjaellraeven_r3=3	PIFjaellraeven_r3=4	PIFjaellraeven_r3=5	PIFjaellraeven_r3=6	PIFjaellraeven_r3=7

PICorona

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich bin daran interessiert, ein Produkt der Marke Corona zu kaufen.	PICorona_r2=1	PICorona_r2=2	PICorona_r2=3	PICorona_r2=4	PICorona_r2=5	PICorona_r2=6	PICorona_r2=7
Es ist wahrscheinlich, dass ich ein Produkt der Marke Corona kaufen werde.	PICorona_r3=1	PICorona_r3=2	PICorona_r3=3	PICorona_r3=4	PICorona_r3=5	PICorona_r3=6	PICorona_r3=7
Ich habe vor, ein Produkt der Marke Corona zu kaufen.	PICorona_r1=1	PICorona_r1=2	PICorona_r1=3	PICorona_r1=4	PICorona_r1=5	PICorona_r1=6	PICorona_r1=7

PIHaagenDazs

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich habe vor, ein Produkt der Marke Häagen-Dazs zu kaufen.	PIHaagenDazs_r1=1	PIHaagenDazs_r1=2	PIHaagenDazs_r1=3	PIHaagenDazs_r1=4	PIHaagenDazs_r1=5	PIHaagenDazs_r1=6	PIHaagenDazs_r1=7
Es ist wahrscheinlich, dass ich ein Produkt der Marke Häagen-Dazs kaufen werde.	PIHaagenDazs_r3=1	PIHaagenDazs_r3=2	PIHaagenDazs_r3=3	PIHaagenDazs_r3=4	PIHaagenDazs_r3=5	PIHaagenDazs_r3=6	PIHaagenDazs_r3=7
Ich bin daran interessiert, ein Produkt der Marke Häagen-Dazs zu kaufen.	PIHaagenDazs_r2=1	PIHaagenDazs_r2=2	PIHaagenDazs_r2=3	PIHaagenDazs_r2=4	PIHaagenDazs_r2=5	PIHaagenDazs_r2=6	PIHaagenDazs_r2=7

PIVoss

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Es ist wahrscheinlich, dass ich ein Produkt der Marke Voss kaufen werde.	PIVoss_r3=1	PIVoss_r3=2	PIVoss_r3=3	PIVoss_r3=4	PIVoss_r3=5	PIVoss_r3=6	PIVoss_r3=7
Ich bin daran interessiert, ein Produkt der Marke Voss zu kaufen.	PIVoss_r2=1	PIVoss_r2=2	PIVoss_r2=3	PIVoss_r2=4	PIVoss_r2=5	PIVoss_r2=6	PIVoss_r2=7
Ich habe vor, ein Produkt der Marke Voss zu kaufen.	PIVoss_r1=1	PIVoss_r1=2	PIVoss_r1=3	PIVoss_r1=4	PIVoss_r1=5	PIVoss_r1=6	PIVoss_r1=7

PILouisVuitton

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich bin daran interessiert, ein Produkt der Marke Louis Vuitton zu kaufen.	PILouisVuitton_r2=1	PILouisVuitton_r2=2	PILouisVuitton_r2=3	PILouisVuitton_r2=4	PILouisVuitton_r2=5	PILouisVuitton_r2=6	PILouisVuitton_r2=7
Ich habe vor, ein Produkt der Marke Louis Vuitton zu kaufen.	PILouisVuitton_r1=1	PILouisVuitton_r1=2	PILouisVuitton_r1=3	PILouisVuitton_r1=4	PILouisVuitton_r1=5	PILouisVuitton_r1=6	PILouisVuitton_r1=7
Es ist wahrscheinlich, dass ich ein Produkt der Marke Louis Vuitton kaufen werde.	PILouisVuitton_r3=1	PILouisVuitton_r3=2	PILouisVuitton_r3=3	PILouisVuitton_r3=4	PILouisVuitton_r3=5	PILouisVuitton_r3=6	PILouisVuitton_r3=7

Start

EDInstagramUsage

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich benutze Instagram gerne, wenn ich an anderen Themen arbeiten sollte.	EDInstagramUsage_r3=1	EDInstagramUsage_r3=2	EDInstagramUsage_r3=3	EDInstagramUsage_r3=4	EDInstagramUsage_r3=5	EDInstagramUsage_r3=6	EDInstagramUsage_r3=7
Ich benutze Instagram gerne, wenn ich erschöpft bin.	EDInstagramUsage_r1=1	EDInstagramUsage_r1=2	EDInstagramUsage_r1=3	EDInstagramUsage_r1=4	EDInstagramUsage_r1=5	EDInstagramUsage_r1=6	EDInstagramUsage_r1=7
Ich benutze Instagram gerne, wenn ich bereits durch andere Dinge abgelenkt bin.	EDInstagramUsage_r2=1	EDInstagramUsage_r2=2	EDInstagramUsage_r2=3	EDInstagramUsage_r2=4	EDInstagramUsage_r2=5	EDInstagramUsage_r2=6	EDInstagramUsage_r2=7

EDSocialMediaUsage

Bitte geben Sie an, inwiefern Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Teils teils	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich benutze andere soziale Medien als Instagram gerne, wenn ich an anderen Themen arbeiten sollte.	EDSocialMediaUsage_r3=1	EDSocialMediaUsage_r3=2	EDSocialMediaUsage_r3=3	EDSocialMediaUsage_r3=4	EDSocialMediaUsage_r3=5	EDSocialMediaUsage_r3=6	EDSocialMediaUsage_r3=7
Ich benutze andere soziale Medien als Instagram gerne, wenn ich erschöpft bin.	EDSocialMediaUsage_r1=1	EDSocialMediaUsage_r1=2	EDSocialMediaUsage_r1=3	EDSocialMediaUsage_r1=4	EDSocialMediaUsage_r1=5	EDSocialMediaUsage_r1=6	EDSocialMediaUsage_r1=7
Ich benutze andere soziale Medien als Instagram gerne, wenn ich bereits durch andere Dinge abgelenkt bin.	EDSocialMediaUsage_r2=1	EDSocialMediaUsage_r2=2	EDSocialMediaUsage_r2=3	EDSocialMediaUsage_r2=4	EDSocialMediaUsage_r2=5	EDSocialMediaUsage_r2=6	EDSocialMediaUsage_r2=7

Alter

Bitte geben Sie Ihr Alter in Jahren an.

Geschlecht

Bitte geben Sie Ihr Geschlecht an.

	Männlich	Weiblich	Divers
Geschlecht	Geschlecht_r1=1	Geschlecht_r1=2	Geschlecht_r1=3

HaeufigkeitInstagram

Bitte geben Sie an, wie viele Minuten Sie durchschnittlich am Tag Instagram nutzen.

HaeufigkeitFacebook

Bitte geben Sie an, wie viele Minuten Sie durchschnittlich am Tag Facebook nutzen.

HaeufigkeitYoutube

Bitte geben Sie an, wie viele Minuten Sie durchschnittlich am Tag Youtube nutzen.

HaeufigkeitWhatsApp

Bitte geben Sie an, wie viele Minuten Sie durchschnittlich am Tag WhatsApp nutzen.

WirtschaftlicheSituation

Bitte bewerten Sie Ihre aktuelle wirtschaftliche Situation.

	Sehr schlecht	Schlecht	Eher schlecht	Neutral	Eher gut	Gut	Sehr gut
Wirtschaftliche Situation	WirtschaftlicheSituation_r1=1	WirtschaftlicheSituation_r1=2	WirtschaftlicheSituation_r1=3	WirtschaftlicheSituation_r1=4	WirtschaftlicheSituation_r1=5	WirtschaftlicheSituation_r1=6	WirtschaftlicheSituation_r1=7

Herkunftsland

Bitte geben Sie das Land an, in dem Sie aufgewachsen sind.

Bildungsgrad

Bitte geben Sie Ihren höchsten Bildungsabschluss an.

	Ohne Abschluss	Hauptschulabschluss	Mittlere Reife	Abitur/Fachhochschulreife	Hochschulabschluss/Universitätsabschluss
Höchster Abschluss	Bildungsgrad_r1=1	Bildungsgrad_r1=2	Bildungsgrad_r1=3	Bildungsgrad_r1=4	Bildungsgrad_r1=5

StudentBinary

Sind Sie zu diesem Zeitpunkt Student/in?

	Ja	Nein
Student/in	StudentBinary_r1=1	StudentBinary_r1=2

Brille

Tragen Sie jetzt gerade eine Brille?

	Ja	Nein
Brille	Brille_r1=1	Brille_r1=2

Kontaktlinsen

Tragen Sie jetzt gerade Kontaktlinsen?

	Ja	Nein
Kontaktlinsen	Kontaktlinsen_r1=1	Kontaktlinsen_r1=2

Haendigkeit

Sind Sie Rechtshänder oder Linkshänder?

	Rechtshändig	Linkshändig	Beidhändig
Händigkeit	Haendigkeit_r1=1	Haendigkeit_r1=2	Haendigkeit_r1=3

Umfrageziel

Was vermuten Sie: Welchen Zweck verfolgt diese Studie? Bitte beschreiben Sie das Ziel der Studie mit einem Satz.

Wahrheit

Haben Sie alle Fragen in dieser Befragung wahrheitsgemäß beantwortet?

	Ja	Nein
Wahrheitsgemäß	Wahrheit_r1=1	Wahrheit_r1=2

beantwortet

DominantesAuge

Bitte sprechen Sie den Testleiter an und ermitteln Sie mit ihm gemeinsam Ihr dominantes Auge. Geben Sie das dominante Auge an.

	Rechtes Auge	Linkes Auge	Kein Unterschied
Dominantes Auge	DominantesAuge_r1=1	DominantesAuge_r1=2	DominantesAuge_r1=3

Terminating

Danke, dass Sie uns bei diesem Experiment geholfen haben. Einer der Expimentierer wird Sie jetzt zur Nachbesprechung einladen, um alle Ihre Fragen zum Experiment zu beantworten. Wir wünschen Ihnen einen schönen Tag!