Navigating Resistance to Persuasion in Health Persuasive Messages

Examining the Impact of the Level of Persuasion Knowledge and Source Credibility on Resistance Strategies

Nina Peters

2079355

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Department Communication and Cognition

School of Humanities and Digital Science

Tilburg University, Tilburg

Supervisor: Dr. P. J. van der Wijst

Second Reader: Dr. F Folkvord

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Abstract

People are constantly confronted with persuasive attempts. Individuals, brands, or organizations try to change an individual's attitude, behavior, or beliefs, especially in health communication, for example, by encouraging healthier behaviors. Nonetheless, persuasion is often accompanied by resistance since individuals do not want to change their behavior. Individuals can deploy different resistance strategies: avoidance, contesting, and empowering. Other concepts that could influence individuals' resistance are persuasion knowledge and source credibility. Previous research found that high persuasion knowledge could enhance resistance. However, other studies found that a credible source could lower resistance. Nevertheless, the combination and interplay of persuasion knowledge and source credibility and their impact on resistance have yet to be studied. Therefore, this study investigates the effect of persuasion knowledge (high vs. low) and source credibility (high vs. low) employed in persuasive health communication on resistance strategies. To explore this, 166 individuals participated in a 2x2 between-subject design online experiment. The results of this study show that participants with high persuasion knowledge show more resistance, but only for the resistance strategy contesting. Additionally, participants show less contesting resistance when exposed to a credible source. No interaction effect was found between the two concepts of persuasion knowledge and source credibility on the resistance strategies. This research has implications for health authorities and organizations by designing new health campaigns.

Keywords: persuasion, persuasion knowledge, source credibility, resistance, resistance strategies, health communication

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Navigating Resistance to Persuasion in Health Persuasive Messages: Examining the Impact of the Level of Persuasion Knowledge and Source Credibility on Resistance Strategies

After a long day at work, Sarah scrolls mindlessly through her Instagram feed. All the online content on her favorite Social Network Sites (SNS) helps her get her mind off things from work. However, Sarah could not help but notice the flood of posts about a healthy lifestyle. Every other friend and influencer shares messages about working out, healthy eating, fitness supplements, and the importance of staying active. Sarah paused on a post of a well-toned fitness model promoting a fitness workout program that will transform her life in only 30 days. "Yeah, right." Sarah thinks. Sarah notices that she starts to feel irritated after being confronted with yet another message telling her what to do or wanting to change her behavior. She decides to ignore it, and Sarah closes her Instagram.

The situation mentioned above is an example of resistance. Resistance is a negative coping response and motivational state in which individuals are motivated to prevent or reduce changing their current attitude or behavior (Fransen et al., 2015; Knowles & Linn, 2004). According to Fransen et al. (2015), individuals can employ different strategies during resistance: avoidance, contesting, and empowering. An example of the avoidance strategy is swiping away after being confronted with an advertisement, as mentioned in the example above (Fransen et al., 2015). In addition, contesting strategies entail actively opposing the advertisement by disputing it, for example, by countering several aspects: the content, the source, or the used persuasive tactics. Furthermore, instead of focusing on the content of the persuasive message or advertisement, empowering strategies focus on the individuals by reassuring themselves or strengthening their current attitude to lower susceptibility to external persuasive attempts.

Resistance strategies are a typical response to persuasive messages, especially in health communication (Reynolds-Tylus, 2019). Health messages and campaigns usually encourage individuals to change unhealthy behaviors or stimulate healthy behavior, such as eating healthy food. However, resistance often occurs when individuals feel their freedom to choose is threatened, hindered, or eliminated by a persuasive message (Brehm, 1966; Fransen et al., 2015). Consequently, although well-intentioned, health campaigns are often seen as threatening individuals' autonomy and leading to resistance (Reynolds-Tylus, 2019; Van 't Riet & Ruiter, 2013).

However, in recent years, during the COVID-19 pandemic, health communication and campaigns have proven to be more critical than ever. Although the pandemic is over, numerous other public health issues need awareness. For example, in the Netherlands, unhealthy food and diets contribute an estimated 8.1% of the burden of disease, as more than half of the adults are overweight (Ministerie van Algemene Zaken, 2023; Rijksinstituut voor Volksgezondheid en Milieu, 2021). Additionally, an unhealthy diet leads to 12,900 deaths per year and 6 billion euros in healthcare expenditures (Rijksinstituut voor Volksgezondheid en Milieu, 2021). Therefore, it is crucial to comprehend and explore the effect of persuasive health communication on resistance to improve health campaigns and stimulate healthier behavior amongst individuals.

Nowadays, health authorities use offline and online platforms to promote their health campaigns. However, exposure to online and offline advertisements may lead to another factor that enhances resistance to persuasion, as it can lead to the development of persuasion knowledge (Friestad & Wright, 1994). Persuasion knowledge is the ability to recognize and evaluate the persuasive attempt one is confronted with and the sender's underlying motives and goals (Eisend & Tarrahi, 2021; Verlegh et al., 2015). Individuals with high persuasion knowledge are more capable of understanding, recognizing, and evaluating the senders'

persuasive intentions (Eisend & Terrahi, 2021). Consequently, activating persuasion knowledge often results in more substantial mistrust of the sender and skepticism about the message and its manipulative or deceptive intents (Fransen et al., 2015).

Nevertheless, a way to reduce mistrust and skepticism toward persuasive messages might be using a credible source (Román et al., 2023). The Source Credibility Theory states that individuals are more easily persuaded when they perceive the source as credible (Hovland & Weiss, 1951). Source credibility is the receivers' perceived trustworthiness of the source, and there is little to no doubt that the source is not deceptive or manipulative (Ohanian, 1990; Umeogu, 2012). Perceived expertise is a critical factor that enhances source credibility (Hovland & Weiss, 1951). Expertise refers to the extent the source is perceived as knowledgeable, experienced, an authority on the subject matter, or capable of providing accurate and valuable information (Pornpitakpan, 2004; Umeogu, 2012).

Therefore, in health communication, providing health messages with an expert source might enhance source credibility and, consequently, persuasion. The study by Roth-Cohen et al. (2021) found that using a credible source helps with more positive outcomes. When a source is considered credible, individuals are more likely to accept and act upon the health message (Roth-Cohen et al., 2021). Thus, it is presumable that individuals show less resistance to persuasion when being confronted with a persuasive health message by a credible source.

The Elaboration Likelihood Model by Petty and Cacioppo (1986) explains the influences of source credibility. This model shows that a persuasive message can be processed in two ways: via the central or peripheral route. Individuals who are highly motivated and capable of critically thinking about and evaluating the persuasive message are likelier to take the central route (Petty & Cacioppo, 1986). Petty and Cacioppo (1986) state that individuals who take the central route critically evaluate the strength of the argument, the presented

evidence, and the content of the message. Additionally, individuals who are less motivated or cannot critically process a persuasive message take the peripheral route and count on heuristics and cues, such as the credibility of the source, to process the persuasive message (Petty & Cacioppo, 1986; Zhou et al., 2014).

A highly credible source lowers motivation to be critical of the persuasive message and might lower resistance to persuasion (Ohanian, 1990; Petty & Cacioppo, 1986). However, a high level of persuasion knowledge might nullify the positive influence of a credible source on resistance, as persuasion knowledge often leads to more mistrust or skepticism towards the sender and more critical thinking by the individual (Eisend & Tarrahi, 2021; Fransen et al., 2015; Friestad & Wright, 1994). It is uncertain what factor influences resistance the most, as the combination and interplay of persuasion knowledge and source credibility have yet to be studied. Therefore, investigating this combination and its effects on resistance to persuasion is a valuable research direction.

By investigating the impact of the level of persuasion knowledge (high vs. low) and source credibility (high vs. low) on resistance, this research can provide implications and insights for health authorities and organizations. In addition, the results of this study might help prevent or avoid resistance to persuasion in future health campaigns and stimulate more healthy behavior in individuals. Therefore, this research aims to answer the following question: *"To what extent do persuasion knowledge and source credibility affect resistance?"*

Theoretical Framework

A theoretical framework must be outlined to answer this study's research question and gain more insight into persuasion knowledge and source credibility. It will also address how both these concepts can influence resistance to persuasion.

Persuasion and Persuasion Knowledge

People are constantly confronted with persuasive attempts (Fransen et al., 2015). Attempts could entail advertisements, a presentation, or a message (Friestad & Wright, 1994). Individuals, brands, or organizations try to change an individual's attitude, behavior, or beliefs (Eisend & Tarrahi, 2021; Fransen et al., 2015; Friestad & Wright, 1994). Individuals are often exposed to persuasive attempts, especially in health communication. A few examples are campaigns encouraging people to be more active, eat healthier food, or quit smoking.

However, individuals eventually learn about the strategies employed in these persuasion attempts (Friestad & Wright, 1994). According to Friestad & Wright (1994) persuasion knowledge helps individuals understand when people are trying to persuade them, why they are trying to persuade them, and how they are trying to persuade them. The Persuasion Knowledge Model by Friestad and Wright (1994) describes the usage of an individual's persuasion knowledge and how this influences the individual's response to the persuasion attempt.

Persuasion Knowledge Model

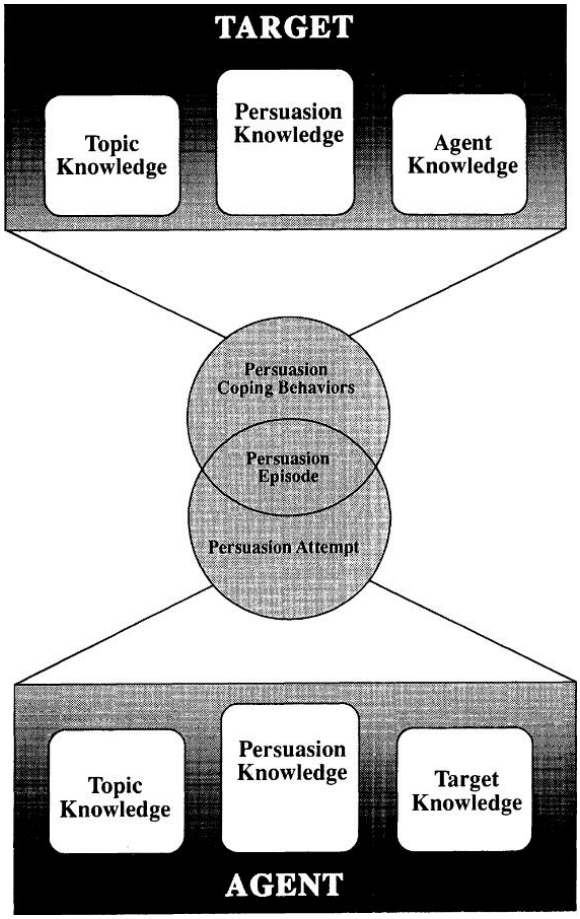

Figure 1. The Persuasion Knowledge Model

Friestad and Wright (1994) distinguish different terms in their Persuasion Knowledge Model: target, agent, persuasive coping behaviors, persuasion episode, and persuasion attempt (Figure 1). Firstly, by the term' target,' the researchers refer to individuals for whom the persuasion attempt is intended. Next, the researchers refer to the term' agent' as the individuals who design and share the persuasion attempt, such as a company responsible for a health campaign. Thirdly, by the term' persuasion attempt', the researchers refer to how a target interprets an agent's persuasive strategies or tactics while communicating information intended to persuade someone's opinions, attitudes, choices, or behaviors. Moreover, the researchers refer to the term' persuasion episode' as the direct behavior of an agent observed by a target. The persuasion episode can include one or multiple attempts by the same agent.

At last, by the term' persuasion coping behaviors', the researchers refer to the behavior of a target as a response to the persuasion attempt by the agent.

Furthermore, Friestad and Wright (1994) distinguish three terms to describe the knowledge structures that interact to influence and define the outcomes of a persuasion attempt: topic knowledge, persuasion knowledge, and agent knowledge. 'Topic knowledge' refers to the target's thoughts and opinions about the topic of the persuasive message or attempt. 'Agent knowledge' refers to the target's thoughts and opinions about the agent's characteristics, qualities, and goals. At last, persuasion knowledge refers to the target's ability to identify, examine, interpret, evaluate, and recall previous persuasion attempts. Consequently, persuasion knowledge helps the target select and implement coping tactics the target believes are adequate and suitable.

Additionally, Friestad and Wright (1994) argue in their Persuasion Knowledge Model that the development of persuasion knowledge changes over time. For example, persuasion knowledge can increase through age, education, practice, and experience (Friestad & Wright, 1994; Wright et al., 2005). The older people get, the more daily tasks are present in adult life in which persuasion knowledge is valuable, for example, establishing and sustaining a personal identity, managing relationships and team roles in the workplace, or making essential purchasing decisions (Friestad & Wright, 1994). Therefore, the researchers argue that developing persuasion knowledge and coping persuasion expertise will grow with age.

Moreover, people who often observe or experience persuasive attempts will develop more persuasion knowledge than people who rarely observe or experience persuasive attempts (Friestad & Wright, 1994). Consequently, the researchers found that the development of persuasion knowledge influences individuals' responses to persuasive attempts, as some persuasive tactics might not be as effective anymore. This phenomenon is known as the 'change of meaning' principle (Friestad & Wright, 1994). This principle by Friestad and

Wright (1994) states that an individual might not give a particular meaning to an agent's persuasive tactics or attempts at first; however, due to the development of persuasion knowledge, an individual learns about these tactics and attempts, and can see through them.

The 'change of meaning' principle could negatively affect the individuals' attitude towards the agent and future persuasive attempts by this agent. Therefore, individuals who developed a high level of persuasion knowledge are expected to use more 'persuasion coping behaviors' and, thus, show more resistance to persuasion.

H1a: Addressees with a high level of persuasion knowledge show more resistance (avoidance) than participants with a low level of persuasion knowledge.

H1b: Addressees with a high level of persuasion knowledge show more resistance (contesting) than participants with a low level of persuasion knowledge.

H1c: Addressees with a high level of persuasion knowledge show more resistance (empowering) than participants with a low level of persuasion knowledge.

Different Dimensions of Persuasion Knowledge

Apart from the cognitive dimension of persuasion knowledge, as described in the Persuasion Knowledge Model by Friestad and Wright (1994), Rozendaal et al. (2011) argued that persuasion knowledge should be divided into multiple dimensions. First of all, conceptual persuasion knowledge refers to the cognitive aspects that include the ability to recognize the persuasive attempt, the source of the attempt, and the comprehension of the purpose and strategies of the persuasive attempt (Boerman et al., 2012; Rozendaal et al., 2011). However, according to Roozendaal et al. (2011), an attitudinal dimension should also be included since only some individuals process persuasion attempts at the same elaborate level. For example, children process persuasion attempts less elaborately than adults.

Consequently, individuals who process persuasion attempts less elaborately often rely on attitudinal instead of cognitive mechanisms (Rozendaal et al., 2011). Individuals rely on

attitudinal mechanisms to evaluate a persuasive message when they use attitudinal persuasion knowledge (Boerman et al., 2012). These attitudinal mechanisms could contain critical attitudes about honesty, trustworthiness, and credibility applied to the persuasive attempt (Roozendaal et al., 2011). For example, when individuals do not like or trust the source, it could negatively affect the evaluation of the persuasive agent or message.

Source Credibility

As described before, source credibility also plays a significant role in evaluating and processing persuasive messages. For instance, individuals are more likely to be persuaded by someone they perceive as knowledgeable, trustworthy, and credible (Pornpitakpan, 2004).

Source Credibility Model

The Source Credibility Model (SCM) by Hovland and Weiss (1951) proposes a theory that a persuasive message by a perceived credible source is more accepted than a non-credible source. Additionally, this model states that individuals confronted with a persuasive message by a credible source are likelier to be persuaded (Hovland & Weiss, 1951). A credible source positively influences the effectiveness of the persuasive message (Seiler & Kucza, 2017). Moreover, Ohanian (1990) proposes that source credibility is determined by three different constructs: expertise, trustworthiness, and attractiveness. However, Umeogu (2012) argues that the constructs of perceived expertise and trustworthiness impact the source's credibility more strongly than attractiveness.

A source is perceived as trustworthy when individuals feel that the source offers honest and objective information (Umeogu, 2012). Expertise is the perception that the source has the knowledge, abilities, and comprehension of the subject to deliver the correct information (Hovland & Weiss, 1951; Ohanian, 1990; Pornpitakpan, 2004). Moreover, the study of Stanley et al. (2011) found that non-profit organizations, such as government agencies, are more likely to be perceived as credible than commercial organizations.

Additionally, in the context of health communication, a study about health promotion found that a non-credible source failed to persuade participants into healthier behavior (Jones at al., 2003). Moreover, in promoting healthier behavior, a persuasive message by a credible source was most influential (Jones et al., 2003). Therefore, the following hypothesis was formulated:

H2a: Addressees exposed to a credible source show lower resistance (avoidance) than addressees exposed to a less credible source.

H2b: Addressees exposed to a credible source show lower resistance (contesting) than addressees exposed to a less credible source.

H2c: Addressees exposed to a credible source show lower resistance (empowering) than addressees exposed to a less credible source.

Elaboration Likelihood Model

Another model that explains how individuals process persuasive messages and make attitude changes is the Elaboration Likelihood Model (ELM) by Petty and Cacioppo (1968). The ELM describes the possibility that individuals will elaborate on the topic they are confronted with (Li & See-To, 2023). However, the level of elaboration might be influenced by the topic the individual is confronted with and the level of interest in this topic. Moreover, the ELM model by Petty and Cacioppo (1986) suggests that individuals can use two routes to process persuasion attempts: the central and peripheral.

The central route involves a high level of cognitive elaboration and critical evaluation of the persuasive message (Petty & Cacioppo, 1986). Individuals engaging in the central route are motivated and capable of critically evaluating the message and its arguments and content (Aghakhani et al., 2022; Petty & Cacioppo, 1986). Additionally, Petty and Cacioppo (1986) argue that individuals who process through the central route focus on the logic and relevance of the message based on their own beliefs and attitudes.

On the other hand, the peripheral route involves minimal cognitive effort and focuses on cues and heuristics instead of the content and arguments of the persuasive message (Petty & Cacioppo, 1986). Petty and Cacioppo (1986) state that individuals engaging in the peripheral route lack the motivation and capability to evaluate the message critically. Moreover, individuals who engage in peripheral route processing often focus on superficial facets, such as the communicator's attractiveness, the credibility of the source, the trustworthiness of the source, or the general impression of the message (Aghakhani et al., 2022).

In the ELM, persuasion knowledge and source credibility play a crucial role. Individuals who have a high level of persuasion knowledge might be more critical of the persuasive message. Therefore, individuals with high persuasion knowledge are more likely to process the message through the central route, as they know when, how, and why someone is trying to persuade them (Friestad & Wright, 1994). A highly credible source can also be a peripheral cue (Aghakhani et al., 2022; Li & See-To, 2023). Therefore, individuals may be convinced by the highly credible source without deeply or critically considering the persuasive message's content or arguments.

Resistance

An important concept that often accompanies persuasion in literature is resistance. In psychology, resistance has taken on two definitions (Knowles & Linn, 2004). Firstly, resistance describes the outcome in which individuals resist the pressure to change (Knowles & Linn, 2004). Secondly, resistance describes a state in which individuals are motivated to resist and counteract the attempts to change (Fransen et al., 2015). Moreover, Fransen et al. (2015) claim that resistance is foremost a state in which individuals want to preserve their existing attitudes while minimizing behavioral and attitudinal changes. Additionally, individuals employ different strategies to do so and resist persuasion attempts. Fransen et al.

(2015) presented the ACE typology that includes three clusters of resistance strategies: *Avoidance, Contesting, and Empowering*.

Avoidance

Avoidance is the resistance strategy that takes the least effort for individuals to protect themselves from persuasive attempts. Fransen et al. (2015) distinguish three types of avoidance: physical, mechanical, and cognitive. Physical avoidance is when individuals leave the room when confronted with a persuasive attempt or intentionally do not read the advertising section (Fransen et al., 2015). Moreover, Fransen et al. (2015) state that mechanical avoidance includes zapping to another channel when a commercial shows. At last, cognitive avoidance includes individuals who ignore or do not pay attention to a persuasive message (Fransen et al., 2015).

Although avoidance has mainly been studied in marketing, it has also taken different forms in political and health communication research (Fransen et al., 2015). In health communication, avoidance can also be deployed as selective exposure or selective avoidance. Selective avoidance or selective exposure is the urge to evade media content that conflicts with an individual's values (Fransen et al., 2015). As the Cognitive Dissonance Theory by Festinger (1957) shows, individuals tend to avoid messages that do not support their attitudes or beliefs.

For example, in the study by Brock and Balloun (1967), smokers chose to focus on the message that claimed smoking was not as harmful to their health instead of focusing on the message that claimed smoking caused severe risks to their health. However, this was only true for individuals with strong opinions about the topic of the persuasive message because individuals who did not smoke paid more attention to the message that claimed smoking caused severe health risks (Brock & Balloun, 1967).

Contesting

On the other hand, individuals could contest the content of the persuasive message, the source of the persuasive message, or the persuasive strategies used in the message (Fransen et al., 2015). Fransen et al. (2015) state that whenever an individual contests the message's content, the individual refutes the message by counterarguing the arguments in the persuasive message.

Moreover, whenever an individual contests the source of the message, the individual questions the credibility, expertise, or trustworthiness of the source (Fransen et al., 2015). Batinic and Appel's (2013) study showed that a non-commercial source is often viewed as more trustworthy than a commercial source. Additionally, earlier research by Kim and Shin (2017) found that a persuasive health message by a commercial organization provided more resistance than a persuasive health message by a government agency.

At last, an individual can contest the strategy used in the persuasive message (Fransen et al., 2015). The development of persuasion knowledge plays a big part in this type of contesting. Consequently, developing persuasion knowledge leads to detecting strategies or tactics used in the persuasive message, resulting in resistance to persuasion (Friestad & Wright, 1994). Moreover, developing persuasion knowledge could contribute to a general distrust of advertisements or persuasive attempts (Darke & Ritchie, 2007; Wright et al., 2005). As a result, individuals might see all types of advertisements or persuasive attempts as deceptive or untrue.

Empowering

In order to reduce one's susceptibility to persuasive attempts from the outside, empowerment strategies entail individuals strengthening their self-confidence or their current attitude (Fransen et al., 2015). Fransen et al. (2015) state that three distinct strategies may be identified under empowering: social validation, attitude bolstering, and self-assertion.

Attitude bolstering is a technique that aims to develop thoughts that reinforce and strengthen an individual's preexisting attitude (Fransen et al., 2015). Moreover, Fransen et al. (2015) state that social validation strengthens one's preexisting attitude by seeking validation from essential people, such as family and friends. Lastly, self-assertion aims to boost one's overall self-assurance and self-confidence by reminding oneself that nothing can change one's preexisting attitude (Fransen et al., 2015).

Current Study

As mentioned above, a high level of persuasion knowledge can result in more resistance to persuasion. Moreover, a highly credible source is expected to cause less resistance to persuasion. However, what happens to resistance when both levels of persuasion knowledge and source credibility are combined?

Research suggests that individuals with high persuasion knowledge show more critical processing of persuasive messages and often show more resistance (Eisend & Tarrahi, 2021; Wright et al., 2005). The ELM suggests that individuals with a high level of persuasion knowledge likely process the persuasive message via the central route, as these individuals are more capable and motivated to critically evaluate the persuasive message than individuals with a low level of persuasion knowledge (Friestad & Wright, 1994; Petty & Cacioppo, 1986).

However, as the SCM suggests, individuals confronted with a highly credible source are more likely to be persuaded (Hovland & Weiss, 1951). Additionally, the ELM suggests that whenever an individual is less motivated or capable of evaluating the persuasive message critically, they are more likely to process the message via the peripheral route and rely on heuristics and cues, such as a credible source (Petty & Cacioppo, 1986; Zhou et al., 2014). Moreover, Roth-Cohen et al. (2021) also suggest that individuals confronted with a persuasive

health message by a credible source are likelier to accept the message instead of showing resistance.

Thus, a highly credible source is expected to lower individuals' critical evaluation of the message and lead to less resistance to persuasion. Additionally, a low level of persuasion knowledge might contribute to a less critical evaluation of the persuasive health message. Therefore, the following hypotheses were formulated:

H3a: *The impact of a high level of persuasion knowledge on avoidance resistance strategies will be more pronounced among addressees with a less credible source.*

H3b: *The impact of a high level of persuasion knowledge on contesting resistance strategies will be more pronounced among addressees with a less credible source.*

H3c: *The impact of a high level of persuasion knowledge on empowering resistance strategies will be more pronounced among addressees with a less credible source.*

The following conceptual model was created to investigate the impacts of persuasion knowledge and source credibility on resistance to persuasion, based on the literature and theories discussed above (Figure 2).

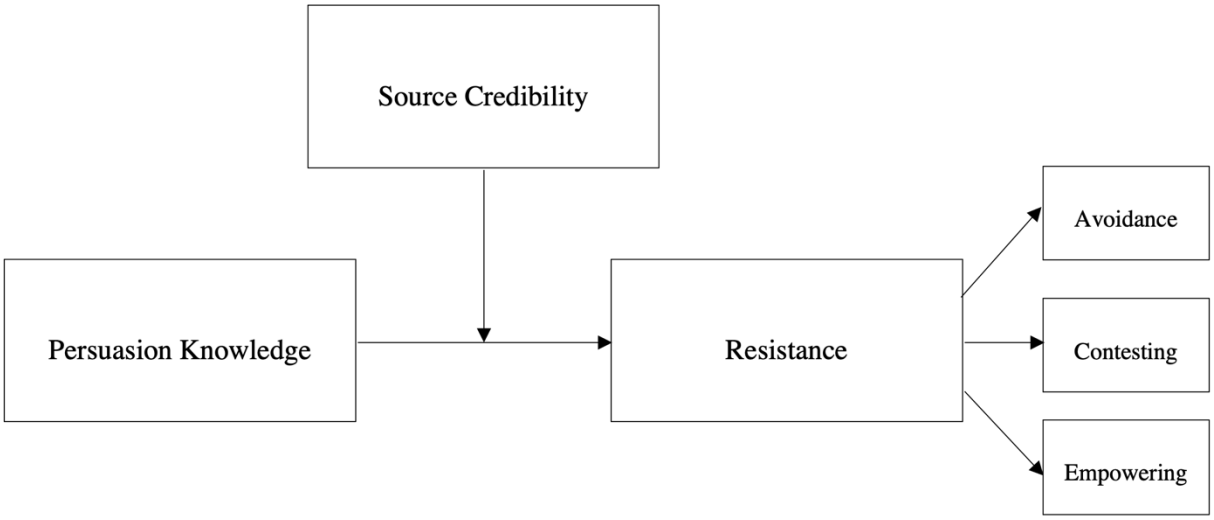

Figure 2 - Conceptual Model of the Study

Method

Design

This study aimed to determine to what extent the level of persuasion knowledge (*high vs. low*) and source credibility (*high vs. low*) affected the resistance in a 2x2 between-subject design. In this study, source credibility and persuasion knowledge are the independent variables, and resistance strategies (*avoidance, contesting, empowering*) are the dependent variables. The research question was answered using a quantitative research method, an online experiment with a questionnaire via the software tool Qualtrics.

Participants

A convenience sampling method recruited participants from online platforms like the researchers' social networking sites. Since the predicted interaction had yet to be explicitly studied in prior research, a G-power analysis was performed to determine a representative sample size. The expected interaction was considered to have a relatively low effect size (Faul et al., 2007). Therefore, with an effect size of $f^2 = .20$, with $a = .05$, and a level of power of $\beta = .80$, a sample size of 199 participants would be necessary for a representative sample size.

In total, 257 participants participated in the online experiment. However, participants who did not finish the experiment or did not give consent were removed from the sample. Therefore, a total of 166 completed the experiment. Of all participants, 36,7% were male ($N = 61$), 61,4% were female ($N = 102$), and 1,8% were non-binary ($N = 3$). The mean age of participants was 33.72 ($SD = 16.22$).

Materials

Participants were asked to look at an Instagram post about promoting a healthy diet to study the effects of source credibility and level of persuasion knowledge on resistance in

persuasive health communication. The source of the post and the level of persuasion knowledge were manipulated in the online experiment.

Instagram posts

The importance of SNS in promoting persuasive messages has not gone unnoticed (Kim & Kim, 2020). SNS are often used worldwide by an extensive public and do not have demographic constraints. Therefore, SNSs are frequently used by health authorities to spread health messages (Laranjo et al., 2014). However, Instagram is one of the most used SNS in the Netherlands daily (Oosterveer, 2023). For this reason, this study focused on the SNS Instagram.

As mentioned above, two Instagram posts were manipulated. One Instagram post contained a credible source (Figure 3), and the other post Instagram post contained a non-credible source (Figure 4). The posts contained text about the danger of an unhealthy diet in the Netherlands and the promotion of a healthy diet. Additionally, the Instagram post contained the same elements as an original Instagram post: the organization's username, a profile picture, and a caption.

Figure 3 - Instagram Post Credible Source

Figure 4 - Instagram Post Non-Credible Source

Two organizations were used in the Instagram posts: RIVM (credible source) and McDonald's NL (non-credible source). RIVM is the Dutch National Institute of Public Health and the Environment (Rijksinstituut voor Volksgezondheid en Milieu, n.d.). The institute is contributing to a sustainable, safe, and healthy society. McDonald's is one of the largest fast-food restaurant chains in the world and has more than 250 restaurants in the Netherlands (McDonald's, n.d.). As both organizations are Dutch, the Instagram posts are also written in Dutch.

In all conditions, the Instagram posts contained the same elements so that the outcome was not affected by it, such as the number of likes, the number of comments, and the time of posting. Only the source of the post was manipulated.

Persuasion Knowledge

A miniature course in persuasion knowledge was created for this study based on the Persuasion Knowledge Model by Friestad and Wright (1994). Friestad and Wright (1994) claim that persuasion knowledge changes over time. Consequently, the level of persuasion knowledge can differ individually, for example, after multiple exposures to persuasive messages (Fransen et al., 2015). In order to yield possible variations in the level of persuasion knowledge, a course about persuasion knowledge was displayed to the participants in the appropriate conditions.

The miniature course consisted of the definition of persuasion, possible mediums to spread persuasive messages, persuasion agents' goals and tactics, and how to cope with these tactics. The course contained text, such as: *"Deze beïnvloeding kan er, bijvoorbeeld, voor zorgen dat u een bepaald product koopt, of dat u uw huidige gedrag aanpast."* The course in persuasion knowledge was written in Dutch and contained 166 words. The full course can be found in Appendix A. After the course, the participants had to answer two knowledge

questions about the course. If the participants did not answer the questions correctly, the participant had to re-read the course in persuasion knowledge.

Animal facts

However, to ensure that the duration of the experiment was roughly even throughout all conditions, the participants in the control conditions that did not include a course in persuasion knowledge completed a text on animal facts. The subject 'animal facts' would not influence other variables, such as persuasion knowledge, source credibility, and resistance to persuasion. The course contained text, such as: *"Wist u bijvoorbeeld dat: dolfijnen elkaar roepen bij naam, olifanten de enige zoogdieren zijn die niet kunnen springen, er al meer mensen zijn gestorven door vlooien dan door alle oorlogen samen, alle mieren op de wereld samen evenveel wegen als alle mensen op de wereld, of dat een slak drie jaar kan slapen zonder te eten?"* The text was written in Dutch and contained 166 words. The full text can be found in Appendix B.

After the course, the participants in the control conditions also had to answer two knowledge questions about the text. If the participants did not answer the questions correctly, the participants had to re-read the text about animal facts.

Questionnaire

Additionally, all participants completed an online questionnaire that measured the participants' level of persuasion knowledge and the participants' assessment of the perceived credibility of the source. Also, the questionnaire included questions that measured the extent to which the conditions induced resistance to persuasion and measured participants' attitudes towards a healthy diet. The questions, measure items, and reliability are further explained in the 'measurement' section. The questionnaire was written in Dutch and can be found in Appendix C.

Attention check

In order to maintain the attention of the participants and to ensure that the questions of the experiment were read carefully, one attention check was included in the experiment. This attention check contributed to the scale validity and the reliability of the collected data (Kung et al., 2017). Consequently, to make sure that participants were paying attention to the source, all participants were asked: "You have just seen an Instagram post from…". The participant could answer with *1) RIVM* or *2) McDonald's*. The Instagram post was shown again if the participant answered the question incorrectly.

Manipulation check

A few manipulation checks were included in the online experiment to test whether the manipulations within the different conditions were successful. The participants within the conditions that included a course in persuasion knowledge were asked two knowledge questions about the course. The questions were included to lower the probability of participants guessing the correct answer. The first question was: "*What can persuasion provide?*" The participant could answer with ***1) Change in behavior and/or attitude****, 2) coercion, and 3) making new friends*. The second question was: "*What is an example of a persuasive tactic?*" The participant could answer *1) talking in a different language,* ***2) reducing the product's price****, 3) using a complex vocabulary*. The participant had to re-read the course in persuasion knowledge until both questions were answered correctly. Correct answers are demonstrated in bold.

The participants within the control conditions, which included a text about animal facts, were asked two knowledge questions about the text. The questions were included to lower the probability of participants guessing the correct answer. The first question was: "*How many animal species have been discovered yet?*" The participant could answer with ***1) 1.5 million****, 2) 3 million, and 3) 5 million*. The second question was: *"What are the*

only mammals that cannot jump?" The participant could answer *1) hedgehogs, **2) elephants**, and 3) bats. The participant had to re-read the text about animal facts until both questions were answered correctly.*

Pretest

A pretest was conducted to determine the materials' effectiveness and the experiment's duration. A small sample of five participants performed the pretest. The participants were exposed to the conditions and were asked to answer all questions of the online experiment. The duration of the conditions in the online experiment, including the course in persuasion knowledge, and the conditions, including the text about animal facts, were compared. Participants were also asked to evaluate the experiment's flow, look, and feel. Only a few adjustments were made, but overall, participants had no problem filling in the experiment. Moreover, the duration of both conditions did not differentiate significantly, as both conditions had a duration between 8 and 10 minutes. Therefore, the materials did not need any improvements.

Measures

Resistance

Resistance was measured using the 23-item Strategies to Resist Advertising Scale (SRAS), see Appendix D. Resistance to persuasion could consist of strategies such as *avoidance*, *contesting*, and *empowering*. The phrasing of the SRAS items was slightly changed for the context of this study. The avoidance strategies were measured by seven items (e.g., *"I do not look at the message")*, the contesting strategies were measured by nine items (e.g., *"I think of arguments that challenge the message*"), and the empowering strategies were measured by seven items (e.g., "*I think about the arguments I have for my opinion about the message*") based on the ACE-typology from Fransen et al. (2015). However, the different resistance strategies were displayed in the questionnaire randomly. The scale uses a 5-point

Likert scale ranging from very unlikely (=1) to very likely (=5). The mean of the 23-item scale was 3.23 (*SD* = 0.60), and the reliability of the scale was good (α = .89). Moreover, the mean of the scale for avoidance was 2.82 (*SD* = 0.67). The mean of the scale for contesting was 3.53 (*SD* = 0.80). At last, the mean of the scale for empowering was 3.26 (*SD* = 0.72).

Persuasion knowledge

Participants' *level of persuasion knowledge* was measured by the broader measure of the 6-item (e.g., "*I can see through the persuasive tactics used in the message"*) consumer self-confidence scale by Bearden et al. (2001), see Appendix E. The phrasing of the items was slightly changed for the context of this study. The scale uses a 5-point Likert scale ranging from extremely uncharacteristic (=1) to extremely characteristic (=5) of themselves. The mean of the scale was 3.74 (*SD* = 0.75), and the reliability of the scale was good (α = .88)

Source Credibility

The credibility of the source was measured using the 18-item scale adopted from the study of McCroskey and Teven (1999), see Appendix F. The scale uses a 7-point semantic differential scale (e.g., *Cares about me/does not care about me*). For example, it ranges from cares about me (= *1)* to does not care about me (= *7*). The mean of the scale was 4.22 (*SD* = 1.21), and the scale's reliability was excellent (α = .94).

Participants attitude

Participants' *attitude toward a healthy diet* was measured using the 7-item attitudes towards message advocacy scale adopted from the study of Dillard and Shen (2005), see Appendix G. Since positive or negative feelings toward the message can affect the attitude toward the message (Spears & Singh, 2004). The scale uses a 7-point semantic differential scale. The word pairs used to measure attitude towards healthy food were bad/good, foolish/wise, unfavorable/favorable, negative/positive, undesirable/desirable, unnecessary/necessary, and detrimental/beneficial. The scale ranged from, for example, bad

(=*1)* to good (=*7*). The mean of the scale was 5.67 (*SD* = 1.20), and the scale's reliability was excellent (α = .93).

Procedure

Participants could participate in the online experiment through a Qualtrics link. First, participants were asked for their informed consent. Participants who did not consent were thanked and sent to the end of the questionnaire. Participants could withdraw from the experiment at any given moment. In the consent form, all participants were welcomed by an introduction and thanked for participation, see Appendix H. The consent form included a short description of the questionnaire and an estimated experiment duration. The duration of the experiment would be approximately 10 minutes. After answering the informed consent, participants were randomly assigned to one of the four experimental conditions.

First, participants were exposed to one of the two courses. Next, participants were exposed to one of the two Instagram posts. After exposure, all participants were asked to evaluate the Instagram post and the persuasive health message displayed in the post, using the 23 statements from the Strategies to Resist Advertising Scale by Fransen et al. (2015). Participants also completed an online questionnaire regarding the source level of perceived credibility and participants' attitudes toward the persuasive health message displayed. Next, participants were asked to evaluate their level of persuasion knowledge.

Additionally, participants were asked demographic questions, such as gender, education level, and age. After that, participants were thanked for participating in the experiment and informed about the purpose of the study. Furthermore, participants were informed to contact the researcher with any questions.

Data-analyses

A data analysis will be performed using SPSS to answer the research question. A MANOVA analysis will examine the main effects of source credibility and persuasion

knowledge on the different resistance strategies. Additionally, a MANOVA analysis will assess if there is a potential interaction effect between source credibility and persuasion knowledge on resistance strategies.

Results

To test the hypotheses as mentioned in the theoretical framework, a multivariate MANOVA analysis was performed to determine if there was a significant interaction effect between level of persuasion knowledge (*high vs. low*) and source credibility (*high vs. low*) as independent variables, in their effect on resistance to persuasion (*avoidance*, *contesting*, and *empowering*) as dependent variables.

Manipulations

To determine if the manipulation of the variable's level of persuasion knowledge and source credibility was successful, two independent t-tests were performed. Firstly, to test whether the group of participants with a course in persuasion knowledge scored a higher mean on persuasion knowledge than the group of participants with a course in animal facts, an independent t-test is performed. On average, the participants with a course in persuasion knowledge (M = 3.96, SD = 0.55) had a slightly higher mean persuasion knowledge score than participants with a course in animal facts (M = 3.55, SD = 0.84).

The data for the participants with a course in persuasion knowledge was not normally distributed (z-score skewness/kurtosis = -1.44 and 1.84). Additionally, the data for the participants with a course in animal facts was not normally distributed (z-score skewness/kurtosis = -3.67 and 0.63). Therefore, the p-value may not be reliable, and more weight should be placed on the bootstrapped 95% confidence interval that will be provided. Equal variance between groups was not assumed $F(1, 164) = 12.73$, $p = <.001$.

The difference between group persuasion knowledge and group animal facts was significant (Mdif = -0.40, $t(155.10) = -3.69$, $p = <.001$). Moreover, it generalizes to the population (95% CI -0.63, -0.18). The difference represented a large-sized effect $d = .72$. This suggests that the manipulation of persuasion knowledge was successful.

Next, to test whether the group of participants with a highly credible source scored a higher mean on source credibility than the group of participants with a less credible source, an independent t-test is performed. On average, the participants with a credible source (M = 5.03, SD = 0.95) had a higher mean source credibility score than participants with a less credible source (M = 3.46, SD = 0.11).

The data for the participants with a less credible source was not normally distributed (z-score skewness/kurtosis = 2.49 and 1.26). Therefore, the p-value may not be reliable, and more weight should be placed on the bootstrapped 95% confidence interval that will be provided. However, the data for the participants with a credible source was normally distributed (z-score skewness/kurtosis = -0.16 and -0.35). Equal variance between groups was not assumed F(1, 164) = 119.08, p = <.001.

This difference was significant (Mdif = -1.57, t(162,77) = -10.98, p = <.001) and generalized to the population (95% CI -1.84, -1.30). The difference represented a large-sized effect d = .92. This suggests the source credibility manipulation was successful.

Effects of Persuasion Knowledge and Source Credibility on Resistance

Since the three resistance strategies differ substantially from one another, all resistance strategies should be addressed separately. Therefore, a multivariate MANOVA analysis was performed to test the impact of persuasion knowledge, source credibility, and the interaction between these concepts on the resistance strategies individually.

Assumptions

The assumptions of all dependent variable's resistance strategies avoidance, contesting, and empowering, were checked. The data for dependent variable avoidance was normally distributed for all conditions, except for the condition PK High/SC High (PK High/SC High z-score skewness = 1.34, z-score kurtosis = 0.35, PK Low/SC High z-score skewness = -1.51, z-score kurtosis = 0.36, PK High/SC Low z-score skewness = 0.61, z-score

kurtosis = -0.97, PK Low/SC Low z-score skewness = 0.11, z-score kurtosis = -0.62). The data for dependent variable contesting was not normally distributed for all conditions (PK High/SC High z-score skewness = -1.93, z-score kurtosis = -0.38, PK Low/SC High z-score skewness = -2.16, z-score kurtosis = 2.57, PK High/SC Low z-score skewness = -0.87, z-score kurtosis = -1.34, PK Low/SC Low z-score skewness = -1.15, z-score kurtosis = -0.88). The data for dependent variable empowering was not normally distributed for all conditions, except for the conditions PK High/SC Low (PK High/SC High z-score skewness = 0.41, z-score kurtosis = 0.02, PK Low/SC High z-score skewness = -2.66, z-score kurtosis = 1.01, PK High/SC Low z-score skewness = -1.15, z-score kurtosis = 0.49, PK Low/SC Low z-score skewness = -0.09, z-score kurtosis = -1.17). Therefore, the *p*-value may not be reliable, and more weight should be placed on the bootstrapped 95% confidence interval that will be provided.

However, the assumption of homogeneity of variances as indicated by a Variance Ratio (VR) was tested. Consequently, the VR was 1.63, and therefore, the assumption of homogeneity of variances was not met. Equal variance for avoidance was not assumed $F(3, 162) = 0.530$, $p = .662$. Moreover, equal variance for contesting was not assumed $F(3, 162) = 1.915$, $p = .129$. At last, equal variance for empowering was not assumed $F(3, 162) = 0.204$, $p = .894$.

Multivariate MANOVA Analysis

Avoidance

To determine addressees with a high level of persuasion knowledge show more resistance (avoidance) than participants with a low level of persuasion knowledge (H1a), a multivariate MANOVA analysis was performed. The multivariate analysis revealed only a marginally statistically significant main effect of level of persuasion knowledge on avoidance, $F(1, 162) = 2.80$, $p = .096$, partial $\eta^2 = .017$. For the resistance strategy avoidance, the mean

for participants with a high level of persuasion knowledge was higher, 2.91 (*SE* = 0.08), than for participants with a low level of persuasion knowledge, 2.73 (*SE* = 0.07). These results imply that although the observed impact of persuasion knowledge on avoidance goes in the anticipated direction, it is not considered statistically significant enough and, therefore, is negligible. Thus, hypothesis 1a is not supported by the data.

Moreover, to determine if addressees exposed to a credible source show lower resistance (avoidance) than addressees exposed to a less credible source (H2a), a multivariate MANOVA analysis was performed. The multivariate analysis revealed only a marginally statistically significant main effect of source credibility on avoidance, $F(1, 162) = 3.43$, $p = .066$, partial $\eta^2 = .021$. The mean for participants with a credible source was lower, 2.73 (*SE* = 0.08), than for participants with a non-credible source, 2.92 (*SE* = 0.07). These results imply that although the observed impact of source credibility on avoidance goes in the anticipated direction, it is not considered statistically significant enough and, therefore, is negligible. Thus, hypothesis 2a is not supported by the data.

Additionally, to test if the impact of a high level of persuasion knowledge on avoidance resistance strategies will be more pronounced among addressees with a less credible source (H3a), a multivariate MANOVA analysis was performed. The results revealed no statistically significant interaction effect between persuasion knowledge and source credibility on avoidance, $F(1, 162) = 0.08$, $p = .775$, partial $\eta^2 = .001$. Therefore, the data does not support hypothesis 3a. Moreover, all bootstrapped confidence intervals did not cross zero, see Appendix I. Figure 5 shows the mean of resistance strategy avoidance split by source credibility and persuasion knowledge level.

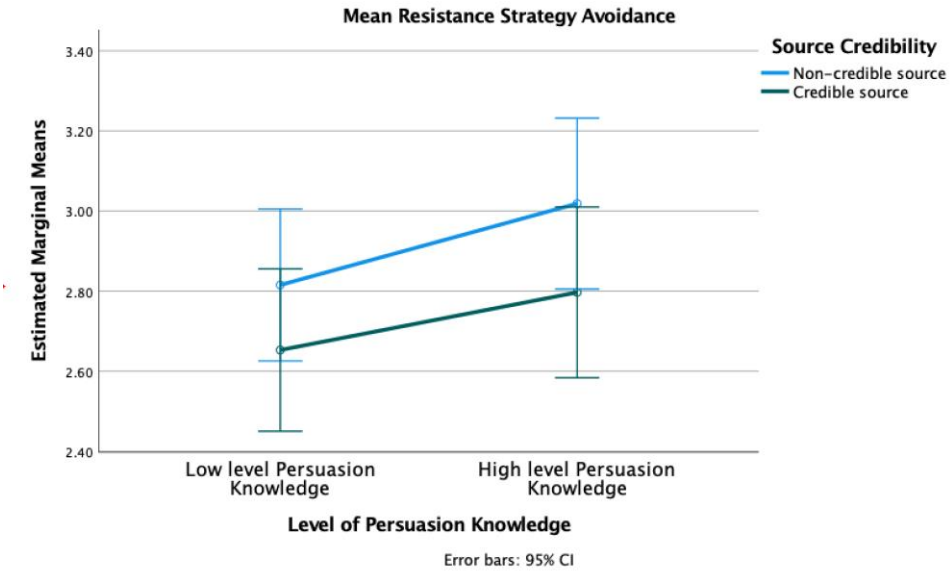

Figure 5 - Interaction Effect Avoidance

Contesting

To determine addressees with a high level of persuasion knowledge show more resistance (contesting) than participants with a low level of persuasion knowledge (H1b), a multivariate MANOVA analysis was performed. The multivariate analysis revealed a statistically significant main effect of the level of persuasion knowledge on contesting, $F(1, 162) = 6.17$, $p = .014$, partial $\eta 2 = .037$. Additionally, for the resistance strategy contesting, the mean for participants with a high level of persuasion knowledge was higher, 3.67 (SE = 0.09), than for participants with a low level of persuasion knowledge, 3.38 (SE = 0.08). These results suggest that, in this study, participants show the most contesting resistance strategies when they have a high level of persuasion knowledge. Therefore, hypothesis 1b is supported by the data.

Moreover, to determine if addressees exposed to a credible source show lower resistance (contesting) than addressees exposed to a less credible source (H2b), a multivariate MANOVA analysis was performed. The multivariate analysis revealed a statistically significant main effect of the level of source credibility on contesting, $F(1, 162) = 21.79$, $p =$

<.001, partial η2 = .119.Additionally, the mean for participants with a credible source was lower, 2.26 (SE = 0.08), than for participants with a non-credible source, 2.80 (SE = 0.08). These results suggest that, in this study, participants show less contesting resistance strategies when they are exposed to a credible source. Therefore, hypothesis 2b is supported by the data.

Additionally, to test if the impact of a high level of persuasion knowledge on contesting resistance strategies will be more pronounced among addressees with a less credible source (H3b), a multivariate MANOVA analysis was performed. The results revealed only a marginally statistically significant interaction effect between persuasion knowledge and source credibility on contesting, F(1, 162) = 2.91, p = .090, partial η2= .018. Thus, the data does not support hypothesis 3b. Moreover, all bootstrapped confidence intervals did not cross zero; see Appendix I. Figure 6 shows the mean of resistance strategy contesting split by source credibility and persuasion knowledge level.

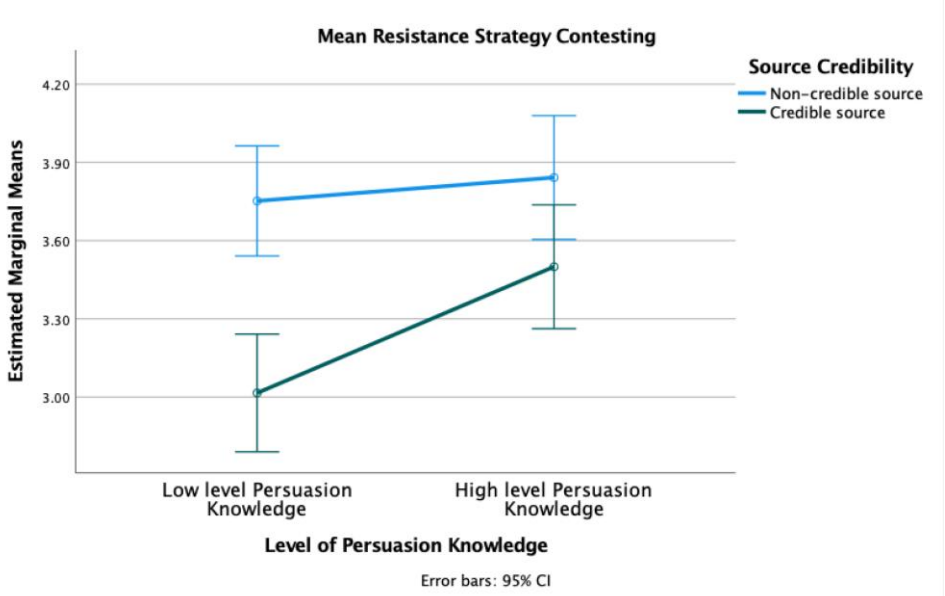

Figure 6 - Interaction Effect Contesting

Empowering

To determine addressees with a high level of persuasion knowledge show more resistance (empowering) than participants with a low level of persuasion knowledge (H1c), a multivariate MANOVA analysis was performed. The multivariate analysis revealed no statistically significant main effect of the level of persuasion knowledge on empowering, F(1,

162) = 0.96, p = .329, partial η2 = .006. For the resistance strategy empowering, the mean for participants with a high level of persuasion knowledge was higher, 3.31 (SE = 0.08), than for participants with a low level of persuasion knowledge, 3.20 (SE = 0.08). Therefore, hypothesis 1c is not supported by the data.

Moreover, to determine if addressees exposed to a credible source show lower resistance (empowering), than addressees exposed to a less credible source (H2c), a multivariate MANOVA analysis was performed. The multivariate analysis revealed only a marginally statistically significant main effect of the level of source credibility on empowering, F(1, 162) = 3.60, p = .060, partial η2 = .022. The mean for participants with a credible source was lower, 3.15 (SE = 0.08), than for participants with a non-credible source, 3.36 (SE = 0.08). These results imply that although the observed impact of source credibility on empowering goes in the anticipated direction, it is not considered statistically significant enough and, therefore, is negligible. Thus, hypothesis 2c is not supported by the data.

Additionally, to test if the impact of a high level of persuasion knowledge on empowering resistance strategies will be more pronounced among addressees with a less credible source (H3c), a multivariate MANOVA analysis was performed. The results revealed only a marginally statistically significant interaction effect between persuasion knowledge and source credibility on empowering, F(1, 162) = 2.87, p = .092, partial η2= .017. Therefore, the data does not support hypothesis 3c. Moreover, all bootstrapped confidence intervals did not cross zero; see Appendix I. Figure 7 shows the mean of the resistance strategy empowering split by source credibility and persuasion knowledge level. The mean and standard deviation for each variable is presented in Table 1.

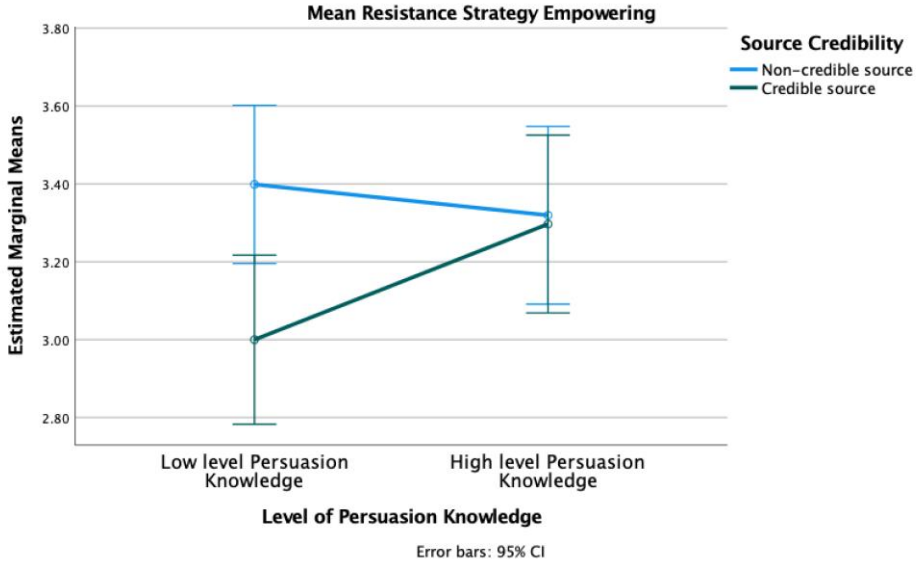

Figure 7 - Interaction Effect Empowering

	Low Level Persuasion Knowledge		High Level Persuasion Knowledge	
	Credible Source	**Non-Credible Source**	**Credible Source**	**Non-Credible Source**
Avoidance	2.65 (0.62)	2.82 (0.72)	2.80 (0.65)	3.02 (0.67)
Contesting	3.02 (0.64)	3.75 (0.82)	3.50 (0.72)	3.84 (0.76)
Empowering	3.00 (0.72)	3.40 (0.69)	3.30 (0.70)	3.32 (0.74)
Resistance	2.90 (0.53)	3.36 (0.57)	3.22 (0.57)	3.43 (0.63)

Tabel 1 - Mean and Standard Deviation per Variable

Discussion

Conclusion

This study examined the impact of level of persuasion knowledge (*high vs. low*) and source credibility (*high vs. low*) on resistance to persuasion (*avoidance, contesting, empowering*). In contrast to the predictions, the results revealed only a marginally significant effect of persuasion knowledge on the resistance strategy avoidance (H1a). Nevertheless, the effect of persuasion knowledge on the resistance strategy contesting was significant (H1b). On the other hand, the effect of persuasion knowledge on resistance strategy empowering was not significant (H1c). It was expected that participants with a high level of persuasion knowledge would show more resistance strategies. However, the results only supported the expectation for the resistance strategy contesting.

Moreover, contrary to the predictions, the results revealed only a marginally significant effect of source credibility on the resistance strategy avoidance (H2a). Additionally, the effect of source credibility on the resistance strategy contesting was significant (H2b). Although, the effect of source credibility on the resistance strategy empowering was not significant (H2c). It was expected that participants exposed to a credible source show lower resistance than participants exposed to a non-credible source. Nevertheless, the results only supported the expectation for the resistance strategy contesting.

Furthermore, it was expected that the impact of a high level of persuasion knowledge on the resistance strategies will be more pronounced among addressees with a less credible source (H3a, H3b, H3c). However, the results revealed only a marginally statistical interaction effect between the levels of persuasion knowledge and source credibility on the resistance strategies contesting, and empowering (H3b, H3c). No significant interaction effect was found for the resistance strategy avoidance. Therefore, all expectations for the interaction effects were not supported by the results.

Theoretical Implications

This study contributes to existing studies on persuasion knowledge, source credibility, and resistance. This study showed that participants with high persuasion knowledge show more contesting resistance strategies than participants with low persuasion knowledge. These findings align with the Persuasion Knowledge Model by Friestad and Wright (1994), suggesting that individuals with high persuasion knowledge can see through persuasive attempts and resist them. However, the results did not support this for the resistance strategies avoidance and empowering. These findings might be because persuasion knowledge might be high, but this will not always lead to unfavorable outcomes such as resistance (Eisend & Tarrahi, 2021). A high persuasion knowledge can also lead to a positive attitude toward the organization, individual, or brand (agent) that tries to persuade them (Isaac & Grayson, 2016; Kirmani & Campbell, 2004). Sometimes, due to high persuasion knowledge, persuasion attempts align with individuals' expectations of trustworthy and plausible information, and therefore, these attempts are seen as credible (Isaac & Grayson, 2016). Therefore, as the results show, not all participants with high persuasion knowledge will automatically show resistance.

Moreover, the results of this study showed that participants exposed to a credible source showed less contesting resistance strategies than participants exposed to a non-credible source. These findings are in line with earlier research that suggests that individuals are more likely to accept a persuasive health message and show less resistance when they are exposed to a credible source than when they are exposed to a non-credible source (Kim & Shin, 2017; Roth-Cohen et al., 2021). However, the results did not support this for the resistance strategies avoidance and empowering. The boomerang effect might explain these findings. Persuasive messages are frequently viewed as threatening an individual's freedom, even when the message does not conflict with their preexisting beliefs or behaviors and is in their best

interest (Dillard & Shen, 2005). Individuals often become more driven or motivated to participate less in the encouraged behavior as a reaction to the threat to their freedom: the boomerang effect (Fransen et al., 2015).

Additionally, the results of this research did not support all expectations about resistance strategies, especially not the expectations about the resistance strategies avoidance and empowering. This study focused on the persuasive health message of a healthy diet. The study of Brečić et al. (2022) found that, generally, people know that healthy food is good for them. The results of the study of Brečić et al. (2022) are in line with the results of this study, as the participants' mean average towards healthy food was 5.67 on a 7-point semantic differential scale. Therefore, despite individuals' high level of persuasion knowledge, it is presumable that the persuasive message used in this study does not conflict with the individuals' values. The Cognitive Dissonance Theory by Festinger (1957) states that individuals tend to avoid messages that do not support their attitudes and beliefs. However, since this persuasive message seemed to support participants' existing attitudes or beliefs, participants did not want to avoid the message. Consequently, participants might show fewer resistance strategies, especially avoidance resistance strategies.

Practical Implications

The conclusions of this study about the influence of persuasion knowledge and source credibility on resistance strategies, such as avoidance, contesting, and empowering, enclose several practical implications. Firstly, when developing new persuasive health campaigns, health authorities and organizations should conveniently acknowledge that individuals with high persuasion knowledge may exhibit only some resistance strategies when confronted with persuasive health messages. Previous research indicates that individuals with high persuasion knowledge may show more resistance, as they can see through the persuasive tactics and strategies they are confronted with (Eisend & Tarrahi, 2021; Friestad & Wright, 1994; Wright

et al., 2005). Conveniently, this might only be the case sometimes. As the results suggest, these individuals can contest persuasive attempts or messages; however, the individuals' resistance might not extend to avoidance and empowering strategies.

Health authorities and organizations should recognize that source credibility might only sometimes diminish resistance strategies. Although previous research by Kim and Shin (2017) and Batinic and Apple (2013) suggests that persuasive messages by non-commercial organizations, often seen as more credible, provide less resistance, this impact by source credibility may only apply to specific resistance strategies. For instance, source credibility might primarily affect contesting resistance strategies, leaving avoidance and empowering resistance strategies unaffected. As the results suggest, a persuasive message about a healthy diet by a credible non-commercial source diminishes contesting resistance strategies. However, the effect of a credible source lowering resistance strategies did not apply on the resistance strategies avoidance and empowering. Therefore, the persuasive tactic of implementing a credible source must be used cautiously, as it might only sometimes have the desired effect of lowering resistance.

Moreover, given the varying outcomes of persuasion knowledge and source credibility on the resistance strategies, it is clear that they should be addressed separately. These resistance strategies cannot be compared as they differ too much. Additionally, the results show that individuals with high persuasion knowledge show more contesting resistance strategies. In contrast, a credible source lowers contesting resistance strategies. However, these outcomes differ for every resistance strategy. Given the varying impacts of persuasion knowledge and source credibility on the different resistance strategies of avoidance, contesting, and empowering, health authorities and organizations must implement tailored persuasion tactics.

Future Research and Limitations

Although the study was conducted with care, it has some limitations. Firstly, for establishing the resistance strategy avoidance, participants were asked items such as: '*I ignored the message*', '*I did not look at the message'*, and *'I wanted to scroll over the message'*. However, before being exposed to the message, participants were asked to carefully read and look at the Instagram post. Additionally, the Instagram posts were displayed in a single post, and not an entire Instagram timeline. As a result, the participants did not have the ability to scroll further, for example, to other posts. Therefore, the results might have been influenced. Moreover, participants showed the least avoidance resistance strategies out of all resistance strategies in all conditions, compared with the resistance strategies contesting and empowering. Future research should establish a realistic Instagram timeline, and remove or replace the introduction text requesting careful attention to avoid this limitation.

Next, this study only focused on the persuasive health message about stimulating a healthy diet. However, the results suggest that participants had a positive attitude toward a healthy diet, with a mean average of 5.67 on a 7-point semantic differential scale. This positive attitude towards a healthy diet amongst participants might suggest that the persuasive message was not a counter-attitudinal message for most participants or that participants did not have a counter-attitudinal opinion about the matter. Therefore, the message might not evoke resistance from some participants. Future research should use another counter-attitudinal persuasive health message that will enhance more resistance, such as the study of Brock and Balloun (1967) about smoking, or a pre-test can investigate different persuasive messages to determine which message or messages might increase the likelihood of resistance. Moreover, this study can be done with a different target group that might have a counter-attitudinal opinion about the persuasive health message, for example, individuals who are overweight or obese.

Thirdly, although 257 participants started the experiment, numerous participants had to be removed due to dropping out. Therefore, the final sample consisted of a total of 166 participants. As a result of the high dropout rate and lack of time, the sample might be less representative and cause a decrease in generalizability (Hoerger, 2010). Additionally, a few effects were marginally statistically significant. By increasing the sample size, these effects may prove to be significant.

Moreover, the text about persuasion knowledge and animal facts contained a considerable number of words. The Strategies to Resist Advertising Scale (SRAS) by Fransen et al. (2015) contained 23 items. Therefore, the duration of the experiment was quite long. Most participants who dropped out during the experiment did this after the Persuasion Knowledge or animal facts text or during the SRAS. Thus, it is recommended to shorten the courses or only focus on one resistance strategy in the future to shorten the experiment to reduce the dropout rate.

Furthermore, to measure Persuasion Knowledge, participants had to self-report their level of Persuasion Knowledge. Therefore, self-report bias might have occurred since participants may not objectively report their behavior, attitude, or beliefs (*APA Dictionary of Psychology*, n.d.). Consequently, participants might have indicated that they have a higher level of persuasion knowledge than they do.

Lastly, although only marginally or no statistically significant interaction effects were found on resistance strategies when persuasion knowledge and source credibility were combined, this study acquired new knowledge about the impact of persuasion knowledge and source credibility on the resistance strategies avoidance, contesting, and empowering. Although no prior research has investigated the effect of persuasion knowledge and source credibility on resistance strategies, these results show the complex relationship between persuasion knowledge, source credibility, and resistance strategies. For example, high

persuasion knowledge can have both favorable and unfavorable outcomes, as it can cause more contesting resistance, though it may also enhance the agent's credibility. Moreover, a credible source can lower contesting resistance strategies. However, this effect of a credible source does not apply to resistance strategies, such as avoidance and empowering. The interaction between source credibility and persuasion knowledge on avoidance showed that there was almost no difference between the level of credibility (high vs. low) in avoidance resistance strategies for participants with high persuasion knowledge.

Thus, further research is necessary to comprehensively understand how these concepts influence each other under varying conditions.

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Appendix A - *Stimuli Persuasion Knowledge Course*

Tegenwoordig wordt er vaak geprobeerd om u, als ontvanger, via communicatie te beïnvloeden. Deze communicatie kan gaan via mediums zoals online- en offline advertenties, bijvoorbeeld op sociale media of op een poster. Deze beïnvloeding kan er, bijvoorbeeld, voor zorgen dat u een bepaald product koopt, of dat u uw huidige gedrag aanpast. De zender kan hiervoor verschillende tactieken gebruiken om u te overtuigen. Denk hierbij aan het inzetten van een deskundige of aantrekkelijke bron, de prijs van het product verlagen, of het creëren van sterke argumenten die actie afdwingen of rechtvaardigen. Echter, kunt u als ontvanger deze tactieken steeds beter herkennen door middel van de ontwikkeling van overtuiging kennis (*Persuasion Knowledge*). Naarmate deze overtuiging kennis groeit, kunt u beter herkennen wat de inspanningen, intenties en voordelen zijn die de zender wil nastreven. Daarnaast kunt u de voordelen voor uzelf begrijpen, en deze afwegen tegen de voordelen voor de zender. Dankzij deze overtuiging kennis kunt u de poging tot overtuigen beter evalueren, en uw keuze hierop afstemmen.

Appendix B - *Stimuli Animal Facts Course*

Naast mensen leven er nog meer wezens op onze wereld, zo ook dieren. Dieren zijn een diverse groep levensvormen die zich voeden met organisch materiaal, zuurstof ademen, en zich geslachtelijk voortplanten. Dieren zijn niet in staat hun eigen voedsel aan te maken, maar onderhouden zich met organisch materiaal van andere wezens. Er zijn meer dan 1.5 miljoen diersoorten beschreven, waarvan ruim 1 miljoen tot de insecten behoren. De oudste fossielen van de eerste dieren zijn zelfs meer dan 540 miljoen jaar oud.

Echter, hebben we waarschijnlijk nog niet alle diersoorten ontdekt en zijn er veel dingen die we nog niet weten over de diersoorten de we al wel hebben ontdekt. Wist u bijvoorbeeld dat: dolfijnen elkaar roepen bij naam, olifanten de enige zoogdieren zijn die niet kunnen springen, er al meer mensen zijn gestorven door vlooien dan door alle oorlogen samen, alle mieren op de wereld samen evenveel wegen als alle mensen op de wereld, of dat een slak drie jaar kan slapen zonder te eten?

Appendix C - *Questionnaire Online Experiment*

Er volgt nu een enquête. Hierbij zijn geen goede of foute antwoorden.

Beoordeel de Instagram post en de boodschap in de post die u zojuist heeft gezien door middel van onderstaande stellingen (1/3).

	Helemaal oneens	Oneens	Neutraal	Eens	Helemaal eens
Ik bedacht argumenten die de boodschap in twijfel trokken.	○	○	○	○	○
Ik dacht na over hoe het bericht mij probeerde te overtuigen.	○	○	○	○	○
Ik vermeed het bericht.	○	○	○	○	○
Ik zocht naar fouten in de argumentatie van de boodschap.	○	○	○	○	○
Ik dacht eraan hoe sterk ik gehecht ben aan mijn mening.	○	○	○	○	○
Ik dacht na over de bedoelingen van de organisatie die het bericht heeft gemaakt.	○	○	○	○	○
Ik hechtte minder waarde aan informatie die niet overeenkwam met mijn eigen mening over het bericht.	○	○	○	○	○
Ik dacht na over mensen die de boodschap niet leuk zouden vinden.	○	○	○	○	○

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Beoordeel de Instagram post en de boodschap in de post die u zojuist heeft gezien door middel van onderstaande stellingen (2/3).

	Helemaal oneens	Oneens	Neutraal	Eens	Helemaal eens
Ik keek niet naar het bericht.	○	○	○	○	○
Ik dacht na over feiten die mijn eigen mening over het bericht ondersteunden.	○	○	○	○	○
Ik dacht ongunstig over de organisatie die het bericht heeft gemaakt.	○	○	○	○	○
Ik wilde over het bericht heen scrollen.	○	○	○	○	○
Ik had negatieve gedachten over de organisatie van de boodschap.	○	○	○	○	○
Ik besteedde meer aandacht aan informatie die mijn mening over het bericht ondersteunde.	○	○	○	○	○
Ik dacht aan andere mensen die ook niet beïnvloed willen worden door deze boodschap.	○	○	○	○	○
Ik bedacht op welke manieren ik het niet eens was met de gepresenteerde boodschap.	○	○	○	○	○

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Beoordeel de Instagram post en de boodschap in de post die u zojuist heeft gezien door middel van onderstaande stellingen (3/3).

	Helemaal oneens	Oneens	Neutraal	Eens	Helemaal eens
Ik dacht aan het feit dat wat ik denk meestal juist is.	○	○	○	○	○
Ik negeerde het bericht.	○	○	○	○	○
Ik dacht na over de technieken die in de boodschap werden gebruikt om mij te beïnvloeden.	○	○	○	○	○
Ik dacht na over de argumenten die ik heb voor mijn mening over de boodschap.	○	○	○	○	○
Ik wilde het bericht wegvegen.	○	○	○	○	○
Ik herinnerde mezelf eraan dat ik zeker ben van mijn mening over de boodschap.	○	○	○	○	○
Ik dacht aan het feit dat het bericht mij probeerde te beïnvloeden.	○	○	○	○	○

Beoordeel de organisatie van wie de Instagram post afkomstig was. Dus, als u de organisatie heel erg intelligent vindt, dan vult u het blokje in dat het dichtst bij "intelligent" staat (1/2).

Intelligent	○	○	○	○	○	○	○	Stompzinnig
Ongetraind	○	○	○	○	○	○	○	Getraind
Geeft om mij	○	○	○	○	○	○	○	Geeft niet om mij
Eerlijk	○	○	○	○	○	○	○	Oneerlijk
Heeft mijn belangen voor ogen	○	○	○	○	○	○	○	Heeft mijn belangen niet voor ogen
Onbetrouwbaar	○	○	○	○	○	○	○	Betrouwbaar
Ondeskundig	○	○	○	○	○	○	○	Deskundig
Egocentrisch	○	○	○	○	○	○	○	Empathisch
Bezorgd om mij	○	○	○	○	○	○	○	Niet bezorgd om mij

Beoordeel nogmaals de organisatie van wie de Instagram post afkomstig was. Dus, als u de organisatie heel erg eervol vindt, dan vult u het blokje in dat het dichtst bij "eervol" staat (2/2).

Eervol	○	○	○	○	○	○	○	Oneervol
Geïnformeerd	○	○	○	○	○	○	○	Niet geïnformeerd
Moreel	○	○	○	○	○	○	○	Immoreel
Onbekwaam	○	○	○	○	○	○	○	Bekwaam
Onethisch	○	○	○	○	○	○	○	Ethisch
Ongevoelig	○	○	○	○	○	○	○	Gevoelig
Slim	○	○	○	○	○	○	○	Dom
Nep	○	○	○	○	○	○	○	Oprecht
Onbegripvol	○	○	○	○	○	○	○	Begripvol

Beoordeel hoe u denkt over gezond eten op basis van de volgende kenmerken. Dus, als u gezond eten heel erg fout vindt, dan vult u het blokje in dat het dichtst bij "fout" staat.

Fout	○	○	○	○	○	○	○	Goed
Onnozel	○	○	○	○	○	○	○	Verstandig
Negatief	○	○	○	○	○	○	○	Positief
Ongunstig	○	○	○	○	○	○	○	Gunstig
Ongewenst	○	○	○	○	○	○	○	Gewenst
Onnodig	○	○	○	○	○	○	○	Noodzakelijk
Schadelijk	○	○	○	○	○	○	○	Voordelig

In hoeverre vindt u dat onderstaande stellingen op u van toepassing zijn:

	Helemaal niet op mij van toepassing	Niet op mij van toepassing	Neutraal	Op mij van toepassing	Helemaal op mij van toepassing
Ik weet wanneer een advertentie te mooi is om waar te zijn.	○	○	○	○	○
Ik kan zien wanneer er aan een advertentie voorwaarden verbonden zijn.	○	○	○	○	○
Ik heb er geen moeite mee om overtuigingstechnieken van een organisatie te begrijpen.	○	○	○	○	○
Ik weet wanneer een organisatie mij probeert over te halen.	○	○	○	○	○
Ik doorzie de overtuigingstechnieken die een organisatie gebruikt om mij over te halen.	○	○	○	○	○
Ik kan feiten van fantasie scheiden in een advertentie.	○	○	○	○	○

Appendix D - *Measurements Consumer Resistance*

Physical Avoidance

1. I don't look at the message.

2. I ignore the message.

3. I avoid the message.

Mechanical Avoidance

1. I would scroll over the message.

2. I would swipe away.

Cognitive Avoidance

1. I pay more attention to information that supports my opinion about the message.

2. I put less value on information that is not in congruence with my own opinion about the message.

Contesting the Content (Counterarguing)

1. I think of arguments that challenge the message.

2. I look for flaws in the messages' argumentation.

3. I think of the ways I disagree with the presented message.

Contesting the Source (Source Derogation)

1. I have negative thoughts about the organization in the message.

2. I think unfavorably about the organization that made the message.

Contesting the Strategies in The Message (Invoking Persuasion Knowledge)

1. I think about how the message tries to persuade me.

2. I remind myself of the fact that the message tries to sell me something.

3. I think about the techniques that are used in the message to influence me.

4. I think about the intentions of the organization that created the message.

Attitude Bolstering

1. I think about the arguments I have for my opinion about the message.

2. I think about facts that support my own opinion about the message.

Social Validation

1. I think about people who do not like the message.

2. I think about other people who also do not want to be influenced by this message.

Self-assertions (Assertions of Confidence)

1. I remind myself that I am certain about my opinion regarding the message.

2. I think of the fact that what I think is usually right.

3. I think about how strongly committed I am to my own opinions.

Appendix E - *Measurements Persuasion Knowledge*

1. I know when an advertisement offer is too good to be true.
2. I can tell when an advertisement has strings attached.
3. I don't have trouble understanding the persuasive tactics used by an organization.
4. I know when an organization is persuading me.
5. I can see through the persuasive tactics used by an organization to persuade me.
6. I can separate facts from fantasy in advertising.

Appendix F - *Measurements Source Credibility*

1. Intelligent 1 2 3 4 5 6 7 Unintelligent
2. Untrained 1 2 3 4 5 6 7 Trained
3. Cares about me 1 2 3 4 5 6 7 Doesn't care about me
4. Honest 1 2 3 4 5 6 7 Dishonest
5. Has my interests at heart 1 2 3 4 5 6 7 Doesn't have my interests at heart
6. Untrustworthy 1 2 3 4 5 6 7 Trustworthy
7. Inexpert 1 2 3 4 5 6 7 Expert
8. Self-centered 1 2 3 4 5 6 7 Not self-centered
9. Concerned with me 1 2 3 4 5 6 7 Not concerned with me
10. Honorable 1 2 3 4 5 6 7 Dishonorable
11. Informed 1 2 3 4 5 6 7 Uninformed
12. Moral 1 2 3 4 5 6 7 Immoral
13. Incompetent 1 2 3 4 5 6 7 Competent
14. Unethical 1 2 3 4 5 6 7 Ethical
15. Insensitive 1 2 3 4 5 6 7 Sensitive
16. Bright 1 2 3 4 5 6 7 Stupid
17. Phony 1 2 3 4 5 6 7 Genuine
18. Not understanding 1 2 3 4 5 6 7 Understanding

Appendix G - *Measurements Attitude Healthy Diet*

1. Bad 1 2 3 4 5 6 7 Good
2. Foolish 1 2 3 4 5 6 7 Wise
3. Negative 1 2 3 4 5 6 7 Positive
4. Unfavorable 1 2 3 4 5 6 7 Favorable
5. Undesirable 1 2 3 4 5 6 7 Desirable
6. Unnecessary 1 2 3 4 5 6 7 Necessary
7. Detrimental 1 2 3 4 5 6 7 Beneficial

Appendix H – Consent Form Online Experiment

Welkom!
Mijn naam is Nina Peters en momenteel ben ik bezig met mijn afstudeeronderzoek voor de Master Communicatie- en Informatiewetenschappen aan de Universiteit van Tilburg. Graag wil ik je vragen om deel te nemen aan dit online onderzoek.

Met dit onderzoek wil ik meer inzicht krijgen in de effecten van verspreiding van overtuigende gezondheidsboodschappen via Instagram. De bevindingen worden gebruikt voor het schrijven van een onderzoeksrapport. Hieronder kunt u alle informatie lezen die nodig is voordat u kunt beginnen met het onderzoek. Lees deze informatie goed door.

Het onderzoek bestaat uit verschillende onderdelen. Deelname aan dit onderzoek duurt ongeveer 10 minuten. Mocht u besluiten om deel te nemen aan het onderzoek, dan kunt u zich op elk moment terugtrekken door simpelweg de webpagina te sluiten. Als u besluit om u terug te trekken, dan worden uw antwoorden niet gebruikt in de resultaten van het onderzoek. De gegevens die worden verzameld tijdens het onderzoek worden volledig anoniem en vertrouwelijk behandeld en verwerkt. De geanonimiseerde gegevens worden bewaard tot na het voltooien van mijn Master. Deelname aan dit onderzoek is geheel vrijwillig en u kunt op elk moment stoppen met het onlineonderzoek zonder gevolgen of uitleg noodzakelijk.

Als u op een later moment nog vragen heeft, dan kunt u contact met mij opnemen via het volgende e-mailadres: **n.peters@tilburguniversity.edu**. Alvast bedankt voor uw bijdrage aan mijn Master thesis.

Door op "**Akkoord**" te klikken, bevestigt u dat u alle bovenstaande informatie hebt gelezen en dat u hiermee akkoord gaat. Daarnaast bent u zich ervan bewust dat uw deelname volledig vrijwillig is en dat u vrij bent om het onderzoek op elk moment te verlaten zonder enige uitleg of consequenties. Tot slot gaat u ermee akkoord dat uw geanonimiseerde gegevens worden gebruikt voor de resultaten van het onderzoek.

Akkoord

Niet akkoord

→

Appendix I - *Bootstrapped Confidence Intervals MANOVA*

3. Level_PersuasionKnowledge * Level_Credible_Source

Dependent Variable	Level_PersuasionKnowledge	Level_Credible_Source	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
Mean_Resistance_Avoidance	Low level Persuasion Knowledge	Non-credible source	2.815	.096	2.626	3.005
		Credible source	2.653	.103	2.450	2.856
	High level Persuasion Knowledge	Non-credible source	3.019	.108	2.806	3.232
		Credible source	2.797	.108	2.584	3.010
Mean_Resistance_Contesting	Low level Persuasion Knowledge	Non-credible source	3.752	.107	3.541	3.963
		Credible source	3.016	.114	2.790	3.242
	High level Persuasion Knowledge	Non-credible source	3.842	.120	3.605	4.079
		Credible source	3.500	.120	3.263	3.737
Mean_Resistance_Empowering	Low level Persuasion Knowledge	Non-credible source	3.399	.103	3.196	3.602
		Credible source	3.000	.110	2.783	3.217
	High level Persuasion Knowledge	Non-credible source	3.320	.116	3.091	3.548
		Credible source	3.297	.116	3.069	3.525