# Scrolling for health: How influencers on Instagram impact supplement choices among young adults

The content and effect of advertising videos of Dutch influencers on Instagram on the perception and purchase behavior of vitamin and mineral supplements in young adults aged between 18 and 25 in the Netherlands.


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# Abstract

**Introduction:** The current study examined the content and influence of advertising videos of Dutch SMIs of vitamin and mineral supplements. The study included two sub-studies. *Sub-study 1* aimed to discover the available advertising videos made by influencers about supplements on Instagram and the form of communication in these videos on Instagram. *Sub-study 2* aimed to find analytical associations between covariates related to perception, purchase intention and actual purchase of vitamin and mineral supplements. **Methodology:** Data of sub-study 1 was collected through social media platform Instagram by using hashtags and tags of the companies and measured by the number of followers of the influencers and the videos were categorized into communication types, type of supplements and health claims. Data of sub-study 2 was collected through questionnaires from a sample of 111 young adults between the ages of 18 and 25 in the Netherlands and measured by the 5-point Likert scale answers of the questionnaire of social media, covariates, perception, and purchase. The answers were analyzed using linear regression analysis in R-studio. **Results:** The results of *sub-study 1* showed that on Instagram a high availability of advertisement videos is. The most used communication types in the 36 videos are the explicit and documentary forms most frequently advertised by micro influencers. *Sub-study 2* showed that spending time on social media, regularly watching videos, attention on the advertisement and trustworthiness appear to be important factors in young adults towards supplements. There is a significant positive association found between regular exposure to advertisement and perception. Also, a significant positive association is found between high frequency time on social media and actual purchase. Next to that, significantly positive associations are found between trusting information and perception, purchase intention and actual purchase of vitamin and mineral supplements. **Conclusion.** This study shows that vitamin and mineral supplements are increasingly being promoted by social media influencers by incorporating supplements into their lifestyle through documentary-style videos to advertise them. Future research is needed to investigate which other variables and negative side influence the perceptions and purchasing behaviors regarding supplements, especially given that supplements are not necessary for young adults with a diverse diet unless they belong to specific groups. It is therefore essential that supplement advertising provide honest information, including recommended dosages and possible side effects of excessive consumption.


**Keywords:** social media influencers (SMIs), vitamin supplements, mineral supplements, young adults, Instagram, communication form, perception, purchase intention, actual purchase.

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# 1. Introduction

In recent years, the use of dietary supplements has become increasingly popular for the reason of improved health and well-being (Brown & Smith, 2019). Although once considered optional, these supplements have become a lifestyle choice for many young adults, similar to the rise of veganism in ethical food consumption (Patel & Jones, 2021). However, this popularity raises a critical question: do young adults really understand the rationale behind supplement use? Despite the growing interest, confusion remains about the effectiveness, necessity and safety of vitamin and mineral intake, compounded by the influence of social media influencers (SMIs) on health perceptions (Johnson & Garcia, 2020).

Dutch young adults often take dietary supplements to supplement nutrient deficiencies or as a preventive measure against health problems (Patel & Jones, 2021). Yet, uncertainties remain about the effectiveness of these supplements, as highlighted by Martinez & Johnson (2019). Although guidelines suggest that a varied diet is sufficient for most individuals, certain populations may benefit from supplementation, such as pregnant women or vegans (NVWA, n.d.; Ministry of Health, Welfare and Sport, 2018b). Nevertheless, the increased use of supplements, coupled with social media influence, raises questions about supplement use in the Netherlands.

Young adults ages 18 to 25, who play a central role in supplement consumption, are of particular concern when it comes to social media influence (Trimbos, n.d.). On average, young people spend 6 hours using a screen, 2 of which are on social media (Trimbos, n.d.). High frequency time is more than 2 hours based on the study of Trimbos (n.d.). More and more supplements are being advertised on social media by influencers, and young adults are the ones most exposed to this form of marketing. Because of their high exposure to social media, they also therefore have the most impact from online ads (CBS, 2020; Baker, 2019). This age group is at a crossroads in their lives, taking increasing responsibility for their health and well-being. Therefore, it is essential to understand what videos are available on social media about these supplements, as they can have a significant impact on young adults' perceptions and purchasing behavior (Trimbos, n.d.). The literature suggests that young adults have a growing interest in supplements and that social media plays an important role in shaping their health perceptions (Trimbos, n.d.). However, there is still a lack of clarity about how specific video content on social media influences young adults' behavior and decisions regarding supplement purchases. This gap in knowledge forms the basis for this thesis, focusing on analyzing the content of supplement advertisement videos on Instagram and understanding their impact on young adults in the Netherlands.

## 1.1 Research objective

Due to the role of social media in young adults to influence the perception, purchase intention and actual purchase of vitamin and mineral supplements, it is essential to understand which videos are available on social media about these supplements. Therefore, the aim of this study was to investigate the content of videos of Dutch SMIs on social media of vitamin and mineral supplements. Secondarily, the study aimed to evaluate how the content of SMIs affect the perception and buying behavior regarding supplements in young adults.

## 1.2 Research question

The main research question is:

What is the content and influence of advertising videos of Dutch SMIs of vitamin and mineral supplements?

The sub questions of this research question are:

- What supplement-related videos are available on Instagram?
- What are the main communication strategies regarding vitamin and mineral supplements promoted by Dutch SMIs?
- How does social media use affect the perceptions, purchase intention and actual purchase of young adults regarding vitamin and mineral supplements?

# 2. Theoretical framework

This theoretical framework explains the central concepts, namely vitamin and mineral supplements, supplement dosage, social media content, types of SMIs, misinformation, the target group and the Elaboration Likelihood Model which is the basis for understanding how young adults process information and arrive at decisions.

The Elaboration Likelihood Model is used in this study to explain how young adults process information of the Instagram videos. The model addresses social media and SMIs as powerful marketing tools, the spread of misinformation, and the influence of social cognitive processes on perception, purchase intention and actual purchase of supplements.

## 2.1 Supplements

**Vitamins and minerals**

Vitamins and minerals are essential nutrients our bodies need for good health (Hermann, 2021). If people do not receive enough vitamins and minerals from your daily intake to meet your needs, supplementation is advised (Bird et al., 2017). There are several vitamin and mineral supplements on the market in the Netherlands. Tables 1 and 2 list the vitamins and minerals available in the Netherlands with their functions and in which food products they are found (RIVM, n.d-a.; Bird et al., 2017; Voedingscentrum, 2014). In addition to single vitamins and minerals, there are also multi-vitamin (MV) and multi-vitamin/mineral (MVM) supplements. These are a mix of vitamins or vitamins and minerals. The exact composition of multivitamins can vary from company to company (Office of Dietary Supplements - Multivitamin/Mineral Supplements, n.d.). Supplements have become increasingly popular over the years. According to the study of French (2023) only 44% of Dutch people used dietary supplements in 2010, and in 2020 it was already 54%. The Food Consumption Survey (VCP) from 2019 to 2021 in fact shows that 57% of the people use supplements in the Netherlands. Out of these, 63% are women compared to 37% men.

**Excessive dosage**

Supplements can contribute to healthy development by supplementing nutrients that may be lacking in the diet, supporting optimal immune function, promoting bone health, and improving overall vitality and well-being (Gombart, Pierre, & Maggini, 2020). However, it is crucial to emphasize that overuse of these supplements can lead to impairment or damage to your health (Bird et al., 2017). Supplements have specific Recommended Dietary Allowance (RDA) and Tolerable Upper Limit (UL). The RDA serves as a guideline for supplements, and it is important to follow these recommendations (RIVM, n.d.-a). The UL represents the maximum daily intake of supplements at which no risk of adverse health effects is expected. For vitamin A, vitamin D, vitamin E, vitamin B6, folic acid, calcium, magnesium, iodine, copper, selenium, and zinc, it has been established that excessive intake can be harmful to health. In fact, acceptable upper limits (UL) of intake have been established for these micronutrients (EFSA, 2006). For vitamin C, iron and phosphorus, there are indications that a certain level of intake may cause undesirable side effects, but no ULs have been established yet (table 1 and 2 in appendix 8.1). Overdose occurs only when using high-dose supplements, an excess of fortified foods, or individual hypersensitivity such as iron-stacking disease. There are supplements on the market with doses well above the acceptable upper limit, so when vitamin preparations are used, it is advised by Ministerie van Volksgezondheid, Welzijn en Sport (2018a) not to take more than one times the RDA. The label of the supplement container states the contribution of micronutrients from a supplement to the RDA set by a European law (Voedingscentrum, 2006).

**Deficiency dosage**

There may be circumstances where supplementation of the diet with supplements may be desirable. Indeed, at an energy intake of less than 1,500 calories (kcal) per day, the supply of micronutrients may be compromised, especially in the elderly who eat poor amounts of food or those on an extreme waste diet (De Groot, Van Den Broek & Van Staveren, 1999). They are at risk of not getting enough micronutrients. This also applies to people with one-sided eating habits. Symptoms of vitamin and mineral deficiency are often non-specific and may include fatigue, irritability, aches, and pains, decreased immune function, and heart palpitations. For these groups, it is important to improve their lifestyle and adjust their diet (Voedingscentrum, 2014).

**Specific groups**

Varied eating, including enough fruits and vegetables, should provide enough vitamins and minerals for almost everyone, according to the Guidelines for Good Nutrition (Ministerie van Volksgezondheid, Welzijn en Sport, 2018a; Ministerie van Volksgezondheid, Welzijn en Sport, 2018b). For some groups of the population, this may not be the case. They are advised to take a supplement. These are special advice for babies, young children, women who want to become pregnant and during pregnancy, elderly people (RIVM, n.d.-b) people with dark or tinted skin or people who do not get outside enough and people with a vegan lifestyle according to the study of Voedingscentrum (2014). Tables 1 and 2 show which vitamins and minerals there are specific groups for and their function. In this thesis the target group is Dutch young adults between 18 and 25, so therefore women who want to become pregnant and during pregnancy and people with a vegan lifestyle are groups common in this target population.

## 2.2 Social media and social media influencers (SMIs)

**Social media platforms**

| | 2022 | 2023 | + / - (aantal) | + / - (percentage) |
|---|---|---|---|---|
| WhatsApp | 12,5 miljoen | 13,3 miljoen | +819.000 | +7% |
| YouTube | 9,3 miljoen | 9,9 miljoen | +630.000 | +7% |
| Facebook | 10,3 miljoen | 9,9 miljoen | -475.000 | -5% |
| Instagram | 6,6 miljoen | 7,8 miljoen | +1.178.000 | +18% |
| LinkedIn | 5,0 miljoen | 5,0 miljoen | -47.000 | -1% |
| Pinterest | 4,2 miljoen | 4,6 miljoen | +403.000 | +10% |
| TikTok | 3,0 miljoen | 4,0 miljoen | +1.034.000 | +34% |
| Snapchat | 3,2 miljoen | 3,9 miljoen | +683.000 | +21% |
| Twitter | 3,5 miljoen | 3,1 miljoen | -464.000 | -13% |
| Telegram | 1,6 miljoen | 1,7 miljoen | +89.000 | +1% |

*Figure 1: Number of users of social media platforms in 2022 and 2023 (Nederpel, 2023).*

In recent years, social media has experienced exponential growth and has become an integral part of everyday life (Edwards, 2011). Social media platforms serve as essential means to communicate with others, share information and stay connected, acting as virtual meeting places where people can share messages, images, videos, and other forms of content with their followers or friends. Users can interact with, "like" and share the content of others through a wide range of websites and apps, including Facebook, Instagram, LinkedIn, Whatsapp, Snapchat, YouTube, TikTok and others, each with their own features and areas of interest (Wilson, 2020). In the Netherlands, platforms such as Whatsapp, Youtube, Facebook and Instagram are among the most widely used social media platforms (Nederpel, 2023).

The increase in the use of supplements runs parallel to the increase in the promotion of supplements, including by social media influencers (Jones & Smith, 2021). This trend has led to a significant increase in ads about supplements on social media platforms such as Instagram and TikTok, where social media influencers advise and inform their followers about these products (Smith & Johnson, 2020). Despite the abundance of ads on social media platforms promoting supplements, caution should be exercised when dealing with the hype surrounding the supplement market (Santos, Cerqueira & Tinsley, 2022). While there may be some benefits associated with this trend, such as increased awareness, it also comes with risks, such as the potential for overdoses (RIVM, n.d.-a).

This thesis specifically focuses on short marketing videos as a research object. Although YouTube hosts videos, the lengths of videos on these platforms vary widely and often include longer content (Patmanthara, Febiharsa & Dwiyanto, 2019). WhatsApp, on the other hand, is more focused on direct messaging and text message exchange. The age range of the target group who uses Facebook is 25-34 (Statista, 2023). Instagram, however, is known for its focus on visual content, including short marketing videos. In addition, the number of users of this platform is up 18% in 2023 from the previous year shown in figure 1 (Nederpel, 2023). Instagram was therefore selected for this thesis as a social media platform because it offers both the right target audience and the right form of content in the study of influencing the perception, purchase intention and actual purchase of supplements in young adults.

**Social media influencers (SMIs)**

SMIs are defined, according to the study of Delbaere, Michael & Philips (2021), as social media users with a significant and engaged group of followers on social media platforms. SMIs are a relatively new and rapidly growing group within the media and marketing world (Vrontis et al., 2021). The rise of SMIs is attributed to the start of social media era, and SMIs began to expand in early 2018 as marketing strategies began online. Since then, SMIs have had a significant impact on how brands market products and services (Subagyo & Ernestivita, 2018). The evolution of SMIs keeps evolving constantly with today's rapidly changing digital media environment.

SMIs give their followers a glimpse into their personal lives, communicate with their followers and advertise products in their social media posts (Ibánez-Sánchez et al., 2022). Followers view the influencer as a credible and trusted source of information, opinions, or recommendations within a specific area of interest. SMIs are divided into categories, usually according to their number of followers (Conde & Casais, 2023). There are four categories, namely mega, macro, micro and nano influencers. Mega influencers (more than 1 million followers) are considered as experts in their field, macro influencers (100,000 to 1 million followers) are the intermediate category (Borges-Tiago, Santiago & Tiago, 2023), micro-influencers (10,000 to 100,000 followers) are people who have a influence on a smaller circle and nano influencers (less than 10,000 followers) often have a local or specific reach (Conde & Casais, 2023). The number of followers of SMIs plays a crucial role, so influencers with a significant number of followers have the potential to reach many people with their content. This makes SMIs particularly valuable for marketing purposes and a strategic choice for companies looking to get a large reach of their message (Tafesse & Wood, 2021). Advertising a product or service through influencers provides a direct route to an extensive and diverse audience. So, this thesis specifically considers mega, macro, and micro SMIs because of their significant reach of more than 10,000 followers.

The number of likes social media influencers receive, in addition to followers, plays a significant role in their online presence and influence (Kay, Mulcahy & Parkinson, 2020). Likes act as a measure of involvement and approval of their content. A higher number of likes builds trust and can attract potential followers and advertisers, making likes a valuable indicator of influencers' success and impact in the digital world.

**Social media marketing**

Social media platforms offer SMIs new advertising opportunities. Social media marketing is a form of Internet marketing that uses various social media platforms to achieve communication with followers (Husain, Ghufran & Chaubey, 2016). Marketing includes sharing content, videos, and images as paid advertisement on social media. By violating the guidelines of the Media Authority, it is hard to distinguish between a paid advertisement and an individual sharing an unsponsored opinion (Evans et al., 2017). SMIs are seen as an on-demand commercial media service and this makes it necessary to include the hashtag, so only videos with these hashtags or tags are included in this study. Employing SMIs is a common method of gaining social media users. It is not a mass marketing technique, but aimed at marketing specific categories (Sajid, 2016). Companies' choice of an SMI may depend on the number of followers on the social media account, how many videos the SMI is willing to make and the platform on which the SMI posts content. The SMIs can be ambassadors of the brands, so they post more content of the respective company than other SMIs. In this thesis, companies must have at least five SMIs making videos of their supplement for enough power to be included.

Nowadays there is a lot of marketing about health products, like supplements (Renga, 2017). In recent years, it is trendy to keep the marketing subtle and therefore ads are often incorporated into their daily routines and videos. Influencers play well on this and try to make money in addition to posting fun content, which is now easily accessible (Delbaere, Michael & Philips, 2021; Ibáñez-Sánchez et al., 2022). High exposure to ads increases the positive

perception of a product among followers. Therefore, it is likely that a high frequency to social media will result in a positive perception of SMIs' ads and a positive perception often leads to a higher purchase intention, as they see the product as relevant in their lives (Renga, 2017).

**Social media content and communication forms**

Social media videos use different forms of communication, distinguishing between explicit and implicit communication. Explicit messages are clearly communicated through written or spoken words. Implicit communication, on the other hand, does not use words or text, but instead the message is hidden in the video (Madhavaram & Appan, 2010).

The contents of Instagram videos are diverse types of vlogs, namely daily vlogs, travel vlogs, informational vlogs, motivational vlogs, opinion vlogs and review vlogs each serve a different purpose. Daily vlogs record daily activities, such as "what I eat in a day" or routines, while travel vlogs highlight experiences in various locations, such as "vlog in Bali" or "vlog in Dubai". Informational vlogs focus on specific topics or offer tutorials, while motivational vlogs offer daily inspiration. In opinion vlogs, the influencer shares personal views, and review vlogs offer insights based on personal experiences (source).

Moreover, social media videos can be categorized into six forms of communication. Comedy videos highlight the personality of the SMI through humor, which resonates well with young adults. Documentary videos, which include daily and travel vlogs, are popular trends because of their aesthetic and relatable content. Communal videos engage multiple people and offer a symbolic or cultural message. Explanatory videos include informational vlogs, like tutorials and life tips, which often appear on platforms such as Instagram and TikTok. Interactive videos include emojis and filters, often seen with trends or challenges. Finally, meta videos look like interactive communication, but serve a more serious purpose, encouraging engagement among users who share common interests with the SMI (Bucher, 2017; Schellewald, 2021). Each form of communication meets different preferences and engages diverse audiences.

The most common communication forms in videos watched by young adults are comedy, documentary, communal and explanatory. However, communal forms are not often used in social media marketing. Thus, videos employing comedy, documentary, and explanatory communication styles prove to be highly popular on Instagram among young adults (Schellewald, 2021). Using these communication styles in SMI marketing campaigns can effectively reach target audiences and it is a strategic choice for companies looking to optimize their marketing efforts.

**Social media target audience**

It is important for companies to focus on the target audience of young adults between 18-25, as this age group use social media the most shown in figure 2 (CBS, 2020; Baker, 2019). The average time spending on social media in 2022 of Dutch teenagers aged 15-19 is 159 minutes per day and of Dutch young adults aged 20-38 is 138 minutes per day, which is an average of around 2,5 hours each day of

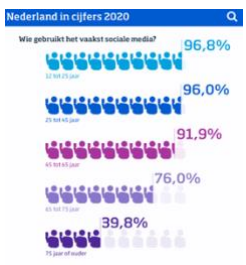


*Figure 2: Population groups using social media in 2022 (CBS, 2020)*

social media exposure (Statista, 2022). Next to that, young adults are sensitive to social media marketing, as they do not process the message of the advertisement as thoroughly (Vanwesenbeeck, Ponnet & Walrave, 2017).

## 2.3 Misinformation

Product ads on Instagram and other social networking sites is an effective form of marketing, especially since sponsored posts are perceived as product reviews or product recommendations (Wnent, 2016). The casual nature of SMI-marketing on social networking sites has changed the way consumers interact with advertised products. Specific to health foods, SMIs on social media have changed the public's perception of health food advertising by getting their followers convinced that their own health is improved or maintained through daily consumption of the advertised products. SMIs may post photos and videos as evidence of health, making a connection between the advertised product and the SMI's outward beauty or perceived well-being (Pilgrim & Bohnet-Joschko, 2019). Messages in posts may imply that followers need to follow the SMI's advice to achieve optimal health, ideal body image and happiness, which often translates into purchase intentions of the advertised products (Pilgrim & Bohnet-Joschko, 2019). When brands and companies take control of the content of SMIs' posts, it can lead to potentially inaccurate and overstated claims or opinions about a product being spread on social media. This can be negative for followers, as SMIs may spread misinformation this way. This misinformation may be spread in good faith by an SMI who did not know the information is false, or maliciously to mislead people. These misinformation spreads are often health claims based on anecdotal evidence or false, misleading information due to the lack of scientific knowledge (Suarez- Lledo & Alvarez-Galvez, 2021). Young adults are active on social media therefore they are exposed to numerous influences and advertisements (Al Rabea et al., 2023). As a result, young adults are vulnerable and often face misinformation. This age group is at a crucial stage of life where they are becoming aware of their health and well-being and need to make important decisions about their diet and lifestyle (Poobalan et al., 2014). Due to this stage of life, it is important that young adults are not overly misled by social media ads but make responsible choices according to health guidelines (RIVM-c, n.d.).

**Health claims**

Health claims on supplements are often considered as a form of misinformation due to the frequent inclusion of inaccurate or incomplete information, particularly regarding potential side effects. The use of supplements is often attributed to beneficial health effects, however many of these health effects are not demonstrated (Voedingscentrum, 2006). Only if the effect is scientifically proven, may there be a claim on a supplement. Regulations have been drawn up in Europe. The health claims made for micronutrients are claims that say something about the effect of the nutrient on the normal functioning of the body at normal doses, so nothing about reducing disease risk or improving health. The use of high doses in dietary supplements provides no additional health benefits and, in some cases, it may even be harmful (Ministerie van Volksgezondheid, Welzijn en Sport, 2018a).

## 2.4 Elaboration Likelihood Model

In addition to examining the content of the videos and the possible influence of influencers, it is also essential to look at how users perceive social media influencers' posts about supplements. To understand this, the Elaboration

Likelihood Model was chosen as a framework. This model provides insight into how information is processed and how people are persuaded by posts on social media. In fact, according to the research of Liao and Huang (2021), there are two routes for processing a message through social media: the central route and the peripheral route. The central route involves paying attention to the content and arguments of a message, while the peripheral route focuses less on the content and more on the superficial aspect, such as emotions in the message (Huang & Su, 2018; Liao & Huang, 2021).

**Social media**

In social media videos, young adults are often put on the peripheral route (Westin, 2020). This is because they are exposed to an overflow of social media messages, making it difficult for them to pay attention and think deeply about each message and process the message not carefully (figure 3). They are more likely to make decisions based on quick judgments, being sensitive to the impact of SMIs or the ad message (Vanwesenbeeck, Ponnet & Walrave, 2017). Companies therefore need to focus on the peripheral route of young adults through social media ads of supplements and therefore pay attention to superficial factors to convince young adults. The automatic processing of social media advertisements may influence young adults' perceptions and their purchase intention and maybe their actual purchase of supplements (Renga, 2017). It is important to understand the association between advertising on social media and its effects on young adults, so that in addition to good marketing for businesses, it can protect young adults from misinformation in advertisements.

This study specifically focuses on the effect of social media on the perceptions, purchase intention and actual purchase of supplements among young adults. The Elaboration Likelihood Model provides a theoretical framework for understanding how these processes take place (Westin, 2020). This study will primarily focus on examining which route the message took in young adults (central or peripheral route). Thus, it will assess whether social media influencers' messages lead young adults along the central or peripheral route and what effect this has on their behavior toward supplements.

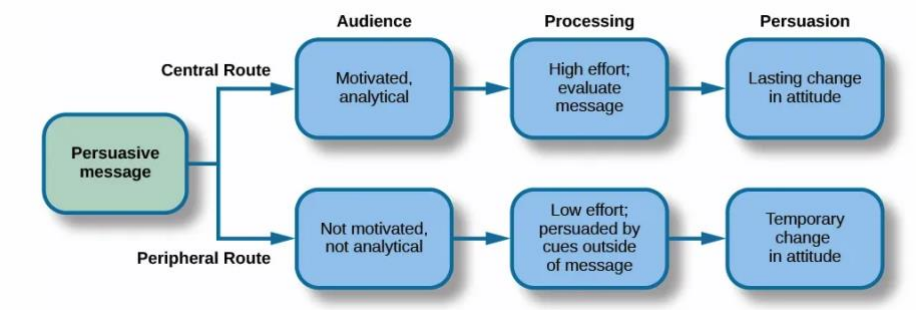


*Figure 3: The Elaboration Likelihood Model explained by two pathways processing a message (Westin, 2020).*

## 2.5 Hypothesis

**Sub-study 1: Content analysis**

There are two hypotheses due to the content of the videos by the availability and main messages of the SMIs

1. Supplement-related videos available on Instagram consist of a positive and appealing way to encourage their audience to purchase vitamin and mineral supplements, due to their collaborations.

2. The main messages in the SMIs videos focus on highlighting the benefits and positive effects of the supplements, with limited attention to misinformation as negative side effects and critical considerations.

**Sub-study 2: Survey**

There are three hypotheses due to the dependent variables changed perception, purchase intention and actual purchase.

1. High frequency time on social media, regular watching videos of supplement advertisement, paying attention to the content of advertising videos and trusting information of SMIs is correlated with a positive perception of supplements.

2. High frequency time on social media, regular watching videos of supplement advertisement, paying attention to the content of advertising videos and trusting information of SMIs is correlated with increased purchase intention of supplements.

3. High frequency time on social media, regular watching videos of supplement advertisement, paying attention to the content of advertising videos and trusting information of SMIs is correlated with increased actual purchase of supplements.

# 3. Methodology

## 3.1 Design

This thesis comprises two quantitative cross-sectional studies, namely sub-study 1 and sub-study 2.

# Sub-study 1: Content Analyses

Sub-study 1 is a content analysis study that examined the videos available on Instagram related to supplements and the main message conveyed by Dutch Social Media Influencers (SMIs).

## 3.2 methodology sub-study 1

**Timeframe**

The study focused on 36 Dutch videos posted between January 2020 and September 2023. These videos were systematically selected based on hashtags associated with the names of supplement companies and tags on their

Instagram profiles. By focusing on a recent period of the past 3 years and 7 months, the study aimed to provide an accurate overview of how supplements have been presented in videos during that time. The inclusion of videos was determined using predefined criteria from literature (Smith., Brown & Jones, 2020) to ensure that the study was conducted systematically.

**Company selection**

There have been numerous Dutch companies in the market offering vitamins and mineral supplements, and these companies have varied over the years. As of the study period, notable providers include Vitakruid, Viteezy, Davitamon, Orthica, Vitalsvoedingssupplementen, MyProtein, Clean Nutrition, and Garden of Life. These companies have promoted their supplements through advertisements on various social media platforms, including YouTube, Facebook, Instagram, and TikTok, which has been shown to be effective for enhancing the organizations' reputation (Spence et al., 2014).

Pharmacies, clinics, drugstores, and companies with coaches are excluded in this study, because of existing professional knowledge of supplements. Also, companies with advertisement focusing on sport goals, no videos of ambassadors or SMIs of the companies and advertising products other than supplements are excluded. In addition, companies with fewer than 5 advertisement videos on Instagram are excluded to ensure a sufficiently representative sample size, as they may not contribute significantly to the research objective or be representative of the broader industry. Consequently, the companies analyzed in this study are limited to Vitakruid and Viteezy.

**Data-collection procedure**

Videos have been collected by systematically visiting the Instagram pages of the companies Vitakruid and Viteezy and examining tagged videos featuring collaborations. These videos have been manually reviewed to identify those featuring supplements. Additionally, a systematic search has been conducted using the Instagram search bar for #VitaKruid and #Viteezy separately, involving manual scrutiny of all videos to filter those where SMIs include supplements.

The selection of videos analyzed in this study contained some conditions. The conditions were that the videos must be 1) in Dutch, and 2) it must be an advertisement. The advertisement must contain a tag or hashtag of the company in question and additionally indicate that the SMIs are sponsored by adding a hashtag with ad, advertisement, partner, sponsor, or collaboration. It is mandatory for SMIs on Instagram to mention in the text of their video that they are sponsored by a company according to the Dutch Media Authority since July 2022. 3) The advertising of the supplements in the video must be about condensed formulations (pill and capsule) supplements, so drinks or drops are excluded (Almeida et al., 2011). Drinks or drops can be advertised in the video, but it must contain at least one vitamin or mineral supplement pill or capsule product. Vitamin and mineral combination packages, like multivitamin, are also included. 4) SMIs need to show the respective supplement bottle in the video, show the supplement, tell in the video which supplement it is about or put it clearly in the description.

**Measures**

For each Instagram supplement-advertising video post, the SMIs, content, communicative form, type of supplement and health claims were measured.

1. SMIs

Various SMIs are involved, categorized based on the number of followers into influencer categories based on the number of followers (Conde & Casais, 2023). The three categories are mega influencers (more than 1 million followers), macro influencers (between 100,000 and 1 million followers), and micro influencers (between 10,000 and 100,000 followers). The number of videos made per company by SMIs is also considered.

2. Video content

The collected videos are categorized based on content communication types, including daily vlogs, travel vlogs, informative vlogs, review vlogs, motivation vlogs, and opinion vlogs. The six communicative forms according to the study of Schellewald's (2021) are comedic, documentary, communal, interactive, explanatory, and meta.

3. Explicit and implicit communication

The videos are categorized as explicit or implicit advertisement communication based on the study of Madhavaram and Appan (2010). Explicit addresses the advertised supplement, and implicit where the supplement was part of a routine, not addressed and therefore not the main message of the video.

4. Type of supplements

The videos are divided into three categories. The categories are vitamins, minerals, and complexes of supplements. Specific types of vitamins, minerals, and complexes are also focused on (RIVM, n.d-a.; Bird et al., 2017; Voedingscentrum, 2014).

5. Health claims

For each of the videos health claims were identified.

**Data analyses**

Sub-study 1 focus on understanding and identifying the content and availability of Instagram videos with supplement advertisement by descriptive statistics. This is the part of the research in which Instagram videos of influencers promoting the brands VitaKruid and Viteezy used descriptive statistics to provide insight into the key messages and the marketing of the Instagram videos related to vitamin and mineral supplements promoted by Dutch SMIs.

The analysis started by collecting Instagram videos wherein the content was analyzed to examine the availability of supplement-related videos and the main messages of these videos on Instagram. The main messages were analyzed by evaluating the content of the videos and their communication forms. The data consist of the name of the influencers, number of followers, content of the videos, form of communication, number of likes, recommended

supplement types, and health claims. Inspired by the study of Hilkens et al. (2021), descriptive analysis has been performed on the content of the videos, including the mean, standard deviation, and variance, which were calculated.

## 4. Results sub-study 1

36 videos were collected among two companies. In Tables 3 and 4, the companies are each listed in a table showing which SMIs promoted the supplements, how many followers these SMIs had, how many videos the SMIs created for the company, and how many likes the videos received, which supplements are promoted, the communication form and style used in the videos, and what health claims were in the videos.

1.SMIs

Intotal 28 SMIs in this thesis advertise supplements through videos on Instagram. 17 SMIs advertise for the VitaKruid company (table 3 in appendix 9.2) and 11 SMIs advertise for the Viteezy company (table 4 in appendix 9.2). There are 1 mega, 4 macro and 24 micro SMIs. From this it can be concluded that smaller influencers advertise supplements and advertise them at all. Indeed, large influencers often already have a higher income according to the study of Borges-Tiago et al. (2023)

2. Communication forms

Only three communication forms are used in the SMI videos, explanatory videos, documentary videos and comedy videos. As can be seen from the numbers in table 5 the documentary form is often used in SMIs in marketing supplements. In most Instagram posts, the documentary style was primarily used as a form of communication, followed by explanatory, with comedy the least used format.

3. Communication styles

Among the videos, 13 videos contain explicit information about the supplements. The explicit information can be shared through video (7 videos), through text (13 videos) or through text and video (15 videos). There is 1 video where the supplements are promoted through implicit communication, where the SMIs do not discuss the supplements and it is part of daily life (Madhavaram & Appan, 2010). This video with implicit processed information about supplements has only 23 likes.

4.Type of supplements

In table 5 is shown all the types of supplements advertised by SMIs. In the Instagram videos of the SMIs, are vitamin B, B8, B11, B12, C, D and D3 advertised. In addition, the minerals advertised in the videos are magnesium and zinc and five types of complexes are advertised, namely mineral complex, daily personalized vitamins multiday, multiday and multi night. Multiday and multi night can be divided into women and mama, wherein mama supplements are for pregnant women or women who just got a baby.

5.Health claims

18 health claims appear in the videos (table 4 in appendix 9.2) Four health claims are about vitamins and minerals in general, namely increasing energy levels and positive effect on immune system, maintaining energy levels and good for muscle function.

There are health claims made in videos about vitamin B12. The supplement should be important for people who have a vegan eating lifestyle because this vitamin is only found in animal food products. In addition, the body needs this vitamin to function. According to four videos, magnesium seems to help during pregnancy and be good for baby development, muscle recovery and the nervous system, reduction of fatigue and lethargy, mood and for concentration. However, these claims have never been proven by research.

Next to vitamins and minerals supplements, health claims in videos are also made about supplement complexes. Mineral complexes are supposed to give benefits to nails and hair according to one influencer. The SMIs do not tell their followers the doses of supplements are needed to get this effect. There are some health claims made about multi day and night supplements. Claims about multi night women supplements are that the supplements give more rest, recovery, and relaxation. Two videos suggest that multi day women supports energy, alertness, and concentration. Multi day mama and multi night mama supplements help during pregnancy. One SMI video states that multi day and night mama, vitamins B12, C and D3 can help during pregnancy by reducing fatigue. Mineral complex is claimed to be good for thyroid and bone health, and chromium helps keep blood sugar stable.

*Table 5: Descriptive outcomes of sub-study 1: Video content with communication form and way, supplement types and health claim of the videos divided into Vitakruid and Viteezy and total.*

| | **Vitakruid** | | **Viteezy** | | **Total** | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| **Communication form** | **25** | **100** | **11** | **100** | **36** | **100** |
| Documentary | 17 | 68 | 8 | 72,7 | 25 | 69,4 |
| Comedy | 1 | 4 | 1 | 9,1 | 2 | 5,6 |
| Explanatory | 7 | 28 | 2 | 18,2 | 9 | 25 |
| **Communication way** | **25** | **100** | **11** | **100** | **36** | **100** |
| Explicit | 25 | 100 | 10 | 90,1 | 35 | 97,2 |
| Implicit | 0 | 0 | 1 | 9,9 | 1 | 2,8 |
| **Supplement type** | **65** | **100** | **12** | **100** | **77** | **100** |
| Vitamin B | 2 | 3,1 | 1 | 9,1 | 3 | 3,8 |
| Vitamin B8 | 1 | 1,5 | 0 | 0 | 2 | 2,6 |
| Vitamin B11 | 1 | 1,5 | 0 | 0 | 1 | 1,3 |
| Vitamin B12 | 9 | 13,8 | 1 | 9,1 | 10 | 12,8 |
| Vitamin C | 9 | 13,8 | 1 | 9,1 | 10 | 12,8 |
| Vitamin D | 3 | 4,6 | 2 | 18,2 | 5 | 6,4 |
| Vitamin D3 | 6 | 9,3 | 0 | 0,0 | 6 | 7,7 |
| Magnesium | 11 | 16,9 | 1 | 9,1 | 12 | 15,4 |
| Zinc | 1 | 1,5 | 0 | 0 | 1 | 1,3 |
| Mineral complex | 3 | 4,6 | 0 | 0 | 3 | 3,8 |
| Daily personalized vitamins multiday | 0 | 0 | 6 | 54,5 | 6 | 7,7 |
| Multiday | 2 | 3,1 | 0 | 0 | 2 | 2,6 |
| Multiday women | 7 | 10,8 | 0 | 0 | 7 | 9 |
| Multiday mama | 4 | 6,2 | 0 | 0 | 4 | 5,1 |
| Multi night women | 3 | 4,6 | 0 | 0 | 3 | 3,8 |
| Multi night mama | 3 | 4,6 | 0 | 0 | 3 | 3,8 |
| **Health claim** | **18** | **100** | **1** | **100** | **19** | **100** |
| Vitamin and mineral supplements | 3 | 16,7 | 1 | 100 | 4 | 21,1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Vitamin B12 | 2 | 11,1 | 0 | 0 | 2 | 10,5 |
| Vitamin C | 1 | 5,6 | 0 | 0 | 1 | 5,3 |
| Magnesium | 4 | 22,2 | 0 | 0 | 4 | 21,1 |
| Mineral complex | 2 | 11,1 | 0 | 0 | 2 | 10,5 |
| multi day | 3 | 16,7 | 0 | 0 | 3 | 15,8 |
| Multi night | 2 | 11,1 | 0 | 0 | 2 | 10,5 |
| **SMIs** | **17** | **100** | **11** | **100** | **28** | **100** |
| Mega | 1 | 5,9 | 0 | 0 | 1 | 3,6 |
| Macro | 2 | 11,8 | 2 | 18,2 | 4 | 14,3 |
| Micro | 15 | 88,2 | 9 | 81,8 | 24 | 85,7 |

So, the hypotheses were true, as the results of this study show. Supplement-related videos on Instagram are indeed a positive and engaging way to encourage their audience to buy vitamin and mineral supplements, mainly thanks to their collaboration with influencers. The main messages in the ad videos focused on highlighting the benefits and positive effects of the supplements, which is consistent with the hypothesis. Influencers mainly emphasized the positive aspects of supplements, focusing on improved health outcomes, while paying little attention to possible side effects or the recommended dosage. However, it is remarkable that ignoring possible negative effects may be misleading to young adults, especially given the risks associated with supplement overdose.

## 5. Conclusion sub-study 1

25 supplement advertisement videos from the companies VitaKruid and Viteezy are included in this study. Micro-influencers, often emerging influencers on social media, were the largest group of SMIs and mainly advertised vitamin B, C and D, magnesium, zinc, multiday and multi night supplements.

Regarding the communication styles of Dutch SMIs, three main styles were identified: documentary, explanatory and, in a few cases, comedic. Most influencers explicitly advertised supplements and some also incorporated positive health claims that are often not scientifically proven, except in the case of vitamin B12 for people on a vegan diet. In addition, none of the videos addressed the dosage of the advertised supplements, leaving viewers without complete information. Overall, the findings show that small influencers often emphasize personal routines and positive health effects of supplements in their videos, with these effects often lacking actual scientific basis.

# Sub-study 2: Survey

## 3.3 methodology sub-study 2

Sub-study 2 is a quantitative cross-sectional study with data analyses examines the influences on the perception, purchase intention, and actual purchase of supplements by surveys. At the beginning of the survey, respondents were asked to agree to give informed consent before participating in the study.

**Timeframe sub-study 2**

The surveys have been collected from the 1st of December 2023 until the 1st of January 2024 by spreading the surveys on LinkedIn, Facebook, Instagram, and WhatsApp. By focusing on data of a recent period of a month, an accurate view is formed of respondents' perception, purchase intention, and actual purchase of supplements.

**Respondents sub-study 2**

The target population group of this study is male and female Dutch young adults aged 18 to 25. This study includes only young adults who use social media platforms. The young adults must use the social media platform Instagram and use or have used supplements already. However, 27 respondents needed to be excluded from the analyses because they had not completed all the constructs of the survey. For this reason, the results are based on 111 respondents. The age of the respondents ranges from 18 to 25 years. The RDI, use of supplements, type of supplements, education level, and frequency of social media are shown in table 6.

*Table 6: Respondents sub-study 2: Respondents divided into gender with information about mean age, mean hours on social media and education level.*

| | Respondents | Mean age (SD) | Mean hours on social media daily (SD) | Highest completed level of education |
|---|---|---|---|---|
| Men | 29 | 22,6 (2.29) | 2.8 (1.01) | 27,6% secondary school<br>20,7% HBO<br>37,9% Universitair bachelor<br>13,8% Universitair master |
| Women | 82 | 22.7 (1.82) | 3.1 (1.04) | 19,5% secondary school<br>1,2% MBO<br>12,2% HBO<br>50% Universitair bachelor<br>17,1% Universitair master |
| **Total** | **111** | **22.67 (1.95)** | **3.03 (1.04)** | **21,6% secondary school**<br>**0,9% MBO**<br>**14,4% HBO**<br>**46,8% Universitair bachelor**<br>**16,2% Universitair master** |

**Data-collection procedure**

Sub-study 2 focus on assessing the association between perception influence of the social media platform Instagram on vitamin and mineral supplements and to examine the perceived influence of social media on vitamin and mineral supplements purchase among young adults.

The surveys are made by the online enquêtetool Qualtrics (appendix 9.3) and have been online spread by a text on social media platforms WhatsApp in groups with young adults, on Facebook, and on Instagram story to select a broad diversity of young adults in the Netherlands. The text was 'Are you between 18 and 25 years and would like to participate in my master's thesis on social media and supplements by filling in this survey? Your opinion is valuable! Here is the link to the survey and it will take only 3 minutes of your time: [...]. Thank you in advance for your participation, and I would really appreciate it if you would share it with others!'

The link's message told young adults that the survey is about social media, vitamin and mineral supplements. When filling out the online survey, respondents first read the introduction. Here, the survey has again been briefly explained and the criteria to be met. Furthermore, the data would be processed anonymously and confidentially. The questions are based or inspired by previous studies, namely the study of van Straten (2018), Renga (2017), Dickinson et al. (2012), Bakker (2019), Huang & Su (2018), and Yalcinkaya et al. (2018).

**Measures sub-study 2**

Social media usage, perception of supplements, purchase intention, and actual purchase of supplements have been studied. The statements on social media, perception, purchase intention, and actual purchase of supplements included response options in a five-point Likert scale (fully disagree to fully agree) based on the study of Van Straten (2018). The questions in the survey are answered based on a 5-point likert scale from totally disagree to totally agree.

*Independent variables*

1. social media

Frequency of social media use has been operationalized by using 1 item inspired by the survey of van Straten (2018) with a multiple-choice answer type in which respondents indicated how many hours on average per day they spend on social media. In addition, eight statements are going to be used of which three statements are inspired by the survey of Yalcinkaya (2018) namely 'I have an account on social media', 'Big influencers (more than 100.000 followers) have more knowledge about supplements they advertise than small influencers (less than 100.00 followers)' and 'I trust the information of influencers when it comes to supplements'.

The two statements 'I regularly watch videos of influencers on social media' and 'I trust information of mega and macro SMIs (more than 100.000 followers) about products they advertise more than micro SMIs (10.000 to 100.000 followers) information' are inspired on the survey of Bakker (2019). Next to these statements, there are three more statements about social media. The statement 'I pay attention on advertisement videos on Instagram' is inspired on the survey of Huang & Su (2018), the statement 'I see influencers on social media recommending or providing information about supplements' is inspired on the survey of Renga (2017) and the statement 'I think SMIs who advertise supplements provide honest information' is inspired on the survey of van Straten (2018).

2. Covariates

Covariates are measured by demographic variables based on the surveys of van Straten (2018), Yalcinkaya et al. (2018) and Dickinson et al. (2012). Questions which are used for demographic variables are 'What is your gender?', 'Do you follow a certain eating lifestyle?', and the statement 'I use supplements for topsport'.

The lifestyle questions are based on BRAVO and were answered by 8-point scale representing days of the week (ligthart, 2013). Seven lifestyle behaviors of BRAVO (XpertHR, 2023) have been used to derive a healthy lifestyle index score, including the following cut-off points: a) physical activity minimum of 30 minutes a day ≥ 5 days a week; b) consumption of 200 grams of vegetables ≥ 5 days a week; c) consumption of 2 pieces of fruit ≥ 5 days a

week; d) sleeping time between 7 and 9 hours per day for ≥ 5 days a week; e) 2 or more glasses of alcohol intake ≤ 2 days a week. Individuals who meet these healthy recommendations have been given 1 point for each recommendation met, whereas those who did not follow them have been assigned 0 points. The maximum possible score is 7 points, representing a healthy lifestyle behavior score.

*Dependent variables*

1. Perception of supplements

Perceptions toward supplements are generalized on three statements based on the survey of Renga (2017). The first statement is 'social media has changed my perception about supplements in a positive way'. Next to that, there are two statements about the perception on supplements, namely 'supplements can have a positive impact on my health' and 'supplements can help me compensate for certain deficiencies in my nutrition'.

2. Purchase intention of supplements

The purchase intention will be examined by the statement 'I would be more likely to buy supplements recommended by SMIs' inspired on the survey of Renga (2017).

3. Actual purchase of supplements

The actual purchase was generalized by the statement 'After watching videos from SMIs where they advertise supplements, I buy it' inspired on the surveys of Renga (2017) and van Straten (2018).

**Data analysis sub-study 2**

The data collected from the Qualtrics survey has been processed and analyzed. The data has been exported to an Excel file and then imported into R-Studio version 4.0.5 for linear analysis. Using statistical analysis, the sub-question "How does social media use affect the perception, purchase intention, and actual purchase of young adults regarding vitamin and mineral supplements?" has been answered. Both a crude model and an adjusted model were run in R-studio. which included the covariate gender. Gender was specifically chosen as a covariate because of the observed trend that women on average spend more time on social media than men which can influence the association (Martinez & Thompson, 2020). Next to that, thrustworthiness consist of two statements which are combined and is checked by Cronbach alpha.

Descriptive analyses

The mean, standard deviation, minimum and maximum of lifestyle variables are summarized by descriptive analysis in Table 6. R-studio is also used to characterize the profiles of the respondents. This characterization will include the demographic variables gender, age, and BMI (Rahmani, 2022). A descriptive analysis is conducted on covariates, social media, trustworthiness, perception, purchase intention and actual purchase.

Analytical linear regression

The independent and dependent variables all have a 5-scale response model (completely disagree to completely agree), which is included as continuous, resulting in ordinal linear regressions. The response possibilities are coded

with numbers, where 'Totally disagree':1, 'Disagree': 2, 'Neutral': 3, 'Agree': 4 and 'Totally agree': 5. The associations are shown in tables 7, 8, and 9.

In R-studio, the association with the next four independent variables is correlated with the three outcomes: perception, purchase intention, and actual purchase. Daily frequency use of social media (exposure), regularly seeing videos wherein influencers recommend supplements on social media (exposure), paying attention to advertisement videos on social media (exposure), and the trustworthiness of influencers (exposure) by fusing two statements, which are thinking that the information the SMIs provide about supplements is honest (statement 1) and trusting the information of mega and macro SMIs about products they advertise more than micro SMIs information (statement 2).

## 4.1 Results sub-study 2

After statistical calculations, 'Totally disagree' to 'Neutral' (1-3) are considered as negative or no change, while 'Agree' and 'Totally agree' (4-5) are included as positive change inspired by the study of Poobalan et al. (2014).

Demographic characteristics of participants

Of the 111 respondents, 24.6% were men and 75.4% were women. Women used more supplements and spent more time on social media than men according to the study of Krasnova et al. (2017) and the survey outcomes (table 6), while also trusting more information from influencers. The largest age group was 23 years old (27.9%) and the highest level of education was a university bachelor's degree (46.8%). The average BMI was 24.72, which is considered "normal" (table 7). About half of the respondents did not follow a specific eating style, while 56.1% regularly used tobacco products or electronic cigarettes.

Covariates

Table 7 shows the mean, standard deviation, minimum and maximum results of 9 variables. Following a certain eating lifestyle may influence the usage of supplements, because of a lack of certain nutrients in the diet or specific dietary restrictions (RIVM, n.d.-a). One respondent has a vegan eating style and is already taking vitamin B12. Of the 15 athletes among respondents, elite athletes are more likely to use supplements for muscle building and recovery and are more likely to follow SMIs that advertise supplements. This may influence their purchase intention of supplements. In addition, results of the variables for calculating BRAVO are shown in table 7, concluding that a large proportion of respondents (98 out of 111) have an unhealthy lifestyle according to the BRAVO calculations (XpertHR, 2023).

*Table 7: Results variables of respondents in sub-study 2: Means (M), Standard deviations (SD), unit, minimum and maximum scores for variables of the survey in young adults using 8-point scale representing days of the week (Inspired on the study of Boerman & Segijn, 2022).*

| | Variabele | Mean (SD) | Minimum | Maximum |
|---|---|---|---|---|
| 1. | Age | 22.67 (1.95) years | 18 | 25 |
| 2. | Sport | 5.63 (1.81) days p/w | 0 | 8 |
| 3. | Vegetables | 6.28 (1.23) days p/w | 0 | 8 |
| 4. | Fruits | 4.54 (2.16) days p/w | 0 | 8 |
| 5. | Sleep | 5.95 (1.47) days p/w | 0 | 8 |
| 6. | Alcohol | 2.88 (1.40) days p/w | 0 | 8 |
| 7. | Smoking | 88.23% (0.32) smokers | n.a. | n.a. |
| 8. | BMI | 24.72 (4.77) Kg/m2 | n.a. | n.a. |
| 9. | Social media use | 3.03 (1.04) hours p/d | 0 | 8 |

Social media

Nearly three-quarters of respondents (73.0%) regularly watch videos from influencers on social media, 62.2% of whom see videos recommending supplements. The average daily time of the respondents on social media is 3 hours and 1 minute, which is more than the average of 2 hours per day according to Trimbos study.

Although most respondents (76.6%) are neutral or do not pay attention to video ads on Instagram, studies have shown that young adults often take the peripheral route when viewing social media according to the Elaboration Likelihood Model (figure 3). This means they make snap judgments and pay more attention to superficial messages than to the content of social media influencers' videos, otherwise young adults will get an overflow of social media messages (Liao & Huang, 2021; Vanwesenbeeck et al., 2017).

In figure 3 in the red box is shown that audience is not analytical to the video and the peripheral route will end in temporary change in attitude instead of lasting change in attitude. Survey results confirm the model and indicate that young adults who do not pay much attention to the message because they are heavily exposed to videos from social media are less likely to undergo changes in perception, purchase intention and actual buying behavior toward supplements. This is further supported by the finding that less analytical individuals are more likely to go the peripheral route, leading to temporary changes in attitudes rather than lasting ones.

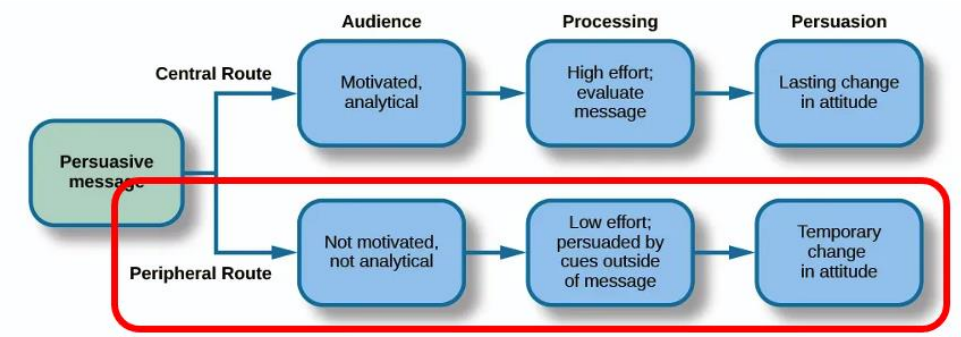


*Figure 3: The Elaboration Likelihood Model explained by two pathways processing a message (Westin, 2020).*

Trustworthiness

The Cronbach's alpha coefficient for the two items "give honest information" and "trust the information" together is 0.84. This Cronbach's alpha coefficient is a strong internal consistency, so these items are closely related and provide a reliable measure of perceptions of honesty and trust in information. This indicates that the scores derived from these items are consistent and provide a solid basis for further analysis.

Only 5,4% of the respondents trust information of SMIs advertisement videos about supplements. In addition, 7,2% of respondents felt that SMIs give honest information. In other words, almost all respondents do not trust information in SMIs advertisements about supplements.

Most respondents 95.5% are neutral or disagree about large influencers (more than 100,000 followers) being more knowledgeable about supplements than small influencers (less than 10,000).

Perception of supplements

Most respondents (82.0%) believe that vitamin and/or mineral supplements have a positive influence on their health and (81.1%) that vitamin and/or mineral supplements can compensate for certain deficiencies in their diet. However, for 8.1% of the respondents has social media positively changed their view of supplements.

Purchase intention of supplements

Most participants (95.5%) indicated no intention to buy more supplements after SMIs advertise supplements in their videos. However, a statistically significant association emerged between trust in SMIs' information and purchase intention, as indicated by a regression coefficient of 0.35 (table 8). This suggests that trust in information from SMIs plays an important role in influencing purchase intention for supplements.

Actual purchase of supplements

The results show that 9,9% of the respondents indicated that they would purchase supplements after viewing ads about supplements by SMIs. These findings suggest that ads on social media have little effect on the actual purchase of supplements. This suggests that although ads may attract the attention of the target audience, they do not result in actual purchases of supplements by most respondents.

*Table 8: Results sub-study 2: Crude: Data analyses independent variables: frequency on social media daily, regularly watching videos of supplements advertisement, paying attention on the content of the advertisement in the video, and trusting information of SMIs in association with the dependent variables: changed perception, purchase intention, actual purchase (inspired on the study of Hermans, Boerman & Veldhuis, 2022)*

| | Changed perception | | | Purchase intention | | | Actual purchase | | |
|---|---|---|---|---|---|---|---|---|---|
| | b (se) | Beta | P | b (se) | Beta | P | b (se) | Beta | p |
| Constant | 0.13 (0.41) | | .743 | 0.09 (0.39) | | .808 | -0.32 (0.40) | | .433 |
| Frequency on social media daily | 0.14 (0.09) | 0.16 | .100 | 0.13 (0.08) | 0.16 | .101 | **0.18 (0.08)** | **0.20** | **.038** |
| Regularly watching videos of supplements advertisement | **0.16 (0.08)** | **0.20** | **.039** | 0.07 (0.07) | 0.09 | .359 | 0.10 (0.08) | 0.12 | .184 |
| Paying attention on the content of the advertisement in the video | 0.12 (0.08) | 0.14 | .134 | 0.05 (0.08) | 0.06 | .508 | 0.14 (0.08) | 0.14 | .088 |
| Trusting the information of SMIs<br><br>*Cronbach alpha= 0.84* | **0.27 (0.11)** | **0.22** | **.015** | **0.35 (0.10)** | **0.31** | **<.001** | **0.45 (0.11)** | **0.36** | **<.001** |

*Significant associations are bold. b = estimate/unstandardized regression coefficient; se = standard error associated with the b coefficient; beta = standardized regression coefficient. *** p < .001, ** p < .01, * p < .05, + p < .10*

*Table 9: Results sub-study 2: Adjusted: Data analyses independent variables: frequency on social media daily, regularly watching videos of supplements advertisement, paying attention on the content of the advertisement in the video, and trusting information of SMIs in association with the dependent variables: changed perception, purchase intention, actual purchase (inspired on the study of Hermans, Boerman & Veldhuis, 2022)*

| | Changed perception | | | Purchase intention | | | Actual purchase | | |
|---|---|---|---|---|---|---|---|---|---|
| | b (se) | Beta | P | b (se) | Beta | P | b (se) | Beta | P |
| Frequency on social media daily | 0.11 (0.50) | 0.12 | .098 | 0.26 (0.19) | 0.22 | .185 | **0.21 (0.09)** | **0.23** | **.045** |
| Regularly watching videos of supplements advertisement | **0.22 (0.02)** | **0.18** | **.026** | 0.05 (0.04) | 0.07 | .469 | 0.14 (0.09) | 0.13 | .247 |
| Paying attention on | 0.15 (0.10) | 0.19 | .189 | 0.08 (0.09) | 0.07 | .552 | 0.21 (0.11) | 0.18 | .106 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| the content of the advertisement in the video | | | | | | | | | |
| Trusting the information of SMIs<br><br>*Cronbach alpha= 0.84* | **0.36 (0.19)** | **0.31** | **.043** | **0.39 (0.12)** | **0.35** | **<.001** | **0.58 (0.18)** | **0.45** | **<.001** |

*Significant associations are bold. b = estimate/unstandardized regression coefficient; se = standard error associated with the b coefficient; beta = standardized regression coefficient. *** p < .001, ** p < .01, * p < .05, + p < .10*

Overall, the results show interesting findings. Table 7 provides the results of demographic variables, including means and standard deviations and in table 8 provides associations between variables and outcomes, where the findings in bold were significantly proven. The variables 'trusting information' and 'regular exposure to advertisements' show a significant positive association with perception. Furthermore, there is a significant positive association between the variable 'trusting information' and intention to purchase. Regarding actual purchases, the variables 'trusting information' and 'high frequency time on social media' show a significant positive association. In addition, Table 8 reports both the crude and adjusted models with the covariate 'gender' included. Moreover, the adjusted model, accounting for the covariate gender, shows no significant difference compared to the crude associations, indicating that gender is not considered as a confounder (Table 8 and 9).

## 5.1 Conclusion sub-study 2

Most participants reported watching influencer videos regularly, with an average time of just over 3 hours on social media (table 6). It was notable that most respondents paid little to no attention to advertisement in videos, possibly due to high exposure to social media videos in young adults. According to elaboration likelihood theory, young adults seem to take the peripheral route here, focusing less on content and more on superficial messages, such as emotions.

The findings in Table 8 offer valuable insights into how social media use affects perceptions, purchase intentions, and actual purchases of vitamin and mineral supplements among young adults. Although the hypotheses were partially supported by the results, indicating that social media plays a role in shaping these outcomes, the findings suggest a more nuanced understanding. Specifically, it was found that the use of social media can influence these outcomes in various ways, with trust in information from influencers on social media emerging as a particularly influential factor. Nevertheless, the three hypotheses were not fully confirmed, highlighting the complexity of the association between social media use and supplement-related behaviors among young adults.

These factors were associated with three measurable outcomes: altered perception, purchase intention and actual purchase. Interestingly, although almost all associations were positive. However, only one variable, trustworthiness, showed significant associations with all three measured outcomes (table 7). This highlights the importance of trust in SMIs in shaping perceptions and purchase intentions and buying related to supplements.

# 6. Discussion

The findings of this study suggest a positive influence of social media on young adults' perceptions and purchasing behavior regarding supplements. High use of social media, regularly watching advertising videos, paying attention to the video, and relying on information from influencers were all positively associated with changed perceptions, purchase intentions and actual purchases of supplements. Moreover, because young adults often take the peripheral route in the elaboration likelihood model, they were expected to not always put much effort into processing the video's message, resulting in temporary changes in attitude or perception. This is consistent with the results from this thesis' survey with ads for supplements on Instagram, where the abundance of exposure to videos may result in changes in perception or attitude among young adults.

The limited inclusion of companies, primarily Vitakruid and Viteezy, that have more than 5 ad videos about supplements raises questions about the representativeness of the sample and its consistency with the global literature. Further research is needed to determine whether these findings apply to various populations and marketing strategies. Additionally, leveraging tools such as the Influencer Monitor Tool could facilitate the rapid and efficient selection of videos for analysis, making the research process easier and faster.

Eight communication forms were available, however, only three forms are used in advertising videos, with documentary-style content being the most common among young adults. This can be inferred from the impact on the target audience of young adults, as documentary videos are popular among young adults due to the aesthetic way of filming and the relatability with their followers (Schellewald, 2021). Previous literature (Schellewald, 2021) indicates that, on the contrary, multiple different forms of communication are often used on the social media platform TikTok. This difference highlights the variability in approaches between different social media platforms and suggests that ads must be tailored to the specific platform to be effective.

Previous literature (Smith et al. 2020) found that trust in influencer-produced videos was significantly associated with perceptions, purchase intention and actual purchase of supplements. However, unlike the findings in this thesis, Smith et al. did not specifically highlight concerns about the reliability of the information presented in the videos, particularly regarding supplement dosage and potential side effects. This suggests that concerns about information reliability and the need for accurate dosing information and side effects may be specific to the study population of young adults or may require more attention in future studies.

Exposure to advertisement videos was positively associated with increased buying behavior among young adults. This finding underscores the importance of targeted marketing efforts to effectively influence consumer perceptions and behaviors. It suggests that a targeted approach to advertising on social media, particularly through influencer marketing, can be a powerful tool to drive buying behavior among young adults. By strategically targeting specific audiences and their preferences, marketers can increase their influence and have a greater impact on consumer behavior.

The limitations and strengths of this study include its focus on Dutch videos and a specific target population of Dutch young adults. As a result, the generalizability of the findings is limited to similar populations in the Netherlands and therefore not comparable at the European or global level. Another limitation of this thesis is that in the statistical analysis, the response options "totally disagree" to "totally agree" were included as continuous variables and then divided into 2 different categories, negative and positive. Linear regression was performed in this thesis, but logistic regression could be performed in a follow-up thesis. The results will probably not be very different, but it could possibly serve as an additional control. In addition, the response options of 1, 2 and 3 (including neutral) were included as negative or no change in perception or buying behavior, and 4 and 5 as positive change. However, neutral could have been included separately, or even as a positive change. The strengths include the comprehensive analysis of various factors affecting perceptions and buying behavior regarding supplements, which provide valuable insights into the mechanisms behind the influence of social media. Moreover, one of the strengths is the focus on the social media platform Instagram, due to a lack of literature on this topic (Schellewald, 2021).

Recommendations for future research include exploring legislative measures to regulate health claims and dosage recommendations in advertising videos. This is essential to reduce the risk of young adults purchasing supplements they do not need, especially given that young adults with a varied and healthy diet typically do not need supplements unless they belong to specific groups, such as those on vegan diets or pregnant women. There is also a need for influencers to share honest information about the recommended dosages and possible side effects of supplements. This can contribute to more responsible consumption of supplements and avoid unnecessary risks for consumers. Further research into the limited number of companies advertising through influencers, despite their effectiveness, may provide valuable insights for marketing strategies in the supplement industry.

In summary, this study highlights the prevalence of advertising for vitamin B, D, magnesium, zinc and other complexes on social media. Online advertising through influencers has a significant impact on the purchasing behavior of young adults, requiring targeted marketing efforts to maximize consumer engagement and influence. Further research is needed to address the identified limitations and provide a more comprehensive understanding of the role of social media in supplement marketing and consumption.

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# 9. Appendices

## 9.1 Appendix 1: Vitamin and mineral supplements

Table 1: vitamins with their functions, in which food products they are found, the RDA, Deficiency effect, UL, excessive effect, specific group, their function and the RDA of the specific group (RIVM, n.d-a.; Bird et al., 2017; Voedingscentrum, 2014) (n.d.= not determined).

Table 2: Minerals with their functions, in which food products they are found, the RDA, Deficiency effect, UL, excessive effect, specific group, their function and the RDA of the specific group (RIVM, n.d-a.; Bird et al., 2017; Voedingscentrum, 2014; Jones & Hodgson, 2020)

## 9.2 Appendix 2: SMIs of Vitakruid and Viteezy

Table 3: The company VitaKruid and their SMIs who promote supplements of the brand, with number of followers, number of videos, kind of supplements and the communication form of the SMI (n.a. = not applicable).

Table 4: The company Viteezy and their SMIs who promote supplements of the brand, with number of followers, number of videos, kind of supplements and the communication form of the SMI (n.a. = not applicable).

*Table 1: vitamins with their functions, in which food products they are found, the RDA, Deficiency effect, UL, excessive effect, specific group, their function and the RDA of the specific group (RIVM, n.d-a.; Bird et al., 2017; Voedingscentrum, 2014) (n.d.= not determined)*

| Vitamin | Function | Food products | RDA | Deficiency effect | UL | Excessive effect | Specific group | Specific group function | RDA specific group |
|---|---|---|---|---|---|---|---|---|---|
| A | Good vision, strengthening the immune system and promoting healthy skin | carrots, sweet potatoes, and liver | M: 1000 µg<br><br>F: 800 µg | Impaired immunity, growth and night blindness | 3000 µg | liver damage, eye disorders and skin abnormalities | n.a. | n.a. | n.a. |
| B<br><br>B1<br><br>B2<br><br>B3<br><br>B5<br><br>B6<br><br>B8<br><br>B11<br><br>B12 | Metabolism, energy production and healthy nerve function<br><br>B11 blood formation and proper nervous system function | whole grain cereals, meat, dairy and leafy vegetables<br><br>B11 vegetables, fruits and legumes | B1 1.1mg<br><br>B2 M: 1.5 F:1.1<br><br>B6 1.5 mg<br><br>B11 0.3 mg<br><br>B12 2.8 µg | B6 microcytic anemia<br><br>B11 Megaloblastic anemia<br><br>B12 pernicious anemia, can lead to neurological damage due to impaired myelination | B1 –<br><br>B2 –<br><br>B6 25ug<br><br>B11 1 mg<br><br>B12 - | B6 neurotoxic effects | B11<br><br>-Pregnant women (until eight weeks after conception)<br><br>-Women trying to become pregnant<br><br>B12 people with vegan lifestyle | B11<br><br>-oxygen transport to the baby, calcium for bone and tooth development<br><br>Prevention of neural tube defects<br><br>Prevent anemia and nerve damage | B11 400 µg/day<br><br>B12 2,8 µg/day |
| C | strengthening the immune system and promoting healthy skin. | fruits and vegetables (citrus fruits, kiwis and peppers) | 70 mg | Impaired wound healing and bleeding, decreased immunity | n.a. | Digestive problems and can cause oxalate stones | n.a. | n.a. | n.a. |
| D | strong bones and calcium absorption | fatty fish (omega-3 fatty acids), eggs and fortified dairy products | 2.5 µg | Increased risk of weakened bones, increased risk of osteoporosis and decreased immunity | 50 µg | Nausea, vomiting, fatigue and damage to the kidneys and other organs. | Breastfed infants<br><br>Children aged up to four years<br><br>Dark-skinned children and women aged 4 to 50 with dark or tanned skin who do not get outside enough or wearing a headscarf or veil<br><br>Pregnant and lactating women<br><br>Seniors (women aged 50 and above, men aged 60 and above) | Building bones and teeth<br><br>Decrease the risk on Rachitis<br><br>Compensate for the lower vitamin D supply<br><br>sunlight<br><br>Maintenance of bone mass, Preventing osteoporosis, muscle weakness and weaker teeth | 10 µg/day<br><br>10 µg/day<br><br>10 µg/day<br><br>5 µg/day<br><br>2,5 – 10 µg/day |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| E | powerful antioxidant that protects cells from free radical damage | Nuts, seeds and vegetable oils | M: 11.8-13 mg<br><br>F: 9.3- 9.9 mg | Neurological symptoms, muscle weakness and increased risk of blood clotting problems | 300 mg | Increased risk of bleeding and potentially harmful effects on cardiovascular health. | n.a. | n.a. | n.a. |
| K | blood clotting and maintaining healthy bones | leafy vegetables (spinach and kale) | n.a. | Increased risk of bleeding, bone abnormalities and impaired blood clotting | n.a. | Blood clots | Breastfed infants of up to three months | Blood clotting | 150 µg /day |

*Table 2: Minerals with their functions, in which food products they are found, the RDA, Deficiency effect, UL, excessive effect, specific group, their function and the RDA of the specific group (RIVM, n.d-a.; Bird et al., 2017; Voedingscentrum, 2014; Jones & Hodgson, 2020)*

| **Mineral** | **Function** | **Food products** | **RDA** | **Deficiency effect** | **UL (Upper limit)** | **Excessive effect** | **Specific group** | **Specific group function** | **RDA specific group** |
|---|---|---|---|---|---|---|---|---|---|
| Calcium | Strong bones and teeth | Diary, green leafy vegetables and almonds | 1000 mg | n.a. | 2500 mg | n.a. | People with vegan lifestyle | n.a. | n.a. |
| Magnesium | Muscle function and nerve function | Green leafy vegetables, nuts, seeds, whole grains, legumes, avocado and bananas | M: 300-350 mg<br><br>F: 250-300 mg | n.a. | 250 mg (from food) | n.a. | People with magnesium deficiency<br><br>Pregnant women | help with muscle cramps and tension<br><br>muscle function of the baby | n.a. |
| Iron | Support oxygen transport in blood | legumes, whole grain cereals and tofu | M: 9-11 mg<br><br>F: 15-16 mg | n.a. | n.a. | n.a. | People with anemia or iron deficiency<br><br>Pregnant women | oxygen transport to the baby, calcium for bone and tooth development | n.a. |
| Iodine | Regulates thyroid function | Iodinez salt, seafood and seaweed | 100 µg | n.a. | 600 µg | n.a. | Pregnant women | Thyroid function and brain development of the baby | n.a. |
| Copper | Supports enzyme function | Nuts, seeds, whole grains, shellfish and liver | 1.5-3.5 mg | n.a. | 5 mg | n.a. | n.a. | n.a. | n.a. |
| Zinc | Healthy immune system, wound healing and growth | Meat, shellfish, legumes, seeds, nuts, dairy and whole grains | M: 7-10 mg<br><br>F:6-9 mg | n.a. | 25 mg | n.a. | Young adults during cold season<br><br>Pregnant women | Cell development | n.a. |
| Selenium | Protecting cells from oxidative damage and supporting healthy thyroid function | Seafood, meat, eggs, dairy, nuts, seeds and vegetables | 50-150 µg | n.a. | 300 µg | Selenium-intoxication, damage to peripheral nervous system, deformities of nails, teeth and hair. | People who are deficient or live in areas with low levels of selenium in the soil | n.a. | n.a. |

*Table 3: The company VitaKruid and their SMIs who promote supplements of the brand, with number of followers, number of videos, kind of supplements and the communication form of the SMI (n.a. = not applicable).*

| SMIs | Followers (in 1000) | Number of videos | Likes *counted manually | Kind of supplements | Content | Communication form | Communication styles | Health claim |
|---|---|---|---|---|---|---|---|---|
| Arie Boomsma (arieboomsmainstagram) | 192,0 (macro) | 1 | 100* | Vitamin D, magnesium | Information vlog: tips about supplements | Explanatory | Explicit in video | n.a. |
| Elise Milou (elisemilou) | 55,4 (micro) | 3 | 515<br><br>1.954<br><br>468 | Multi day women, multi night women, magnesium<br><br>Vitamin D3, B12, multiday women, multi night women<br><br>Multiday women, multi night women, vitamin B12, D, magnesium | Daily vlog: morning routine<br><br>Daily vlog: morning routine vs. real morning routine<br><br>Daily vlog: self-care routine | Documentary<br><br>Comedy<br><br>Documentary | Explicit in text<br><br>Explicit in text<br><br>Explicit in text | Multi day and night women: support energy and concentration<br><br>Magnesium: state of mind, concentration, and beneficial effect on the reduction of fatigue<br><br>Energy level increase<br><br>n.a. |
| Gwen van Poorten (gwenvanpoorten) | 214,0 (macro) | 1 | 1.319 | Vitamin C, magnesium, | Information vlog: tips about supplements | Explanatory | Explicit in video | n.a. |
| Rianne Meijer (rianne.meijer) | 1.500,0 (mega) | 1 | 29.139 | Multiday mama, multi night mama, Vitamin B11, vitamin D, zinc, magnesium, | Information vlog: tips about pregnancy | Explanatory | Explicit in video and text | Magnesium: development of the baby |
| Lisa Stel (lisagoesvegan) | 54,8 (micro) | 2 | 100*<br><br>100* | Vitamin B12, C<br><br>Vitamin B12 | Daily vlog: what I eat in a day<br><br>Information vlog: tips about eating plant-based | Documentary<br><br>Explanatory | Explicit in video<br><br>Explicit in text | n.a.<br><br>Vitamin B12: body needs it om goed te kunnen functioneren |
| Romy Koldenhof (romykoldenhof_) | 81,5 (micro) | 1 | 100* | Multiday mama, multi night mama, vitamin B12, C, D3 | Information vlog: tutorial about supplements during pregnancy | Explanatory | Explicit in video and text | Help during pregnancy, like fatigue |
| Kirsten (mijngelukje) | 15,6 (micro) | 1 | 222 | Multiday mama, multiday, multi night | Morning routine | Documentary | Explicit in text | n.a. |

| SMIs | Followers (in 1000) | Number of videos | Likes *counted manually | Kind of supplements | Content | Communication form | Communication styles | Health claim |
|---|---|---|---|---|---|---|---|---|
| Marije (fitmetmarije) | 89.6 (micro) | 2 | 100*<br><br>681 | Magnesium<br><br>Magnesium, multi day women, multi night women | Daily vlog: sport routine<br><br>Daily vlog: what I eat in a day | Documentary<br><br>Documentary | Explicit in text<br><br>Explicit in video and text | Magnesium: good for muscles and nervous system and reduction of fatigue and lethargy<br>Magnesium: promotes muscle recovery |
| Saar (xsaarofficial) | 51,5 (micro) | 1 | 762 | Vitamin C, B8 (biotine), B12 | Travel vlog: Dubai | Documentary | Explicit in video and text | n.a. |
| Suzanne den Toom (wateetjedanwel) | 69,1 (micro) | 4 | 271<br><br>328<br><br>188<br><br>529 | Vitamin D3<br><br>Mineral complex<br><br>Mineral complex, Vitamin B, B12, C, D3<br><br>Vitamin D3, mineral complex, B12 | Daily vlog: what I eat in a day as a vegan<br><br>Daily vlog: night routine<br><br>Daily vlog: what I eat in a day & vitamin routine<br><br>Daily vlog: what I eat in a day as a vegan | Documentary<br><br>Documentary<br><br>Documentary<br><br>Documentary | Explicit in video and text<br><br>Explicit in text<br><br>Explicit in text<br><br>Explicit in text | n.a.<br><br>Mineral complex: beneficial for thyroid and chromium that helps keep blood sugar levels stable.<br><br>n.a.<br><br>Vitamin B12: important for vegans because only found in animal food products.<br>Mineral complex: beneficial for bones, hair, and nails |
| Daisy Oppelaar (daisyoppelaar) | 35,7 (micro) | 1 | 131 | Vitamin C | Travel vlog: Bali | Documentary | Explicit in video and text | Vitamin C: Strengthening of immunity |
| Dafne Muilwijk (dafnemuilwijk) | 17,2 (micro) | 1 | 122 | Vitamin B12, C, magnesium | Information vlog: tips about healthy hair | Explanatory | Explicit in video (text) | Healthy hair |
| Lise van Wijk (lisevanwijk) | 91,0 (micro) | 1 | 3.171 | Vitamin B12 | In the past vs now | Documentary | Explicit in video and text | n.a. |
| Lieke Biemans (liekebiemans) | 72,7 (micro) | 1 | 100* | Magnesium, vitamin C | Daily vlog: life as a mom | Documentary | Explicit in video | n.a. |
| Rosa Sofia Kolen (rosasofiakolen) | 48,4 (micro) | 1 | 100* | Multi day women | Information vlog: tips for healthy hair | Explanatory | Explicit in video | Healthy hair from inside the body |
| Lisa Damen – Van der Veen (lisadamenv) | 47,6 (micro) | 1 | 100* | Magnesium, multi day mama | Daily vlog: morning routine | Documentary | Explicit in text | Help during pregnancy |
| Nina Pierson (ninapierson) | 65,6 (micro) | 1 | 194 | Magnesium, multi day women, multi night women | Vlog: supplements | Documentary | Explicit in video (text) and text | Multi day women: energy, alertness, and concentration<br>Multi night women: rest, recovery, and relaxation |

| SMIs | Followers (in 1000) | Number of videos | Likes *counted manually | Kind of supplements | Content | Communication form | Communication styles | Health claim |
|---|---|---|---|---|---|---|---|---|
| Noor Oostenveld (noor.oostenveld) | 18,0 (micro) | 1 | 357 | Multi night women, sleep complex | Daily vlog: night routine | Documentary | Explicit in video | n.a. |

*Table 4: The company Viteezy and their SMIs who promote supplements of the brand, with number of followers, number of videos, kind of supplements and the communication form of the SMI (n.a. = not applicable)*

| **SMIs** | **Followers (in 1000)** | **Number of videos** | **Likes *counted manually (max 100)** | **Kind of supplements** | **Content** | **Communication form** | **Communication style** | **Health claim** |
|---|---|---|---|---|---|---|---|---|
| Nikkie Plessen (nikkie_official) | 517,0 (macro) | 1 | 100* | Daily personalized vitamins | Information vlog: explain supplement | Comedy | Explicit in video and text | n.a. |
| Lotte van Leeuwen (lottleeuw) | 240,0 (macro) | 1 | 1.901 | Daily personalized vitamins | Daily vlog: daily routine | Documentary | Explicit in video and text | Vitamins: positive effect on the immune system, keep energy levels up and good for muscle function |
| Iris Sijtsma (Irissijtsmadressage) | 16,5 (micro) | 1 | 197 | Daily personalized vitamins | Daily vlog: a day in my life | Documentary | Explicit in video and text | n.a. |
| Benthe Hoekstra (Benthefh) | 11,4 (micro) | 1 | 39 | Daily personalized vitamins | Information vlog: tutorial | Explanatory | Explicit in video and text | n.a. |
| Chavi de Gier (x.chavi) | 22,5 (micro) | 1 | 93* | Daily personalized vitamins | Information vlog: tutorial | Explanatory | Explicit in video and text | n.a. |
| Jolijt Lub (jolijtlisanne) | 13,6 (micro) | 1 | 217 | Vitamin B | Daily vlog: a day in my life | Documentary | Explicit in text | n.a. |
| Leonie (x_leoniie) | 11,5 (micro) | 1 | 67* | Vitamin B12 | Daily vlog: breakfast | Documentary | Explicit in text and video | n.a. |
| Ruby-ann Munsterhuis (ruby_annmunsterhuis) | 21,5 (micro) | 1 | 2* | Vitamin C | Daily vlog: morning routine | Documentary | Explicit in tekst and video | n.a. |
| Michelle Kemps (michellekemps) | 20,2 (micro) | 1 | 23* | Daily personalized vitamins | Daily vlog: morning routine | Documentary | Implicit | n.a. |
| Babette Peters (babettepeters_) | 10,0 (micro) | 1 | 40* | Vitamin D | Daily vlog: morning routine | Documentary | Explicit in text | n.a. |
| Linda (snoepgezond) | 25,3 (micro) | 1 | 64 | Vitamin D, magnesium | Daily vlog: what I eat in a day (holiday edition) | Documentary | Explicit in text | n.a. |

## 9.3 Appendix 3: Qualtrics survey

*Geachte deelnemer,*

*Allereerst wil ik je bedanken dat je de tijd wilt nemen om deze vragenlijst in te vullen. Ik ben student Voeding en Gezondheid aan Wageningen University & Research en schrijf momenteel mijn master thesis, waar deze enquête een onderdeel van is. Het doel van de studie is om de invloed van social media videos op de perceptie en het koopgedrag van vitamine en mineraal supplementen te onderzoeken. Je kunt alleen deelnemen aan het onderzoek als je tussen de 18 en 25 jaar oud bent, social media gebruikt, vitamine of mineraal supplementen gebruikt of ooit hebt gebruikt en niet zwanger bent op dit moment. Het invullen van de enquête duurt ongeveer 3 minuten.*

*De enquête begint met algemene vragen, gevolgd door vragen over sociale media en supplementen. Ik wil je vragen om de stellingen en vragen zorgvuldig te lezen en te beantwoorden. De gegevens die via de vragenlijst worden verzameld, zijn volledig anoniem en worden alleen voor wetenschappelijke doeleinden gebruikt. Als u ergens bezwaar tegen heeft, dan kan dat worden aangegeven bij de open notitie aan het einde van de vragenlijst.*

*( ) Ik begrijp dat deelname vrijwillig is en dat ik mag stoppen als ik niet meer mee wil doen*

*( ) Ik wil deelnemen en ga akkoord dat gegevens worden gebruikt voor wetenschappelijke doeleinVeel succes!*

*Marlous Jansen*

***Allereerst zullen er een paar algemene vragen komen. Probeer de vragen zo eerlijk mogelijk te beantwoorden.***

1.Wat is je geslacht?

2.Wat is je leeftijd?

3.Wat is je hoogst behaalde opleidingsniveau?

4.Wat is je gewicht? (in kg)

5.Hoelang ben je? (in m)

***De volgende stellingen gaan over levensstijl. Probeer de stellingen zo eerlijk mogelijk te beantwoorden.***

6.Hoeveel dagen per week heeft u tenminste 30 minuten per dag lichaamsbeweging die tenminste even inspannend is als stevig doorlopen of fietsen?

7.Hoeveel dagen per week eet je minimaal 200 gram groente? (Ligthart, 2013)

8.Hoeveel dagen per week eet je tenminste 2 stuks fruit? (Ligthart, 2013)

9.Hoeveel dagen per week slaap je gemiddeld 7,5 - 9 uur per nacht? *Inspired on (Ligthart, 2013)*

10.Hoeveel glazen alcohol drink je gemiddeld per week? *Inspired on (Ligthart, 2013)* 0-50

11.Hoeveel sigaretten per week rook je? *Inspired on (Ligthart, 2013)* 0-50

12.Volg je een bepaalde eetstijl?

**Er volgen hierna stellingen waarbij je aan geeft of je het er helemaal mee oneens bent tot helemaal mee eens. *Probeer de stellingen zo eerlijk mogelijk te beantwoorden*, er is geen goed of fout antwoord.**

***De volgende stellingen gaan over social media en influencers. Er zijn geen goede of foute antwoorden. Probeer de stellingen zo eerlijk mogelijk te beantwoorden….***

13.Hoelang besteed je elke dag gemiddeld op social media zoals Instagram, TikTok etc.? (in minuten)

14.Ik heb een of meerdere accounts op social mediasites

15.Ik kijk regelmatig videos van influencers op hun social media

16.Ik neem advies aan van influencers over gezondheidsdoeleinden

17.Ik besteed aandacht aan reclamevideo's op social media

***Dit deel van de vragenlijst bevat stellingen gerelateerd aan de consumptie, perceptie en het kopen van vitamine en/of mineraal supplementen.***

18.Ik neem momenteel vitamine en/of mineraal supplementen of heb deze supplementen genomen in het verleden

19.Vitamine en/of mineraal supplementen kunnen helpen om bepaalde tekorten in je voedingsdieet te compenseren

20.Ik neem vitamine en/of mineraal supplementen voor topsport

21.Ik zie influencers die vitamine en/of mineraal supplementen aanbevelen of er informatie over geven

22.Ik ben beïnvloed om vitamine en/of mineraal supplementen te kopen na het bekijken van video's van influencers waarin ze reclame maken voor deze supplementen

23.Sociale media influencers hebben mijn kijk op vitamine en/of mineraal supplementen positief veranderd

24.Vitamine en/of mineraal supplementen kunnen een positieve invloed hebben op mijn gezondheid

25.Ik koop bij voorkeur vitamine en/of mineraal supplementen die worden aanbevolen door influencers op social media

26.Klik hieronder de vitamine en mineraal supplementen aan die je momenteel gebruikt of hebt gebruikt in het verleden (je kan meerdere antwoorden kiezen)

***Tot slot, beantwoord de volgende stellingen die gaan over informatie van influencers in correlatie met supplementen.***

27.Ik denk dat influencers die reclame maken voor vitamine en/of mineraal supplementen eerlijke informatie geven

28.Ik vertrouw de informatie van influencers als het gaat om vitamine en/of mineraal supplementen

29.Grote influencers (meer dan 100.000 volgers) hebben meer kennis over vitamine en/of mineraal supplementen waar ze reclame voor maken dan kleine influencers (minder dan 100.000 volgers).

***Je hebt de vragenlijst volledig ingevuld. Bedankt voor je deelname. Als je vragen, feedback of bezwaren hebt, voel je dan vrij om ze hier met mij te delen.***