UNIVERSITY OF TWENTE.

Fake news affecting real brands

Persuasive factors influencing Dutch social media users' acceptance of fake news about brands

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Fake news affecting real brands: Persuasive factors influencing Dutch social media users' acceptance of fake news about brands

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11 July 2021

Abstract

Aim - Due to the enormous growth of social media, fake news is spreading faster than ever before. Fake news about brands, the focus area of this research, has increasingly become a threat to organizations in the last years. Little is known about why the misinformation spread via fake news is often accepted by the readers. When there is a clearer understanding of what makes fake news so compelling to accept, people can be informed and protected in a better way against fake news. Therefore, this research aims at examining if the persuasive factors authority and social proof influence the acceptance of fake news about brands.

Method - An experimental study with a 2x2 between-subjects factorial design was executed. The research materials for this study consisted out of four fictional Facebook posts inspired by existing fake news posts whose information could harm the reputation and business of a brand. For every brand, four versions of the fake news post were created. Three dependent variables, brand attitude, credibility, and newsworthiness, were measured trough a questionnaire. The sample of this study were Dutch citizens above the age of 18 (N=310).

Results – The data of this study showed a significant difference in the acceptance of fake news between people who are familiar with the concept of fake news and those who are not. People that are aware of the spread of fake news and indicated to know how to detect misinformation had a lower acceptance of misinformation. This group of people's acceptances did not get significantly influenced by the peripheral cues' authority and social proof. For people who were not familiar with fake news the peripheral cues of authority significantly influenced their acceptance of fake news. For both groups, no interaction effect between authority and social proof was found.

Conclusions - This study claims that the persuasive principles of authority and social proof will not influence Dutch social media users' acceptance of fake news about brands if these people

are already aware of the existence of fake news. However, social media users that are not familiar with the concept can be influenced by the principle of authority and have in general a higher acceptance of fake news than people who are familiar with fake news. In order to combat the negative effects of fake news about brands, it is important that society keeps getting informed about fake news and misinformation and that tools are provided to recognize such fake news.

Preface

During my master course, I got intrigued by the concept of fake news and its persuasiveness. I started wondering how is it possible that so many of us accept the lies we are told online without considering them twice? This led me to the research question of my thesis: "*To which extent do the persuasive factors influence Dutch social media users' acceptance of fake news about brands?*". After months of researching, I am happy to present my answer and the process of the research itself in this master thesis.

I would like to thank both my supervisors Menno de Jong and Ruud Jacobs for their help and support during my master thesis. I have benefited greatly from their knowledge and critical questions that helped me improve my master thesis and made it possible for me to develop myself further as a researcher.

Lastly, for everyone reading my master thesis, I hope the topic of fake news will intrigue you as much as it did to me and that you will enjoy reading the paper.

Nina Perik

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1. Introduction

In the beginning of 2014, the Facebook page "The Hidden Truth" claimed that human meat was found in the freezers of 90% of the McDonald's meat factories. This post without any evidence or reliable source was viewed by more than 50.000 Facebook users (Swenson, 2020). Via digital word of mouth, the fake news about the food quality of McDonald's went on: beaks and feet in McNuggets, mysterious pink slime in the Big Mac, and plastic eggs in the McMuffin. The effect was that consumers' perception of McDonald's food quality started to decline drastically and consumers threatened to boycott the company (Burnett, 2018; Taylor, 2016). McDonald's is not the only brand that had to deal with the negative effects of fake news. A study by Reber et al. (2018) states that 20% of all organizations experiences the negative consequences of fake news on their reputation. 80% of this fake news gets spread via social media (Reber et al., 2018).

In the Netherlands, a large part of the younger generation uses social media as their primary news source (Commissariaat voor de Media, 2020). This media shift is also increasingly evident among older generations. Indeed, social media is increasingly becoming a news source for all generations in the Netherlands. This news media shift is expected to increase over the upcoming years (Commissariaat voor de Media, 2020).

The rise of social media did not only cause a media shift, but it also teared down the barriers for creating and spreading content (Robinson & DeShano, 2011). Nowadays, it is easier than ever before to share information with the world, this also includes misinformation and fake news. It can be expected that these two developments and namely, the media shift and the ease with which (mis)information can be created and disseminated, will be accompanied by the spread of more fake news and by the occurrence of all their negative consequences (Menczer & Hills, 2020).

The importance of understanding and combating fake news is reflected in the increased number of studies devoted to this topic (Lazer et al. 2018; Flostrand et al., 2019; Allcott and Gentzkow 2017; Gabrielkov et al., 2016). However, most studies focus on fake news regarding political issues and conspiracy theories. Fake news in the context of brands is a relatively less researched subject (Jang & Kim, 2018). In multiple theories about the acceptance of fake news, information overload is mentioned as the culprit (Horne & Adah 2017; Robinson & DeShano, 2011; Gabrielkov et al, 2016). The information overload forces people to use quick heuristic and make a rapid ill-considered judgment about information.

Cialdini (2007) identified seven persuasive principles that can capitalize heuristics and the theory has been extensively used in the field of marketing. However, in the context of fake news, the effects of these principles have not been studied yet. Nevertheless, it is conceivable that some of these principles may also be relevant in the context of this study. To examine this, the paper at hand will investigate the influence of authority and social proof on the acceptance of fake news. These two principles appear to be the most relevant in the context of fake news. The principle of authority revolves around the fact that people are thought since a young age that it is rewarded to follow an authority figure or an expert (Cialdini, 2007). The principle of social proof states that people observe the behaviors and opinions of others to guide or validate their own (Cialdini, 2007).

When there is a clearer understanding of what makes fake news so compelling to accept, people can be informed and protected in a better way against fake news. In advertising, for instance, consumers develop knowledge about persuasion techniques. This knowledge helps the consumer to realize when and how marketers are trying to influence them (Friestad & Wright, 1994). It is conceivable that the same effect will happen in the context of fake news. If people better understand how fake news is trying to persuade them, they might reject the

misinformation. Therefore, is it important to find out which persuasive factors influence the acceptance of fake news; this is the gap that the research described in this paper aims to fill.

To contribute to the literature on the acceptance of fake news about brands, the current study aims to answer the following research question: "*To which extent do the persuasive principles authority and social proof influence Dutch social media users' acceptance of fake news about brands?*"

2. Theoretical framework

2.1 Fake news

Lazer et al. (2018) define the term "fake news" as "fabricated information that mimics news media content in form but not in organizational process or intent" (p. 1094). The outlets that produce fake news lack the norms and processes that official media outlets have to assure their readers with the truthfulness and credibility of the information (Lazer et al., 2018). Allcott and Gentzkow (2017) describe fake news as "news articles that are intentionally and verifiably false and could mislead readers" (p. 213). They state that the creators of fake news are aware of the misinformation they are spreading and that the aim is to mislead readers with misinformation (Allcott & Gentzkow, 2017).

The exponential growth of social media has played an important role in the spread of fake news. It has changed the way people search and consume news and shifted journalism in multiple ways. For example, alongside the rise of social media, the barriers for producing content went down. Creating and publishing news content was all of a sudden possible for everyone and not only for journalists themselves (Robinson & DeShano, 2011). Thereby, the distribution mechanisms for news become more efficient now that links to online content are easily shared via social media networks such as Facebook, WhatsApp, and Instagram (Mills, 2012). People are welcoming this new way of consuming news and have come to trust Facebook posts as much as newsletter articles (Tandoc & Lim, 2017).

In general, people associate the term "fake news" with politics, but fake news is also a growing threat for brands, the focus area of this study. Brands endure several risks when they are the target of fake news. These risks are for instance declining brand trust, purchase intention, or positive word of mouth (Flostrand et al., 2019). For instance, in 2016, Pepsi's stock value decreased by 4% when a fake news article about their CEO telling Trump supporters to "take

their business elsewhere" went viral (Berthon et al., 2018). When brands sponsor internet pages containing fake news, the risk is that consumers will likely interpret that the brand supports fake news (Berthon et al., 2018). For example, Kellogg Co. experienced a backlash when they sponsored Breitbart, a website known for posting fake news. The brand received a lot of criticism when this fact was pointed out on social media. As a result, the brand felt compelled to remove all the ads on the website (the Guardian, 2016).

Allcott and Gentzkow (2017) distinguish two main motives behind fabricating fake news namely, ideological motives and financial motives. Fabricators of fake news with an ideological motive aim to promote certain ideas or people by disgracing others. An example here is how the shoe brand New Balance got dragged into the presidential elections of 2016. A New Balance spokesperson said that Obama let them down on the Trans-Pacific partnership and that with Trump 'things will move into the right direction'. Trump supporters rephrased the quote on the internet and made it look like the company felt totally let down by Obama and was now supporting Trump. This led to many Republicans praising the shoes as a brand for white Americans, and Democrats to burn their New Balance sneakers (Obada, 2019).

A financial motive for sharing fake news is that the latter is often more entertaining than the truth itself and result in more clicks and viewers that are convertible in ad-revenues (Allcott & Gentzkow, 2017). Creating and spreading fake news has become a business model where the money derives from ads, provided by self-service ad technology of companies like Facebook Ads, AppNexus and Google (Reilly, 2018). Creators of fake news set up a website, install ads on it, create content and make it go viral. Successful websites can earn up to thousands of dollars every month. In 2018, it was estimated that most fake news got spread via a network of 40 fake news websites, jointly responsible for 750 fake news articles a month (Reilly, 2018).

A competitor could also be responsible for the spreading of fake news. By putting the competition in a bad day light, they might benefit from this themselves. A study from the University of British Columbia (2017), examined real-life cases of companies spreading fake news about competitors. It was discovered that, while the fake news could cause great damage to the company that is the victim of the fake news, the company who spread the misinformation can experience an even greater backlash. The company that concocted the story would experience significant longer backlash when the news appeared to be false than the victimized company (University of British Columbia, 2017). However, hurting a competitor is not the only financial motive. Financial actors have interest in reducing the share price of a company by circulating false information to influence the stock market (Siering et al., 2021). An example of fake news affecting an organization's share price is given by a fake news story that went viral about Steve Jobs dying from a heart attack in 2008. This led to Apple's shares' value decreasing by 10% in only 10 minutes (Hargreaves, 2008). More recently, the British Metro Bank's shares' value fell by 11% due to fake news rumors shared on social media that the bank was facing financial difficulties and would soon go bankrupt. A study by the University of Baltimore (2019) showed that fake news has cost the stock market 39 billion dollar (University of Baltimore; CHEQ, 2019). The study found that 0.05% of the stock market's value is threatened by fake news.

2.2 The acceptation of misinformation

Now, the question is how readers accept fake news and which are the elements that make a misinformation message believable and, therefore, accepted? In 2016, an analysis made of 2.8 million tweets containing news articles showed that 59% of the tweets were shared without opening the link to the relevant news article (Gabrielkov et al., 2016). While it may seem ill-considered to share a news article online by only reading the headline, this is also how we

communicate offline. In our day-to-day life, we assume that our interlocutors contribute relevant information that is truthful (Grice, 1975; Sperber & Wilson, 1986). When there are no reasons to question the information, an interlocutor is giving, people often accept the content without thinking twice, which leads to many misjudgments (Schwarz, 1994).

Horne and Adah (2017) examined the mental process of a person when reading news messages on social media and what are their motivation and reasoning to reject or accept the information. What was discovered is that due to the information overload on social media, people are often forced to use quick heuristics to obtain information and decide whether or not they trust the message. These heuristics are often mental shortcuts and look for peripheral cues (Horne & Adali, 2017). In line with the study of Horne and Adah, Greifeneder et al. (2021) describe that people evaluate the credibility of a message via an intuitive evaluation in a fast and effortless process and that people are only more likely to do an analytic evaluation when their instincts tell them something may be wrong. During this evaluation people consider some of the five truth criteria: compatibility, coherence, credibility, consensus and evidence (Greifeneder et al., 2021). These truth criteria can be related to the heuristics people use to accept or reject information and can be perhaps influenced by peripheral cues. In table 1 the five truth criteria are further clarified.

Table 1. The five truth criteria to evaluate the credibility of a message (Greifeneder et al., 2021, p.74)

Criterion	**Analytic evaluation**	**Intuitive evaluation**
Compatibility: Is it compatible with other things I know?	Is this compatible with the knowledge retrieved from memory or obtained from trusted sources?	Does this make me stumble or does it flow smoothly?

Coherence: Is it internally coherent?	Do the elements fit together in a logical way? Do the conclusions follow from what is presented?	Does this make me stumble or does it flow smoothly?
Credibility: Does it come from a credible source?	Does the source have the relevant expertise, a vested interest? Is the source trustworthy?	Does the source feel familiar and trustworthy?
Consensus: Do other people believe it?	What do my friends say? What do opinion polls say?	Does it feel familiar?
Evidence: Is there supporting evidence?	Is there supportive evidence in peer-reviewed scientific articles or credible news reports? Do I remember relevant evidence?	Does some evidence easily come to mind?

2.3 Cialdini's Principles of Persuasion

Every day, people deal with innumerable stimuli, overflowing information, and hundreds of decisions to make. In order to live efficiently, most of the time, people rely on mental shortcuts and heuristics to guide their attitudes and behaviors (Cialdini, 2007). A way to capitalize on these heuristics is to use persuasive tactics. Cialdini identified seven conceptually independent principles of persuasion: (1) authority, (2) liking, (3) consistency, (4) social proof, (5) scarcity, (6) reciprocity and (7) unity. These seven principles operate outside of the conscious awareness and are essential in today's message-dense society. Nowadays, the theory has been extensively used in marketing to understand the persuasiveness of content (Cialdini, 2007). However, in the context of fake news, the effects of these principles have not been studied yet.

Nevertheless, due to the reason that people use quick heuristics to evaluate information that can be influenced by peripheral cues, the theory of Cialdini can perhaps give a better insight on the acceptance of fake news. In this study, the effect of two of these principles and namely, authority and social proof, on the acceptance of fake news will be examined. The reason to

choose for these two principles is that authority and social proof might be able to influence a reader's intuitive assessment of truth. Peripheral cues of the principle of authority could persuade a reader in thinking the information they are reading is trustworthy and, therefore, result in a higher credibility. Peripheral cues of social proof could result in a higher consensus and persuade the reader in thinking others believe the information they are reading.

By not examining the effect of the other five principles the study at hand is not claiming that these principles are irrelevant however, they are a less obvious choice. Scarcity is persuasive due to the fact that things can be perceived more valuable when there is a limited availability and reciprocity revolves around the fact that people feel the need to return favors. The principle of consistency focuses on the fact that people like to be consistent in their thoughts and actions. Three principles that can be from great value in the field of marketing but are less relevant when it comes to fake news. The principles of liking and unity need to be customized for every participant because they will all have different interests and preferences. In the research at hand, there are not the resources to properly examine these principles. Thus, the effect of authority and social proof will be examined in the study at hand.

2.3.1 Authority

From the day we were born, we have learned that following and obeying an authority is rewarded and defiance of authority is punished (Cialdini, 2007). With the principle of authority, Cialdini states that there is "a deep-seated sense of duty to authority within us all" (Cialdini, 2007, p. 213). Complying with an authority is often more favorable, because they have more knowledge about a situation. In an uncertain situation, an authority can, therefore, offer an efficient shortcut to a good decision without the need to process all the important information (Cialdini, 2001). For this very reason, we often follow authority without consciously thinking

about whether or not the authority is trustworthy (Cialdini, Influence: The psychology of persuasion, 2007).

But, when it comes to information, who can exert this authority and how? A typology that is often used by social scientists to interpret authority is Weber's typology of authority (1946). Weber outlined three main types of authority and namely a traditional, a charismatic, and a legal or rational one (Ritzer, 1991). Traditional authority is a type of authority, where the power arises from a long-standing custom. Examples of traditional authority are patriarchy, the church or the royal family. With charismatic authority, the power derives from their personal qualities. These authority figures have a personality that inspires others, their actions and ideas are there for followed (Ritzer, 1991). The last type of authority outlined by Weber is validated by laws and referred to as rational-legal authority. The authority is based on a system with rules and the right of those appointed to an authority role to issue commands (Weber, 1968). A police officer is an example of a rational-legal authority.

Weber's typology is often used in the context of politics and not in the context of the acceptance of information. This can perhaps be explained by the criticism the typology has received. For many decades there has been a wide discussion going if Weber's typology is thorough enough. Many argue that not all cases of authority can be explained by Weber's three types of authority. Especially a non-formal form of rational authority is missing in the eyes of critics. When it comes to authority figures such as doctors, experts, or professionals, the current three types are not suitable enough (Guzmán, 2014).

Van Leeuwen (2007) extended the typology by two other types of authority that are also more compatible for the focus area of this paper. The first addition is the expert authority, this form of authority derives from expertise rather than status. This form of authority can, for example, be demonstrated in a message by mentioning credentials or the experts themselves (e.g., Dutch Dental Associations say that brushing your teeth twice a day is not enough) or

when the source itself is an expert (van Leeuwen, 2007). Lastly, van Leeuwen added the authority of conformity. According to the authority principle, a message is believed because other people do it as well. This form of authority radiates often through high frequency modality e.g., the majority of students bought their books online (van Leeuwen, 2007).

Authority can make information more credible and trustworthy and can result in a higher acceptance of the information (Greifeneder et al., 2021). When a fake news message radiates authority, for example by mentioning experts or credible sources, it is expected that the reader will feel like they can trust the information and, therefore, accept the fake news.

H1: The use of authority positively influences people's acceptance of fake news on social media.

2.3.2 Social proof

In the 1950s, Solomon Asch conducted conformity experiments to study to which degree a person's own opinion is influenced by that of a group (Asch, 1956). During his experiment, he made groups consisting of seven to nine participants, all but one of these participants were pretending to be subjects and gave on purpose the wrong answer to the questions. The real subject, who always answered the question second to last, confirmed the wrong answer of the group in most cases. About three-quarters of the participants in the experiment went along with the group at least one time. Afterwards, when the participants were informed about the aim of the experiment, they gave different reasons why they conformed with the wrong answer of the group. They stated that they felt pressure from the group but also that they were questioning themselves and believed that the group must have been right (Allcott & Gentzkow, 2017). The experiment of Asch is a good example of the persuasive principle social proof.

The principle of social proof states that people observe the behaviors and opinions of others in order to guide or validate their own. The principle derives from two forceful social pressures: social comparison and conformity (Cialdini, 2007). Social comparison refers to the fact that individuals compare their behavior and thoughts to those of other people. If there is a

difference between the other persons and themselves, oftentimes they will doubt themselves and feel the need to adjust their behavior or thoughts. Most of the time, social comparison happens unconsciously, people are not aware of the fact that they are comparing their own behaviors to others and adjusting them (Wood, 1996).

On the other hand, conformity refers to the fact that people do not like to feel uncertain, when they find themselves in a situation where they do not know what to do or to think, they will follow the crowd (Cialdini 2007). In a situation that a person reads fake news on social media and is unsure whether or not to believe the information, seeing confirming comments and likes of others can convince a person that the misinformation is trustworthy.

When it comes to the effect of social proof on social media behaviors, several studies showed that comments and reactions can have an impact on a person's opinion and behavior (Hilverda et al., 2018). When more evident examples of social proof like comments are not available, a person might look for more subtle hints of social proof (Hilverda et al., 2018). These subtle hints can refer to the amount of likes a post has or the number of comments and shares. Cues such as likes and shares indicate that there is interest in the post and that people support it and it is likely that this will influence a person's behavior (Muscanell et al., 2014). This way of thinking is supported by a study by Lee et al. (2015), which showed that likes on Facebook positively influence the sales rate of products. The study mainly focuses on the more commercial aspects of social proof in social media (lee et al., 2015). It is unclear whether the effect of social proof also works on the acceptance of information.

Based on this information, it is hypothesized that cues of social proof in social media posts containing fake news will result in a higher acceptance of this fake news. These cues may include signs of social proof in the content of the post as well as more subtle social proof hints like numbers of likes and shares.

H2: The use of social proof positively influences people's acceptance of fake news on social media.

It is expected that authority and social proof both independently have an impact on the acceptance of fake news. However, besides testing the expected influence of authority and social proof on the acceptance of fake news separately, this study tests whether these factors interact with each other as well. Cialdini stated that the principles of persuasion are most effective when they are combined (Cialdini, 2001). Therefore, it is hypothesized that there is an interaction effect between authority and social proof that influences the acceptance of fake news.

H3: The effect of authority in combination with social proof results in a higher acceptance of fake news on social media as compared to when the two principles are used independently.

2.4 Changing brand attitude, credibility, and newsworthiness

In the past literature of fake news, there are no methods yet defined on how to measure the acceptance of fake news. Therefore, the study at hand will use three indicators to examine if the misinformation in the message gets accepted or not. These indicators are a change in brand attitude, the credibility of a message and the perceived newsworthiness.

2.4.1 Changing brand attitude

Brand attitude is the impression or opinion a person has about a brand (Petty and Cacioppo, 1986). In the Elaboration Likelihood Model (1986), Petty and Cacioppo describe two routes a person can take to change their attitude about a brand. When a person adopts the central route, a change in brand attitude will be the result of thorough consideration. By adopting the peripheral route, the change in brand attitude is the result of associating the brand with positive or negative cues within the context of persuasion (Petty and Cacioppo, 1986). Cues of authority

and social proof are expected to influence a reader's peripheral route and therefore also result in a change in brand attitude. Thus, changing brand attitude will be used as an indicator of the acceptance of the fake news message.

2.4.2 Credibility

Credibility of a message can be defined as an overarching evaluation of the objectiveness of the message (Sundar, 1998) or the perceived quality of a message based on various factors such as trustworthiness and expertise (Chung et al., 2012). A higher credibility of a message results in a greater acceptance of the information contained in the message (Appelman & Sundar, 2015). For this reason, will the perceived credibility of a message serve as an indicator for the acceptance of the fake news message.

2.4.3 Newsworthiness

Newsworthiness refers to information that is interesting or meaningful enough for society to be reported by the media and protects the publication of true information (Bahadur, 2019). Appelman and Sundar (2015), argue that the perceived newsworthiness of information can predict whether the message is perceived as truthful (Appelman & Sundar, 2015). Therefore, the perceived newsworthiness will be used as an indicator of the acceptance of the fake news message.

2.5 Conceptual research model

Figure 1 gives a visual overview of the conceptual research model. In table 2, the formulated hypotheses that will be analyzed in this study are presented.

Figure 1. Conceptual research model

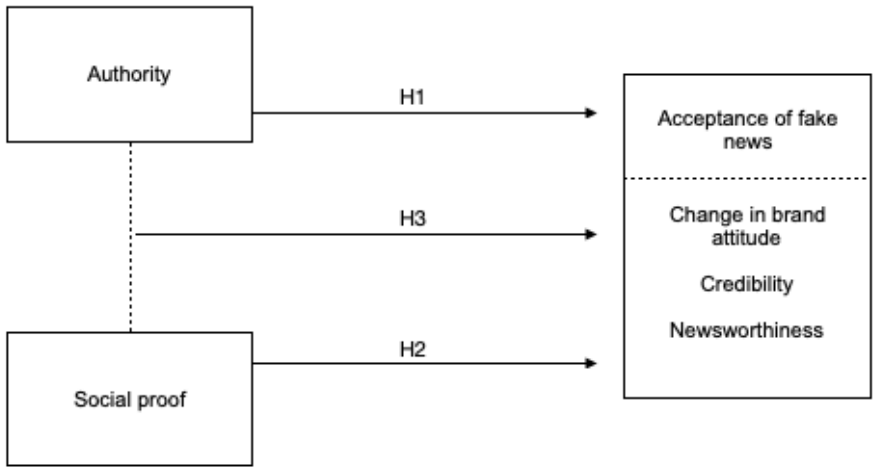


Table 2. Overview of hypotheses

Hypotheses	**Expected effect**
H1: The use of authority positively influences people's acceptance of fake news on social media.	The acceptance of fake news is higher when cues of authority are implemented in the message
H2: The use of social proof positively influences people's acceptance of fake news on social media.	The acceptance of fake news is higher when cues of social proof are implemented in the message
H3: The effect of authority in combination with social proof results in a higher acceptance of fake news on social media as compared to when the two principles are used independently.	The acceptance of fake news is higher when cues of authority in combination with cues of social proof are implemented in the message

3. Method

3.1 Research design

To investigate the effects of authority and social proof on the acceptance of fake news, an experimental study with a 2x2 between-subjects factorial design was executed. To manipulate the independent variables, authority and social proof, four variants of fake news posts were created. The dependent variables were changing brand attitude, impression, and credibility. The dependent variables were used to measure the acceptance of fake news. Participants were randomly assigned to one of the four experimental conditions.

3.2 Research materials

The research materials for this study consisted of four fictional Facebook posts containing fake news. Every participant saw a total of four facebook posts. The reason to show four different post of four different brands to every participant was to avoid bias caused by brand preference. The posts were based on or inspired by existing fake news posts found on the internet, whose information could harm the reputation and business of a brand. In order to find the inspiration for the fake news posts, the researcher visited various websites and Facebook pages that are known for posting fake news. The fake news articles shared on these platforms were analyzed and selected on different aspects such as relevance for the Dutch population, brand awareness and period the article got spread. All articles used as inspiration were fact checked to make sure the content of the articles was false.

The four fake news stories were about existing brands that were probably known by most participants, namely Coca-Cola, Apple, L'Oréal, and Houseparty. All Facebook posts were written in Dutch (the examples shown are translated to English). Most posts were inspired by fake news messages written in English. For the translation from English to Dutch three master students, including the researcher herself, translated the fake news articles. The content of the

posts later got checked on spelling and grammar by a student of the master Dutch Studies to avoid bias caused by grammar mistakes. Dutch Facebook posts can be found in appendix 1.

3.2.1 Selection of companies and fake news

Fake news Coca-Cola

The first Facebook post was about Coca-Cola and its product Dasani water. The fake news story claimed that thousands of bottles were contaminated with a parasite and that hundreds of people were hospitalized with symptoms like diarrhea, nausea and fever.

Fake news Apple

The second Facebook post contained misinformation about the brand Apple. According to the fake news story, Apple slows down old iPhone models by means of software updates, in order to sell more new iPhones.

Fake news L'Oréal

L'Oréal was the subject of the third Facebook post. The fake news story lashed out to the brand L'Oréal for testing their make-up on cats, to sell to the Chinese market. In particular, the post asked people to prevent the company from testing such products on cats.

Fake news Houseparty

The last Facebook post contained misinformation about the brand Houseparty. The post claimed that, despite the success of the app at the beginning of the year, at that moment, it was facing serious backlash since the company would sell the data of its users to third parties.

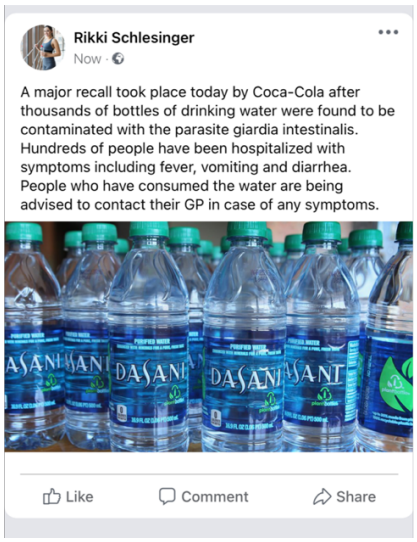
3.3.1 Manipulations

For every brand, four versions of the fake news post were created. Apart from the manipulations, all versions contained the same content. In the following part, it will be explained how the manipulations clearly differenaited the conditions from each other.

Authority

For the manipulations, two types of authority were used, namely the expert authority and rational-legal authority. Expert authority can be demonstrated in a message by mentioning credentials, quoting experts, or when the source of the message is an expert (van Leeuwen, 2007). Signs of expert authority have been incorporated into the message by mentioning subject-matter experts that could feel familiar to the participants. For the rational-legal authority organizations appointed to an authority role such as the Netherlands National Committee for the protection of animals used for animal testing, were mentioned. As fake news most is often spread via unreliable sources, the researcher chose not to manipulate the source of the Facebook post into a reliable expert. An example of how a post got manipulated with the principle of authority can be seen in figure 2.

Figure 2. Two fake news posts Coca-Cola, no signs of authority (left) and signs of authority (right)



Social proof

On social media, subtle hints of social proof can influence a person's opinion and behavior. These subtle hints can refer to the amount of likes a post has or the number of comments and shares. Cues as likes and shares indicate that there is interest in the post and that people support it and it is likely that this will influence a person's behavior (Muscanell et al., 2014). Therefore, signs of social proof have been incorporated into the message by showing a high numbers of likes and comments on the posts. This hint of social proof is accompanied by signs of social proof in the news itself. In figure three an example is given how the fake news posts got manipulated with social social proof. Table 3 provides a complete overview of all manipulations for both authority and social proof.

Figure 3. Two fake news posts L'Oréal, no signs of authority (left) and signs of authority (right)

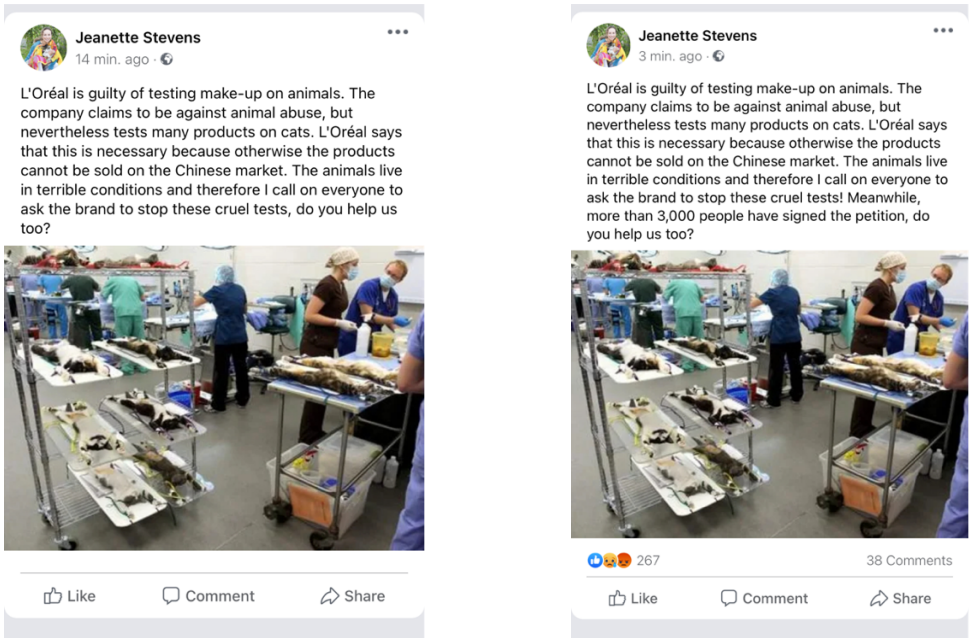


Table 3. Overview of manipulations per Facebook post

Facebook post	Manipulations authority	Manipulations social proof
Coca-Cola	The content contained an advice of the Dutch Association for Parasitology	The post stated that social media was full of message of people claiming to be sick of the parasite.
Apple	The news of the post was based on a research of Harvard University	The post claimed that thousands of victims want to sue Apple.
L'Oréal	The post claimed that the information given was confirmed by the Netherlands National Committee for the protection of animals used for animal testing.	A petition was addressed that asked L'Oréal to stop testing on animals. According to the post over 3000 people signed the petition.
Houseparty	In the content of the post is added that the Dutch privacy authority is warning consumers for the dangers of the app.	The post addresses the fact that a large amount of the users already deleted their account.

3.3 Measurements

To measure the effects of authority and social proof on the acceptance of fake news, three constructs were measured. The first construct measured the participants change in brand attitude, the second construct measured the impression of the post, and the third construct measured the credibility of the information. For each construct, the seven-point Likert Scale was used (from strongly disagree to strongly agree). Participants could express how much they agreed or disagreed with statements in the questionnaire. Some of the statements were inspired or borrowed from other studies or theories. Other statements were constructed for this specific research. For each construct, the statements of the survey are discussed below.

Changing brand attitude

Immediately following the Facebook posts, questions were asked to see if there had been a shift in the participant's brand attitude. This construct had a total of four statements, of which two measured the change in the overall impression of the brand and the other two measured the shift in the trust towards the brand and the purchase intention. For example, the item "After reading this post, my impression of the brand X is more negative" was included. The questions were inspired by the study of Vanwesenbeeck et al. (2017).

Credibility

In order to measure to what extent, the participants accept the fake news, a construct of four statements was created. These statements were inspired by a study of Appelman and Sundar (2015). With their research, they looked at indicators for message credibility. By combining these indicators, they found that it was an appropriate measure for use by communication scholars. For example, the item "I think the post is trustworthy" was included.

Newsworthiness

The impression of the fake news was measured with three self-constructed items. With the items, participants could indicate how interesting, important, and captivating they found the content per post. An example of an item that was included is "I think the post is interesting".

In order to determine whether the various items belonging to a group indeed measure the same factor and to verify the scale construction of the study, a factor analysis was conducted. For this analysis, the rotation method "varimax" was selected. For all four Facebook posts, a separate factor analysis was conducted. The rotated component matrix showed that by removing two items that measure the change in brand attitude, it was possible for each item to measure the one group they were designed to measure, whilst all the scales of change in brand attitude

still had a reliable Cronbach's alpha. In table 4, the factor analysis is presented, the total explained variance and eigenvalues were also included. Due to the reason that four separate factor analyses were conducted, these variance and eigenvalue are four separate factor loadings and do not describe one model.

Table 4. Factor loadings of the scale items measuring the acceptance of fake news.

Construct	Scale items	Houseparty			L'Oréal			Coca-Cola			Apple		
		1	2	3	1	2	3	1	2	3	1	2	3
Changing brand attitude	My impression of brand X is more negative.	.89			.76			.88			.78		
	My purchase intention in relation to brand X is more negative.	.92			.89			.89			.93		
Newsworthiness	The post is interesting.		.85			.83			.81			.86	
	The post is important.		.81			.79			.77			.82	
	The post is captivating.		.87			.87			.88			.89	
Credibility	The post is credible.			.88			.86			.89			.87
	The post is plausible.			.83			.86			.88			.85
	The post is convincing			.81			.79			.83			.83
	The post is trustworthy			.81			.87			.84			.85
	Eigenvalue	5.56	1.24	0.92	6.14	0.98	0.76	5.35	1.19	1.02	5.70	1.32	0.78
	Explained variance	61.8%	13.8%	10.2%	68.3%	10.8%	8.4%	59.4%	13.3%	11.3%	63.4%	14.7%	8.6%
	Cronbach's alpha α	.89	.91	.94	.85	.92	.95	.74	.92	.93	.80	.91	.96

3.4 Participants

The population of this study are Dutch citizens above the age of 18. Research has shown that at least 30 participants are needed per condition in an experiment (Fink, 1995; Sekeran & Bougie, 2016). For this reason, a minimum number of 120 respondents was aimed for. Convenience sampling was used to reach the participants, via social media the survey was spread.

In total 367 responses were collected, of whom 57 responses were filtered out. The reason for this is that not all participants completed the survey (49) and that others completed the survey in less than five minutes or more than 25 minutes (8). When a participant did not spend the minimum amount of time it is highly unlikely that they completed the experiment with full attention. A duration of more than 25 minutes implies that the participant has not completed the survey in one sitting or with full concentration. This resulted in a total of 310 participants that were included in the analyses.

Table 5 gives an overview of the participants' demographic characteristics. The age of the participants variated between 18 and 73 years (M = 36.9, SD = 13.3). The majority of the participants was female; in total there were 223 female respondents (72%) versus 86 male respondents (28%). About two third of the respondents was highly educated (66%). Considering that participants' gender, age, educational background, and their awareness of fake news may influence the results, it was tested if significant difference existed between the four conditions. A Chi square test showed that no significant difference between the four conditions for gender ($\chi^2(6) = 5.13, p = .527$) and education ($\chi^2(3) = 5.31, p = .150$) was found. In addition, a one-way univariate analysis was conducted to look for a significant difference in age between the conditions. No significant difference was found for the age of the participants ($F(3, 306) = 1.23$, $p=.29$).

Moreover, the same analysis was used to test whether the significant difference between the four conditions for prior awareness of fake news, the self-assessed ability to recognize fake news and the frequency participants saw similar posts on their own social media. Again, no significant difference was found for the awareness ($F(3, 306) = 0.64$, $p=.59$), ability ($F(3, 306) = 1.57$, $p=.19$) and the frequency ($F(3, 306) = 1.19$, $p=.31$). In conclusion, the analyses show that, across the four conditions, the demographic characteristics of the participants were equally distributed.

Table 5. Demographic characteristics of the participants.

	Social proof + authority	Social proof	Authority	Control
N	79	83	70	78
M age	37.20 (13.66)	38.14 (13.79)	34.29 (13.28)	37.62 (12.44)
% Female	72.2 %	77.1 %	67.1 %	70.5 %
% Higher education	59.5 %	61.4 %	75.7 %	67.9 %
M Awareness fake news	2.33 (0.79)	2.27 (0.73)	2.15 (0.71)	2.26 (0.82)
M Ability recognize fake news	3.14 (0.89)	3.17 (0.89)	2.89 (0.90)	3.03 (0.84)
M Frequency	1.69 (0.46)	1.76 (0.43)	1.80 (0.40)	1.68 (0.47)

3.5 Procedure

The experiment was embedded in a web-based questionnaire. The first section of the questionnaire contained a briefing outlining the procedure of the experiment. In order to avoid bias, participants were not informed about the real subject and the goals of the research prior to the experiment. Instead, they were informed that the research focused on their news consumption in social media. After the briefing, demographic questions were asked. After the demographic section, the four sections containing the Facebook posts were presented. Every participant saw the Facebook in a randomized display order. This was followed by questions about the awareness of the participant on fake news and their ability to recognize such

misinformation. At the end of the questionnaire, participants were informed about the research goals of the experiment and the fact that the information just obtained was false. After receiving all the information about the research, participants were offered the possibility to withdraw consent. The average duration of the experiment was 584 seconds (+- 10 minutes) with a standard deviation of 271 seconds (+- 4.5 minutes).

4. Results

This section presents the results of the research. A multivariate test for variance was conducted to examine whether the persuasive principles authority and social proof influence the dependent variables. It was also examined whether these two principles combined have an (interaction) effect on the dependent variables. The results presented in table 6 show a summary of the descriptive statistics of authority and social proof cues on the dependent variables. Table 7 presents a summary of the descriptive statistics per Facebook post. Table 8, consisting of the summary of the descriptive statistics of authority and social proof cues on the dependent variables per Facebook post can be found in the appendix.

Table 6. Summary of the descriptive statistics of authority and social proof cues on the dependent variables

	Cues of social proof			**No cues of social proof**		
	N	M	SD	N	M	SD
Cues of authority						
Changing brand attitude	79	4.38	0.95	70	4.12	0.99
Newsworthiness	79	4.08	1.32	70	3.96	1.27
Credibility	79	3.94	1.16	70	3.78	1.07
No cues of authority						
Changing brand attitude	83	4.33	0.99	78	4.27	0.97
Newsworthiness	83	3.99	1.11	78	4.10	1.15
Credibility	83	3.92	1.08	78	3.80	0.99

All results are measured using a 7-point Likert-scale from (1) totally disagree to (7) totally agree

Table 7. Summary of the descriptive statistics per Facebook post

	N	M	SD
Overall			
Changing brand attitude	310	4.28	0.97
Newsworthiness	310	4.03	1.21
Credibility	310	3.86	1.07
Coca-Cola			
Changing brand attitude	310	3.20	1.39
Newsworthiness	310	3.94	1.54
Credibility	310	3.49	1.54
Houseparty			
Changing brand attitude	310	5.22	1.35
Newsworthiness	310	3.88	1.60
Credibility	310	4.07	1.36
Apple			
Changing brand attitude	310	3.95	1.39
Newsworthiness	310	3.99	1.54
Credibility	310	3.89	1.41
L'Oréal			
Changing brand attitude	310	4.75	1.49
Newsworthiness	310	4.33	1.61
Credibility	310	3.98	1.51

All results are measured using a 7-point Likert-scale from (1) totally disagree to (7) totally agree

4.2 Main effects

As the descriptive statistics for authority and social proof only differ slightly, it must be tested whether these differences are significant. In order to do so, a MANOVA test was conducted. The results are presented in table 9. To measure the general effect between authority and social proof and the dependent variables, the Wilk's Lambda is used.

Table 9. Multivariate test results

Multivariate test		Wilks' Λ	F	df	Significance (p)	η^2
Wilk's Lambda	Authority	.99	0.10	3,304	.96	.00
	Social proof	.99	1.46	3,304	.23	.01
	Authority + social proof	.99	0.66	3,304	.58	.01

A Wilk's Lambda test shows that there is no significant main effect of authority on the combined dependent variables throughout ($\Lambda = 0.99$, $F(3,304) = 0.10$, $p = .96$). In addition, there was no significant main effect of social proof found ($\Lambda = 0.99$, $F(3,304) = 1.46$, $p = .23$), and there was also no significant interaction effect between the independent variables ($\Lambda = 0.99$, $F(3,304) = 0.66$, $p = .58$).

Table 10 shows which dependent variables are affected by the independent variables. For the independent variable authority, the following has been observed. The main effect of authority on changing brand attitude ($F(1,306) = 0.19$, $p = .66$), perceived newsworthiness ($F(1,306) = 0.02$, $p = .89$) and perceived credibility ($F(1,306) = 2.11$, $p = .99$) is not significant. The first hypothesis "the use of authority positively influences people's acceptance of fake news on social media" can be rejected.

Likewise, the main effect of social proof on changing brand attitude ($F(1,306) = 2.08$, $p = .15$), perceived newsworthiness ($F(1,306) = 0.00$, $p = .96$) and perceived credibility ($F(1,306) = 1.39$, $p = .24$) is not significant. Therefore, also the second hypothesis "The use of social proof positively influences people's acceptance of fake news on social media*"* can be rejected.

Table 10. Univariate test results

		F	df	Significance (p)	η^2
Authority					
	Changing brand attitude	0.19	1,306	.66	.00
	Newsworthiness	0.02	1,306	.89	.00
	Credibility	0.00	1,306	.99	.00
Social proof					
	Changing brand attitude	2.08	1,306	.15	.01
	Newsworthiness	0.00	1,306	.96	.00
	Credibility	1.39	1,306	.24	.01
Authority + social proof					
	Changing brand attitude	0.88	1,306	.35	.00
	Newsworthiness	0.68	1,306	.41	.00
	Credibility	0.01	1,306	.91	.00

4.3 Interaction effects authority and social proof

The results presented in table 9 and 10 show that there is no significant interaction effect of authority and social proof cues on changing brand attitude ($F(1,306) = 0.88$, $p = .35$), perceived newsworthiness ($F(1,306) = 0.68$, $p = .41$) and perceived credibility ($F(1,306) = 0.01$, $p = .91$). The last hypothesis is rejected.

4.4 Additional analyses

The hypotheses of this study are now tested. However, because all hypotheses needed to be rejected some additional tests are conducted. These tests are conducted in order to check if this information has an effect on the acceptance of fake news.

4.4.1 Gender

Analysis showed that gender has no effect on the acceptance of fake news. A Wilk's Lambda test shows that there is no significant main effect of gender on the combined dependent variables throughout ($\Lambda = 0.97, F(6,610) = 1.50, p = .18$). In addition, the main effect of gender on changing brand attitude ($F(2,307) = 2.38$, $p = .09$), impression of fake news ($F(2,307) = 2.14$, $p = .12$) and acceptance of fake news ($F(2,307) = 0.92$, $p = .39$) is not significant.

4.4.2 Highest level of education

To test whether the level of education of a participant influences the acceptance of fake news a MANOVA was conducted. A Wilk's Lambda test shows that there is no significant main effect of education on the combined dependent variables throughout ($\Lambda = 0.99$, $F(3,306) = 1.58$, $p = .19$). In addition, the main effect of education on impression of fake news ($F(1,308) = 0.58$, $p = .05$) and acceptance of fake news ($F(1,308) = 2.25$, $p = .16$) is not significant. However, the effect of education on the changing brand attitude ($F(1,308) = 3.92$, $p = < .05$) is significant. Participants with a higher level of education had a lower changing brand attitude (M = 4.19, SD = 0.98) compared to participants who had a lower level of education (M = 4.3, SD = 0.95)

4.4.3 Awareness of fake news and the perceived ability to recognize it

Participants could give an indication on how aware they are of the spread of fake news and their ability to recognize such misinformation. In order to test whether this awareness and ability in the context of fake news influences the acceptance of fake news, a multivariate analysis is conducted. A Wilk's Lambda test shows that there is a significant main effect of awareness on

the combined dependent variables throughout (Λ = 0.97, F(3,304) = 0.3.54, p = < .02). Likewise, there was a significant main effect of perceived ability to recognize fake news found (Λ = 0.97, F(3,304) = 3.15, p = < .03). However, there was no significant interaction effect between the awareness and perceived ability to recognize fake news (Λ = 0.99, F(3,304) = 0.66, p = .58).

For the effect on the dependent variables separately, the following has been observed. The main effect of ability on changing brand attitude (F(1,306) = 2.02, p = .16) is not significant. The main effect of perceived ability on newsworthiness (F(1,306) = 10.55, p = < .01) and credibility (F(1,306) = 2.11, p = < .02) is significant.

For the perceived ability to recognize fake news, the main effect on newsworthiness (F(1,306) = 1.59, p = .21) is not significant. However, the main effect of perceived ability on changing brand attitude (F(1,306) = 8.51, p = < .01), and credibility (F(1,306) = 4.41, p = < .04) is significant. Table 10 shows that people who are less aware of fake news and indicated that they are limited in recognizing fake news had a higher acceptance score of the misinformation then those who are more aware of fake news and indicated to be capable of recognizing such misinformation.

Table 10. Summary of the descriptive statistics of awareness and ability on the dependent variables

	N	M	SD
Not aware of fake news			
Changing brand attitude	310	4.39	0.95
Newsworthiness	310	4.31	1.06
Credibility	310	4.05	0.96
Aware of fake news			
Changing brand attitude	310	4.19	0.99
Newsworthiness	310	3.83	1.27

Credibility	310	3.72	1.13
Low perceived ability to recognize fake news			
Changing brand attitude	310	4.37	0.92
Newsworthiness	310	4.09	1.16
Credibility	310	3.94	1.04
High perceived ability to recognize fake news			
Changing brand attitude	310	3.89	1.10
Newsworthiness	310	3.75	1.39
Credibility	310	3.53	1.18

All results are measured using a 7-point Likert-scale from (1) totally disagree to (7) totally agree

A follow-up test was conducted to see if participants who are less aware of fake news and indicated that they are not capable of recognizing fake news are influenced by the independent variables' authority and social proof. A Wilk's Lambda test shows that there is, indeed, a significant main effect of authority on the combined dependent variables throughout ($\Lambda = 0.93$, $F(3,108) = 2.70$, $p = < .05$) for this group of participants. However, there was no significant main effect of social proof found ($\Lambda = 0.97$, $F(3,108) = 1.46$, $p = 1.18$) and again there was also no significant interaction effect between the independent variables ($\Lambda = 0.99$, $F(3,108) = 0.07$, $p = .98$).

For the effect of authority on the dependent variables separately, the following has been observed. The main effect of authority on changing brand attitude ($F(1,110) = 0.08$, $p = .79$) is not significant. The main effect of authority on newsworthiness ($F(1,110) = 3.91$, $p = < .05$) and credibility ($F(1,110) = 4.13$, $p = < .05$) is significant. Table 11 presents that this group has overall a higher acceptance score of fake news when cues of authority were presented in the messages.

Table 11. Summary of descriptive statistics of authority on the dependent variables for participants who are less aware of the spread of fake news and able to recognize it

	N	M	SD
Cues of authority			
Changing brand attitude	58	4.43	1.04
Newsworthiness	58	4.50	0.98
Credibility	58	4.28	0.96
No cues of authority			
Changing brand attitude	56	4.47	0.88
Newsworthiness	56	4.11	1.07
Credibility	56	3.89	0.94

All results are measured using a 7-point Likert-scale from (1) totally disagree to (7) totally agree

5. Discussion

5.1 Main findings

This study aimed to shed light on the persuasiveness of fake news. Previous studies on the acceptance of (mis)information argued that due to information overload on social media, people are often forced to use quick heuristics to obtain information and make an intuitive evaluation in order to decide whether to trust or distrust the message (Horne & Adali; Greifeneder et al, 2021). However, these previous studies did not specify how these heuristics can be influenced. The goal of this study was to find out whether participants have a higher acceptance of fake news when the news messages contain cues of the persuasive principles' authority and social proof than when the messages lack of these types of cues.

Table 12 gives an overview the three hypotheses and the extent to which the findings of this study confirm them. The first hypothesis, that cues of authority in a fake news message positively influences people's acceptance of fake news on social media, is only partly supported by the data. Only if a person is not aware of the existence of fake news and has a hard time recognizing fake news, does it appear to make a difference whether cues of authority are present in the fake news message. This finding supports the Principles of Persuasion theory of Cialdini (2007) and is in line with earlier research on the acceptance of misinformation (Greifeneder et al., 2021). The lack of effect of authority for people who are more familiar with the concept fake news perhaps already have built on some persuasion knowledge and are therefore less susceptible to this persuasive principle. Another explanation for the lack of effect could be the fact that today's society is increasingly made aware of the presence of more points of view in every topic and that there is not just one expert for every topic (van Leeuwen, 2007). On top of that, van Leeuwen (2007) claims that experts and their opinions are increasingly being questioned. This development makes the influence of expert authority waning slowly (van Leeuwen, 2007). The peripheral cues of authority took the shape of an expert or of an

organization appointed to an authority role. The declining trust in such types of authority may explain why the hypothesis is only partly supported by the data collected in this research.

Table 12. Hypotheses and Results

Hypotheses	**Result**
H1: The use of authority positively influences people's acceptance of fake news on social media.	Partially supported
H2: The use of social proof positively influences people's acceptance of fake news on social media.	Not supported
H3: The effect of authority in combination with social proof results in a higher acceptance of fake news on social media as compared to when the two principles are used independently.	Not supported

The second hypothesis, according to which the cues of social proof in a fake news message positively influences people's acceptance of fake news on social media, is not supported by the data. This finding does not support the Principles of Persuasion theory of Cialdini (2007) and it is not in line with earlier research on the effect of social proof on social media behaviors (Hilverda et al., 2018). In different studies, social proof has proven to be more and more important as a peripheral cue on social media (Hilverda et al., 2018). These studies investigated evident examples of social proof such as comments and reactions of friends. In the study at hand, subtle hints of social proof such as the numbers of likes and comments were used. The participants did not know from whom these comments were originated and if they were positive or negative. However, other studies that focused on the effect of social proof on social media behavior claimed that whenever more evident examples of social proof are missing, subtle hints will be effective (Muscanell et al., 2014). The results of the study at hand were not in line with this conclusion and cues of social proof in fake news post did not lead to a higher acceptance of the misinformation.

The third hypothesis and, specifically, that the effect of authority in combination with social proof results in a higher acceptance of fake news on social media as compared to when the two principles are used independently, is not supported by the data. According to Cialdini, the principles of persuasion are most effective when they are combined (Cialdini, 2001). Therefore, it was expected that, when the two peripheral cues were combined in a fake news message, there would have been an interaction effect that resulted in a higher acceptance of the information. But, contrary to the expectation, no interaction effect between authority and social proof was detected. The results suggest that cues of authority and social proof both separately as in combination do not influence the acceptance of fake news on social media.

Lastly, additional analyses were performed to see if other factors than the hypothesized ones might had an influence on the acceptance of fake news. No effect was found for the demographic variables gender and educational level on the acceptance of fake news. It did not matter if a participant was male, or female and their level of education was not significantly relevant for the acceptance of fake news. During the experiment, it was measured how aware participants are that fake news exists and gets frequently spread on social media. In addition, participants were able to give an indication of how much they considered themselves capable of recognizing fake news. An additional analysis showed that people that are less aware of the existence of fake news and indicted that they are not capable of recognizing fake news had overall a higher acceptance then those who are more familiar with the concept of fake news. In the paper at hand, it has been mentioned before that in the context of marketing and advertising, consumers develop knowledge about persuasion tactics. This knowledge helps the consumer to realize when and how marketeers are trying to influence them (Friestad & Wright, 1994). People that are already aware of the existence of fake news perhaps already developed knowledge on how to recognize fake news and are, therefore, better able to withstand the persuasion tactics. As mentioned above, a follow-up test showed that the group of participants

with less awareness of fake news was thereby also influenced by the persuasive principle of authority.

In conclusion, this study claims that people who are not aware of the spread of fake news on social media and who indicate that they are not able to recognize such misinformation have a higher acceptance of fake news then others. This group is also influenced by the persuasive principle of authority and will have a higher acceptance of a fake news message when cues of authority are presented in the message.

5.2 Theoretical implications

The findings of this research have several theoretical implications. For instance, still little is known about the acceptance of fake news. The results of this study imply that there is a significant difference in the acceptance of fake news between people who are aware of the spread of fake news and those who are not aware and feel like they are less capable in recognizing such misinformation. This finding suggests that it if people are informed about fake news and are aware that not all the news they read on social media can be trusted, they are less likely to accept fake news.

In addition, the research demonstrates that, when people are not aware of fake news, they can be influenced by the principle of authority. This supports partly the Principles of Persuasion theory (Cialdini, 2007). However, the persuasive principles of authority and social proof may not be effective in the context of fake news for those who are conscious of fake news. Previous studies suggest that, in the context of accepting information online, people experience an information overload that forces them to use quick heuristics in order to accept or reject the information. Information processing happens mainly on intuition and a more critical analysis is done by a person only if it suspects that something is wrong (Horne & Adali, 2017; Greifeneder, 2021). Cialdini (2007) claimed that a way to capitalize on these heuristics

is to use persuasive tactics, such as authority and social proof and combining these tactics even leads to better results (Cialdini, 2007). This study did not find any evidence that cues of authority and social proof, separately or combined, influence the acceptance of fake news for people who are aware of the spread of fake news.

5.3 Limitations and further research

Several limitations can be addressed regarding this study. Firstly, in the beginning of this research it was addressed tha,t due to an information overload on social media, people are often forced to use quick heuristics to obtain information and decide whether they trust the message or not. These heuristics are often mental shortcuts and look for peripheral cues. Partly because of this information it was decided to investigate the effect of the persuasive principles of authority and social proof on the acceptance of fake news. However, the materials used in the research did not fully replicate a social media timeline and the information overload that this entails. Therefore, participants perhaps did not use quick heuristics to evaluate the information like expected in real life. Another limitation in this case is that the cognitive load for the participants was not measured during the experiment. Therefore, it cannot be said with certainty that the participants did not experience an information overload. Future research on the acceptance of fake news could aim at fully replicating a social media timeline to simulate an information overload and afterwards measuring the cognitive load. This can be done for example with the rating scale developed by Paas (1992). This scale is designed to measure task difficulty, where participants can indicate on a Likert scale the mental effort they had to use to perform for the task (Paas, 1992). By letting participants indicate their mental effort, it can be seen if this perhaps makes a difference for the effect of the independent variables.

Secondly, in the experiment two types of social proof were combined and used to manipulate the fake news posts. These types of social proof consisted out of hints of social

proof in the written content itself and out of subtle cues of social proof, namely the number of likes and commends. For this last type of social proof, when it comes to the effect of social proof on social media behaviors, several studies showed that comments and reactions can have an impact on a person's opinion and behavior (Hilverda et al., 2018; Muscanell et al., 2014). Research of Muscanell et al. (2014) claims that when this type of social proof is not available, subtle cues of social proof such as numbers of likes and comments are effective. In the research, the subtle cues of social proof were used to manipulate the posts instead of personalized comments and likes. Cialdini (2007) claims that the principle social proof works most effectively when people feel that they are like the other. It is possible that, if more obvious and personalized cues of social proof were used, the results would have turned out differently. Personalizing the cues of social proof for every participant in an experiment is not doable. However, presenting actual comments that are not anonymous in which a participant can see the opinions of others might result in a higher effect of social proof. Due to the reason that subtle cues of social proof were proven to be effective in other studies they were chosen as way to manipulate the messages. Because no effect is found for social proof a recommendation for further research would be to use identified comments and likes that present an opinion about the fake news message. In addition, for this research two types of social proof were combinedly used into one manipulation. In the view of further research, it would be recommended to use these types of social proof separately. In the case that an effect will be found for social proof it will this way be clear if the effect occurs due to the comments and likes or because of the signs of social proof in the message itself.

Lastly, during the experiment, a manipulation check was not used. The reason for this was because the researcher was afraid that, with a total of four different Facebook posts, the participants would realize after one or two manipulation checks that the posts were manipulated. By, for example, asking after every Facebook post is they saw likes and comments

in a message, this could bias the way they looked at the upcoming fake news posts. In retrospect, it would have been good to confirm whether the participants perceived the manipulations or not. Not knowing for sure whether the participants noticed the cues of social proof and authority is a limitation of the research. In this light, a recommendation for further research would be to add a manipulation check. When a between-subjects design will be used, the manipulation check could be presented at the end of experiment. Since all posts will be manipulated in the same way, one manipulation check can be effective without biasing the experiment.

5.5 Conclusion

The aim of this study was to research if the persuasive principles, authority and social proof, influence Dutch social media users' acceptance of fake news about brands. Previous literature on the acceptance of (mis)information indicated that, due to the information overload on social media, people tend to use quick heuristics in order to decide to accept a message or not. An important motivation to investigate these principles is because the researcher believes that when there is a clearer understanding of what makes fake news so compelling to accept, people can be informed and protected in a better way against fake news.

Contrary to expectations, the peripheral cues of authority and social proof do not influence Dutch social media users' acceptance of fake news about brands. Nevertheless, the outcomes of this research did show the importance of making people aware of the existence of fake news and informing people on how to recognize misinformation. People that are already informed about the existence and spreading of fake news online are less likely to accept the misinformation presented to them. People that are less aware and do not know how to verify the trustworthiness of news have a higher chance to accept the fake news they read online. If this fake news contains cues of authority, the result will be a even higher acceptance among this group.

In conclusion, this study claims that the persuasive principles of authority and social proof will not influence Dutch social media users' acceptance of fake news about brands if these people are already aware of the existence of fake news. However, social media users that are not familiar with the concept can be influenced by the principle of authority and have in general a higher acceptance of fake news then people who are familiar with fake news. In order to combat the negative effects of fake news about brands it is important that society keeps getting informed about fake news and misinformation and tools are provided to recognize such fake news.

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Appendix 1 – Fake news posts Facebook

Apple- no manipulations

Translation

If you were Apple, what tricks would you use to increase the sales of your latest product? Knowing big companies, they use all possible tricks to make more profit. Apple even goes so far that they make older models slower through software updates just before the release of a new device.

Apple - authority

Translation

If you were Apple, what tricks would you use to increase the sales of your latest product? Knowing big companies, they use all possible tricks to make more profit. Apple even goes so far that they make older models slower through software updates just before the release of a new device. This was shown in a research by Harvard University.

Apple - social proof

Translation

If you were Apple, what tricks would you use to increase sales of your latest product? Knowing big companies, they use all possible tricks to make more profit. Apple even goes so far that they make older models slower through software updates just before the release of a new device. Thousands of victims now want to file a lawsuit against the tech giant and expect a compensation.

Apple- authority & social proof

Translation

If you were Apple, what tricks would you use to increase sales of your latest product? Knowing big companies, they use all possible tricks to make more profit. Apple even goes so far as to make older models slower through software updates just before the release of a new device. This has emerged from research by Harvard University. Thousands of victims now want to file a lawsuit against the tech giant and expect compensation.

Coca-Cola - no manipulations

Translation

A major recall has taken place today by Coca-Cola after thousands of bottles of drinking water were found to be contaminated with the parasite giardia intestinalis. Hundreds of people have been hospitalized with symptoms including fever, vomiting and diarrhea. People who have drunk the water are advised to contact their GP in case of symptoms.

Coca-Cola - authority

Translation

A major recall took place today by Coca-Cola after thousands of bottles of drinking water were found to be contaminated with the parasite giardia intestinalis. Hundreds of people have been hospitalized with parasitic symptoms including fever, vomiting and diarrhea. The Dutch Society for Parasitology advises people who have drunk the water to contact their GP in case of complaints.

Coca-Cola – social proof

Translation

A major recall has taken place today by Coca-Cola after thousands of bottles of drinking water were found to be contaminated with the parasite giardia intestinalis. Hundreds of people have been hospitalized with symptoms including fever, vomiting and diarrhea. Social media is also full of reports of people who have become ill after drinking the water. People who have drunk the water are advised to contact their GP in case of symptoms.

Coca-Cola – authority & social proof

Translation

A major recall has taken place today by Coca-Cola after thousands of bottles of drinking water were found to be contaminated with the parasite giardia intestinalis. Hundreds of people have been hospitalized with symptoms such as fever, vomiting and diarrhea. Social media is also full of messages from people who have become ill. People who have drunk the water are advised to contact their GP in case of complaints.

Houseparty – no manipulations

Translation

The social network app Houseparty has grown enormously in recent months, partly thanks to the pandemic. But that could soon be over. Users are worried because the app sells passwords and data to third parties. After installing the app, the accounts of several people were hacked, including those of eBay and Instagram.

Houseparty – authority

Translation

The social network app Houseparty has grown enormously in recent months, partly thanks to the pandemic. But that could soon be over. Users are worried because the app sells passwords and data to third parties. After installing the app, the accounts of several people were hacked, including those of eBay and Instagram. The Dutch privacy watchdog warns of the dangers of the app.

Houseparty – social proof

Translation

The social network app Houseparty has grown enormously in recent months, partly thanks to the pandemic. But that could soon be over. Users are worried because the app sells passwords and data to third parties. After installing the app, the accounts of several people were hacked, including those of eBay and Instagram. The Dutch privacy watchdog warns of the dangers of the app. House party accounts are now being deleted and many people are switching to alternatives such as FaceTime.

Houseparty – authority & social proof

Translation

The social network app Houseparty has grown enormously in recent months, partly thanks to the pandemic. But that could soon be over. Users are worried because the app sells passwords and data to third parties. After installing the app, the accounts of several people were hacked, including those of eBay and Instagram. The Dutch privacy watchdog warns of the dangers of the app. Users are now deleting their accounts and switching to other apps.

L'Oréal – no manipulation

Translation

L'Oréal is guilty of testing make-up on animals. The company says it is against animal abuse, but nevertheless tests many products on cats. L'Oréal says that this is necessary because otherwise the products cannot be sold on the Chinese market. The animals live in terrible conditions and therefore I call on everyone to ask the brand to stop these cruel tests.

L'Oréal – authority

Translation

L'Oréal is guilty of testing make-up on animals, the NCad reports. The company says it is against animal cruelty, but still tests many products on cats. L'Oréal says this is necessary because otherwise the products cannot be sold on the Chinese market. The animals live in terrible conditions and therefore I call on everyone to ask the brand to stop these cruel tests.

L'Oréal – social proof

Translation

L'Oréal is guilty of testing make-up on animals, the NCad reports. The company says it is against animal cruelty, but still tests many products on cats. L'Oréal says this is necessary because otherwise the products cannot be sold on the Chinese market. The animals live in terrible conditions and so I urge everyone to ask the brand to stop these cruel tests! More than 3,000 people have already signed the petition, will you help?

L'Oréal – authority & social proof

Translation

L'Oréal is guilty of testing make-up on animals, the NCad reports. The company says it is against animal cruelty, but still tests many products on cats. L'Oréal says this is necessary because otherwise the products cannot be sold on the Chinese market. The animals live in terrible conditions and so I urge everyone to ask the brand to stop these cruel tests! More than 3,000 people have already signed the petition, will you help?

Appendix - Table 8

Table 8. Summary of the descriptive statistics of authority and social proof cues on the dependent variables per Facebook post

	Cues of social proof		No cues of social proof	
	M	SD	M	SD
Facebook post Coca-Cola				
Cues of authority				
Changing brand attitude	3.22	1.54	3.02	1.30
Newsworthiness	3.97	1.68	3.83	1.56
Credibility	3.54	1.72	3.36	1.42
No cues of authority				
Changing brand attitude	3.26	1.31	3.27	1.40
Newsworthiness	3.94	1.46	4.00	1.47
Credibility	3.61	1.43	3.44	1.57
Facebook post L'Oréal				
Cues of authority				
Changing brand attitude	4.89	1.61	4.57	1.38
Newsworthiness	4.44	1.61	4.31	1.58
Credibility	4.13	1.43	3.79	1.52
No cues of authority				
Changing brand attitude	4.79	1.48	4.71	1.50
Newsworthiness	4.31	1.62	4.24	1.67
Credibility	3.98	1.56	4.01	1.52
Facebook post Houseparty				
Cues of authority				
Changing brand attitude	5.29	1.36	5.30	1.33
Newsworthiness	3.86	1.76	3.97	1.53
Credibility	3.97	1.48	4.23	1.21
No cues of authority				
Changing brand attitude	5.06	1.37	5.24	1.36
Newsworthiness	3.66	1.46	4.03	1.67
Credibility	4.10	1.29	4.00	1.44