FACULTY OF
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AN ANALYSIS OF TIKTOK FOOD TRENDS AND THEIR IMPACT ON USERS' EMOTIONS AND DIETARY CHOICES

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1 Abstract

Introduction

The rapid rise of TikTok has significantly influenced food and nutrition-related content, especially among younger users. This study examines the connection between TikTok food content and users' dietary practices, aiming to understand its broader public health implications.

Methods

A mixed-methods approach was used, incorporating three data collection methods: a hashtag trend analysis to monitor popularity shifts, a participant-driven video collection to explore content themes, and a user survey to capture emotional and behavioural responses. Emotional responses were measured using the Positive Eating Scale and the Self-Assessment Manikin.

Results

The analysis of TikTok's food-related content revealed distinct trends. The hashtag trend analysis identified a significant increase in #HighProtein, reflecting a growing focus on fitness and health-conscious eating. In contrast, the popularity of #WhatIEatInADay stabilised, suggesting a shift towards other content formats. The participant-driven video collection highlighted dominant themes, such as transformation and motivation in #WeightLoss content, often featuring before-and-after comparisons and dieting advice. Meanwhile, sensory-rich content like #Mukbang and #EatWithMe videos engaged viewers through ASMR (Autonomous Sensory Meridian Response) elements and communal eating experiences. Survey results underscored the emotional impact of this content, revealing that many users are inspired to change their dietary behaviours, though concerns about the negative effects of idealised content on body image were also evident. The SAM analysis showed that different content elicited varied emotional responses, indicating a complex psychological effect.

Conclusions

The study showed a growing interest in high-protein diets and a declining fascination with traditional food diary formats like #WhatIEatInADay. The duality in TikTok's content was highlighted, balancing between promoting health-conscious trends and indulging in sensory-rich experiences. The questionnaire results further underscored TikTok's profound impact on users' dietary practices, with emotional engagement playing a crucial role in shaping behaviours. Policy recommendations are proposed to mitigate risks, promote accurate nutritional information, and protect mental well-being, while future research should explore these dynamics in greater depth through longitudinal studies.

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4 Abbreviations

ANOVA	Analysis of Variance
ASMR	Autonomous Sensory Meridian Response
DMP	Data Management Plan
FOMO	Fear of Missing Out
GDPR	General Data Protection Regulation
HDL	High-Density Lipoprotein
HSD	Honestly Significant Difference
PAD	Pleasure-Arousal-Dominance
PES	Positive Eating Scale
PWE	Pleasure When Eating
SAM	Self-Assessment Manikin
SCT	Social Cognitive Theory
SEO	Search Engine Optimization
SLT	Social Learning Theory
SWE	Satisfaction with Eating
UGT	Uses and Gratification Theory

5 Introduction

Social media has become an integral part of daily life, profoundly reshaping communication, social interactions, and personal habits[1–3]. Platforms like TikTok, which blend entertainment with social engagement, have emerged as powerful influences on user behaviour, especially among younger demographics, deeply embedded in digital culture. Millions of users on TikTok share content related to food, diets, and body image, with 15% of all TikTok videos falling into food and cooking categories. These videos feature a wide range of content, from dietary advice and healthy eating tips to the latest food trends and cooking challenges[4].

However, the widespread dissemination of food-related content on TikTok is not without its concerns. Only 1.4% of videos offering nutritional advice are created by qualified professionals, such as registered dietitians or nutritionists[5,6]. This raises concerns about the quality and accuracy of the information being shared. The potential consequences are particularly alarming when considering that even college students – who are generally more capable of critical thinking – can be misled by this information[7]. This unexpected vulnerability underscores the heightened risk for younger audiences, easily influenced by popular content, and less likely to critically evaluate the credibility of sources, making them more prone to being influenced by their dietary choices and body image perceptions. Research by Brenner[8], Kwon[9], and Roeder[10] highlights the significant effects of social media on body image and eating behaviours, while studies by Andreassen[11], Kuss[12], and Turkle[13] reveal correlations between social media engagement and issues like anxiety and depression.

Popular trends such as Mukbang - an eating webcast trend that originated in South Korea, where the host consumes a large quantity of food while interacting with a live audience[14]- further complicate the media landscape. While engaging and often entertaining, these formats frequently blur the line between entertainment and education, potentially promoting unrealistic expectations and unhealthy behaviours. Similarly, the “What I Eat In A Day” format, which showcases the content creator’s daily food intake, can also spread misleading information when personal choices are presented as universally applicable advice[15]. These trends, while popular, may inadvertently contribute to unhealthy eating habits or distorted perceptions of what constitutes a balanced diet.

While previous research has extensively examined the effects of nutritional advice and body image messages in traditional media, there is a lack of studies focusing specifically on the impact of TikTok content. This master’s dissertation aims to fill this research gap by exploring the relationship between TikTok food content and users’ dietary practices. The study examines the prevalence and themes of food-related content on TikTok, aiming to assess its potential influence on viewers' dietary choices

and eating behaviours, with a particular focus on young adults aged 18-26 years – a demographic that is both highly active on social media and highly susceptible to its influences.

To achieve this, the research employs a three-pronged data collection approach. First, it assesses the popularity of selected popular hashtags related to food and nutrition to identify trends and the types of content that gain traction on the platform. Second, a participant-driven video collection is conducted to explore patterns, key messages, formats, and trends within the TikTok food and nutrition content landscape. Finally, a questionnaire is used to gather users' emotional responses to food-related TikTok videos, providing insights into how this content resonates with viewers and influences their attitudes and behaviours. The study also examines additional factors, such as demographic characteristics, body confidence scores, TikTok usage patterns, and relationship with food, to understand how these factors may influence emotional responses to TikTok content.

The findings of this research offer valuable insights into how audiences engage with food-related content on TikTok and how receptive they are to different types of messages. By identifying opportunities for targeted interventions and educational initiatives, this study contributes to the broader discourse on digital literacy and public health. Based on these insights, the study proposes policy recommendations aimed at reducing the spread of harmful content and promoting accurate, beneficial information on TikTok, thereby supporting healthier dietary practices among its users.

6 Background

6.1 Analysing media influence on nutrition: a theoretical approach

The influence of media on decision-making processes is a topic of significant interest in contemporary society, especially in the context of food and nutrition. Traditional media, characterised by one-way communication, has been integral to human communication for centuries. Despite the rise of new media, the traditional ones remain a primary source of information for many, often perceived as more credible than newer sources like blogs and social media platforms. This credibility has allowed traditional media to wield substantial influence in shaping public perceptions of food and nutrition[16,17].

To provide a robust analytical framework for exploring the influence of modern media, this chapter draws on several key theoretical frameworks that have been foundational in media studies, particularly those developed to understand the dynamics of traditional media. These theories were selected for their relevance in explaining how media influences decision-making processes and societal outcomes. While these theories originated from the study of traditional media, they offer valuable insights that can be extended to newer forms of media, such as TikTok. Each theory proposes a distinct perspective on how media content is consumed, interpreted, and integrated into daily life, thereby shaping societal outcomes in the domain of food and nutrition. Examining these theories establishes a theoretical foundation for analysing how TikTok, as a modern social media, influences users' dietary choices and nutritional behaviours, allowing for a comprehensive understanding of the evolving media landscape and its multifaceted impact on food-related decision-making.

The Uses and Gratifications Theory (UGT) originated from research that assesses why specific media and content appeal to different people[18,19]. UGT focuses on media consumers as active users who choose media to fulfil their needs and desires. It posits that media use is motivated and goal-oriented, driven by individual social and psychological factors, and competes with other forms of communication for fulfilling needs[19]. Since people are active media users, media messages do not strongly affect them unless they align with the users' existing needs and desires[19–21]. Indeed, a study has found that exposure to food content on social media platforms like Instagram can lead to increased cravings and even impulsive eating behaviours, as users seek to fulfil their emotional or social needs through food[21]. UGT identifies various needs gratified by media use, including cognitive needs (information and knowledge), affective needs (emotional and pleasurable experiences), integrative needs (credibility and stability), social integrative needs (strengthening contact with others), and

tension-release needs (escaping or reducing stress)[18,19,22]. UGT helps explain why different types of food-related media content appeal to different audiences. For example, individuals seeking to improve their health might seek out educational content about nutrition, whereas others might engage with cooking shows or food blogs for entertainment or social connection[21,23]. Understanding these motivations can help identify how media content shapes dietary choices and nutritional behaviours, as users gravitate towards content that aligns with their personal needs and desires.

Building upon the UGT, the Agenda Setting Theory suggests that traditional media sets the public agenda by highlighting certain issues while downplaying others. This selective framing influences individuals' perceptions of reality and the issues they prioritise when making decisions[24–26]. Agenda setting occurs through a cognitive process known as accessibility, where media provides the most relevant information, portraying the major issues of society and reflecting public concern[19,24]. Gatekeeping, a central concept within this theory, refers to the role of media editors and managers in controlling content selection and presentation. Priming, another critical aspect, involves media outlets emphasising specific events or issues through repeated coverage, shaping public perception and attitudes[17,24]. In the realm of nutrition and food, Agenda Setting Theory explains how media coverage can influence public interest and policy decisions related to food and health issues[17,27–29]. For instance, the media's focus on certain diets or health trends can lead to widespread public adoption, sometimes regardless of the scientific validity of those trends. This was evident in the media's promotion of low-fat diets in the 1990s, which led to a significant shift in public dietary habits, despite later evidence that such diets might not be as beneficial as once thought[29]. Overall, mass media plays a critical role in shaping public health agendas by repeatedly highlighting the benefits of certain diets or the risks associated with specific foods, bringing these topics to the forefront of public consciousness and setting priorities within the broader food and health sectors[30].

The Cultivation Theory, introduced in the 1960s, examines television's long-term influence on viewers, suggesting that prolonged exposure to media shapes how consumers perceive the world and conduct themselves[17,31]. This theory highlights the concepts of mainstreaming, where repeated media exposure leads to a uniform perspective among diverse audiences, and resonance, where media content aligns with viewers' real-life experiences, reinforcing media effects[17,29,32]. Despite criticisms regarding its methodological approaches and assumptions, Cultivation Theory remains significant in understanding media's impact on societal views and behaviours, particularly in understanding how long-term exposure to media depictions of food and body image can influence public perceptions and behaviours[21]. For instance, constant exposure to television shows or advertisements that promote

unhealthy eating habits or idealized body types can contribute to individuals adopting these behaviours or aspiring to these body standards, believing them to be normal or desirable[9,10,33].

Social Learning Theory (SLT), proposed by Albert Bandura, build on the principles of traditional behaviourism[17,34] —which suggests that all behaviours are acquired through conditioning influenced by environmental stimuli[17,19,35]— by further emphasising the role of cognitive factors in learning[36]. It posits that people learn new behaviours through observation and imitation of others, highlighting the importance of mediational processes such as attention, retention, motor reproduction, and motivation[19,29]. This theory underscores the significance of observational learning, where individuals acquire knowledge, skills, and attitudes by observing other's actions and outcomes[36]. In the context of food and nutrition, SLT explains how individuals learn about new recipes, dietary practices, or health behaviours by observing cooking shows, food influencers, or advertisements[10,33].

Social Cognitive Theory (SCT) expands upon SLT by incorporating additional cognitive processes like attention, memory, and self-regulation, positing that learning occurs within a social context through dynamic interactions between the person, environment, and behaviours[37,38]. SCT emphasises social influence, self-efficacy beliefs (individuals' beliefs in their capabilities), and outcome expectations (beliefs about the consequences of behaviour)[39]. Individuals selectively engage with media messages relevant to their interests and goals, shaping their attitudes and behaviours accordingly[39]. Research has shown that exposure to social media content that emphasises the benefits of a particular diet can increase individuals' confidence in their ability to make healthier food choices and achieve the desired health outcomes[8]. This theory, therefore, highlights the importance of cognitive processes in the interaction between media and food-related behaviours.

Festinger's Cognitive Dissonance Theory can further elucidate how individuals might experience discomfort when media messages conflict with their pre-existing knowledge or beliefs about nutrition, leading them to adjust their attitudes or behaviours to reduce this dissonance[40]. They may change their beliefs or behaviours to align more closely with the new information to alleviate this discomfort. In the context of media influence on nutrition, this theory helps explain why someone who has always believed that a high-carb diet is unhealthy might start incorporating more carbohydrates into their diet after exposure to media promoting the benefits of whole grains and fibre. The media's role in presenting conflicting nutrition information can thus lead to changes in public behaviour as individuals seek to resolve the dissonance between their beliefs and the new information they are consuming.

6.2 Traditional media's role in shaping nutritional choices

Before the advent of social media, traditional media played a crucial role in disseminating information about food and nutrition. Print media, particularly magazines, have been renowned for their influence on consumer knowledge in these areas[41]. Advertisers have always used magazines as a crucial source of interaction with the consumer and have based their communication on inviting readers to recognise themselves in the images they propose among those pages. As a result, readers could be led to believe that by consuming those products, they will obtain the attributes of the image projected, such as beauty or success[42]. The messages conveyed through these channels can significantly impact food choices by both reflecting and potentially shaping social norms related to food consumption and health[43]. Researchers have investigated the types of messages spread through magazines, especially those directed at women, and examined how these messages are perceived by readers and whether they affect their behaviours and attitudes.

For instance, a study in Canada analysed the content of the magazine *Chatelaine* from 1928 to 1986[44]. The findings revealed a notable shift in advertising trends over time, with a significant increase in advertisements for products with low nutrient density, while ads for basic food ingredients declined. This change was strongly associated with the evolving social role of women during that period[44]. Additionally, these promotional messages increasingly emphasised the avoidance of specific elements such as calories, additives, and sugars, particularly in low-nutrient products. This shift reflects broader societal concerns about diet and health, even as it potentially misleads consumers about the nutritional value of the promoted products[44].

Figure 1: Food advertisements and messages in three issues of Chatelaine, respectively from 1953[45], 1970[46], and 1974[47].

Australian researchers observed similar trends in 1992, noting that advertisements in young women's magazines often lacked dietary recommendations and instead promoted lifestyle ideas, associating specific foods, such as alcohol, with success[48]. Building on the shifts observed in the *Chatelaine* magazine, a similar trend was observed in the USA during the 1990s, where food and beverage

advertisers progressively increased their use of nutrition claims[49]. However, it remains uncertain whether this rise was due to a genuine interest in nutrition or if the presence of such claims in advertisements generated interest in the nutritional properties of food. Notably, while these claims had the potential to support health professionals' messages, they also risked misleading consumers with incomplete or irrelevant information[49]. This trend paralleled findings from an analysis of magazines targeting Black audiences, where a predominant focus on alcoholic beverages overshadowed crucial health-promoting messages[50]. This neglect represented a missed opportunity to address the rising obesity rate and positively influence dietary habits within a vulnerable demographic[50].

Magazines in the 2000s showcased a significant shift in focus. Women's magazines often featured extremely thin celebrities and promoted drastic diets to achieve such body types (Figure 2a)[51], while men's magazines promoted muscular and fit bodies (Figure 2b), often shaming those who did not meet these standards and offering miraculous solutions for body transformation. These portrayals have been linked to harmful weight-related behaviours in both boys and girls[50].

Figure 2: 2a) Covers of women's magazines from the 2000s. Respectively, Glamour 2009[52], Star 2000[53], Us 2009[54] (top); 2b) Covers of men's magazines from the 2000s. Respectively, Men's Fitness 2000[55], Men's Health 2009[56], Men's Health 2009[57] (bottom).

The widespread presence of dieting and weight-loss content in magazines has been shown to significantly contribute to harmful weight-related behaviours, especially among adolescents[58]. Research consistently finds a moderate to strong positive correlation between the frequent reading of health and fitness magazines and the adoption of extreme weight loss and dieting practices[59]. This relationship is largely driven by the magazine's portrayal of unattainable beauty standards[58]. For

instance, magazines often promote the thin-ideal body type, which many young readers internalise as a societal norm. This internalisation can lead to body dissatisfaction, as readers, especially young girls, struggle to achieve unrealistic standards[60–62]. Moreover, the content in these magazines does not just promote dieting but often glorifies extreme measures such as fasting, the use of diet pills, and other unhealthy behaviours. For example, one longitudinal study found that frequent readers of dieting articles were significantly more likely to engage in unhealthy weight-control behaviours, such as skipping meals, using laxatives, or even vomiting, compared to their peers who did not engage with such content[58]. The impact of these media messages is further exacerbated by the lack of critical media literacy among young readers, who may not recognise the unrealistic nature of the beauty standards being promoted. Consequently, these magazines inadvertently reinforce the desirability of extreme thinness, leading to both conscious and unconscious comparisons that fuel body dissatisfaction and promote disordered eating behaviours[59–62]. In boys, while the association between magazine reading and unhealthy weight control behaviours is less pronounced than in girls, there is still evidence of negative impacts. Boys may be influenced by content that emphasises muscularity and low body fat, leading to their own set of body image concerns[60].

Social comparison plays a significant role in driving body image and eating disturbances, especially when readers critically engage with the images presented in magazines[63]. Studies have identified a correlation between frequent magazine reading and the development of body image and eating disturbances in both boys and girls, with a stronger impact on young girls[63]. The specific types of images that readers compare themselves to within these magazines influence the prevalence of body image and eating disturbances-related behaviours[26]. For instance, images promoting thin ideals are more likely to lead to unhealthy weight control behaviours among girls[63]. In contrast, a longitudinal study revealed that while frequent reading of magazine articles about dieting and weight loss strongly predicted unhealthy weight-control behaviours in adolescent girls, the effect was not as pronounced in boys, who seemed to be more affected by muscular images than by those promoting thinness[64].

Television, another form of traditional media, has a profound impact on body image and nutrition-related behaviours as well. Programs that often stereotype women, such as soaps, serials, and movies, have been positively correlated with body dissatisfaction and the internalisation of thin ideals[59], with soap operas and music videos being particularly influential[65]. While both television viewing and magazine reading contribute to body dissatisfaction, though, the mechanisms differ; television exposure directly influences dissatisfaction, while magazine reading fosters the internalisation of thin ideals, leading to dissatisfaction indirectly[59]. Despite adolescents being aware of the unrealistic nature

of media portrayals, the sheer volume of these images still influences their pursuits of thin ideals. Further research indeed emphasises that frequent exposure to dieting content on television strongly predicts weight-control behaviours, particularly in adolescent girls, underscoring the significant long-term impact of those media messages[60].

A 1996 study analysed how young women perceived themselves and explored correlations between their self-perceptions and television exposure. The study used the Drive for Thinness score and assessed body satisfaction levels[63]. Baseline body satisfaction and confidence were strong predictors and potential moderators of the relationship between media and body image[60]. Both the amount of television watched, and the type of show were relevant factors. Specifically, programs likely to stereotype women, like soaps, serials, and movies, were positively correlated with body dissatisfaction. This suggests that repeated exposure to thin idealized female figures on television may normalise such figures, emphasizing the cumulative effect of television's portrayal of conceptions of reality[60]. This phenomenon is well explained by the Cultivation Theory, which suggests that prolonged media exposure shapes viewer's perceptions of reality, leading them to adopt these mediated ideals as the norm[31,32]. Furthermore, music videos were uniquely predictive of the drive for thinness, recognized as a primary indicator for anorexia nervosa, likely because they present societal standards for women's appearance in a highly focused manner, without any broader context[60]. This makes it difficult for viewers to disengage from these images, much like the challenge of consuming magazines without engaging with the idealised images they portray[63]. In parallel, a focus group study conducted in Australia in 2000 demonstrated that adolescents, although aware that media portrayals of women are unrealistic and manipulated, are still influenced by the sheer volume and intensity of these images, often striving towards a thin ideal[59].

The level of exposure to media is not uniformly correlated with viewer and reader outcomes. Instead, different underlying processes seem to be at play, as individuals select and respond to various types of media based on their preferences and orientations. This suggests that it is the specific content, rather than the overall amount of media exposure, that influences outcomes such as body dissatisfaction and the drive for thinness[61,62,65]. For example, health-conscious individuals tend to engage more actively with media like magazines, which they consider more informative, while television is often viewed as a passive source of information, more frequently consumed by those less focused on health[66]. Understanding how messages delivered through various media formats impact consumers is crucial for developing effective communication strategies. How readers and viewers interact with media reveals critical connections and commonalities across different sources of

information. This insight is essential for crafting successful health campaigns and providing health professionals with evidence-based recommendations on using these platforms to spread knowledge and awareness effectively.

6.3 The evolution of social media and its impact on food culture

While traditional media continues to shape our food landscape, the rise of social media demands a closer look. Unlike its predecessors, social media platforms create a dynamic and interactive environment where user-generated content and influencer marketing strategies blur the lines between consumption and creation. This shift necessitates a deeper understanding of how social media influences our relationship with food.

The development of social media began during the 90s[16]. The beginning of social media as we know it was marked by Myspace reaching a million monthly active users in 2004. Following this, several platforms emerged, competing for dominance in the social media landscape. Early platforms like Friendster and Myspace introduced basic social networking concepts, which paved the way for more sophisticated platforms like Facebook, YouTube, and Twitter. Facebook, launched in 2004, quickly became a dominant force in social media, reaching 1 billion users by 2012 and establishing itself as the most popular social media platform since 2010[67]. YouTube, launched in 2005, revolutionised video content sharing and has seen exponential growth since 2006. The platform's user-friendly interface and ability to share videos globally attracted millions of users, making it one of the most visited websites worldwide. Twitter, introduced in 2006, offered a unique microblogging experience, allowing users to post short updates and interact in real time, which significantly influenced news dissemination and public discourse[67].

The advent of smartphones further accelerated the growth and accessibility of social media. The release of the iPhone in 2007 and Android phones in 2008 made it easier for users to access social media platforms on the go, leading to a significant increase in user engagement and content creation. Instagram, launched in 2010, capitalized on the growing popularity of photo sharing, and by 2018, it had reached 1 billion monthly active users. TikTok, born in 2018, rapidly gained popularity for its short-form video content, reaching 1.56 billion users by January 2024[68].

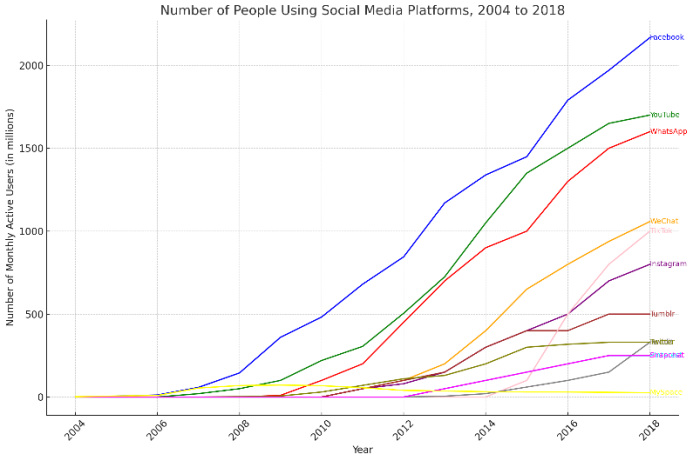

Figure 3: Graphic showing the user trends of the main social media sites from 2004 to 2018[69]

Data from 2024 show that, while the supremacy of Facebook and YouTube remains strong, new platforms are rapidly gaining prominence. Indeed, while in 2018 Instagram and TikTok had 1 billion and 500 million monthly active users, respectively, by January 2024, these numbers had risen to 2 billion for Instagram and 1.56 billion for TikTok[68,70].

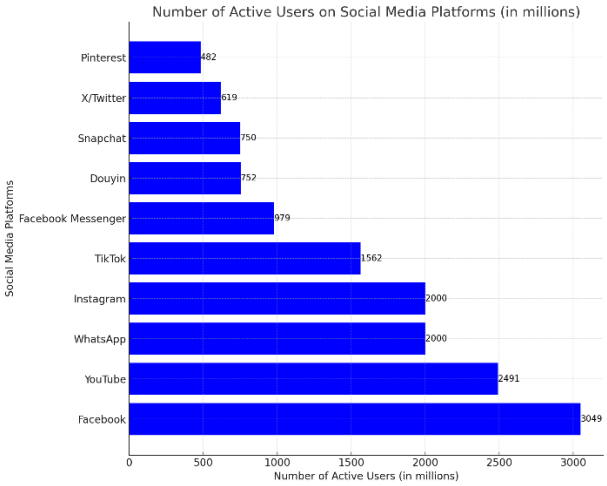

Figure 4: Most popular social networks worldwide as of January 2024, ranked by number of monthly active users (in millions)[68]

The rapid growth and widespread adoption of social media have significantly impacted communication, information dissemination, and social interactions. Platforms like Facebook, Twitter, Instagram, and TikTok have transformed how people connect, share, and consume information. These platforms facilitate real-time communication and allow users to share diverse content types, including text, images, and videos, thus enhancing the interactive experience[69]. Integrating social media into daily life has expanded social networks, allowing individuals to maintain relationships across vast distances and connect with new people who share similar interests. However, this constant connectivity can also lead to challenges such as cyberbullying and the pressure to present an idealized version of oneself online[64].

Social media has also revolutionized the way information is disseminated. Platforms like Twitter and Facebook have become primary sources of news for many users, providing real-time updates and a platform for public discourse. This immediacy and accessibility have democratized information sharing but have also led to information overload and the spread of misinformation and fake news, posing significant challenges to public awareness and decision-making[71].

Moreover, social media platforms have created new opportunities for businesses and marketers. The ability to target specific demographics with tailored advertising campaigns has proven highly effective. Also, influencer marketing has emerged as a powerful tool, with social media influencers leveraging their large followings to promote products and brands. This has transformed traditional advertising models and has significantly impacted consumer behaviour[70,72,73].

6.4 Social media and its influence on human decision-making

As social media has become a dominant force in modern life, its role in shaping individual choices and behaviours has become increasingly apparent. These platforms have a significant impact on various aspects of daily life, influencing everything from consumer habits and political engagement to travel planning and health-related decisions.

Social media platforms like Instagram, Facebook, and TikTok have revolutionised how consumers make purchasing decisions. The seamless integration of marketing tools and influencer endorsements allows these platforms to directly influence consumer preferences, making them key drivers in the marketplace. Through personalised content and targeted advertisements, social media has blurred the lines between marketing and personal recommendation, leading to more immediate and powerful effects on consumer behaviour[72]. In the political domain, platforms such as Twitter and Facebook have become central to shaping public opinion and driving political participation. The rapid dissemination of news and information on these platforms facilitates real-time public discourse, which can influence electoral outcomes and broader political dynamics[71]. Travel planning has also been transformed by social media, where visual platforms like Instagram and Pinterest provide endless inspiration and ideas. The sharing of user-generated content, such as travel photos and itineraries, has turned social media into a critical resource for those seeking travel advice and inspiration. Moreover, social media's influence extends deeply into health and fitness, where users increasingly rely on platforms for fitness tracking, dietary advice, and wellness tips[73,74]. While these platforms offer a wealth of information, they also present challenges regarding the quality and accuracy of health-related content. The widespread dissemination of health misinformation on social

media is particularly concerning, with research indicating that user-generated content can often spread misleading or exaggerated health claims, leading to poor health decisions, for instance about dieting and weight loss[21].

One domain where the influence of social media is particularly evident is the reality of food-related content. This type of content has become ubiquitous on social media, attracting users from diverse age groups, with young adults making up a significant portion of the demographic[75]. Instagram, boasting a global community of 800 million users, is a prime example of this trend, with popular hashtags like #foodporn and #vegan highlighting the extensive food-related content available on the platform[76]. The formats of these posts vary widely, ranging from simple text or images, and recipe videos, to elaborate recipe videos and multimedia posts that combine text, images, and videos[77,78]. Food, while essential for sustenance, identity plays a crucial role in cultural identity and health, a complexity that is reflected in the diverse content shared on social media[79]. This multifaceted role of food is mirrored in social media's influence on dietary choices and cultural practices, highlighting the global reach and impact of these platforms.

6.4.1 Young adults and the use of social media

With the rapid evolution of digital technologies, social media has become a central aspect of daily life, particularly among young adults. This demographic, typically defined as individuals aged between 18 and 29 years old, exhibits high levels of engagement on platforms such as Instagram, Snapchat, TikTok, and Twitter. These platforms are especially popular among young adults, with reports indicating that approximately 71% of individuals in this age group use Instagram regularly[80]. The widespread adoption of social media among young adults has led to extensive research into usage patterns, motivations, and the impact on their social identities, relationships, and self-expression[11]. Studies suggest that social media use among young adults is characterised by a diverse range of platform preferences and varying content consumption habits. This demographic is not only highly active on these platforms but also exhibits behaviours that suggest a deep integration of social media into their daily lives.

Research has highlighted the addictive potential of social media, particularly among young adults. A large-scale survey found that individuals with higher levels of narcissism and lower self-esteem are more likely to exhibit addictive behaviours on social media platforms, where they seek validation and affirmation[11]. Additional studies further emphasize the role of social networking sites in facilitating addictive behaviours among young adults[12]. The design features of these platforms, such as

notifications, likes, and comments, are intentionally engineered to capture users' attention and promote continuous engagement. As a result, young adults may develop a dependency on social media, experiencing negative consequences such as reduced productivity, impaired self-esteem, and disrupted offline relationships[12].

6.4.2 Motivations for engagement and impact on social identities

Young adults are drawn to social media for a myriad of reasons, each shaping their online behaviours and influencing the content they engage with, create, and share. According to Barker (2012), age and social identity play pivotal roles in motivating young adults to interact with social media[81], a concept that aligns with the principles of the UGTs[18,20]. These platforms serve as dynamic spaces for identity exploration and expression, providing individuals with a digital canvas to showcase their hobbies, interests, values, and affiliations[81]. By curating their online profiles and sharing content aligned with their identity, young adults seek validation and affirmation from their peers. This desire for recognition fuels engagement with social media content, fostering a sense of community and belonging as individuals participate in online discussions and connect with like-minded peers. Researchers have explored the addictive nature of social media use among young adults, highlighting psychological factors like narcissism and low self-esteem that contribute to excessive engagement[11]. SLT[34,36] and SCT[37] provide a framework for understanding how social media becomes a virtual stage for seeking external validation and affirmation, leading to compulsive behaviours and a constant craving for social approval. A key aspect of this dynamic is social comparison, where users often measure their lives against the carefully curated personas of others, leading to feelings of inadequacy and dissatisfaction[21]. The constant exposure to idealised representations on social media fosters a persistent need for validation, reinforcing the cycle of compulsive behaviour as individuals strive to align themselves with these unrealistic standards. This interplay between social comparison and the desire for validation highlights the powerful influence of social media on young adults' self-perception and behaviour[82].

In the digital age, social media platforms have become integral to how individuals shape and express their identities. Users carefully select what aspects of themselves to showcase, often presenting an idealised version of who they are to the world[83], a phenomenon explained by the SCT[37]. This curated self-image often differs from their offline persona, blurring the lines between authenticity and performance. Social media allows users to experiment with various identities, exploring different facets of themselves and seeking validation from their peers[21,84]. The allure of likes, comments, and

followers can fuel a quest for social acceptance, shaping how individuals perceive themselves and their place in the digital landscape. However, this pursuit of validation may also expose individuals to risks such as cyberbullying or identity theft, highlighting the complexities of navigating social identities in the digital realm. SCT[37] suggests that users frequently measure their lives against the carefully curated online personas of their peers[13]. This constant exposure to idealised representations can foster feelings of inadequacy and loneliness, particularly among young adults.

6.4.3 Facilitating self-expression and interpersonal relationships

Social media plays a pivotal role in shaping young adult's social identities, relationships, and self-expression, profoundly influencing how they interact with the world around them. The formation of social identities and the development of relationships through social media platforms are deeply intertwined. Technology has shifted expectations, leading individuals to seek more from their online interactions while often experiencing a sense of isolation in the physical world[13]. Online communication offers unique opportunities for adolescents, allowing them to explore different aspects of their identities and connect with a broader network of peers. This digital interaction provides a platform for self-exploration and social experimentation, where young adults can navigate social norms and establish their place within their peer groups[21,84].

Online communication offers unique opportunities for adolescents and young adults, allowing them to explore different aspects of their identities and connect with a broader network of peers. This digital interaction provides a platform for self-exploration and social experimentation, where young adults can navigate social norms and establish their place within their peer groups[11]. The extensive networks that young adults form on platforms like Facebook can significantly impact their social relationships. College students often have vast networks of online friends, which can influence their communication patterns and overall well-being. These networks provide a space for social support and validation, but they can also create pressures to maintain a certain online persona[85]. The concept of social capital is particularly relevant in understanding these dynamics. Social media platforms like Facebook can enhance social capital by providing opportunities for maintaining relationships and fostering new connections. This increased social capital can contribute to a sense of belonging and support within the digital community[86]. Furthermore, social media platforms provide young adults with a digital canvas for creative self-expression and artistic exploration. From sharing photos and videos to writing blog posts and creating multimedia content, individuals have myriad opportunities to showcase their talents, interests, and passions to a global audience. Emotional disclosure on social media serves as a

platform for self-expression, enabling individuals to share their thoughts, feelings, and experiences with others in real-time. Users are more likely to express positive emotions than negative ones on platforms like Facebook, engaging in impression management to present a more favourable image[85]. The interactive nature of social media encourages reciprocal sharing and empathy, fostering a sense of community and belonging among young adults[85]. Additionally, the digital empowerment facilitated by social media allows for the construction of identities anchored in real-world relationships, blending online and offline interactions seamlessly[87].

In addition to creative expression, social media allows young adults to engage in personal branding, where they strategically cultivate their online presence to align with their personal and professional goals. By curating their profiles, sharing content relevant to their interests, and engaging with followers, individuals can enhance their visibility, credibility, and influence in various domains. Social media platforms provide individuals with tools and resources to shape their online persona, project their desired image, and build networks of support and collaboration. Personal branding on platforms like LinkedIn enables young adults to showcase their skills and achievements, enhancing their professional prospects[87].

6.5 Influence of social media on nutrition and eating behaviour

By shaping nutritional habits and eating behaviours, social media can strongly impact both physical and mental health. Nutritional habits significantly impact mental health and overall well-being[88], and the promotion of various diets, food trends, and body ideals through social media can influence users' perceptions of healthy eating and shift their dietary choices.

One of the main ways social media influences nutrition is through the promotion of diets high in processed foods, sugars, and unhealthy fats. These diets are often glamorised by influencers and celebrities, leading to their widespread adoption. Unfortunately, such diets are consistently associated with an increased risk of developing mental health disorders. High consumption of these foods can lead to inflammation in the body, which is linked to the onset or exacerbation of conditions like depression and anxiety[89]. Additionally, social media trends often promote foods with a high glycaemic index—such as sugary snacks—which can cause rapid fluctuations in blood glucose levels, contributing to mood swings and depressive symptoms[89]. Social media's role in promoting these unhealthy patterns is further exacerbated by the pervasive presence of idealised body images on platforms like Instagram and TikTok. Users may develop negative self-perceptions and engage in harmful dietary practices, such as extreme dieting, in an attempt to conform to these unrealistic

ideals[21]. This effect can be partly explained by the theory of cognitive dissonance, developed by Festinger in the 1950s to explain that individuals experience discomfort when their actions (for instance, eating unhealthy food) conflict with their knowledge (like the awareness of the health risks)[40]. To reduce this dissonance, they might rationalise their choices by aligning with influencers who present these foods in a positive light, thereby minimising the perceived risk.

Furthermore, the framing of food content on social media plays a significant role in influencing dietary choices. The way information is presented can indeed alter consumer perceptions, with labels mentioning the "low-fat" content of a food making it seem healthier, even if it is high in sugar[19]. This negative framing can lead users to make poor dietary choices, as the negative aspects of these foods are downplayed.

Conversely, social media can also be a platform for promoting healthier eating patterns. Diets rich in fruits, vegetables, lean proteins, and healthy fats, such as the Mediterranean diet, are associated with better mental health outcomes[89–91]. The Mediterranean diet, frequently highlighted in health-focused communities, emphasises the intake of whole grains, fruits, vegetables, nuts, olive oil, and fish, which have been shown to reduce the risk of depression. Further studies have also confirmed this theory by analysing the promotion of the Mediterranean diet in traditional media, which has been shown to elicit positive emotional responses due to its association with health and vitality[92]. The anti-inflammatory properties of these foods and their positive effects on the gut microbiome, which plays a crucial role in regulating mood and cognitive function[89,93]. The inclusion of foods rich in omega-3 fatty acids, found in fatty fish, is particularly beneficial as they support brain health by reducing inflammation and enhancing neurotransmitter function, which can help mitigate symptoms of depression and anxiety[89,93,94].

Social media trends like the "fitspiration" movement and the rise of hashtags like #HighProtein on platforms such as Instagram and TikTok further demonstrate how social media can amplify trends that align with societal ideals of health and fitness. A study examining Instagram's role in promoting the "fitspiration" movement highlighted how social media can reinforce and spread fitness and body image ideals[95]. Another study found that exposure to appearance-focused content on social media is linked to increased body dissatisfaction, drive for thinness, and disordered eating behaviours, particularly due to the internalisation of societal beauty standards and social comparison[96]. Additionally, research on younger populations, such as preteen girls, has shown that internet use, particularly on social networking sites, is associated with increased internalisation of thin ideals, body

surveillance, and lower body esteem[97]. These findings suggest that even at a young age, social media contribute to the development of body image concerns and unhealthy dieting behaviours, reinforcing the need for mindful media consumption.

The growing emphasis on high-protein diets, often linked to fitness and muscle-building, further underscores the role of social media in shaping dietary behaviours. In contrast, some content on social media challenges the traditional portrayal of fast food as inherently "bad" or something to be avoided entirely. By presenting fast food as part of a balanced diet, these videos counter toxic diet culture and encourage a more inclusive and realistic approach to eating. This shift helps to move away from the dichotomy of “good” versus “bad” foods that has been prevalent in earlier media and continues to exist on social media[98]. This evolving perspective aligns with the recent discussions on the role of media in promoting balanced and mindful eating practices.

6.5.1 Social media influence on body image and eating behaviours

The pervasive presence of idealized body images on social media platforms like Instagram and TikTok can lead to increased body dissatisfaction and unhealthy eating behaviours among young adults[94,99–101]. These platforms often promote unattainable beauty standards through heavily edited and filtered images, which can exacerbate issues related to body image and eating disorders. This environment fosters unrealistic body expectations, negative self-perception, and increased anxiety about one's appearance, leading to the adoption of harmful dietary practices to conform to these ideals[99,102]. Social media also influences eating behaviours through mechanisms related to impulsivity and cognitive restraint. The constant exposure to food-related content can trigger cravings and impulsive eating, especially in individuals with high levels of cognitive impulsivity[102–104]. This impulsivity can result in binge eating and other disordered eating patterns[102–104]. Moreover, the influence of social media can weaken cognitive restraint, making it difficult for individuals to maintain healthy eating habits, particularly in stressful situations[94,103,105].

Viewing visually appealing food images can stimulate appetite and increase food intake, even when not physically hungry[106]. The prevalence of indulgent, high-calorie food images, exemplified by the popular #FoodPorn hashtag, which has over 250 million posts on Instagram, can drive cravings and overeating. Research indicates that exposure to such content can lead to increased food consumption and a preference for high-calorie foods, particularly in individuals who are already struggling with weight management[107]. On the flip side, promoting healthy foods through visually appealing images

can encourage better eating habits. Engaging presentations of fruits, vegetables, and balanced meals can make these options more attractive, potentially shifting preferences towards healthier choices[108].

Diet, physical activity, and sedentary behaviours often cluster together and collectively influence both physical and mental health outcomes[109,110]. For young adults, a critical period for developing long-term health behaviours, the interplay of these factors is crucial[109,110]. Poor dietary choices, when combined with low physical activity and high sedentary behaviour, can lead to adverse health outcomes, including obesity and mental health disorders[94,111]. Understanding these behaviour clusters is essential for developing comprehensive health interventions that target multiple behaviours simultaneously[100,109].

6.5.2 Opportunities and challenges in promoting healthy eating through social media

Despite its potential negative impacts, social media offers opportunities for promoting healthy eating behaviours. Health researchers and public health campaigns are increasingly leveraging these platforms to disseminate accurate nutritional information, promote healthy eating patterns, and provide social support for behavioural change[109,110]. By engaging young adults through social media, these initiatives can reach a broader audience and counteract some of the negative influences associated with social media usage[110]. Moreover, the diverse array of food content available on social media contributes to a broader understanding of global culinary practices. However, it also raises concerns about the quality and accuracy of the information being disseminated.

As previously mentioned, platforms such as Instagram, TikTok, and YouTube have become major sources of food-related information. Users are frequently exposed to a wide range of content, including recipes, nutritional advice, and diet trends. However, studies have shown that exposure to food advertisements on social media is linked to an increased likelihood of consuming the promoted products, often leading to higher calorie intake and poorer nutritional choices[112,113]. It is therefore clear that social media influencers and food bloggers play a crucial role in this dynamic. Young adults are indeed particularly susceptible to purchasing and consuming foods endorsed by influencers they follow, whether these foods are healthy options or less nutritious, energy-dense foods[114,115]. Moreover, the visual appeal of food images is a powerful tool to influence food-related decisions. Platforms like Instagram are flooded with aesthetically pleasing photos of meals and snacks, which can drive cravings and affect food choices. Visually attractive food images can trigger a desire to try new foods or recreate dishes at home, often leading to increased consumption of the depicted foods[116].

This visual stimulation also contributes to impulsive eating behaviours, as users may struggle to resist the allure of appetising food images[113].

The blending of personal stories with promotional content in influencer marketing makes advertisements less obvious and more persuasive[108]. Influencers can drive trends in healthy eating, plant-based diets, or specific dietary practices by sharing their experiences and endorsements, potentially affecting user's health-related behaviours[117]. Influencers like Ella Mills (Deliciously Ella) or Kayla Itsines have built large communities around their dietary philosophies, significantly influencing the eating habits of their followers. However, this influence comes with risks. Influencers may promote unhealthy food products that are high in sugar, fat, and salt, contributing to poor dietary habits and health outcomes[21,118]. While regulations require disclosure of sponsored content, enforcement is inconsistent, and challenges remain in ensuring the accuracy and healthfulness of the information shared. The global reach of influencers complicates matters further, as varying regulations across countries can lead to the promotion of products that may not be safe or approved in all regions. This lack of oversight can expose consumers to misleading or harmful advice.

Media campaigns have the potential to significantly influence public perceptions, similar to how social media content shapes eating habits, and they can be harnessed to promote healthier eating practices[119]. However, this potential must be balanced against the challenges posed by misinformation and the persuasive power of influencers.

While social media has the potential to enhance food literacy by offering easy access to cooking tutorials, nutritional advice, and health tips[107,120], it also presents significant challenges due to the proliferation of misinformation. Studies have shown that platforms like TikTok and Instagram are abundant with unverified dietary claims and diets that lack scientific backing[121]. This misinformation can lead to harmful eating practices, such as extreme calorie restriction or the promotion of supplements with no proven benefits[5]. Additionally, constant exposure to idealised food images can foster unrealistic expectations and unhealthy eating behaviours[122]. Influencers often showcase perfectly prepared meals that are difficult to replicate, which can lead to frustration and negative self-perception among viewers.

6.6 The TikTok case

6.6.1 The birth and rise of a global giant

TikTok's history begins in 2014, when Alex Zhu and Luyu Yang, from Shanghai launched "Musical.ly"[68]. This video-based content social media platform was used to create and share short lip-sync videos and to interact with other "musers" via trending sounds and hashtags. By the end of May 2017, the app had reached over 200 million users. Musical.ly was then acquired by Byte Dance Ltd. on November 10th, 2017, and merged with TikTok on August 2nd, 2018.

In January 2019, TikTok ranked first among free application downloads in several countries. An explosive growth was observed in 2019 when it became one of the most downloaded apps globally. TikTok's user base continued to grow rapidly, reaching over 2 billion downloads globally by mid-2020[123]. Its popularity further increased during the COVID-19 pandemic, when more people turned to digital platforms for entertainment[124]. In 2023, TikTok reached 1.9 billion users, a 16% increase from the previous year[125,126].

Data shows that TikTok is the most appreciated between 16 to 24 years old[127], and in 2023 18.2% of users are 18-24 years old women, same for males of the same age[128]. Despite the app being officially intended for those aged 13 and over, there is no age verification process to ensure the application of this rule, making it hard to say how many younger children are using TikTok. Estimates say that up to a third of TikTok users in the US could be under 14[126]. The average monthly time active users spend on TikTok is 34 hours per month[127], illustrating its relevance as a source of information on nutrition and diet.

6.6.2 TikTok's success and addictiveness

Since its release in 2018, TikTok has seen staggering numbers of active users and app downloads. The platform reached the one billion milestone in September 2021[129], less than three years after its global launch, making it the fastest-growing social media app in history[130]. This rapid growth highlights the profound influence TikTok has on user behaviour, making it essential to understand the factors driving this success and how they shape user interactions on the platform.

The algorithm is widely recognised as the core driver behind TikTok's phenomenal success[68]. This sophisticated algorithm tailors each user's experience by analysing their interactions, preferences, and viewing habits, delivering a highly personalised content feed that ensures continuous engagement

and increases user retention. Another significant factor contributing to TikTok's rapid rise was its origin, which involved the merger of two substantial communities, Musica.ly and Douyin. This merger not only consolidated vast amounts of user data but also unified the existing user bases under a single platform, giving TikTok a large, active community from the outset and a substantial advantage in achieving exponential growth[131].

TikTok's format is ingeniously designed to capitalise on users' short attention spans. The platform's hallmark is its short, easily consumable videos, initially capped at 15 seconds, but later extended to 60 seconds and eventually allowed videos up to 10 minutes in length[132]. This flexibility enables content creators to produce a wide variety of content, from quick, engaging clips to more in-depth storytelling, catering to everybody's needs and preferences. However, the shorter video format remains the most popular, as it aligns perfectly with the fast-paced scrolling behaviour that TikTok encourages[132].

The app's design also fosters a sense of urgency and novelty through its short-lived trends. TikTok trends often emerge, peak, and fade within days or weeks, creating a continuous cycle of fresh content that keeps users returning for more. This constant influx of new trends and challenges drives user engagement and also feeds the addictive nature of the platform, as users feel compelled to stay updated with the latest content and participate in trending activities. These short-lived trends capitalize on the "Fear of Missing Out" (FOMO), which can further entrench user habits and increase the time spent on the app.

Research on TikTok's influence on viewers' behaviours and attitudes has garnered significant attention in recent years. Studies have demonstrated that TikTok, with its short-form video content and highly engaging algorithm, has a profound impact on users' consumption habits, social interactions, and psychological well-being. TikTok's unique algorithm significantly affects users' viewing patterns and engagement levels[126]. One notable study found that TikTok's algorithm creates a feedback loop that reinforces users' preferences and behaviours, often leading to prolonged usage and higher engagement[115]. This can result in parasocial relationships, where viewers form emotional connections with influencers and content creators, impacting their attitudes and behaviours towards various topics, including food and nutrition[116]. The study also highlighted that the platform's focus on visually appealing content, such as food videos, can influence users' dietary choices and perceptions of healthy eating[75].

6.6.3 TikTok's role in shaping user behaviour

TikTok's widespread popularity, particularly among adolescents and young adults, has raised concerns about its influence on dietary behaviours and food choices. Research suggests that exposure to food-related content on TikTok can lead to increased cravings and impulsive eating behaviours, especially among younger audiences who are more susceptible to visual stimuli and peer influences[114]. The platform's highly visual nature and algorithm-driven content curation play a key role in reinforcing these behaviours, creating a feedback loop where users are continually exposed to content that may encourage unhealthy eating patterns.

Moreover, TikTok has been criticised for perpetuating a toxic diet culture. Studies highlight that the platform is filled with content promoting unrealistic body images and extreme diet trends, contributing to body dissatisfaction and disordered eating patterns among young users[74,133]. The "For You" page, which serves as the main interface for most users, often features content that glorifies thinness and promotes restrictive eating practices under the guise of wellness and fitness[133]. This type of content can be particularly harmful, as it not only normalizes unhealthy behaviours but also fosters a comparison culture that exacerbates feelings of inadequacy and body dissatisfaction.

Additionally, the frequent portrayal of diet-related content on TikTok has been linked to the rise of orthorexia—a condition characterized by an unhealthy obsession with eating foods deemed "clean" or "pure"[134]. This obsessive focus on health can lead to restrictive eating patterns that are detrimental to overall well-being.

These findings highlight the importance of understanding TikTok's role in shaping food-related decision-making among young adults. Given the platform's influence, it is crucial to develop effective public health strategies and interventions aimed at promoting healthy eating habits and mitigating the potential negative impacts of social media. Addressing these issues requires a comprehensive approach that includes educating users about media literacy, promoting diverse and realistic body images, and providing support for those affected by disordered eating behaviours[68].

6.6.4 Regulation and transparency in influencer marketing

The rise of TikTok as a dominant social media platform has brought significant attention to the regulation and transparency of influencer marketing. Influencer marketing on TikTok has seen explosive growth, with many brands leveraging the platform's unique engagement dynamics to reach

a broad audience. However, this rapid expansion has also highlighted the need for stricter regulations to ensure transparency and protect consumers from misleading endorsements.

In many countries, regulations now require influencers to disclose paid promotions. For instance, the Federal Trade Commission (FTC) in the United States mandates that influencers must disclose any material connections with brands, including payments or free products, in their endorsements to avoid deceptive practices. The FTC's guidelines emphasize that these disclosures should be clear and conspicuous, ensuring that the audience is aware of the commercial nature of the content[135,136].

In Europe, the Unfair Commercial Practices Directive (UCPD) specifically addresses the issue of undisclosed advertorials, which are media content that presents advertising in a way that may appear objective, potentially misleading consumers[137]. According to the UCPD, if there is a direct link between payment or the provision of something valuable and an advertising service, this must be clearly disclosed to consumers. This includes instances where influencers receive free products or services, such as PR packages or gifted items, which are often given with the expectation of promotion. The Court of Justice of the European Union, in the Peek and Cloppenburg case, clarified that such practices are considered unfair if they are not disclosed, further reinforcing the need for transparency in influencer marketing across platforms, including TikTok[137].

Despite these regulations, enforcement remains inconsistent, and many influencers still fail to comply with disclosure requirements, either due to a lack of awareness or intentional non-compliance. This inconsistency can mislead audiences about the nature of endorsements they see on TikTok, further complicating the landscape of influencer marketing. In addition to these overarching European regulations, some countries have their regulatory bodies to further enforce transparency in influencer marketing. For example, in France, the Autorité de Régulation Professionnelle de la Publicité (ARPP) offers the Ethical Influence Certificate, which influencers can obtain to demonstrate their commitment to ethical advertising practices. This certification process is part of broader efforts to professionalize influencer marketing and ensure that influencers adhere to ethical guidelines when promoting products[138].

Despite these regulations, enforcement remains inconsistent. Many influencers still fail to comply fully with disclosure requirements, either due to a lack of awareness or intentional non-compliance. This inconsistency can mislead audiences about the nature of endorsements they see on TikTok, further complicating the landscape of influencer marketing[136]. Additionally, influencers often have

access to a global audience, which introduces further complications. Different countries have varying regulations on what is allowed to be sold and advertised, depending on how food and health products are approved by agencies like the EFSA in Europe and the FDA in the USA[139,140]. This disparity means that products that are illegal or deemed unsafe in one country might still be promoted and sold in another, leading to potential risks for consumers who may be exposed to products that have not been approved in their own country[141]. The lack of consistent global regulations can exacerbate the issue, leaving consumers vulnerable to misleading or harmful advice.

TikTok has implemented measures to enhance transparency, particularly through tools that allow influencers to clearly tag content as paid partnerships, similar to features available on other platforms like Instagram. These tools are designed to make it easier for users to identify sponsored content. However, the effectiveness of these transparency tools relies heavily on influencers consistently and correctly using them[138]. Despite these efforts, TikTok has faced criticism for its overall lack of transparency, especially in how it manages advertisements and political content. Concerns have been raised about "political payola," where influencers are compensated to promote political messages without clear disclosure, leading to potential misinformation. These issues have prompted calls for more stringent oversight and clearer guidelines from both TikTok and regulatory authorities to ensure transparency and accountability[136].

6.6.5 Policy framework and implementation challenges on TikTok

TikTok's policy framework is designed to ensure a safe and positive environment for its users by setting clear guidelines on acceptable content. These community guidelines address various areas, including hate speech, harassment, and misinformation. Specifically, TikTok has implemented policies to regulate food and nutrition content to prevent the spread of false health information and promote safe dietary practices. This includes prohibiting content that encourages eating disorders, unsafe weight loss methods, and unverified health claims. These measures were prompted by growing concerns about the platform's role in spreading harmful diet trends and misinformation, particularly among vulnerable users. TikTok's updates to its Community Guidelines have been informed by consultations with experts in the field, reflecting the platform's commitment to addressing the issue of disordered eating. The guidelines are designed to remove content that promotes dangerous behaviours such as extreme dieting and fasting, which can lead to severe health consequences. Additionally, TikTok requires influencers to disclose any paid partnerships to ensure transparency in

advertising, though enforcing these rules consistently remains a challenge due to the sheer volume of content on the platform[142,143]

Despite these policies, enforcing them presents significant challenges. One primary issue is the sheer volume of content uploaded to TikTok daily. With millions of videos posted each day, it is difficult for automated systems and human moderators to monitor and promptly remove harmful content effectively. Indeed, studies have shown that despite these guidelines, a significant amount of misleading and harmful nutrition advice still circulates on the platform[5]. TikTok's recommendation algorithm can inadvertently promote sensational and misleading content because these types of posts often generate higher engagement[144]. For instance, users might encounter videos promoting extreme diet trends or unverified health supplements, which can quickly go viral due to the platform's algorithm favouring engaging content. This creates a fertile ground for misinformation as the platform struggles to keep pace with the rapid dissemination of content.

Another critical issue is the regulation of influencer marketing. Influencers can significantly impact their audience's dietary choices, and while TikTok mandates disclosure of paid partnerships, compliance is inconsistent. Influencers often promote products or diets without adequate scientific backing, which can mislead their followers. Ensuring that influencers adhere to these guidelines and accurately represent nutritional information is a complex task[114]. For example, an influencer might promote a product as a quick weight loss solution without mentioning potential health risks or the lack of scientific evidence supporting such claims.

TikTok's global reach adds another layer of complexity to policy implementation. The platform must adapt its policies to various legal and cultural contexts, which can be challenging to manage. Different countries have different regulations regarding food advertising and health claims, and TikTok must navigate these diverse legal landscapes to enforce its guidelines effectively[74,140]. In regions with less stringent regulations, misleading content may proliferate more easily, undermining global efforts to maintain a safe and reliable platform.

Moreover, ensuring that users are educated about the platform's guidelines and the importance of adhering to them remains a significant challenge. While TikTok provides resources and guidelines, users may not always be aware of them or may choose to ignore them for various reasons, including the pursuit of higher engagement and followers. This highlights the need for ongoing education and

more robust enforcement to ensure that TikTok remains a safe and trustworthy platform for its global user base.

6.6.6 TikTok's legal concerns and scandals

TikTok has faced numerous significant legal concerns and scandals related to food, nutrition, and eating disorders, highlighting the platform's ongoing challenges in regulating harmful content and ensuring user safety. One particularly poignant case is that of Amy Ellis, a young woman from the UK who used TikTok to document her battle with anorexia. Despite her efforts to raise awareness about her condition, Amy tragically passed away. This case underscores the dangerous impact of social media platforms in glamorizing or inadvertently promoting eating disorders. The platform's algorithm, which often amplifies engaging but potentially harmful content, played a role in exposing vulnerable users like Amy to triggering material[145]. Another critical case involves Zhanna Samsonova, a vegan raw food influencer who promoted an extreme raw vegan diet on TikTok. This eventually led to her death from starvation and exhaustion, illustrating the severe risks associated with unverified dietary advice proliferating on social media. This spurred discussions about the responsibilities of platforms like TikTok in regulating health-related content and the need for stricter oversight[146,147].

TikTok has also faced broader legal challenges related to its content moderation policies, particularly concerning misleading health information and the promotion of unsafe dietary practices. Although the platform has guidelines to combat these issues, the sheer volume of content and the algorithm's tendency to recommend engaging material often allow harmful material to slip through[5,144].

Legal actions have been taken against TikTok, including lawsuits filed by the Social Media Victims Law Centre, which argues that TikTok's algorithm contributes to eating disorders and mental health issues in young users. These lawsuits claim that TikTok directs young users to harmful content, exacerbating issues like anorexia and bulimia[148]. Supporting this claim is an ITV News investigation, which found that a significant percentage of users with eating disorders reported that TikTok hindered their recovery, with the platform failing to adequately respond to complaints about harmful content[149].

These legal concerns and scandals have led to calls for more stringent policies and improved enforcement mechanisms. TikTok has responded by enhancing its content moderation strategies and updating its community guidelines to address these issues. However, the platform continues to face significant challenges in ensuring user safety and well-being. Additionally, TikTok's overall

regulatory and control measures have been a matter of concern, as users enjoy almost limitless freedom regarding what they share, view, and post. Scandals surrounding TikTok have led to requests and, in some cases, actual bans in specific countries, based on concerns ranging from national security to child safety, pornography, and the presence of toxic and racist content[150,151].

Recently the European Commission launched a formal investigation into TikTok's compliance with the Digital Services Act. This probe focuses on protecting children through effective age verification and content filtering. It also examines the potential for addictive design elements within TikTok's algorithms and how the platform's design might contribute to spreading harmful content or radicalisation processes. Additionally, the European Commission will investigate the limitations researchers face in accessing publicly available TikTok data, further highlighting the need for transparency and accountability in social media governance[152].

7 Study objectives and research questions

The first objective of this study is to describe the trends of some of the most relevant hashtags related to food and nutrition on TikTok. By analysing the number of posts connected to these hashtags over time, the study aims to determine trends in popularity, thereby identifying what users find most interesting. This will involve an examination of the fluctuation in popularity of these hashtags to define any patterns that may indicate changing interests and preferences among TikTok users.

Another goal of this study is to understand the type of messages predominantly shared on TikTok concerning the most relevant food and nutrition trends. To achieve this, participants were asked to share the videos they first encountered when searching for these hashtags. These videos were then analysed and categorised to identify any recurring themes or particular characteristics. This qualitative analysis aims to provide insights into the nature of content that garners significant attention and engagement, highlighting the narratives and messages that are most prevalent in this digital space.

Additionally, this study seeks to explore the impact of TikTok content on viewers' eating habits, body confidence, emotions, and TikTok usage patterns. While much research has been conducted on the influence of nutritional content in traditional media, TikTok remains relatively unexplored. To address this gap, a questionnaire was developed and administered to individuals aged 18 to 26, a demographic particularly sensitive to this content. The questionnaire assessed respondents' baseline relationship with food, eating, and body confidence using validated scales. It also evaluated their perceptions of popular food and nutrition trends by showing them selected videos and assessing their emotional reactions. Furthermore, the questionnaire included items on TikTok usage frequency to investigate its potential correlations with these factors. This approach allowed for an understanding of respondents' baseline conditions and facilitated the investigation of correlations between these conditions and their reactions to the videos. Demographic information such as age, gender, field of expertise, and educational level was collected to examine their relevance in shaping their responses.

In addition to these objectives, the study aims to propose policy recommendations based on the results. These recommendations will focus on promoting healthy content on TikTok related to food and nutrition, making the platform a safe space for viewers. By encouraging the dissemination of accurate and beneficial information, the study aspires to transform TikTok into a resource for educating users on healthy diets.

The research questions guiding this study are as follows:

RQ1: What are the trends of the most relevant food and nutrition-related hashtags on TikTok, and how have they evolved?

RQ2: What types of messages and themes are primarily conveyed in videos associated with these trending hashtags?

RQ3: How do viewers perceive and react to TikTok content related to food and nutrition?

RQ4: Is there a correlation between expressed body confidence and the relationship with food and eating with the perception of the videos?

RQ5: How do demographic factors such as age, gender, field of expertise, and educational level influence their reactions to these videos?

RQ6: What is the correlation between TikTok usage and the perception of the videos, body confidence, Satisfaction with Eating (SWE), and Pleasure When Eating (PWE)?

Through these research questions, the study aims to provide a comprehensive understanding of the dynamics of food and nutrition trends on TikTok, the nature of the content shared, and its impact on viewers' behaviours and perceptions. This investigation will contribute to the existing body of knowledge on social media influence, particularly in the context of a rapidly growing platform like TikTok. By proposing actionable policy recommendations, the study seeks to foster a healthier and more informed online environment for all users.

8 Methodology

8.1 Positionality statement

As a Bachelor's graduate in Medical Biotechnologies and a soon-to-be Master's graduate in Nutrition and Food Systems, my personal and academic journey has been deeply connected to food, health, and public health. My passion for food and cooking has grown through my exposure to food content on social media, particularly TikTok. This engagement has fuelled my interest in nutrition but has also subjected me to the societal pressures that come with it. My studies have provided me with a solid understanding of how the body works and the principles of a balanced diet, which helps me critically assess the content I consume, distinguishing between scientifically sound advice and misinformation. However, the influence of social media, especially platforms like TikTok, presents significant challenges.

Social media algorithms often expose users to similar content repeatedly, which can lead to the formation of incorrect ideas and unhealthy habits. On a personal level, I have felt the pressure to alter my eating habits and exercise routines to conform to the unrealistic standards set by influencers. The hunger and cravings triggered by certain food videos, envy towards influencers, and feelings of inadequacy have all been part of my experience. I am still learning how to navigate these challenges without feeling pressured. Despite these difficulties, I recognise social media's potential for positive change. It can foster good eating habits, teach cooking skills, introduce new foods, and provide support and education on eating disorders. My experiences have shown me both the dangers and benefits of food-related content online.

These experiences drive my desire to research this area, exploring whether these perceptions are shared by others and identifying factors that make individuals more or less vulnerable to such content. This study is relevant as it seeks to enhance the positive aspects of food-related TikTok content, with the potential to influence users towards healthier outcomes. Ultimately, my goal is to contribute to the literature, informing policy improvements and initiatives that address these issues. I envision a digital space where professionals provide scientifically accurate information, and influencers are accountable for the content they share, ensuring audiences can distinguish between personal opinions and reliable advice.

8.2 Hashtags analysis for popularity trends

Hashtags are words and numbers following the # symbol that categorise and track content on social media. Hashtags are crucial for social SEO, or Search Engine Optimisation[153], which involves including relevant information and keywords in posts to help users browsing social platforms easily find your content[154]. When users click on or search for certain hashtags, they are brought to a feed of videos containing those tags. For the present study, food and nutrition-related hashtags were chosen to cover three critical areas of interest: weight loss versus limitless eating, vegan versus omnivore diet, and clean versus fast food eating. These areas represent diverse and often opposing dietary perspectives on TikTok, providing a broad spectrum for analysis, and allowing for e comprehensive view of the food and nutrition discourse on TikTok. The goal of this data collection is to gain insights into users' most prominent trends and interests in food and nutrition and to track if and how they change over time. The wide range of topics helps capture a comprehensive view of TikTok's food and nutrition discourse. Including opposing messages within each category allows for a comparative analysis of different dietary narratives.

8.2.1 Hashtag selection and data collection

Hashtags were chosen by searching on TikTok the keywords “food”, “nutrition”, “weight”, and “body image”. The selection was based on frequent usage and high view counts, ensuring they reflect popular trends within the topics of interest. The observation was conducted in the first half of April 2024 to note commonly used hashtags in these categories. The data collection was then conducted weekly from April 15th, 2024, to May 13th, 2024, between 8 AM and 10 AM to ensure consistency. The main investigator was the sole collector of this data using their personal TikTok account.

8.2.2 Ethical aspects

Collecting data from TikTok involved ethical considerations, particularly regarding user privacy and consent. All data collected for this study was publicly available, ensuring that no private or personal information of users was accessed or utilized. The data was sourced exclusively from content and metrics provided openly by the platform, such as the number of posts associated with specific hashtags, without delving into individual user details or private interactions.

8.2.3 Data analysis

To assess trends in the number of posts associated with various hashtags on TikTok over the observed period (April 15 to May 6, 2024), a linear regression was used to model the relationship between the number of posts (dependent variable) and time (independent variable, represented by collection

dates). The primary goal of this analysis was to determine whether there were significant trends in the popularity of each hashtag over time. The slope of the regression line indicates the rate of change in the number of posts per unit of time. A positive slope suggests an increasing trend, while a negative slope would indicate a decreasing trend. The significance of each slope was evaluated using p-values, with a p-value less than 0.05 considered statistically significant. This method allowed for the quantification of how quickly or slowly each hashtag's popularity was changing during the observation period.

8.3 Participant-driven video collection

8.3.1 Protocol

Participants were instructed to search for each of the 12 predetermined hashtags on TikTok on two separate occasions. They were informed that the study aimed to explore how nutrition-related content on TikTok can influence viewers, particularly regarding their food choices and eating behaviours. Each day, they were asked to share the links of the first three videos that appeared in the search results for each hashtag. Searching on two different days helped ensure the collection of a diverse range of videos and minimised potential biases due to time-specific trends or algorithmic variations.

After receiving the video links from participants, each video's content was systematically analysed and categorised. The analysis focused on identifying the messages related to nutrition, dieting, and eating habits conveyed by the content creators, using a predefined codebook. At the same time, details about the content creators, such as demographics and account information, were documented for further examination. The collected videos and associated data underwent qualitative content analysis to identify recurring themes and patterns, enabling the exploration of prevalent messages and narratives. Additionally, content creators' characteristics were analysed to uncover potential correlations or trends related to the dissemination of specific messages.

8.3.2 Participants

Seven participants from the network of the main investigator were recruited to assist with video collection, ensuring familiarity and ease of communication. Efforts were made to ensure diversity among participants, considering factors such as gender identity and geographic location. The participants were required to be between the ages of 18 and 25, aligning with the target demographic of TikTok users and the relevance of nutrition-related content to this age group. The group included individuals identifying as male, female, and non-binary, residing in different parts of Europe and other regions globally.

8.3.3 Ethical aspects

Participants were provided with an informed consent form before engaging in the study to ensure they had a clear understanding and agreement to the collection and analysis of their data. The consent form detailed the study's purpose, the tasks participants would undertake, the confidentiality measures in place, and the voluntary nature of their participation. By signing the informed consent, participants confirmed they had read and understood the provided information and agreed to take part in the study.

To maintain confidentiality and privacy, only pseudonymous data were retained, including demographic details such as age, location, and gender. Pseudonyms were used to protect participant identities, and a separate, securely stored key linked these pseudonyms to the participants' real identities. Additional measures were implemented to ensure that participants' identities remained protected in any reporting or analysis of the study's findings.

8.3.4 Codebook development

To systematically analyse the content of nutrition-related videos on TikTok, a comprehensive codebook was developed. The development process involved identifying key characteristics essential for categorising the videos and breaking each characteristic into specific coding categories. These characteristics included the age range of the content creators, their general physical appearance and gender identity, the type of nutrition message conveyed, engagement metrics, visual content elements, specific dietary focuses, and the presence of product placement or sponsorship.

8.3.5 Data analysis

The statistical analysis aimed to explore the relationships between various variables in the dataset, including themes, periods, content creator characteristics, and engagement metrics, to uncover patterns and trends. Using this categorised data, engagement metrics were analysed to understand how different types of content resonated with audiences. Correlations between themes and engagement levels were examined to determine which types of posts were more popular.

The temporal distribution of posts was also analysed to identify trends in the popularity of certain themes over time. Additionally, the characteristics of content creators were explored to identify patterns in the types of content produced and the engagement received. This included analysing whether certain age groups or genders were more likely to create specific types of content and how these factors influenced engagement levels.

The analysis also considered co-occurring hashtags to understand the prevalent themes associated with certain hashtags and the popularity of specific content formats.

8.4 TikTok content impact questionnaire

The decision to conduct a questionnaire was driven by the need to collect comprehensive and quantitative data on the impact of social media on its users, as it allows for efficient data collection from a large and diverse audience, ensuring a broad representation of experiences and perceptions. Several studies have successfully employed questionnaires to investigate various impacts of social media, such as its influence on body image, mental health, and consumer behaviour.

8.4.1 Questionnaire development

The questionnaire was developed using a systematic approach, beginning with a literature review to identify key themes related to social media's impact. The questions were developed using a combination of existing validated scales and newly developed items. Three validated scales were incorporated: the Self-Assessment Manikin (SAM), the Satisfaction with Eating Scale, and the Pleasure When Eating Scale.

The SAM[155], based on the Pleasure-Arousal-Dominance Emotional State Model (PAD)[156], was used to assess participants' emotional reactions in a quick, non-verbal manner. This scale directly measures three emotional dimensions: Pleasure, Arousal, and Dominance[155]. The Pleasure dimension reflects the degree of pleasantness or unpleasantness experienced, Arousal represents the level of excitement or calmness, and Dominance indicates the degree of control or influence the participant feels in response to a stimulus[157]. Participants rated their emotional responses using a figure that visually represents different levels of these dimensions[157].

The SWE and PWE scales, part of the Positive Eating Scale (PES) - a psychometric tool designed to measure the extent to which individuals have a positive relationship with eating[158] - were used to assess the baseline relationship with eating among the respondents. These SWE scale measures overall satisfaction with eating habits, reflecting a positive appraisal of one's eating behaviour, and are linked to healthier eating patterns and better health outcomes. Higher scores on this subscale are linked to healthier eating behaviours, lower probabilities of elevated waist circumference, low HDL cholesterol, and a lower risk of metabolic syndrome. SWE is also positively associated with general life satisfaction. The PWE scale, on the other hand, assesses the immediate pleasure and enjoyment derived from eating. While this subscale is related to enjoying the taste of food and eating for pleasure,

it does not show a significant association with healthy eating behaviours or health indicators as SWE does. It indicates that immediate pleasure in eating does not necessarily correlate with overall healthy eating patterns[158,159].

Table 1 below lists the statements from both the SWE and PWE scales, where respondents rated each statement as "Strongly Disagree," "Somewhat Disagree," "Somewhat Agree," or "Strongly Agree".

Table 1: Statements from the Satisfaction with Eating (SWE) and Pleasure with Eating (PWE) Scales

Satisfaction with Eating	**Pleasure when Eating**
I eat in a way that makes me feel good	Eating is a pleasure for me
Overall, I am satisfied with my eating behaviour	I enjoy eating
I am relaxed about eating	Eating is fun for me
I have a good relationship with eating	Eating is something nice for me

Given the relatively small sample size of approximately 50 participants, it was necessary to assess the internal consistency of these scales, since the reliability of psychometric tools can vary across different samples and settings. Cronbach's alpha was calculated to measure the reliability of the items within each scale[160]. Additionally, a Confirmatory Factor Analysis was performed to verify the factor structure of the scales and ensure that the data fit the hypothesised measurement model[161].

The questionnaire was administered via Qualtrics, which was selected for its user-friendly interface and advanced features. Data analysis was conducted using the statistical software RStudio. Notably, no pilot testing of the questionnaire was performed.

8.4.2 Participants

Respondents for the questionnaire were recruited from the author's network, including friends and family, through personal outreach via WhatsApp and Instagram stories. WhatsApp was used for direct and personalised communication, which increased the likelihood of participation, while Instagram stories offered broader visibility within the author's social media circle, promoting a more diverse sample. This approach enabled the collection of necessary data for the study through trusted and accessible channels.

To mitigate potential bias resulting from selecting participants within the author's network, efforts were made to ensure a diverse range of respondents. This involved reaching out to individuals with varying backgrounds, interests, and demographics, aiming to reduce the impact of selection bias on the study's findings.

8.4.3 Ethical aspects

Before submitting the questionnaire, participants were required to review and sign an informed consent form that clearly outlined the study's purpose. The form assured participants that their involvement was entirely voluntary, with the option to withdraw anytime. It provided details on the study procedures, duration, potential risks, and benefits, and emphasised that data would be pseudonymised, securely stored, and used exclusively for research purposes. The form also included contact information for the researcher and supervisor for any inquiries.

The Data Management Plan (DMP) specified the procedures for handling data, including the use of Qualtrics for data collection and the collection of personal information such as age, gender identity, and dietary habits. All data was pseudonymised, ensuring that participant identities were kept separate from the study data. Data was securely stored on password-protected devices and encrypted cloud storage, with access restricted to authorised personnel. Regular backups and compliance with GDPR ensured data protection and safeguarded participants' rights.

Ethics committee approval from Ghent University Hospital confirmed the study met all ethical standards. The committee thoroughly reviewed the study's objectives, methodology, consent process, and DMP, ensuring that risks to participants were minimised and ethical considerations were adequately addressed.

8.4.4 Data analysis

8.4.4.1 Satisfaction with Eating and Pleasure when Eating scales

To analyse the SWE and PWE scales, various statistical methods were employed to explore their relationships with demographic and behavioural variables. Descriptive statistics were used to examine the distribution of responses on the SWE and PWE scales, offering an overview of how respondents rated their satisfaction and pleasure with eating.

The analysis began with data preparation, where several variables were transformed into numeric values to facilitate the analysis. Age and body confidence scores were used in their numeric values.

The SWE and PWE responses were coded as 1 for strongly disagree, 2 for somewhat disagree, 3 for somewhat agree, and 4 for strongly agree. Gender identity was coded as 1 for “male”, 2 for “female”, and 3 for “non-binary”. Education level was coded as 1 for “high school”, 2 for “bachelor’s degree”, and 3 for “master’s degree.” The field of expertise was coded as 1 for “food-adjacent” and 2 for “everything else.” Body confidence was measured on a scale from 0 to 5, where 0 indicating "not confident at all" and 5 indicating "very confident." TikTok usage frequency was coded as 1 for “never”, 2 for “once per week”, 3 for “several times per week”, 4 for “once a day”, and 5 for “several times per day”.

Following data preparation, the internal consistency of the SWE and PWE scales was evaluated using Cronbach's alpha to assess how well the items within each scale reflect their underlying constructs. To validate the structure of these scales, Confirmatory Factor Analysis (CFA) was conducted to test whether the items on the scales loaded onto their expected factors.

Descriptive statistics were utilised to examine the distribution of responses on the SWE and PWE scales, providing a detailed overview of how respondents rated their satisfaction and pleasure with eating. Bar plots were generated to visualize these distributions, highlighting the variation in satisfaction and pleasure levels among participants.

The analysis of the relationships between the SWE and PWE scales and various demographic variables was conducted using a range of statistical methods tailored to the nature of the data. Spearman’s rank correlation coefficient was employed to examine relationships between SWE and PWE scores and the ordinal variables age and body confidence, since it is particularly suitable for ordinal data and when the assumptions of normality are not met, making the parametric Pearson’s correlation test not applicable. The goal of this analysis was to measure how well the relationships between the variables are described by a monotonic function, therefore increasing, or decreasing, not necessarily in a linear manner. Boxplots were used to visually represent the distribution and potential relationships within these variables, providing additional insights into the nature of these correlations. For gender identity and field of expertise, the relationship with the SWE and PWE scores was assessed based on the means and medians, as they both are non-ordered categorical variables. Due to the limited variation in education level within the sample, no meaningful analysis was conducted on this variable. Finally, the non-parametric Kruskal-Wallis test was utilised to analyse the relationship between body confidence levels and both SWE and PWE scores, with boxplots used to illustrate these relationships visually.

8.4.4.2 Self-assessment Manikin

To assess the strength and direction of the association between the different emotional responses, Spearman's rank sum test was employed, also due to the non-normal distribution of the data. This test provides insights into how changes in one emotional dimension might be related to changes in another. Additionally, ANOVA was considered to evaluate whether different TikTok videos elicited different emotional responses, as it is a validated method for comparing the means of multiple group[157]. However, ANOVA assumes that the data are normally distributed and that the variances across groups are homogeneous, and the Anderson-Darling test and Levene's test were chosen to verify these assumptions. The tests showed significant deviations were found, therefore the use of the non-parametric Kruskal-Wallis test was necessitated instead. Following significant results from the Kruskal-Wallis test, post-hoc Dunn tests with Bonferroni adjustment were conducted to identify specific group differences. Finally, an analysis of the mean scores of the emotional responses was conducted to assess overall trends. An analysis of the mean scores of the emotional responses was also conducted to assess overall trends across the stimuli, providing a general overview of how different videos were perceived in terms of Pleasure, Arousal, and Dominance.

Various statistical methods were employed to analyse the relationships between demographic variables and emotional responses. The Kruskal-Wallis test was used to assess differences in emotional responses across different TikTok usage patterns. This test was chosen for the same reasons as mentioned above—it is suitable for non-normally distributed data and allows for comparisons across multiple groups. Spearman's rank correlation coefficient was applied to evaluate the monotonic relationship between SAM responses and age. Finally, for evaluation of the impact of the field of expertise and gender identity, means and medians were evaluated. When significant results were found in the Kruskal-Wallis tests, post-hoc Dunn tests were performed to pinpoint specific group differences.

These analyses were supported visually by boxplots, which provided a clear representation of the distribution of emotional responses across different levels of the independent variables. As previously mentioned, due to the lack of variability in responses to the education level, no analysis could be conducted in connection to that demographic variable.

8.4.4.3 TikTok usage analysis

To explore the correlations between TikTok usage patterns, body confidence, and SWE and PWE, emotional response, specific statistical methods were employed, considering both the nature and the

distribution of the data. To assess the correlation between usage frequency and the SWE and PWE scores, Kendall's Tau correlation was applied to measure the strength and direction of the association between two ranked variables, due to the non-parametric nature of the data. To evaluate the medians of body confidence and SAM scores across different levels of TikTok usage, the Kruskal-Wallis rank sum test was applied. When significant differences were identified in the Kruskal-Wallis test, Dunn's post-hoc test with Bonferroni correction was applied. All statistical analyses were supplemented with boxplots to visually represent the findings

8.4.4.4 Analysis of open-ended questions

At the end of the questionnaire, two open-ended questions were included to gain deeper insights into participants' perceptions and to provide an opportunity to uncover aspects that the structured questions might have not addressed. These questions were designed to explore the influence and potential harmfulness of food-related content on individuals, allowing for a more nuanced understanding beyond the predefined topics. To analyse the responses, a systematic qualitative examination was conducted. The process began with a comprehensive review of all participant responses, where each response was carefully read to identify recurring themes, opinions, and concepts. Key phrases and ideas were then extracted and categorised to reflect the common patterns observed. The analysis aimed to capture the diverse perspectives and experiences of the respondents, enabling a richer understanding of how food-related content can influence individuals and the potential risks associated with it. The findings were summarised to reflect the overall impact, highlighting both positive and negative aspects as reported by the participants.

8.5 Integration of AI-assisted analysis

ChatGPT-4.0 was utilised in this study to support various aspects of the research process. Specifically, it assisted in summarising the planning of the thesis, aiding in the identification of relevant references, and enhancing the clarity, grammar, and spelling of the text. Additionally, ChatGPT-4.0 was employed to assist with coding for statistical analysis, facilitating the application of appropriate methods and improving the efficiency of the analysis. Despite these supports, all final decisions, interpretations, and conclusions were made by the researcher, ensuring that the integrity and academic rigour of the study were maintained.

9 Results

A summary of all the results can be found in Annex Summary.

9.1 Hashtags analysis for popularity trends

Data has been acquired to track the popularity trend of the selected hashtags on TikTok. The obtained information is summarised in Annex A.

9.1.1 Statistical analysis and hashtag popularity trends

The analysis of trends in the number of posts associated with various hashtags over time, as illustrated in Figure 7, reveals several key observations. The hashtag #HighProtein exhibited the most significant increase in the number of posts, particularly between April 22 and May 6, 2024, with a sharp rise from 303,300 to 890,300 (slope = 233,700, p = 0.02). This indicates a rapidly growing interest in high-protein diets during this period, positioning it as the fastest-growing hashtag in the dataset.

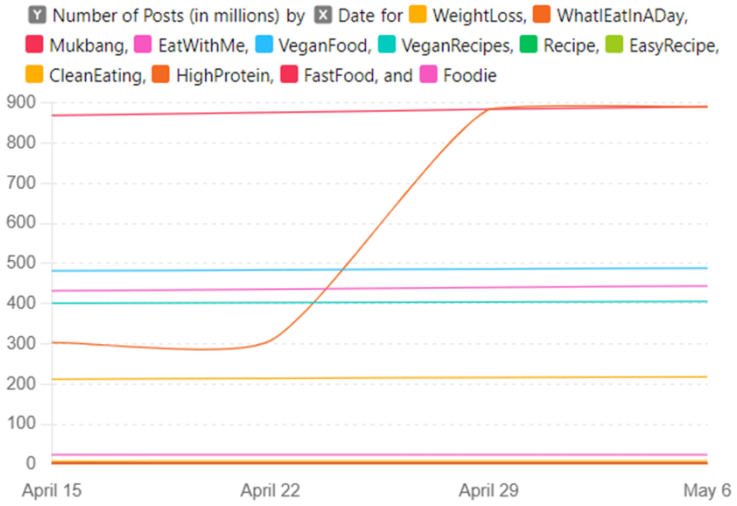

Figure 7: Trends in hashtag usage on TikTok from April 15, 2024, to May 13, 2024

In contrast, #WeightLoss and #Foodie consistently recorded the highest number of posts throughout the observed period, with the former showing a slight but steady increase from 8.1 million to 8.3 million posts (slope = 60,000, $p < 0.05$). The #Foodie hashtag maintained a steady upward trajectory from 23.8 million to 24.1 million posts (slope = 100,000, $p < 0.001$), reflecting a sustained and high level of engagement with general food-related content on TikTok.

Other hashtags, such as #WhatIEatInADay and #Mukbang, showed minimal variation over the same period. The number of posts for #WhatIEatInADay remained static at 1.7 million (slope = 0, p = 1), indicating stable but non-growing interest in daily meal content. Similarly, #Mukbang posts increased

slightly from 3.5 million to 3.6 million (slope = 30,000, p = 0.17), reflecting consistent, moderate engagement with this type of content.

Hashtags related to healthy and niche dietary choices, including #VeganFood, #VeganRecipes, and #CleanEating, displayed modest but steady growth. For example, #VeganFood saw an increase from 481,500 to 488,700 posts (slope = 2,430, p = 0.02), suggesting a slow but consistent rise in interest in vegan and clean eating topics.

The statistical analysis further supports these observations, with significant trends identified for several hashtags. In addition to #HighProtein, the hashtags #FastFood and #EatWithMe also exhibited noticeable increases, underscoring the diverse dietary interests of TikTok users, which range from indulgent fast food options to interactive meal experiences. The Kruskal-Wallis test confirmed significant differences in the number of posts across different hashtags (chi-square = 27.307, $p < 0.001$), further emphasizing the varying levels of engagement with these topics.

Overall, the data highlights a strong and growing interest in high-protein diets, general food content, and vegan topics on TikTok, while some popular hashtags, like #WhatIEatInADay, continue to engage users without significant growth. The consistent increase in posts for hashtags like #FastFood and #EatWithMe reflects both indulgent and interactive food-related content, as depicted in Figure 7.

9.2 Participant-driven video collection

9.2.1 Specific hashtags and themes

The analysis of TikTok content reveals distinct themes and patterns associated with the investigated nutrition-related hashtags. #WeightLoss commonly features transformation, motivation, and progress themes, showcasing before-and-after comparisons, practical advice, and tips for weight loss, including diet tips, meal prep, and exercise routines. These posts often include hashtags like #CalorieDeficit and #IntermittentFasting, reflecting specific methods used in personal journeys, milestones, and daily routines presented, the most frequent being. Similarly, #WhatIEatInADay features eating diaries, with some versions emphasising realistic eating and body size inclusivity. The content generally includes detailed accounts of all meals consumed in a day, with voiceovers explaining food choices and their health benefits, along with caloric breakdowns. Tags like #RealisticFullDayOfEating and #WhatIEatInADayAsAFatPerson mark a positive shift away from earlier versions of this format that promoted extremely restrictive and unrealistic diets[162].

#Mukbang videos are centred around themes of entertainment and excess, featuring individuals eating large quantities of food with a strong emphasis on the sensory aspects of eating, including ASMR (Autonomous Sensory Meridian Response) elements. These videos typically showcase a wide variety of indulgent foods, often fast food items, and include close-up shots and eating sounds, making the experience immersive for viewers. Related to this hashtag is #EatWithMe, which promotes interactive and social eating experiences, where creators invite viewers to join them during meals, fostering a sense of community. While these videos often include elements of Mukbang, there is more focus on the enjoyment and experience of eating through dialogue and interaction. Content typically features comfort foods and snacks, with creators describing and reviewing the food, combining ASMR and conversational elements, and sharing personal anecdotes.

Content under #VeganFood and #VeganRecipes promotes vegan and plant-based diets, catering to a dedicated audience. Videos showcase a variety of easy, quick, and protein-rich vegan recipes, emphasizing their nutritional benefits and including step-by-step instructions and health information. Additionally, there is an occasional incorporation of ASMR elements for sensory engagement.

Videos tagged with #Recipe and #EasyRecipe emphasise accessible and straightforward cooking, catering to viewers looking for simple and quick meal ideas, often with a focus on cost-effectiveness. Some of these videos also provide expert tips and educational insights from professional chefs. Featuring a diverse array of cuisines and specific food items, these videos cater to various tastes. Meal-related tags offer ideas for breakfast, lunch, dinner, and snacks, while diet-related tags highlight health and wellness.

Content under the #CleanEating and #HighProtein hashtags emphasise a healthy lifestyle, focusing respectively on healthy diets and muscle building. Videos tagged with #CleanEating frequently include additional tags related to specific diets they promote, such as whole foods, plant-based diets, and raw food cleanses, all aimed at encouraging clean eating habits. Common content includes meal prep tips and food preparation advice, with some product endorsements. The frequent association with tags like #WhatIEatInADay and #WeightLoss suggests an integration into daily routines and personal health journeys. The content under #HighProtein highlights popular high-protein foods linked to fitness and gym lifestyles, providing practical advice for incorporating protein into various meals throughout the day.

Content tagged with #FastFood often features reviews and recommendations for various fast-food options, exploring their menu items and conducting taste tests. These videos spotlight popular fast food staples, especially chicken dishes, appealing to a wide geographical range. Tags related to enjoyment, indulgence, cooking, and recipes reflect the multifaceted approach to fast food content, catering to both pure enjoyment and health-conscious choices. #Foodie often appears alongside #FastFood but generally covers a wider range of culinary experiences. This includes documenting daily meals, cooking videos, Mukbangs, and eating shows, accommodating various viewer preferences. The use of ASMR and audio-visual effects enhances sensory appeal and engages a strong community of food enthusiasts, with creators reflecting a diverse and inclusive foodie community.

9.2.2 Engagement metrics

The analysis revealed varying levels of engagement across different hashtags, highlighting distinct trends. The hashtags #EasyRecipe and #Recipe emerged as leaders in engagement, reflecting a strong interest in simple and accessible cooking content. In contrast, #CleanEating showed the lowest engagement, indicating less interest in content tagged with this term.

High-protein diets attracted significant attention, particularly under #HighProtein, and vegan-related content under the tags #VeganRecipes and #VeganFoodled performed well too. Weight loss content under #WeightLoss showed moderate engagement, and #WhatIEatInADay resonated with viewers, reflecting sustained interest in daily eating habits.

Content associated with #FastFood and #Foodie attracted substantial engagement, demonstrating their broad appeal. Additionally, #EatWithMe content had high engagement, highlighting its appeal for entertainment and sensory experiences.

9.2.3 Hashtags co-occurrences

The analysis of co-occurring hashtags revealed several popular pairings. The #WeightLoss and #WeightLossTransformation combination appeared frequently, with 6 co-occurrences, indicating strong interest in content focused on weight loss journeys and physical transformations. Similarly, #VeganFood and #VeganRecipes often co-occurred, suggesting a dedicated audience for plant-based dietary content. The pair of #Mukbang and #EatWithMe, with 7 co-occurrences, highlighted the popularity of communal eating experiences and ASMR content. This connection is further emphasized by the co-occurrence of #Mukbang with 14 ASMR-related hashtags and #EatWithMe with 13, underscoring the strong link between these content formats and sensory engagement. The

#FastFood and #Foodie combination, which co-occurred 8 times, pointed to a trend towards reviewing and enjoying fast food, aligning with the broader theme of food exploration and enjoyment.

9.2.4 Content creators' characteristics and engagement metrics

The analysis of TikTok content creator demographics and engagement patterns revealed distinct trends.

Mukbang videos were predominantly created by young adults aged 20-30, with a majority of female creators. Similarly, vegan recipes and “What I Eat in a Day” content were mainly produced by females, particularly those aged 25-30. In contrast, recipes displayed a more balanced age distribution among creators aged 25-35. Fast food reviews featured both male and female creators, spanning a broader age range of 20-40. High-protein content stood out as primarily created by males in the 30-35 age group, suggesting distinct demographic preferences across different types of food-related content.

Content created by individuals identifiable as "skinny" or "fit" consistently attracted higher engagement, especially for food-related posts such as Mukbangs or meal preparations, often obtaining millions of likes. Videos with detailed explanations or narrations, such as meal preparations with voiceovers, received more comments, particularly those involving personal stories or weight loss journeys. Practical content, such as recipes, high-protein snack ideas, and detailed meal plans, was frequently saved, reflecting its value to viewers. High-protein and vegan recipes, like a one-pot dinner, also experienced high save rates. On the other hand, visually engaging content, including Mukbangs and dramatic transformations, was more frequently shared. This trend extended to videos featuring enjoyable eating experiences, significant weight loss, strong ASMR elements, or messy eating, all of which highlighted their broad appeal.

9.2.5 Formats popularity

Mukbang videos, especially those featuring strong ASMR elements and messy eating, consistently receive high engagement across likes, comments, saves, and shares, thanks to their sensory appeal and entertainment value. Similarly, before-and-after transformations garner significant interaction, driven by the visual impact of these changes and the compelling personal narratives that resonate with viewers. Informative and instructional content, such as practical advice, detailed meal preparations, or step-by-step recipes, are frequently saved and shared, reflecting their high perceived value as resources worth revisiting for practical use.

9.2.6 Product placement or sponsorship

The presence of product placement or sponsorship in TikTok videos generally correlates with lower engagement metrics. Videos without explicit sponsorship tend to achieve higher engagement, suggesting that audiences prefer content they perceive as authentic. However, when product integration is subtle and not overtly promoted, engagement levels can vary, indicating that discreet endorsements can sometimes be effective. It is important to note that failing to disclose a paid advertisement or formal collaboration is illegal under the Unfair Commercial Practices Directive (UCPD), as indicated by the European Commission in the Influencer Legal Hub[137]. Undisclosed advertising can mislead consumers by blurring the line between organic content and advertisements, making it essential to adhere to legal disclosure requirements.

9.2.7 Similarities and differences among hashtags

Content tagged with #VeganRecipes, #EasyRecipe, and #Recipe, while all centred on food preparation, conveyed distinct messages. All three hashtags highlighted diverse cuisines and ingredients, often promoting healthy eating and specific dietary preferences, with frequent connections to veganism, high-protein meals, and overall healthiness. However, #VeganRecipes was exclusively focused on vegan and plant-based recipes, #EasyRecipe prioritised simplicity and quick preparation, while #Recipe offered a broader range of recipes without specific dietary restrictions or preparation time emphasis.

Similarly, hashtags like #EatWithMe, #WhatIEatInADay, and #Mukbang all highlighted eating habits, food choices, and meal consumption, often incorporating a variety of foods and cuisines enhanced by ASMR and eating sounds for a richer sensory experience. These tags fostered interaction and a sense of communal dining but differed in their primary focus. #WhatIEatInADay documented an entire day's meals, emphasising realism and body positivity. In contrast, #Mukbang focused on consuming large quantities of food with strong ASMR elements, and #EatWithMe encouraged viewers to join the content creator for their meal, often featuring conversation during the videos. While realism and body positivity were key in #WhatIEatInADay, #Mukbang and #EatWithMe placed more emphasis on the eating experience itself.

9.3 TikTok content impact questionnaire

9.3.1 Participant demographics and response rate

The study collected responses from a total of 63 participants. The study collected responses from a total of 63 participants. Out of these, demographic information was available for 36 respondents,

providing insight into the sample's composition. The ages of the respondents ranged from 19 to 26 years, with the most common age being 25, followed closely by ages 24 and 26. Gender distribution within the sample showed a predominance of female respondents, with 28 females compared to 8 males.

In terms of geographical diversity, the respondents hailed from various countries, with a significant concentration in Europe. Most participants were from Italy (12 respondents), followed by Spain (5 respondents). Other European countries represented in the sample included Belgium, the Netherlands, France, Germany, Poland, Portugal, Romania, and Belarus. There was also representation from Asia, with respondents from Singapore, India, and China, as well as from South America, including Ecuador and Brazil.

9.3.2 Self-assessment Manikin

9.3.2.1 Correlations within emotional status

The correlation matrix (Table 2) reveals negligible relationships among the emotional states, as indicated by the correlation coefficient and p-values.

Table 2: Correlation matrix: Pearson's correlation coefficient and p-values – 336 responses

	Pleasure	**Arousal**	**Dominance**
Pleasure	1.000 (p-value: NA)	-0.047 (p-value: 0.466)	0.021 (p-value: 0.746)
Arousal		1.000 (p-value: NA)	-0.036 (p-value: 0.575)
Dominance			1.000 (p-value: NA)

Note: NA (Not Applicable) for diagonal elements as these represent the correlation of a variable to itself

To complement the correlation analysis, boxplots were generated to visually explore the distribution of emotional scores across different levels of the other emotional dimensions. The boxplot of Arousal by Dominance (Figure 8) illustrates significant variability across different levels of Dominance, suggesting that Arousal can vary considerably irrespective of the perceived Dominance level.

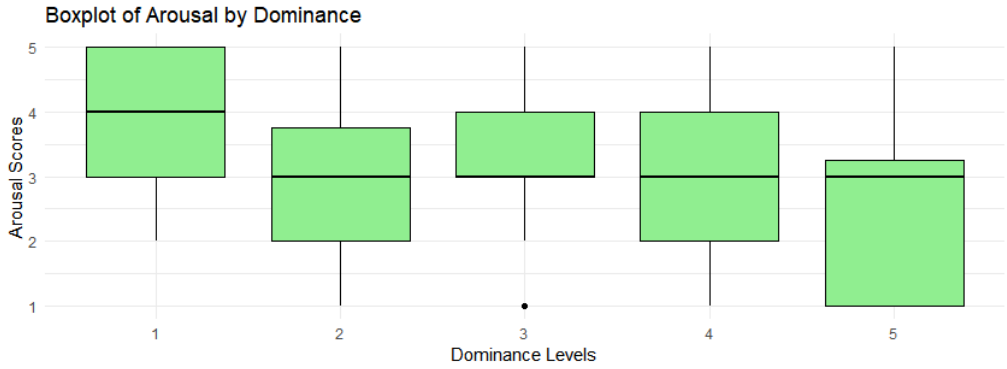

Figure 8: Boxplot of Arousal by Dominance - 336 responses

Similarly to Arousal, the boxplot (Figure 9) shows that Pleasure scores vary widely across Dominance levels, underscoring a complex relationship that is not captured by linear correlation.

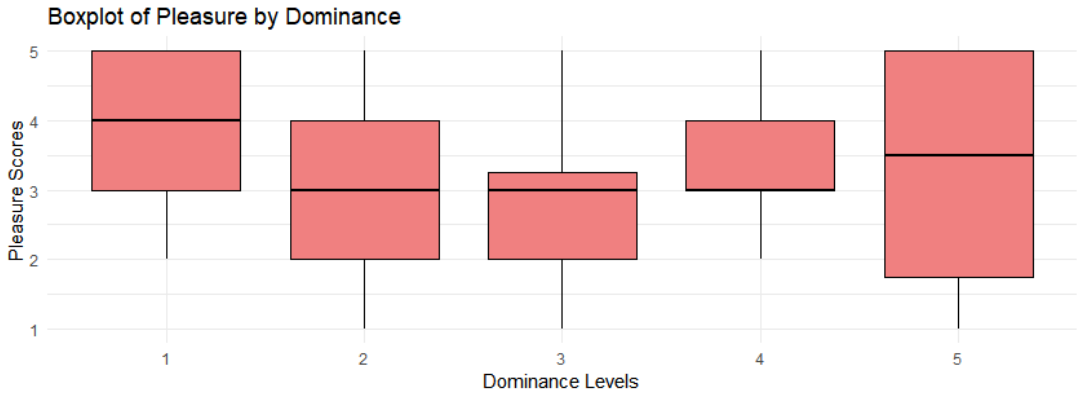

Figure 9: Boxplot of Pleasure by Dominance- 336 responses

Finally, the boxplot of Pleasure by Arousal (Figure 10) illustrates that Pleasure scores do not exhibit any significant trend across different Arousal levels either. This supports the weak and non-significant correlation found in the Person analysis as well.

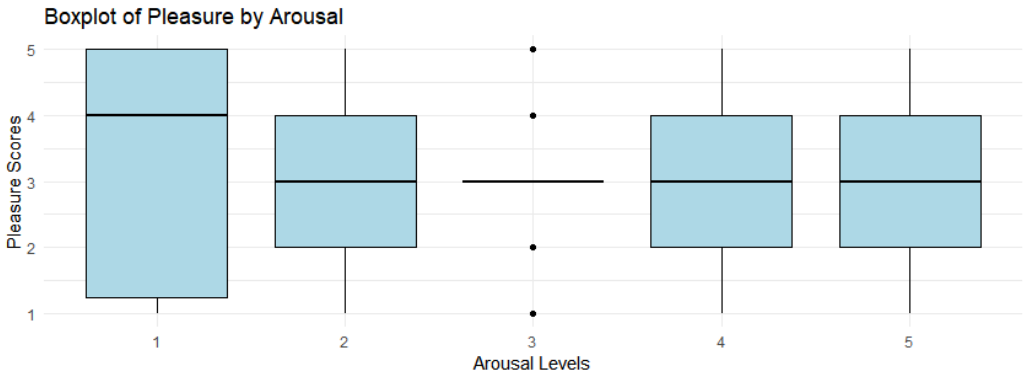

Figure 10: Boxplot of Pleasure by Arousal - 336 responses

9.3.2.2 Emotional responses to TikTok videos

An ANOVA was initially considered to assess whether the videos shown as stimuli during the SAM elicited significantly different responses across the three emotional states. However, before proceeding with the ANOVA, the assumptions of normality and homogeneity of variances were evaluated using the Anderson-Darling and Levene's tests, respectively. The results indicated that the data did not meet the normality assumption for any of the emotional states, with all p-values being significantly less than 0.05. Regarding the homogeneity of variances, the results showed that the variances for Pleasure were not equal ($p = 0.018$), whereas Arousal and Dominance met this assumption, with p-values of 0.391 and 0.060, respectively. Given the violation of the normality assumption across all groups and the variance assumption for Pleasure, the Kruskal-Wallis test was selected as a suitable non-parametric alternative.

The Kruskal-Willis test for Pleasure revealed a significant difference among the stimulus groups (Kruskal-Wallis Chi-square = 39.174, $df = 7$, $p < 0.001$), indicating that some videos were perceived as significantly more or less pleasurable than others. In contrast, Arousal (Kruskal-Wallis Chi-square = 7.116, $df = 7$, $p = 0.417$) and Dominance (Kruskal-Wallis Chi-square = 5.714, $df = 7$, $p = 0.574$) did not reveal significant differences among the stimuli, suggesting that the videos did not differ significantly in terms of how arousing or dominant they were perceived to be.

To identify which groups differed in Pleasure, a post-hoc Dunn test with Bonferroni correction was conducted. The Dunn test revealed several pairs of stimuli with significant differences in Pleasure scores. Specifically, Mukbang elicited significantly higher Pleasure scores compared to What I Eat in a Day ($p = 0.0001$), Weight Loss ($p = 0.036$), Fast Food ($p = 0.015$), High Protein ($p < 0.001$), and Clean Eating ($p = 0.0002$). Mukbang videos were generally perceived as more pleasurable compared to several other types of content. Conversely, What I Eat in a Day and Weight Loss were perceived as less pleasurable than their respective significant pairs, highlighting the relative appeal of Mukbang over these types.

To further understand the overall trends, the stimuli with the lowest and highest mean scores for each emotional state were identified. The Mukbang stimulus has the highest Pleasure score (3.8), while High Protein has the lowest (2.5). On the other hand, the High Protein stimulus has the highest Arousal mean (3.3), while Fast Food has the lowest, even though the difference is not high (2.9). Finally, Fast Food obtained the lowest Dominance score as well (2.8), while What I Eat in A Day got the highest one (3.3).

9.3.2.3 Correlation with demographic variables

9.3.2.3.1 Age

The analysis aimed to investigate the relationship between age and emotional dimensions using Spearman's rank correlation. The results indicate no significant correlations between age and any of these emotional responses (Pleasure: rho = -0.051, p = 0.440; Arousal: rho = 0.005, p = 0.943; Dominance: rho = -0.040, p = 0.542). The corresponding boxplots can be found in Annex B.

9.3.2.3.2 Gender identity

The analysis of emotional responses by gender shows that male and female participants have nearly identical mean and median values for pleasure and arousal. The mean pleasure score for both gender identities is 3.04, and the median value is also 3. The mean arousal for males is slightly higher at 3.23 compared to 3.13 for females, although both have a median arousal score of 3. However, a slight difference can be observed in the dominance scores. Females have a marginally higher mean dominance score of 3.03 compared to 2.98 for males, with both genders having a median dominance of 3.

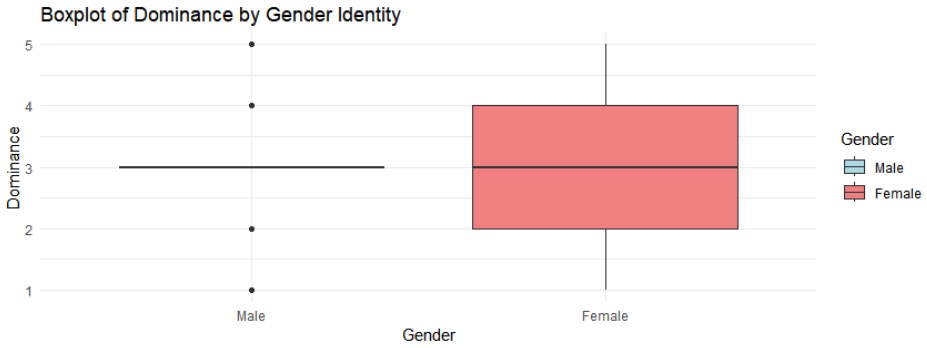

Figure 11: Boxplot of Dominance by gender identity

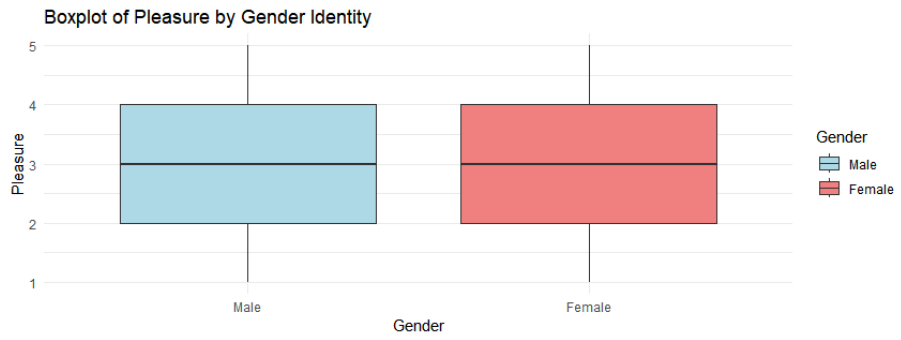

Figure 12: Boxplot of Pleasure by gender identity

The boxplots (Figures 11, 12, and 13) visually compare these distributions and confirm the consistency across genders. For both pleasure and arousal, the distributions are remarkably similar across genders. In the case of dominance, females exhibit a slightly wider distribution than males,

although both genders still cluster around similar median values. Overall, the differences between genders are minor, indicating that emotional responses are consistent across male and female participants.

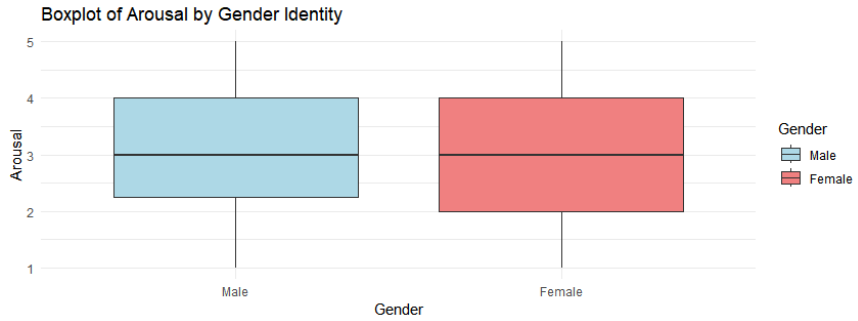

Figure 14: Boxplot of Arousal by gender identity

9.3.2.3.3 Field of expertise

The analysis of emotional responses based on the field of expertise revealed notable differences between individuals working in food or nutrition-adjacent fields and those in non-food or nutrition-adjacent fields. The mean Pleasure score was slightly higher in the former group (3.21) compared to the latter (2.99), indicating a generally similar level of enjoyment across both groups. The median Pleasure score was 3 for both groups, further suggesting a comparable level of enjoyment. Arousal levels were slightly higher among those not directly involved in food-related fields, with a mean score of 3.35 compared to 2.92 for those in food-related fields, and both groups had a median Arousal score of 3. Dominance scores also showed a slight difference, with individuals in food-related fields reporting a higher mean score (3.21) compared to their counterparts (2.99). The median Dominance score was also 3 for both groups.

Figure 14: Boxplot of Pleasure by field of expertise

Figure 15: Boxplot of Dominance by field of expertise

The boxplots (Figures 14, 15, and 16) illustrate these differences, showing that while there are some variations in emotional responses based on professional expertise, these variations are relatively subtle. The findings suggest that professional expertise may slightly influence emotional responses, particularly in arousal and dominance, but the overall emotional experience remains broadly similar across different fields of expertise.

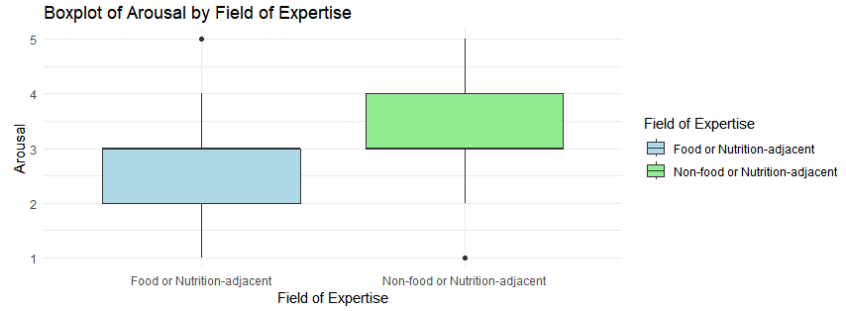

Figure 16: Boxplot of Arousal by field of expertise

9.3.2.4 Body confidence and emotional responses to videos

The analysis of the relationship between body confidence and emotional responses revealed interesting insights. For Pleasure and Arousal, the Kruskal-Wallis test did not indicate any significant differences among the levels of body confidence (Pleasure: Chi-square = 0.957, p = 0.916; Arousal: Chi-square = 2.869, p = 0.58). In contrast, Dominance scores were significant between categories of body confidence, with the Kruskal-Wallis test yielding a Chi-square value of 11.461 (p = 0.022). This indicates that individuals' perception of dominance in response to stimuli is related to their level of body confidence. However, the Dunn test did not detect specific pairwise differences between the groups, suggesting that while an overall difference exists, no particular levels of body confidence stand out as significantly different from each other. The corresponding boxplot (Figure 17) visually supports these findings. Although there is variability in Dominance scores across different levels of body confidence, no single group shows a stark difference from the others. Additionally, the boxplots for Pleasure and Arousal, which are presented in Annex C, further illustrate the findings.

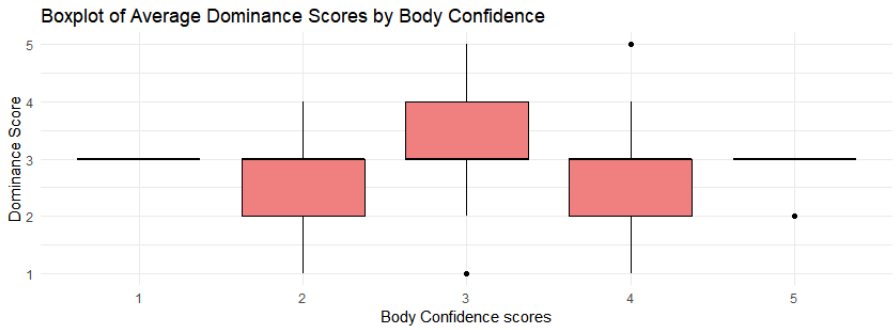

Figure 17: Boxplot of average Dominance scores by body confidence

9.3.2.5 Correlation of TikTok usage patterns with emotional responses

The Kruskal-Wallis test was conducted to examine the relationship between TikTok usage and emotional responses. The results indicated no significant differences neither in Pleasure (Chi-square = 6.504, p = 0.165) nor in Dominance scores (Chi-square = 8.701, p = 0.069) scores across different levels of TikTok usage. However, the Kruskal-Wallis test for Arousal scores did show a significant difference (Chi-square = 10.151, p = 0.038), with Dunn's post-hoc test with Bonferroni adjustments highlighting a significant difference between the "Never" and "Several times per week" usage levels (adjusted p = 0.032). This suggests that participants who used TikTok several times per week experienced higher Arousal scores compared to those who never used TikTok. Figure 18 illustrates these findings with a boxplot that displays the variation in Arousal scores across TikTok usage levels. The other boxplots, showing Pleasure and Dominance scores by TikTok usage, can be found in Annex D.

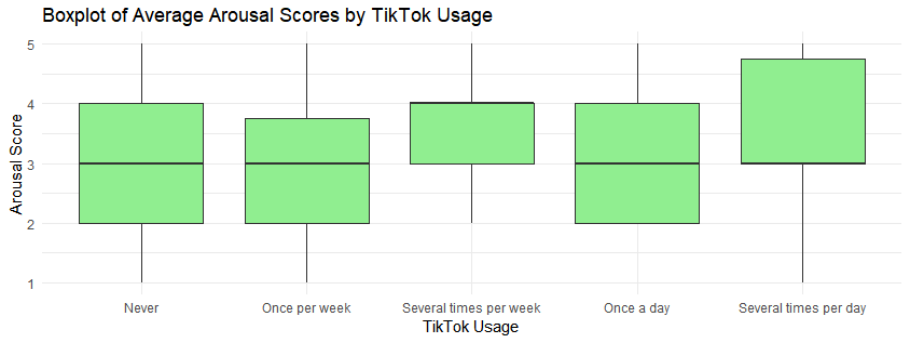

Figure 18: Boxplot of average Arousal scores by TikTok usage

9.3.2.6 Correlation with SWE and PWE

The analysis of emotional responses across different levels of SWE and PWE revealed several significant findings.

For SWE, while the Kruskal-Wallis test for Pleasure indicated no significant differences (Chi-square = 6.238, p = 0.621), it showed significant differences for the other emotional responses. The analysis of Arousal obtained a Chi-square value of 17.634 (p = 0.024), suggesting that SWE has a notable impact on Arousal levels, with the boxplot in Figure 19 supporting this finding. Dunn's post-hoc test revealed no significant pairwise differences, but the overall result indicates some influence of SWE on Arousal. As for Dominance, the Chi-square value of 30.482 (p = 0.0002) implies a strong association between SWE and a sense of Dominance. The boxplot (Figure 20) visually reinforces this result, displaying distinct differences in Dominance scores across various SWE levels. Post-hoc analysis with Dunn's test highlighted significant differences between specific SWE levels, indicating that individuals with certain SWE levels feel more dominant or in control.

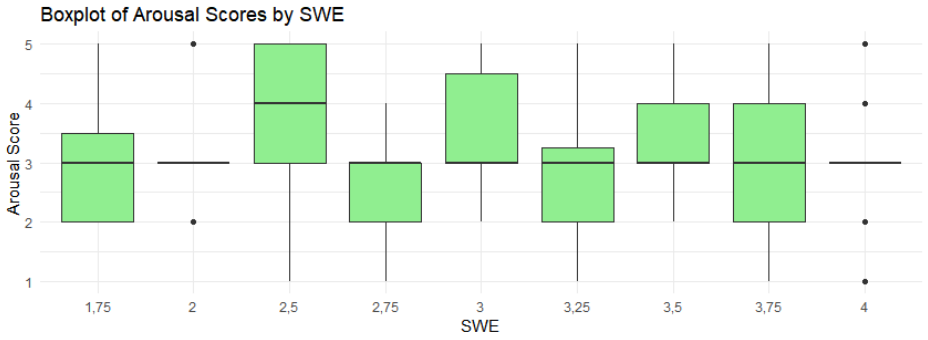

Figure 19: Boxplot of Arousal scores by SWE

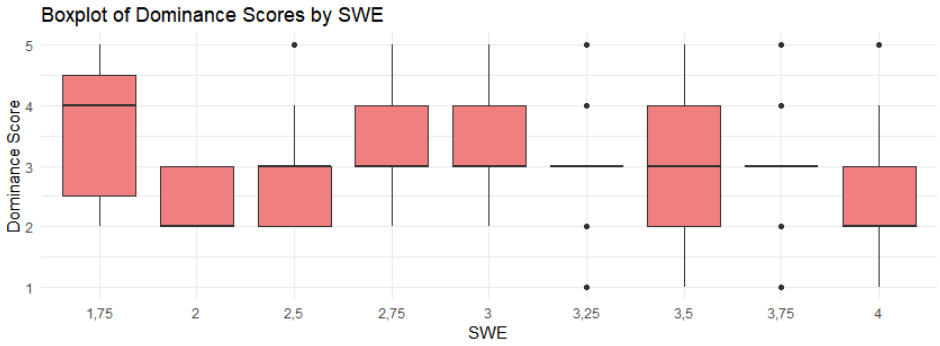

Figure 20: Boxplot of Dominance scores by SWE

Regarding PWE, neither Pleasure nor Arousal was significantly different based on PWE levels (Pleasure: Chi-square = 6.295, p = 0.391; Arousal: Chi-square = 11.753, p = 0.068). On the other hand, the analysis for Dominance by PWE yielded a Chi-square value of 17.058 (p = 0.009), suggesting that PWE significantly affects the sense of Dominance. The boxplot (Figure 21) supports this finding, showing distinct differences in Dominance scores across PWE levels. Dunn's post-hoc test further revealed significant differences between specific PWE levels (details in Annex –

Summary), indicating that individuals' sense of dominance varies with their level of pleasure when eating.

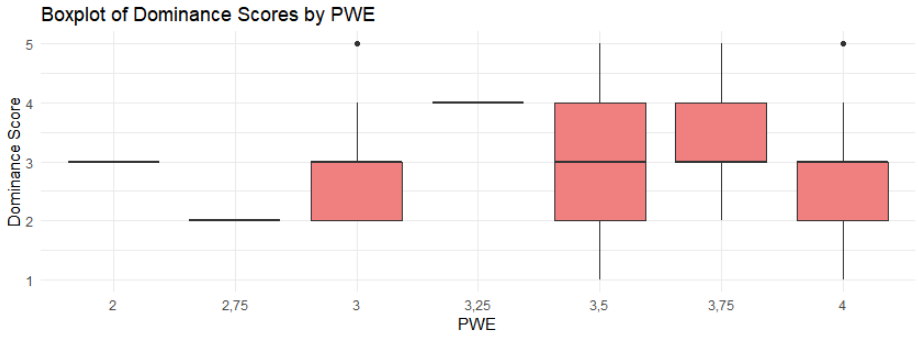

Figure 21: Boxplot of Dominance scores by PWE

The boxplots showing the non-significant relationships can be found in Annexes E and F.

9.3.3 Satisfaction with Eating and Pleasure when Eating scales

The descriptive statistics of SWE scores, as illustrated in Figure 22, indicate a diverse range of satisfaction levels with eating behaviours among respondents. While there is a noticeable peak around the satisfaction level of 3.0, the bar plot also reveals additional peaks at scores like 2.5 and 3.75. this distribution pattern highlights that satisfaction levels are widely spread, with no single dominant satisfaction level. The data suggest that respondents have varied experiences and perceptions of their eating satisfaction, with relatively fewer individuals reporting extreme satisfaction or dissatisfaction.

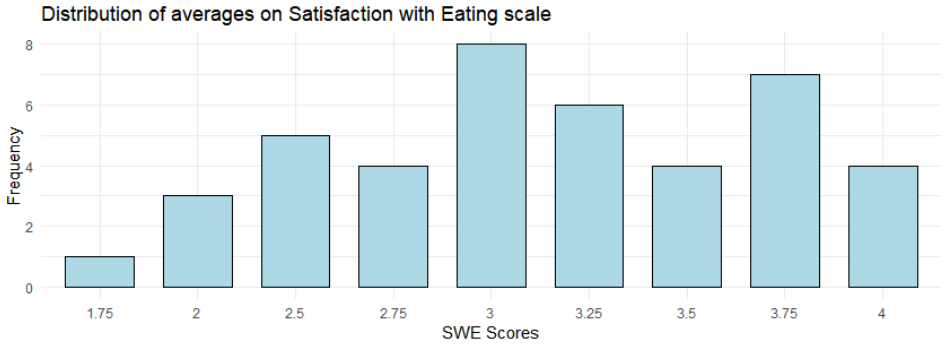

Figure 22: Distribution of averages on Satisfaction with Eating scale

Figure 23 presents the distribution of PWE scores, revealing a notable skew towards higher pleasure levels. The most prominent peak occurs at the maximum score, but smaller peaks can be also found at the scores of 3.0 and 3.5, indicating that a substantial number of respondents experience moderate to high PWE. The overall pattern is distinctly weighted towards the higher end of the scale, with fewer individuals reporting lower levels of PWE.

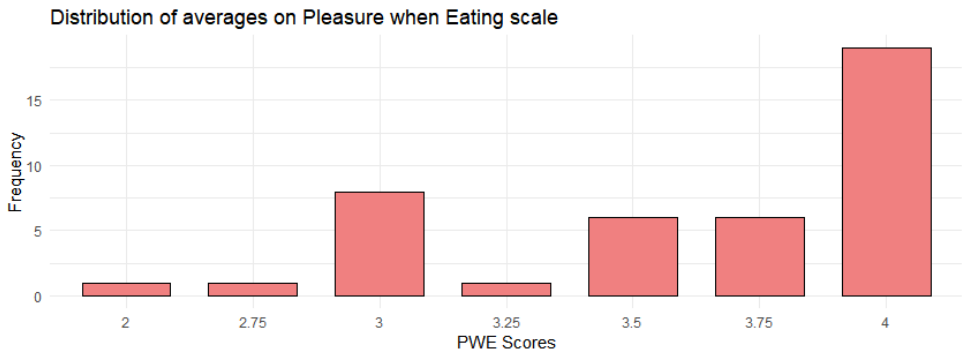

Figure 23: Distribution of averages on Pleasure when Eating scale

To ensure the reliability and validity of these scales in the current sample, internal consistency was assessed using Cronbach's alpha, which yielded values of 0.78 for the SWE scale and 0.86 for the PWE scale, indicating acceptable and good internal consistency. This confirms that the items within each scale reliably reflect the underlying constructs. Furthermore, Confirmatory Factor Analysis was conducted to assess whether the items loaded onto their intended factors, and the analysis confirmed that the items aligned with their respective factors as expected. However, the results, while theoretically supportive of the model, are unrealistic. Specifically, the fit indices showed extremely high values—such as a Comparative Fit Index of 1.000, a Tucker-Lewis Index of 1.000, and a Root Mean Square Error of Approximation of 0.000—indicating a perfect fit. The values are likely due to the small sample size and related low variability within the data. These conditions can artificially inflate the fit indices, making the model appear more accurate and reliable than it truly is. As a result, while these indices might suggest the model is valid, the lack of sufficient data and variability means the results should be interpreted with caution, as they may not be robust or generalisable.

The correlation analysis between the SWE and PWE scales reveals a moderate positive relationship, with the Pearson correlation coefficient being 0.561. The p-value associated with this correlation is p=0.0001, indicating that the observed correlation is statistically significant. This relationship is further illustrated by the scatter plot with the Pearson correlation line shown in Figure 24, and details about Pearson's correlation results can be found in Annex G. The plot visually depicts how PWE scores generally rise with higher SWE levels, reinforcing the trend identified through the correlation analysis.

Figure 24: Scatter plot with Pearson correlation line showing the correlation between SWE and PWE

9.3.3.1 Correlations with demographic variables

9.3.3.1.1 Age

The analysis aimed to explore the relationship between the participant's age and their SWE and PWE scores was performed using Spearman's rank correlation test, considering the non-parametric nature of the data. The results indicated no significant correlation between age and SWE scores (Spearman's rho = 0.128, p = 0.471), nor between age and PWE scores (Spearman's rho = 0.126, p = 0.477). Boxplots showing these relationships are provided in Annex H to visually support the findings.

9.3.3.1.2 Gender identity

The analysis of SWE and PWE by gender identity reveals subtle differences between male and female participants. The mean SWE score for both genders is identical at 3.17, although the median values differ slightly, with males having a median of 3.12 and females a slightly higher median of 3.25. The boxplot for SWE by gender (Figure X) visually represents this small variation, showing a slightly wider distribution among females.

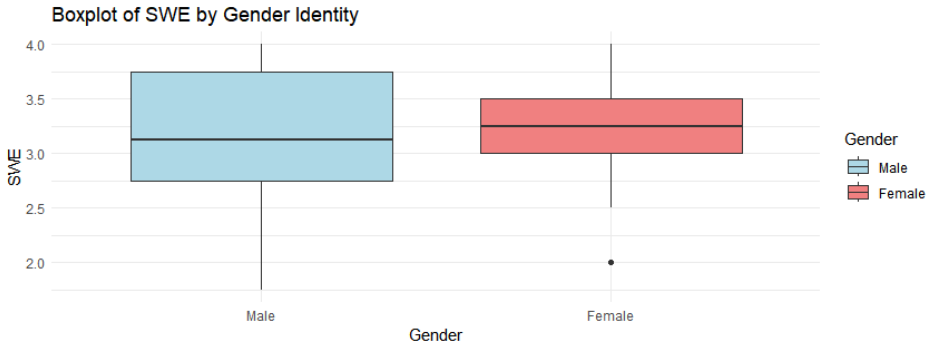

Figure 25: Boxplot of SWE by gender identity

In terms of PWE, males exhibit a mean score of 3.67, marginally higher than the 3.66 observed in females. However, the median PWE scores for both genders differ slightly, with males having a median of 4 and females 3.75. The corresponding boxplot (Figure 26) further illustrates that while the distributions are relatively similar, the slight variations in central tendency highlight potential gender-related differences in PWE.

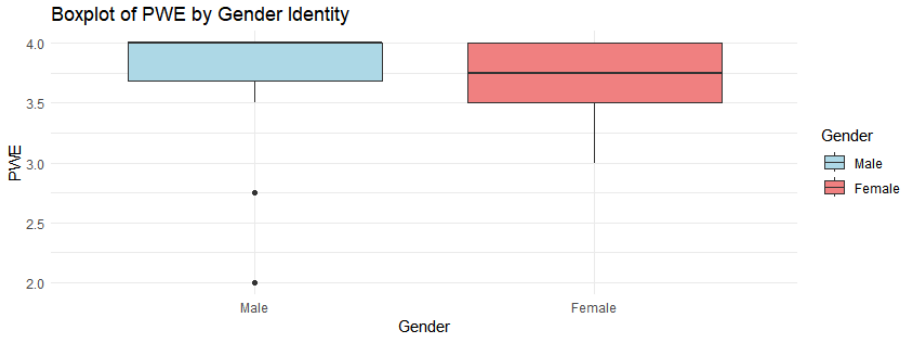

Figure 26: Boxplot of PWE by gender identity

It is important to note that no data was available for the non-binary gender identity in this analysis, so the findings are limited to comparisons between male and female participants only.

9.3.3.1.3 Field of expertise

When comparing SWE and PWE based on the field of expertise, distinct patterns emerge. Individuals in food or nutrition-adjacent fields reported a mean SWE score of 3.33, with a median of 4, while those in non-food or nutrition-adjacent fields exhibited a slightly higher mean of 3.5 and a median of 3.5. The boxplot for SWE by field of expertise (Figure 27) illustrates these differences, particularly the broader distribution observed in the non-food-related group.

Figure 27: Boxplot of SWE by field of expertise

For PWE, participants in food or nutrition-adjacent fields showed a mean score of 3.67 with a median of 4, whereas those in non-food-related fields recorded a slightly higher mean of 3.75, also with a median of 4. The corresponding boxplot (Figure 28) visually supports this, indicating a more compact distribution for those in non-food-related fields. These findings suggest that the field of expertise might play a role in shaping both SWE and PWE, with non-food or nutrition-adjacent professionals exhibiting marginally higher scores.

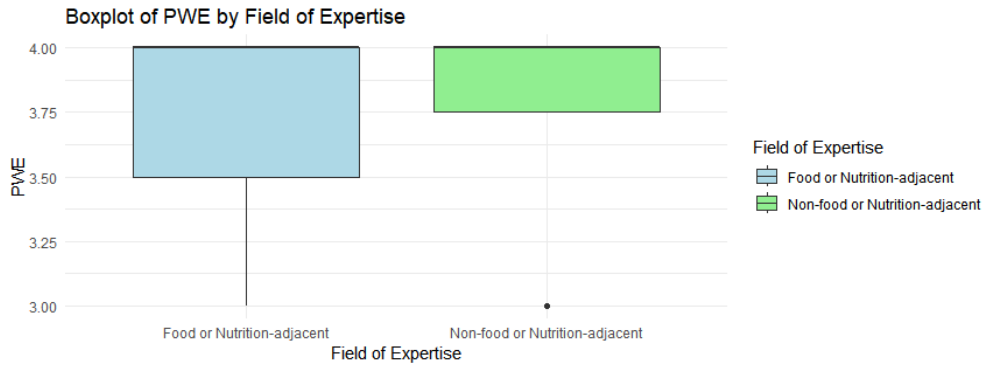

Figure 28: Boxplot of PWE by field of expertise

9.3.3.2 Body confidence and SWE and PWE scales

The results of the Kruskal-Wallis tests indicated a statistically significant difference in SWE scores across different levels of body confidence (Kruskal-Wallis chi-square = 14.647, df = 4, p = 0.005). This suggests that body confidence levels significantly impact SWE scores within this sample, supported visually by the boxplot in Figure 29. A Dunn post-hoc test was conducted to identify specific differences between the groups. The test revealed that the comparison between body confidence levels 2 and 4 showed a significant difference (Z = -3.558, adjusted p = 0.004), indicating that participants with a body confidence level of 4 have significantly higher SWE scores compared to those with a body confidence level of 2. Other comparisons did not show statistically significant differences after the Bonferroni adjustment.

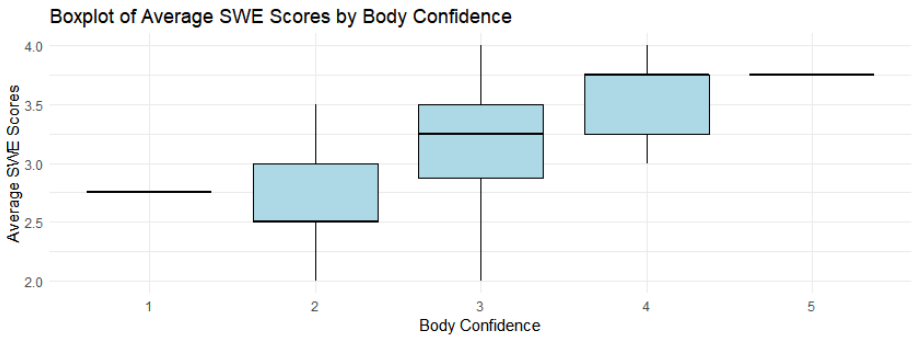

Figure 29: Boxplots of average SWE scores by body confidence

On the other hand, the test for PWE scores across different body confidence levels did not reach statistical significance (Kruskal-Wallis chi-square = 8.178, df = 4, p-value = 0.085). Although the p-value indicates a trend toward significance, it does not meet the conventional threshold ($p < 0.05$), but the relationship can still be observed through the boxplot in Figure 30.

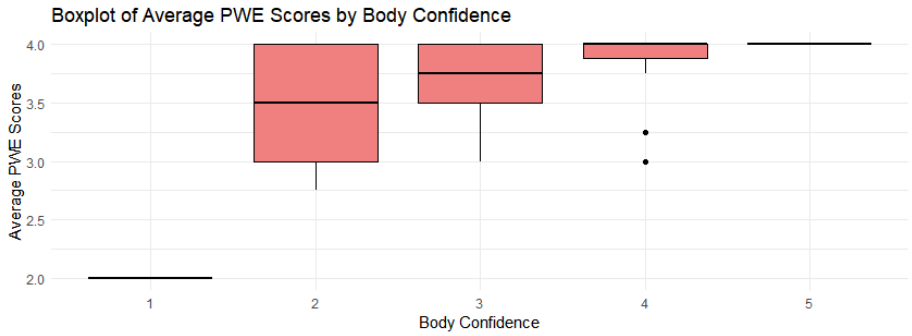

Figure 30: Boxplots of average PWE scores by body confidence

9.3.4 TikTok use frequency analysis

9.3.4.1 Correlation with SWE and PWE scores

The analysis of the relationship between TikTok usage and both SWE and PWE scores was conducted using Kendall's Tau correlation. The results indicated no statistically significant correlations between TikTok usage and SWE scores ($\tau = -0.0796$, $p = 0.529$) or between TikTok usage and PWE scores ($\tau = 0.046$, $p = 0.732$). The boxplots supporting these findings can be found in Annex I.

9.3.4.2 Correlation with body confidence

The Kruskal-Wallis rank sum test was conducted to assess whether body confidence scores differ across various levels of TikTok usage. The results of the test indicate that there is no statistically significant difference in body confidence scores between the different TikTok usage groups (Kruskal-Wallis chi-square = 6.123, df = 4, p-value = 0.190). Therefore, the differences observed in body confidence scores across the levels of TikTok usage may not be meaningful. The corresponding boxplot is presented in Annex J.

9.3.5 Analysis of open-ended questions

The analysis of the responses to the open-ended question about the potential harmfulness of food-related content revealed various concerns. Categorised responses, summarised in Annex K, indicate that misinformation and lack of regulation are significant concerns. Many respondents (14 out of 44) highlighted the prevalence of unverified or superficial advice from influencers, which can lead to unhealthy eating practices. Additionally, concerns about the psychological impact of food-related

content were noted, particularly on vulnerable populations like teenagers and individuals with existing eating behaviour issues. The promotion of unrealistic dietary standards and body images was cited as a cause of anxiety, low self-esteem, and disordered eating behaviours (11 out of 44). However, some respondents (6 out of 44) acknowledged that food-related content can have positive effects by providing useful dietary information and inspiration.

Responses to whether individuals feel influenced by food-related content reveal a complex interplay of positive, negative, and neutral influences (details in Annex L). Positive influences were prominently mentioned, with many respondents (15 out of 44) noting that food-related content inspires them to try new recipes and explore different cooking ideas. Social media and influencers were often credited with providing motivation and awareness about healthier food choices (10 out of 44). However, concerns were also raised about the impact of food-related content on body image and diet pressures, with some respondents (8 out of 44) noting that influencers often portray unrealistic body standards, leading to unhealthy dieting behaviours and negative self-perception. Content promoting junk food or unhealthy eating habits was identified as a negative influence, particularly among those more susceptible to such content (5 out of 44). Some respondents (4 out of 44) took a more neutral stance, recognising that while food-related content has the potential to influence, it largely depends on individual discernment and existing habits. For instance, one respondent mentioned that although they might feel a temporary urge to change their diet after viewing certain content, they typically revert to their habits.

10 Discussion

10.1 Key findings

The analysis of the food and nutrition-related hashtags on TikTok revealed a diverse range of popularity and trends. Notably, there was a significant increase in the use of #HighProtein, indicating a growing interest in high-protein diets among users. In contrast, the hashtag #WhatIEatInADay maintained a consistent level of interest, showing no significant fluctuations over the observed period.

The content analysis of TikTok videos revealed several distinct themes that resonated strongly with the platform's audience. Videos tagged with #WeightLoss and related hashtags prominently featured transformation and motivational content, appealing to users seeking guidance and inspiration for their weight loss journeys. Similarly, #WhatIEatInADay content maintained its popularity, with a focus on daily eating habits, though the analysis did not indicate a significant shift towards body size inclusivity or healthier dietary habits as a trend. #CleanEating content stood out for its emphasis on health-conscious eating and visually appealing, fresh ingredients, often associated with promoting a balanced, healthy lifestyle. Conversely, #Mukbang and #EatWithMe videos capitalised on the sensory and communal aspects of eating, with ASMR elements playing a significant role in their popularity. Meanwhile, hashtags like #VeganFood and #VeganRecipes catered to a niche, but dedicated audience interested in plant-based diets, offering educational content that both informs and inspires dietary changes. The broad appeal of these themes highlights TikTok's ability to cater to diverse user interests, from health-conscious eating to indulgent culinary experiences.

Furthermore, the analysis of viewer perceptions and emotional responses indicated a complex interaction between the content and its audience. While some viewers responded positively, finding the content motivating or enjoyable, others experienced negative emotions, such as anxiety or dissatisfaction, particularly concerning content promoting unrealistic diets. Although the emotional impact of these videos could influence viewers' perceptions and behaviours, the study did not find a significant correlation between TikTok usage frequency and body confidence. Additionally, only the field of expertise, among all the demographic factors, was found to influence viewers' Arousal levels. Indeed, those without a background in nutrition were more likely to be influenced by the content, potentially due to a lack of critical evaluation skills. While the correlation between TikTok usage frequency and psychological metrics like body confidence and SWE scores was explored, no significant direct effects were observed. This suggests that frequent exposure to food-related content

does not directly impact these aspects of mental health and well-being but highlights the importance of the content consumed.

10.2 Interpretation of findings

10.2.1 Hashtags and trends

The trends observed in the popularity of food and nutrition-related hashtags on TikTok reflect significant societal interests and shifts in dietary culture. The rise in #HighProtein underscores the growing emphasis on fitness-related diets, which is consistent with broader trends that prioritise high-protein consumption for its benefits in muscle building and weight management. This suggests that TikTok is not just a platform for entertainment but a key player in disseminating dietary trends. This trend mirrors findings from studies on other social media platforms, where similar patterns have been observed. For example, Tiggemann and Zaccardo (2015)[95] examined Instagram's role in promoting the "fitspiration" movement demonstrating how social media can amplify trends that align with societal ideals of health and fitness. This phenomenon can be further contextualised within the framework of UGT[23], because TikTok users gravitate towards content that fulfils their cognitive and social integrative needs, such as gaining knowledge about fitness-related diets or connecting with a community that shares similar health goals. This aligns with the broader societal shift towards high-protein diets, driven by their perceived health benefits, including increased satiety, muscle maintenance, and weight loss[63].

In contrast, the #WhatIEatInADay hashtag maintained a stable level of interest, with no significant changes over time. This indicates a consistent appeal of content focused on daily eating habits, which continues to resonate with TikTok users without experiencing major shifts in popularity. Similarly, the consistent popularity of hashtags like #WeightLoss and #Foodie further underscores TikTok's role as a hub for discussions around diet, body image, and culinary exploration. This dual interest in both health-oriented and indulgent content reflects a societal tension between health consciousness and the pleasure of indulgence. Such a dichotomy in media content is not new; traditional media, like women's magazines, have long featured both healthy and indulgent treats, catering to a wide range of consumer desires[44]. TikTok continues this legacy by providing a platform where both health and indulgence coexist, shaping modern food culture.

The steady growth in vegan-related hashtags like #VeganFood and #VeganRecipes indicates a slow but persistent rise in the acceptance and interest in plant-based diets. This trend is consistent with global movements towards sustainability and ethical eating, suggesting that TikTok is also an important platform for the dissemination and normalisation of vegan lifestyles. This observation parallels the Agenda Setting Theory[24], as the platform is helping to bring veganism into the mainstream conversation, similar to how traditional media once brought dietary concerns about calorie counting and fat reduction to the forefront of public discourse[42]. Interestingly, the lack of significant growth in the widely spread hashtag #WhatIEatInADay may indicate a saturation point or a plateau in the novelty of such content formats. While these videos remain popular, users seem to be seeking new and varied content, potentially due to content fatigue[32].

The observed trends in the popularity of food and nutrition-related hashtags on TikTok reflect broader societal interests and shifts in dietary culture. The potential trend in hashtags like #CleanEating suggests that there may be emerging patterns in health-oriented content, though these are not always strongly pronounced. This is interesting based on how previous literature has demonstrated Instagram's role in promoting the "fitspiration" movement, meaning that this trend may align with societal ideals of health and fitness, as social media are key players in the dissemination of dietary trends[95]. This phenomenon can be further contextualised within the framework of UGT[23], because TikTok users gravitate towards content that fulfils their cognitive and social integrative needs, such as gaining knowledge about fitness-related diets or connecting with a community that shares similar health goals. This aligns with the broader societal shift towards clean eating, driven by their perceived health benefits, including weight loss[63].

The significant differences in the number of posts across different hashtag categories highlight TikTok's role in amplifying certain dietary trends over others. For instance, the platform's users seem to gravitate more towards content that celebrates indulgence, as seen in the higher popularity of hashtags like #Foodie and #Mukbang. This dual interest in both health-oriented and indulgent content reflects a societal tension between health consciousness and the pleasure of indulgence. Such a dichotomy in media content is not new; traditional media, like women's magazines, have long featured both healthy and indulgent treats, catering to a wide range of consumer desires[44]. TikTok continues this legacy by providing a platform where both health and indulgence coexist, shaping modern food culture.

TikTok's ability to cater to a wide array of interests, from high-protein diets to indulgent food experiences, illustrates its role as a key player in shaping and reflecting contemporary food trends. This aligns with findings from the literature on traditional media, such as the shift towards featuring low-nutrient-density products in advertisements and the emphasis on calorie control, which highlights how media platforms have always had a significant impact on dietary choices and public health discourse[41]. TikTok, like its traditional media predecessors, continues to influence dietary choices and public health discourse, shaping a new generation's understanding of nutrition and health.

10.2.2 Themes and Messaging in Trending Hashtag Videos

The content analysis of nutrition-related hashtags on TikTok reveals recurring themes and messages that effectively engage the platform's audience.

Transformation and motivation emerge as central themes in content tagged with #WeightLoss and related hashtags. These videos frequently feature before-and-after comparisons, and practical advice on dieting, meal prep, and exercise routines, all of which reinforce a narrative of self-improvement and discipline which, being a recurring theme, has the power to shape public interests and priorities[24]. These messages were also seen in fitness magazines and television programs, where they emphasised personal achievement through physical transformation, a recurring theme still today[49]. The evolution of #WhatIEatInADay, with an emphasis on realistic eating and body size inclusivity through sub-hashtags like #RealisticFullDayOfEating and #WhatIEatInADayAsAFatPerson, represents a shift from restrictive diet portrayals, which were prevalent in traditional media.

Content under the hashtags #Mukbang and #EatWithMe highlights the entertainment value of food, particularly through communal eating experiences and ASMR elements. These videos not only emphasise the sensory appeal of food but also foster a sense of community and shared experience. The popularity of these themes reflects viewers' desire for both relaxation and engagement through immersive content, once more aligned with the perception of media as a source of fulfilment for individual needs, as proposed by the UGT[23]. Additionally, the rise of ASMR content on TikTok is particularly noteworthy, as it caters to viewer's tension-release needs, offering a unique form of digital escapism[14].

The promotion of specific dietary choices is also a key theme, particularly in content tagged with #VeganFood and #VeganRecipes. These videos cater to a dedicated audience interested in plant-based diets, offering easy, quick, and protein-rich recipes that emphasize the nutritional benefits of

veganism. The frequent use of step-by-step instructions and health information suggests that these videos aim to educate and inform, as well as inspire dietary changes. This educational focus was already present in traditional media, which have always represented a crucial source of dissemination of nutritional information and dietary trends promotion[41,42]. The content under #CleanEating and #HighProtein similarly emphasises a healthy lifestyle, with a specific focus on promoting whole foods, plant-based diets, and muscle-building regimens. These themes resonate with the fitness and gym lifestyle, which have been extensively covered in traditional media, particularly in men's health magazines[50,59]. As for #Recipe and #EasyRecipe content, it centres around accessibility and ease in cooking, appealing to viewers seeking practical and cost-effective meal ideas. The broad range of cuisines and specific food items featured in these videos reflects a diverse culinary interest among viewers.

Finally, #FastFood and #Foodie hashtags suggest trends towards exploring and enjoying fast food within the broader context of culinary experiences. While fast food content often centres around reviews and indulgence, it also caters to health-conscious choices in two significant ways. Firstly, many videos demonstrate that it is possible to make healthier choices even when eating fast food, showing how certain menu items or modifications can fit into a diet plan. Secondly, this content tends to avoid portraying fast food as inherently "bad" or something to be completely avoided. By normalizing the enjoyment of fast food within a balanced diet, these videos counteract toxic diet culture and promote a more inclusive and realistic approach to eating, avoiding the dichotomy of "good" versus "bad" foods that were prevalent in earlier media representations[44], and also present on social media. This shift aligns with recent discussions on the role of media in shaping balanced and mindful eating practices[98].

This analysis highlights TikTok's role as a critical medium for public health messaging and the promotion of diverse dietary practices. The platform not only reflects but also actively shapes contemporary food trends, similar to the influence of traditional media in previous decades[49,66]. TikTok continues the legacy of the media's complex relationship with food, offering a multifaceted approach to dietary messaging that appeals to a broad audience.

10.2.3 Emotional responses to TikTok food content

The study's analysis of viewer perception and emotional response to TikTok videos on food and nutrition-related topics reveals a complex interplay of emotional reactions, assessed using the SAM to measure Pleasure, Arousal, and Dominance. The findings suggest that these emotional states are

relatively independent, as indicated by the negligible correlations among them. This shows that users' reactions to TikTok content are multifaceted and complex, with each emotional dimension operating separately. Different content types trigger varied responses without a strong interconnection between these emotional states, highlighting the broad range of emotional reactions on TikTok. This is consistent with findings in traditional media, where specific content types, such as health-focused messages, elicit different emotional and cognitive responses compared to entertainment-oriented content[36].

The UGT helps explain why certain content, like "Mukbang" videos, associated with higher Pleasure scores, are chosen by viewers to fulfil needs for entertainment or tension release. These videos allow viewers to enjoy the pleasure of watching indulgent eating as a form of escapism, similar to traditional media where magazines and television programs feature food and lifestyle content offered similar gratifications by suggesting that viewers could achieve attributes like beauty or success through specific diet or products[22]. Conversely, "High Protein" diet videos received the lowest Pleasure scores, likely reflecting their focus on information and guidance rather than strong pleasurable responses, a pattern also observed in traditional health communication strategies, which often prioritise information dissemination over entertainment[21].

The analysis also highlighted the variance in Arousal across different types of video stimuli. "High Protein" videos received the highest Arousal scores, likely due to the focus on active, health-driven content that engages viewers with the promise of tangible fitness benefits. On the other hand, "Fast Food" videos were found to have the lowest Arousal scores, possibly reflecting a more passive consumption experience that elicits less excitement or engagement.

On the other hand, "What I Eat in a Day" videos were found to be the most dominant, possibly due to their emphasis on vibrant, fresh, and visually appealing ingredients, possibly indicating that these videos provide viewers with a stronger sense of control or empowerment, as they can relate to the content or see it as an attainable lifestyle. Indeed, as previously observed about magazines, this content may increase viewers' self-efficacy and motivation to adopt healthier habits as a pathway to an idealised lifestyle[21,48]. On the other hand, "Fast Food", which had the lowest Dominance scores, might evoke a sense of resignation and lack of control or autonomy associated with fast food consumption, which may not align with viewers' health goals and therefore evoke feelings of empowerment, as was already demonstrated for traditional media[29].

This study adds to the growing body of literature on social media's impact on food-related behaviours by providing new insights into the specific emotional responses elicited by TikTok content. It confirms many of the patterns observed in traditional media and other social media platforms, while also highlighting the unique ways in which TikTok's format and algorithm may exacerbate these effects.

10.2.4 Impact of TikTok usage on body confidence and eating behaviours

The analysis of the relationship between body confidence and TikTok usage revealed that no significant differences in body confidence scores were found across various levels of TikTok usage. This suggests that while TikTok may influence body image and eating behaviours through its content, the frequency of TikTok usage does not appear to directly impact body confidence in a statistically significant way. This is in contrast with previous findings about traditional media, which showed that exposure is associated with lower body confidence, in accordance with the Cultivation Theory[31]. This phenomenon has been well-documented in traditional media, where persistent portrayals of thinness or muscularity have historically set unrealistic beauty standards, contributing to similar issues of body dissatisfaction[61,62].

The relationship between body confidence and SWE and PWE was also examined. A moderate positive correlation was found between body confidence and SWE scores, indicating that individuals with higher body confidence are generally more satisfied with their eating behaviours. However, the correlation with PWE scores was weaker, suggesting that body confidence has a less pronounced effect on the pleasure derived from eating compared to SWE. SCT helps explain this, as it highlights the role of observational learning and self-efficacy in behaviour change[36]. Individuals consuming TikTok content may internalise the portrayed eating behaviours and body images, affecting their self-efficacy and, consequently, their body confidence, as already demonstrated by previous literature[38,82]. Social Comparison Theory further supports these findings, suggesting that individuals often compare themselves to media portrayals, leading to body dissatisfaction. On TikTok, users are frequently exposed to highly curated and idealised content, which may amplify these comparisons, particularly among younger viewers who are more susceptible to such influences. This can lead to a heightened sense of inadequacy and negatively impact body image and overall well-being, a pattern also observed in studies of Instagram and other visual social media platforms[96,97].

Interestingly, the lack of significant correlations between TikTok use and the SWE and PWE scores indicates that the frequency of TikTok use does not directly impact these particular aspects of eating

behaviour, or the pleasure derived from eating. UGT provides a framework for understanding this, suggesting that while TikTok may fulfil users' needs for entertainment, social interaction, or escapism, it does not significantly influence deeper psychological metrics such as the satisfaction or pleasure derived from eating, which is influenced by more complex and personal factors[22].

Furthermore, the open-ended responses highlighted the perceived harmfulness of food-related content, particularly regarding misinformation and the promotion of unrealistic body standards. These concerns are echoed in the Agenda Setting Theory, which states that media not only reflect but also shape public priorities[24]. By frequently presenting certain body types and dietary trends, TikTok content can set an agenda that influences public perceptions of ideal body image and acceptable eating behaviours. The amplified comparisons and the resulting dissatisfaction, especially among younger viewers, underscore the significant impact of these media portrayals on body image, similar to the effects observed in traditional media[25,26].

The amplified comparisons and the resulting dissatisfaction, especially among younger viewers, underscore the significant impact of these media portrayals on body image, similar to the effects documented in other media forms. For instance, studies on magazine readership and television viewing have shown that exposure to idealised body images and diet-related content can lead to body dissatisfaction and unhealthy eating behaviours, particularly among adolescents and young adults[61,62].

10.2.5 Demographics and emotional responses to TikTok content

The analysis of the relationship between demographic factors and emotional responses to TikTok content revealed several important findings. Contrary to initial expectations that younger viewers would be more affected by TikTok content, particularly through higher Arousal and Pleasure scores due to their developmental stage[61,62], as explained by Social Learning Theory[36], the study found no significant correlations. Based on previous literature, TikTok's dynamic, visually stimulating content, combined with relatable influencers, was thought to provide a conducive environment for modelling behaviours related to food choices and lifestyle, similar to how television and magazines have historically shaped youth behaviours through repeated exposure to idealized body types[62]. This indicates that factors other than age may play a more critical role in how TikTok content impacts viewers, suggesting that the platform might influence emotional responses differently compared to traditional media as discussed in previous literature. One possible explanation for these unexpected results could be the interactive nature of TikTok, which encourages active participation in content creation and engagement across all groups. Younger viewers, who are often expected to have deeper

emotional investments due to their personal connections with content creators or trends, might not exhibit significantly higher emotional responses because TikTok's algorithm tailors content to individual preferences and engagement patterns across all age groups. Indeed, TikTok's unique algorithm may lead to a more uniform emotional impact across different ages, making it less likely that the age-related differences observed on other social media platforms[82,96] will apply in the same way on TikTok. While the cognitive and social aspects of media use, as discussed in the UGT[22], suggest that younger viewers typically seek content that fulfils their needs for entertainment, social integration, or personal identity formation, TikTok's vibrant and aspirational food content—ranging from creative recipes to indulgent Mukbangs—appears to provide similarly pleasurable and socially relevant experiences across all age groups. This might explain why the expected age-based differences in emotional responses were not observed, as the platform effectively caters to and gratifies a wide spectrum of viewers regardless of age.

Additionally, gender identity did not play a significant role in shaping emotional responses to TikTok content. The lack of variation in emotional responses between male and female participants suggests that TikTok content impacts all genders similarly. This uniformity may result from the content's generally engaging nature or the lack of reinforcement of gendered norms that might influence emotional responses differently across genders, as was already shown by previous literature[61,62].

In terms of expertise, individuals with nutrition-related expertise and those without it displayed similar medians across all emotional responses. Although there are differences in the mean levels of Arousal, the central tendency of these emotional responses remains comparable between the groups. This suggests that the observed differences are more nuanced, perhaps reflecting a more critical or engaged response to content among those with expertise, without necessarily leading to a broader shift in how these emotions are generally experienced. These findings indicate that while expertise can heighten certain emotional responses, such as Arousal, it does not uniformly affect all aspects of how individuals interact with TikTok content. The complex interaction between expertise and emotional responses underscores the need to consider how specialised knowledge might lead to more critical engagement with media content, as demonstrated in traditional media studies[19], but without necessarily altering the general patterns of emotional experience across all dimensions. Furthermore, even literature on traditional media shows a varying effect depending on the content type and the individual's level of engagement with the media[19], highlighting the complexity of how expertise interacts with media consumption.

10.2.6 Correlation between TikTok use frequency and psychological metrics

The analysis of the correlation between TikTok use frequency and psychological metrics reveals important insights. As previously mentioned, no significant differences in body confidence scores were found across various levels of TikTok usage. This finding conflicts with the existing literature on the impact of social media platforms on body image, particularly among young adults, where platforms like Instagram and Facebook have been shown to promote idealised bodies, often leading to body dissatisfaction and decreased self-esteem in users[61,62]. Social Comparison Theory can still be applied to understand the relationship between TikTok use and body confidence, as users may compare themselves to the idealised images and often unrealistic portrayals of beauty and body image frequently seen on TikTok. This comparison can foster feelings of inadequacy[40] and lower self-esteem, especially among younger users who are still forming their self-concepts. Similar mechanisms of social comparison have been documented in studies focusing on traditional media like television and magazines[61,62]. However, the results of this study contrast with the predictions of Cultivation Theory, extensively documented traditional media, as no statistically significant differences in body confidence were found across various levels of TikTok usage within this sample[119] suggesting that frequent use of TikTok does not correlate with lower body confidence.

One possible explanation for these discrepancies is the interactive and diverse nature of TikTok content compared to traditional media. The interactive nature of TikTok—where users can participate in challenges, create their own content, and engage with a community—might provide a sense of empowerment that counteracts the passive consumption associated with traditional media. This active engagement can foster a sense of agency and self-expression, which may help maintain or even enhance body confidence, despite exposure to idealized images. Additionally, unlike traditional media, which often presents a narrow range of beauty standards, TikTok allows users to curate their content feeds based on personal preferences and interests. This personalisation may expose users to a broader spectrum of body types and beauty ideals, potentially mitigating the negative impact of exposure to unrealistic standards. Additionally, TikTok's algorithm tends to prioritise content that matches users' past interactions, which might include body-positive or diverse representation content. This contrasts with the often homogeneous and idealized portrayals found in traditional media. As a result, users who might be more susceptible to negative body image impacts might also be more likely to encounter content that challenges traditional beauty norms, thereby buffering the potential negative effects on body confidence.

On the other hand, the analysis showed no significant correlations between TikTok use and the SWE and PWE scores either. This suggests that TikTok use does not directly impact these particular aspects of eating behaviour, or the pleasure derived from eating. The UGT may help explain why TikTok usage does not significantly correlate with pleasure or satisfaction in eating, as it posits that media consumers actively select media channels and content to satisfy specific needs[22]. While TikTok may fulfil needs for entertainment, social interaction, or escapism, it may not significantly influence deeper psychological metrics like pleasure derived from eating, as these involve more complex and personal factors such as individual dietary habits and cultural influences. This might suggest that the psychological metrics of SWE and PWE are more influenced by personal and cultural factors rather than media consumption alone. Factors such as individual dietary habits, cultural attitudes toward food, and personal experiences with eating are likely to play a more substantial role in shaping these aspects of eating behaviour. TikTok's influence, while significant in other areas, may not be strong enough to alter deeply ingrained eating behaviours or the personal pleasure derived from eating.

10.3 Implications for public health and policy

The findings from this study on TikTok's influence on food and nutrition-related content highlight significant public health and policy implications. As TikTok increasingly shapes public perceptions and behaviours, particularly among younger demographics, addressing the complexities of content regulation and information dissemination is critical.

To promote healthier eating behaviours, public health campaigns should leverage the popularity of hashtags like #CleanEating and #VeganFood to disseminate accurate and scientifically backed nutritional information. These campaigns can use trending hashtags to disseminate accurate and scientifically backed nutritional information, much like traditional media has done historically by framing public health narratives through targeted messaging[24]. Furthermore, content tagged with #WeightLoss, which emphasises transformation and motivation, highlights the platform's role in influencing viewers seeking guidance on personal health and self-improvement. This reflects similar findings from studies on Instagram, where fitness and health influencers have been shown to significantly affect followers' health behaviours[117], and should therefore collaborate to produce content that promotes realistic, balanced diets and body positivity, countering the restrictive and often unrealistic portrayals previously prevalent on the platform.

However, the indulgent content shared through hashtags like #Mukbang and #FastFood indicates the necessity of balancing messages that promote healthy eating with the acknowledgement of the enjoyment of indulgence. This balance is particularly important as fast food content, while often centred around reviews and indulgence, also caters to health-conscious choices. The challenge lies in creating content that promotes a realistic and inclusive approach to eating without reinforcing harmful dietary behaviours.

Furthermore, the open-ended responses in this study highlighted the perceived harmfulness of food-related content, particularly regarding misinformation and the promotion of unrealistic body standards. These concerns align with the Agenda Setting Theory, which posits that media not only reflect but also shape public priorities[24]. By frequently presenting certain body types and dietary trends, TikTok content can set an agenda that influences public perceptions of ideal body image and acceptable eating behaviours. The amplified comparisons and the resulting dissatisfaction, especially among younger viewers, underscore the significant impact of these media portrayals on body image, akin to the effects observed in traditional media.

Concerns about body image and the potential for negative self-perception due to exposure to idealized content on TikTok are particularly pressing. While the analysis did not find a significant correlation between TikTok usage frequency and lower body confidence, the type of content consumed remains critical. This underscores the need for public health interventions that focus on the quality of content rather than just the quantity of use. Effectively utilising TikTok to disseminate reliable nutritional information requires the involvement of professionals and experts in content creation. Public health agencies and governments could establish grants to support healthcare professionals, dietitians, and nutritionists in producing evidence-based content. This approach parallels successful public health campaigns in traditional media, where expert-driven content has effectively informed public health behaviours[28]. Policies encouraging collaborations between social media platforms and public health organizations could further enhance the reach and credibility of these messages. Verified channels featuring certified experts could be prominently promoted within apps, and a certification program for influencers in the health and nutrition space could ensure the reliability of the content, mirroring initiatives in traditional media to promote trustworthy sources[17].

The analysis indicated that TikTok usage does not significantly impact users' satisfaction or pleasure derived from eating (SWE and PWE scores). Public health campaigns should therefore focus on encouraging content that promotes positive eating experiences and body positivity, rather than solely

addressing concerns about body dissatisfaction. Promoting content that celebrates diverse body types and healthy eating habits can enhance users' overall satisfaction and pleasure with eating. Regulatory frameworks must ensure transparency in digital content, particularly regarding digital enhancements and body standards. This could involve mandatory disclosures for edited images and videos, clearly labelled by content creators. Regulations should also require that influencers promoting health-related products provide evidence-based information, potentially in collaboration with certified professionals. Social media platforms should implement monitoring systems to flag non-compliant content, with penalties for violations, such as fines or account suspensions. Regular audits and international collaboration could help maintain consistent standards across borders, which is crucial considering that influencers often have a global audience.

The challenge of regulating misinformation and ensuring the reliability of influencer marketing is another critical issue. The enforcement of regulations around advertising disclosures and health claims needs to be stricter. Regulatory bodies could establish rigorous penalties for non-compliance and use advanced algorithms to detect undeclared sponsorships and misleading claims. A centralized registry for influencers could track commercial relationships and ensure transparency. Public education campaigns could further inform consumers about recognizing paid partnerships and critically assessing information.

These measures, if implemented effectively, would enhance the reliability and transparency of influencer marketing, ensuring that influencers adhere to ethical standards and that consumers receive accurate, trustworthy information.

The legal concerns and scandals surrounding TikTok, including the promotion of harmful diet trends and inadequate data protection, highlight the need for a more robust regulatory approach. The tragic outcomes of individuals like Amy Ellis and Zhanna Samsonova highlight the need for more robust content moderation and algorithmic adjustments to prioritise user safety over engagement metrics. The involvement of the European Commission and other regulatory bodies in investigating TikTok's compliance with digital safety laws reflects growing recognition of these issues at an international level.

The platform's role in perpetuating a toxic diet culture and the associated risks to mental health, particularly concerning eating disorders, further emphasize the need for stringent content moderation. The evidence from studies indicating that TikTok's algorithm can inadvertently promote harmful

content highlights the importance of developing better algorithms that prioritize user safety over engagement metrics. This includes ensuring that content related to extreme diets or unhealthy body standards is either moderated or accompanied by disclaimers and support resources.

10.4 Strengths and limitations

This study offers several strengths that enhance its contribution to understanding the influence of TikTok's food and nutrition-related content on public perceptions and behaviours. One notable strength is the comprehensive approach taken to analyse a wide range of popular food-related hashtags. This method allows for a detailed exploration of current trends and interests on the platform, providing valuable insights into the types of content that resonate with users. The study also employs a mixed-methods approach, combining quantitative data analysis with qualitative insights from open-ended questionnaire responses. This methodological diversity enriches the understanding of both numerical trends and the nuanced perceptions of users.

Furthermore, the study's focus on a younger demographic (ages 18 to 26) is particularly relevant, given that this age group constitutes a significant portion of TikTok's user base. By targeting this demographic, the research provides relevant insights into a group that is highly engaged with social media and more susceptible to its influences. Additionally, the use of validated scales, such as the SWE, PWE and SAM, allows for a multifaceted exploration of how TikTok content impacts users' emotional and psychological states.

Moreover, much of the discussion was grounded in a strong theoretical framework. The study draws on established theories, providing a robust basis for interpreting the findings and understanding the mechanisms by which TikTok content may influence viewers' attitudes and behaviours. The application of these theories not only strengthens the analysis but also situates the findings within a broader context of media influence research.

Incorporating the results from the content analysis, another strength is the detailed examination of the themes and messages conveyed through trending nutrition-related hashtags on TikTok. The findings reveal important trends, providing a broad understanding of the types of messages that resonate with TikTok users, particularly concerning dietary practices and body image.

However, several limitations should be acknowledged in this study. Firstly, the cross-sectional design only provides a snapshot of the associations between TikTok usage and its effects on body image,

dietary choices, and psychological metrics at a single point in time, without capturing the dynamics of change. Additionally, the short data collection period also restricts the ability to observe long-term trends, which might have offered more comprehensive insights into evolving user behaviours. The heavy reliance on self-reported data also introduces potential biases, such as social desirability and recall errors, which could influence the validity of the findings. Furthermore, the absence of pilot testing for the questionnaire represents a significant limitation, as it would have helped to identify and rectify potential issues with the survey design, question wording, and overall comprehensibility before the full study was conducted. This lack of pilot testing may have contributed to the difficulties reported by participants, particularly about the SAM scale, where some respondents expressed confusion about the emotional dimensions being assessed, potentially leading to inconsistent or incomplete responses. Additionally, the analysis of the SWE model revealed a mixed fit, with some indices suggesting an acceptable fit while others indicated areas for improvement, which could impact the interpretation of those results.

Relatively small sample sizes for both data collections may limit the generalisability of the findings and reduce the statistical power needed to detect smaller effect. Morover, the sample was predominantly composed of individuals from the main investigator's network, which may introduce selection bias. This recruitment method could lead to a non-representative sample of the broader TikTok user population, potentially skewing the results due to shared social, cultural, or behavioural characteristics within the network. The narrow age range of participants primarily focused on individuals aged 18 to 26, also limits the study's conclusions regarding age-related differences in responses, as it does not account for the experiences of older or younger age groups. Additionally, due to the lack of variability in the data, it was non possible to analyse whether education level can be relevant for the study's conclusions.

Lastly, the content analysis was focused on specific hashtags, which may not fully represent the broad spectrum of TikTok content that influences users. This targeted approach might overlook other content types that affect user behaviour and perceptions, potentially limiting the comprehensiveness of the findings.

10.5 Future research

Future research should aim to address the aforementioned limitations to enhance the robustness and comprehensiveness of the findings.

To improve the establishment of causal relationships, longitudinal studies are recommended, as they track changes in user behaviour and perceptions over time. Incorporating objective methods, such as digital analytics, can help verify self-reported data and reduce associated biases. Additionally, future studies should seek larger and more diverse samples, including participants from various age groups, backgrounds, and regions, to improve the representativeness and generalizability of the results. The application of larger and more diverse samples may also help detect certain relationships, such as the impact of TikTok usage on body confidence and eating behaviours, that in this study were not relevant. Furthermore, to mitigate the impact of potential selection biases, future studies should employ more rigorous recruitment strategies, such as random sampling or the use of online panels, to obtain a sample that is more representative of the broader TikTok user base.

To capture long-term trends and changes in TikTok's content and its influence on users, extending the data collection or conducting follow-up studies would be beneficial. Expanding the range of content types analysed, beyond specific hashtags, will also be crucial to capture the diverse ways TikTok content influences user behaviour and perceptions. Given the non-significant findings in some areas, such as the relationship between TikTok usage and satisfaction or pleasure derived from eating, future research should explore these areas with more targeted methodologies or larger samples to determine if these relationships emerge under different conditions.

Finally, the development and validation of more user-friendly tools for measuring emotional responses, such as an improved version of the SAM, could enhance the reliability and accuracy of emotional data collected. Conducting pilot tests of survey instruments before full-scale studies will further help identify and rectify potential issues, improving the overall quality of the data collected.

11 Conclusions

The findings of this research significantly shed light on evolving trends, user behaviours, and the significant public health implications of TikTok's food and nutrition-related content.

Throughout the data collection period, #HighProtein experienced significant growth, indicating a rising interest in high-protein diets, particularly within fitness-focused communities. This trend mirrors a broader societal shift towards health-conscious eating. Meanwhile, #WhatIEatInADay maintained its popularity, with a continued focus on daily eating habits. While more emphasis seems to be given to body size inclusivity and healthier eating habits, the analysis did not indicate a significant shift, suggesting that this may not reflect broader shifts in dietary trends. The continued popularity of indulgent food-related content, as evidenced by hashtags like #Mukbang and #FastFood, demonstrates the enduring appeal of sensory-rich and indulgent experiences, even as health-conscious trends like #VeganFood and #VeganRecipes steadily gain traction. The duality within TikTok's food-related content underscores the platform's ability to cater to contrasting user interests, ranging from health and fitness to indulgence and entertainment.

The participant-driven video collection provided valuable insights into the themes and messages that resonate with TikTok users. #WeightLoss content often featured transformation and motivation as central themes, with videos focusing on personal journeys, before-and-after comparisons, and practical advice on dieting and exercise routines, which appeals to users seeking inspiration and guidance on their own health and fitness goals. On the other hand, the rise of #Mukbang and #EatWithMe content highlighted the entertainment value of communal eating experiences and ASMR elements, reflecting a user's desire for both relaxation and engagement through immersive content. As for #VeganFood and #VeganRecipes, they catered to an audience interested in plant-based diets, emphasising the nutritional benefits of veganism through easy, quick, and protein-rich recipes.

The questionnaire results further underscored the emotional and psychological impact of TikTok's food-related content on users. Theories such as the SCT and Cultivation Theory have been applied to understand the potential impact of TikTok usage on body confidence and eating habits. However, this study's findings diverge from traditional media research, revealing no significant correlation between TikTok usage and body confidence or eating habits (measured by the SWE and PWE scales). This suggests that, unlike traditional media, TikTok usage may not be a strong predictor or moderator of body image perception or eating behaviours.

Emotionally engaging content, such as Mukbang videos, resulted in eliciting high Pleasure scores, suggesting they are particularly enjoyable and captivating for viewers. On the other hand, High Protein and Clean Eating videos, while evoking different levels of emotional responses, did not show a direct influence on users' dietary practices. While many participants found inspiration in weight loss narratives and practical diet advice, leading to changes in their behaviours, concerns were also raised about the potential negative effects of exposure to idealised content, which can exacerbate body image issues and perpetuate unrealistic beauty standards. These findings highlight the varied emotional impact of TikTok content and the complex relationship between the content and users' dietary behaviours and body image. Contrary to expectations, demographic factors, such as the field of expertise, did not significantly influence how viewers reacted to the content, with similar emotional responses to TikTok videos across different expertise. This suggests that media literacy alone may not be enough to alter the impact of emotionally engaging content on viewers. Additionally, no significant correlation was found between TikTok usage and body confidence, which contrasts with findings from previous studies that have linked media exposure to lower body confidence.

The SAM results provide additional insights, particularly highlighting how different types of content elicit varied emotional responses. "Mukbang" videos elicited the highest Pleasure scores, underscoring their sensory appeal and the gratification users derive from watching such indulgent content. This finding is consistent with the Uses and Gratifications Theory, which posits that viewers engage with content that fulfils their need for entertainment and relaxation. On the other hand, "High Protein" videos received the lowest Pleasure scores, indicating that while they may align with viewers' health goals, they do not evoke the same immediate emotional satisfaction as more indulgent content. This differentiation underscores the complex motivations behind content consumption, where health-related content might be valued for its long-term benefits rather than for its immediate pleasure.

The SAM findings revealed that "High Protein" videos were the most arousing, likely due to their strong association with fitness and muscle-building, which directly appeals to viewers' health and fitness aspirations. This high Arousal suggests that such content is particularly effective at engaging viewers' attention and motivating them to consider healthier lifestyle choices. According to the SCT, such content could boost viewers' motivation to adopt healthier eating habits by presenting clean eating as an appealing lifestyle choice. The contrast between having the highest Arousal scores but the lowest Pleasure ones indicates that while "High Protein" content is successful in capturing and stimulating viewers' interest, it does not evoke the same level of immediate emotional satisfaction as other content types, such as Mukbang videos. This suggests that viewers may be drawn to High

Protein videos for their perceived long-term benefits rather than for the immediate gratification that other content might offer. Conversely, "Fast Food" videos, which garnered the lowest Arousal and Dominance scores, suggest a more passive viewing experience, likely due to their association with routine, everyday food choices. The lower Dominance scores also imply that viewers might feel less control or empowerment when consuming fast food content, potentially due to the negative connotations associated with unhealthy eating.

Overall, these findings underscore the diverse emotional responses elicited by different types of TikTok content and highlight the platform's influence on users' dietary practices, body image, and overall well-being. The results suggest that while TikTok content can inspire positive changes in dietary behaviour, it also has the potential to reinforce negative self-perceptions, particularly when it comes to idealized body standards and unrealistic portrayals of eating habits. This duality emphasises the need for a balanced approach in content creation and consumption, ensuring that the benefits of informative and motivational content are maximized while minimising the risks associated with harmful stereotypes and misinformation.

In light of these findings, several policy recommendations are proposed. Public health initiatives should leverage TikTok's popularity to disseminate accurate and scientifically backed nutritional information. Collaborations between TikTok influencers and public health organisations could help promote balanced diets and body positivity, countering the restrictive and often unrealistic portrayals prevalent on the platform. Additionally, there is a need for stricter regulatory frameworks to ensure transparency in influencer marketing and to mitigate the spread of misinformation. Social media platforms like TikTok should implement monitoring systems to flag non-compliant content, with penalties for violations, such as fines or account suspensions. Educational initiatives to enhance media literacy, particularly among younger users, are also crucial to help them critically assess the content they encounter and mitigate the negative impacts on body image and mental health.

Future research should address the limitations of this study by employing longitudinal designs to capture changes in user behaviour over time and by incorporating larger and more diverse samples to enhance the generalisability of the findings. Expanding the range of content types analysed, beyond specific hashtags, will also provide a more comprehensive understanding of TikTok's influence on dietary practices and perceptions. Furthermore, the development and validation of more user-friendly tools for measuring emotional responses could improve the reliability and accuracy of future research in this area.

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13 Annexes

Summary: Summary of the results of all statistical analysis.

Hashtag trends analysis. Linear regression to show the rate of change in the number of posts over time.

Numeric results	Significance	Interpretation
#HighProtein: Slope = 233,700, p = 0.02	Yes	Rapid increase in popularity, significant growth trend
#Foodie: Slope = 100,000, p < 0.001	Yes	Consistently high and steadily increasing interest
#WeightLoss: Slope = 60,000, p < 0.05	Yes	Slight but steady increase in interest
#Mukbang: Slope = 30,000, p = 0.17	No	Minimal growth, moderate and stable engagement
#WhatIEatInADay: Slope = 0, p = 1	No	No change in popularity, stable interest
#VeganFood: Slope = 2,430, p = 0.02	Yes	Modest but steady growth in interest
#EatWithMe: Slope = 4,070, p < 0.05	Yes	Moderate growth in popularity
#FastFood: Slope = 7,340, p < 0.001	Yes	Noticeable increase in popularity
#VeganRecipes: Slope = 1,520, p = 0.02	Yes	Gradual increase in interest
#CleanEating: Slope = 2,000, p = 0.02	Yes	Slow and steady growth in popularity
#EasyRecipe: Slope = 30,000, p = 0.17	No	Moderate growth, similar to #Mukbang
#Recipe: Slope = 30,000, p = 0.17	No	Moderate growth, similar to #EasyRecipe and #Mukbang

Videos characteristics analysis

Video Analysis					
Thematic content	Engagement metrics	Hashtag co-occurrences	Content creators characteristics	Popular formats	Associated hashtags
#WeightLoss: transformation, motivation, and progress.	**#EasyRecipe** and **#Recipe:** lead in engagement (likes, shares, and saves).	**#WeightLoss + #WeightLoss Transformation**	**#Mukbang**: mainly 20-30 years old females.	**Mukbang videos (ASMR, messy eating).**	**#VeganRecipes, #EasyRecipe**, and **#Recipe**.
#WhatIEatInADay: eating diaries. Realistic eating and body size inclusivity promotion.	**#HighProtein:** significant likes, comments, and saves.	**#VeganFood + #VeganRecipes**	**#VeganRecipes** and **#WhatIEatInADay**: mainly 25-30 years old females.	**Before-and-after transformations, diet tips, exercise routines.**	**#EatWithMe, #WhatIEatInADay**, and **#Mukbang**.
#Mukbang and **#EatWithMe:** entertainment and	**#WeightLoss:** high likes and comments.	**#Mukbang + #EatWithMe**	**#Recipe**: 25-35 years old, both genders.	**Meal prep and recipes.**	

social eating experiences.					
#VeganFood and **#VeganRecipes:** plant-based diets promotion.	**#WhatIEatInADay:** high likes and comments.		**#FastFood**: 20-40 years old, both males and females.		
#Recipe and **#EasyRecipe:** accessible, quick, and affordable recipes.	**#FastFood** and **#Foodie:** high likes, shares, comments, and saves.		**#HighProtein**: 30-35 years old males.		
	#EatWithMe: high likes, shares, and comments (enhanced by ASMR elements).				
	#CleanEating: lowest likes and shares.				

Analysis of questionnaire answers

Method	Numeric results	Significance	Interpretation	Post-hoc
SAM correlations - Pearson's correlation	Pleasure vs. Arousal: r = -0.047, p = 0.466	No	Negligible correlations between emotional states	
	Pleasure vs. Dominance: r = 0.021, p = 0.746	No	Negligible correlations between emotional states	
	Arousal vs. Dominance: r = -0.036, p = 0.575	No	Negligible correlations between emotional states	
Differences in SAM across stimuli - Kruskal-Wallis Test	Pleasure: Chi-square = 39.174, df = 7, p < 0.001	Yes	Significant difference in Pleasure across stimuli	Dunn's test with Bonferroni: • Mukbang vs. What I Eat in a Day: p = 0.0001. • Mukbang vs. Weight Loss: p = 0.036. • Mukbang vs. Fast Food: p = 0.015.

				• Mukbang vs. High Protein: $p < 0.001$.
	Arousal: Chi-square = 7.116, df = 7, p = 0.417	No	No significant differences in Arousal	
	Dominance: Chi-square = 5.714, df = 7, p = 0.574	No	No significant differences in Dominance	
Highest and lowest mean scores for each SAM - Means	**Pleasure:** Mukbang highest (3.8), High Protein lowest (3.3)			
	Arousal: High Protein highest (3.3), Fast Food lowest (2.9)			
	Dominance: WIEIAD highest (3.3), Fast Food lowest (2.8)			
Age vs SAM - Spearman's Rank Correlation	**Pleasure:** rho = -0.051, p = 0.440	No		
	Arousal: rho = 0.005, p = 0.943	No		
	Dominance: rho = -0.040, p = 0.542	No		
Gender identity vs SAM - Means and median	**Pleasure:** Mean male = 3.04, Mean female = 3.04; Median male = 3.0, Median female = 3.0			
	Dominance: Mean male = 2.98, Mean female = 3.03; Median male = 3.0, Median female = 3.0			
	Arousal: Mean male = 3.23, Mean female = 3.13; Median male = 3.0, Median female = 3.0			
Expertise vs SAM - means and medians	**Pleasure:** Mean Food = 3.04, Mean Non-Food = 3.04; Median Food =3.0 , Median Non-Food = 3.0			
	Arousal: Mean Food = 3.21, Mean Non-Food = 2.99; Median Food =3.0 , Median Non-Food = 3.0			

	Dominance: Mean Food = 3.21, Mean Non-Food = 2.91; Median Food =3.0 , Median Non-Food = 3.0			
Body confidence vs SAM - Kruskal-Wallis	**Dominance:** Chi-square = 11.461 , p = 0.022	Yes	Individuals' perception of dominance in response to stimuli is related to their level of body confidence	Dunn's test with Bonferroni: no specific pairwise differences between the groups.
	Arousal: Arousal: Chi-square = 2.869, p = 0.58	No		
	Pleasure: Chi-square = 0.957, p = 0.916	No		
TikTok usage vs SAM - Kruskal-Wallis	**Arousal:** Chi-square = 10.151, p = 0.038	Yes	Significant differences among levels of TikTok usage	Dunn's test with Bonferroni: significant difference between the "Never" and "Several times per week" usage levels (adjusted p = 0.032)
	Pleasure: Chi-square = 6.504, p = 0.165	No		
	Dominance: Chi-square = 8.701, p = 0.069	No		
SWE vs SAM – Kruskal-Wallis	**Arousal: Chi**-square = 17.634, p = 0.024	Yes	Significant differences among SWE	Dunn's test with Bonferroni: no significant pairwise differences
	Dominance: Chi-square = 30.482, p = 0.0002	Yes	Significant differences among SWE	Dunn's test with Bonferroni: • 2.75 vs 2 (Z = -3.331, adjusted p = 0.016) • 3 vs 2 (Z = -3.206, adjusted p = 0.024) • 4 vs 2.75 (Z = 3.730, adjusted p = 0.003) • 4 vs 4 (Z = 3.714, adjusted p = 0.004)
	Pleasure: Chi-square = 6.238, p = 0.621	No		
PWE vs SAM – Kruskal-Wallis	**Dominance:** Chi-square = 17.058, p = 0.009	Yes	Significant differences among PWE	Dunn's test with Bonferroni: significant difference between PWE levels 3.75 and 4 (Z-value: 2.9905, adjusted p = 0.029).
	Arousal: Chi-square = 11.753, p = 0.068	No		
	Pleasure: Chi-square = 6.295, p = 0.391	No		

SWE&PWE – Descriptive statistics	**SWE peaks:** 3.0 and 3.75, smaller at 2.5			
	PWE peak: 4, smaller at 3			
SWE&PWE correlation – Pearson's correlation	0.561, p = 0.0001	Yes	Moderate positive relationship	
SWE vs Age – Spearman's Rank correlation	Spearman's rho = 0.128, p = 0.471	No		
PWE vs Age – Spearman's Rank correlation	Spearman's rho = 0.126, p = 0.477	No		
SWE vs gender identity - Means and medians	**SWE:** Mean male = 3.17, Mean female = 3.17; Median male = 3.12, Median female = 3.25			
PWE vs gender identity - Means and median	**PWE:** Mean male = 3.67, Mean female = 3.66; Median male = 4.0, Median female = 3.75			
SWE vs expertise - Means and medians	**SWE:** Mean Food = 3.33, Mean Non-Food = 3.5; Median Food =4.0 , Median Non-Food = 3.5			
PWE vs expertise - Means and medians	**PWE:** Mean Food =3.67, Mean Non-Food = 3.75; Median Food =4.0 , Median Non-Food = 4.0			
SWE vs body confidence – Kruskal-Wallis	Kruskal-Wallis chi-square = 14.647, df = 4, p = 0.005	Yes	Significant relationship between SWE and body confidence scores	Dunn's test with Bonferroni: body confidence levels 2 and 4 showed significant difference (Z = -3.558, adjusted p = 0.004).
PWE vs body confidence – Kruskal-Wallis	Kruskal-Wallis chi-square = 8.178, df = 4, p-value = 0.085	No		

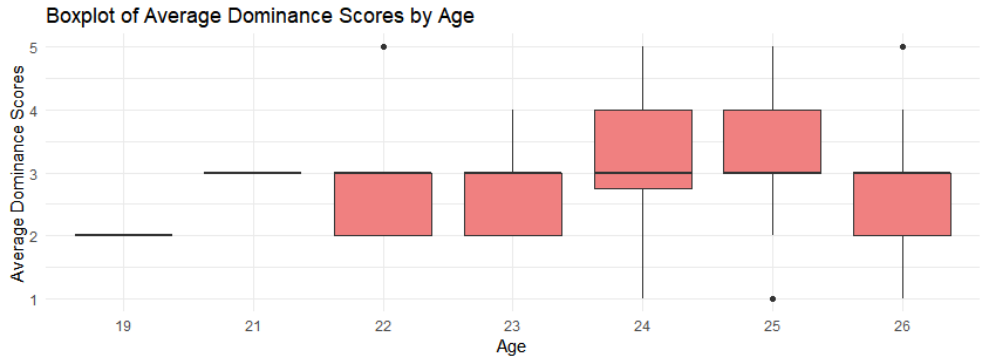
TikTok usage vs SWE – Kendall's Tau	$\tau = -0.0796$, $p = 0.529$	No		
TikTok usage vs PWE – Kendall's Tau	$\tau = 0.046$, $p = 0.732$	No		
TikTok usage vs body confidence – Kruskal-Wallis	Kruskal-Wallis chi-square = 6.123, df = 4, p-value = 0.190	No		

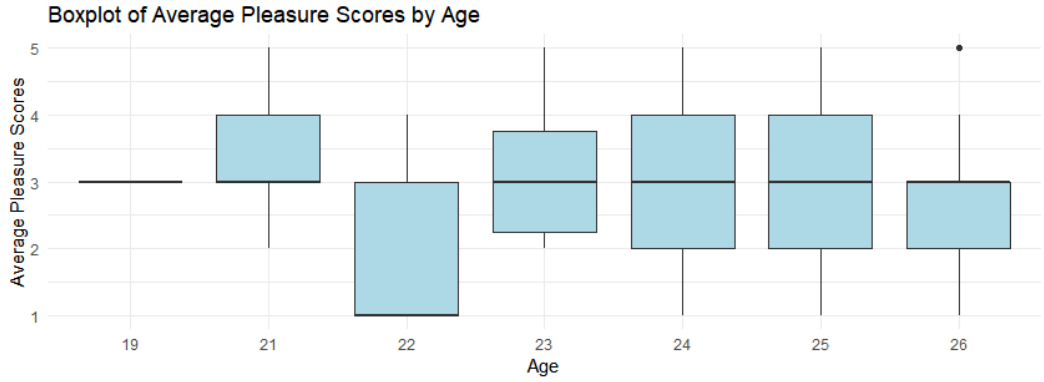
Annex A: Number of posts connected to each hashtag collected on five different days every week.

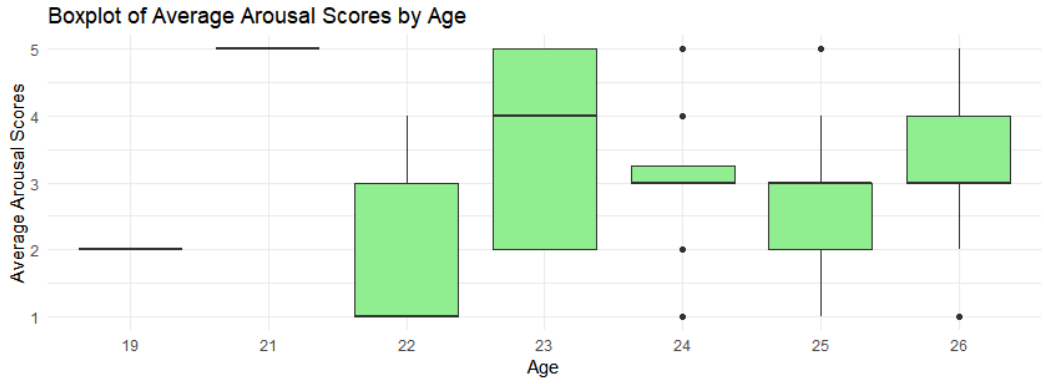
Hashtags	Number of posts			
	April 15th	April 22nd	April 29th	May 6th
Weight-loss and Diet				
#WeightLoss	8.1M	8.2M	8.2M	8.3M
#WhatIEatInADay	1.7M	1.7M	1.7M	1.7M
Limitless Eating				
#Mukbang	3.5M	3.5M	3.5M	3.6M
#EatWithMe	431.9K	436.2K	440.6K	444.0K
Vegan Diet				
#VeganFood	481.5K	483.8K	486.5K	488.7K
#VeganRecipes	400.9K	402.5K	404.2K	405.4K
Omnivore Diet				
#Recipe	3.4M	3.5M	3.5M	3.5M
#EasyRecipe	1.9M	2.0M	2.0M	2.0M
Healthy Eating				
#CleanEating	212.1K	214.1K	216.4K	218.0K

#HighProtein	303.3K	308.0K	884.0K	890.3K
Fast Food Eating				
#FastFood	868.6K	875.7K	884.0K	890.3K
#Foodie	23.8M	23.9M	24.0M	24.1M

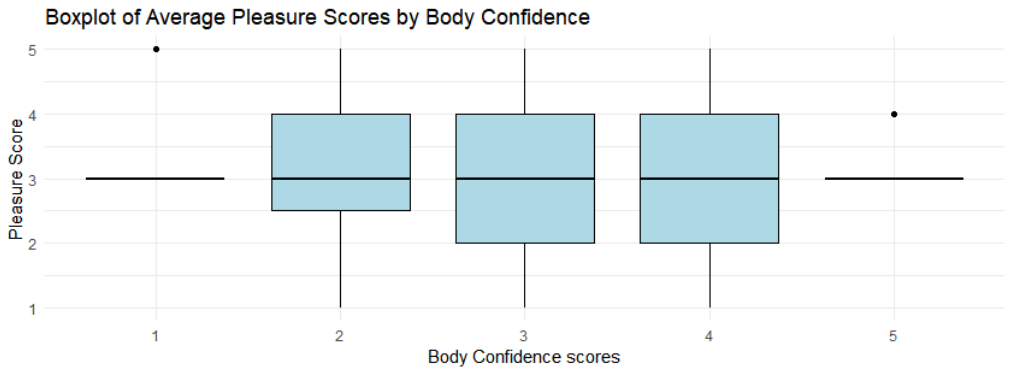
Annex B: Boxplots showing the relationships between the emotional states of Dominance, Pleasure, and Arousal, and age.

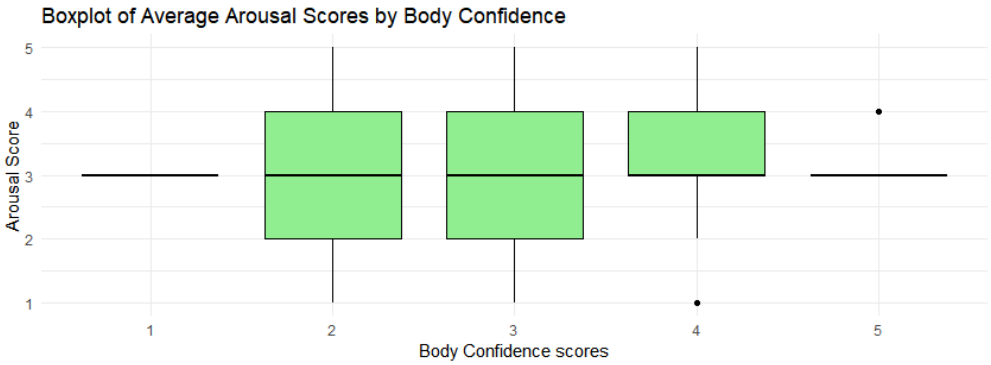




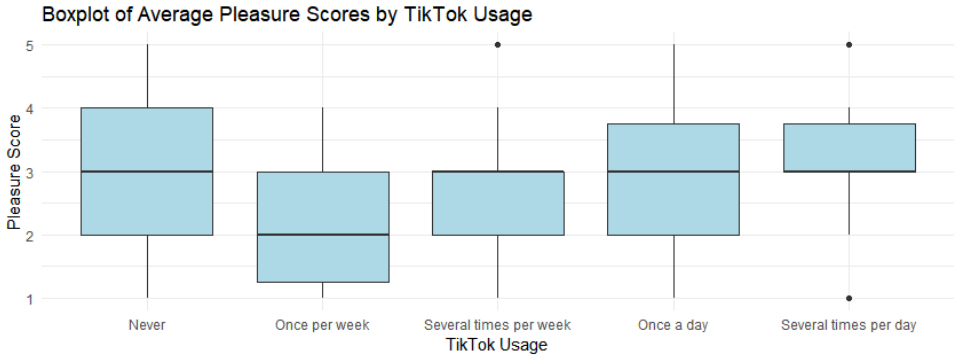


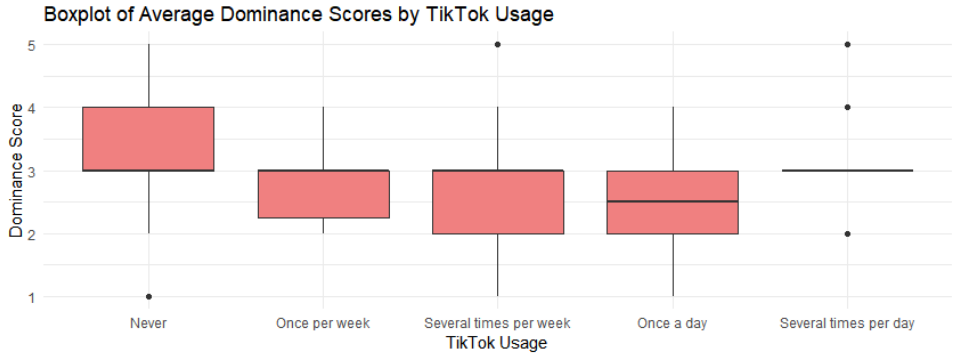
Annex C: Boxplots showing the relationships between the emotional states of Pleasure and Arousal, and body confidence.



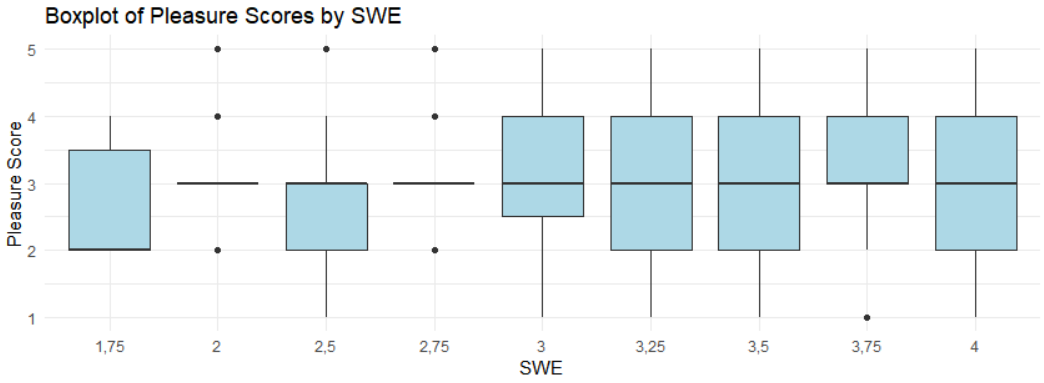


Annexe D: Boxplots showing the relationships between the emotional states of Pleasure and Dominance, and TikTok Usage.

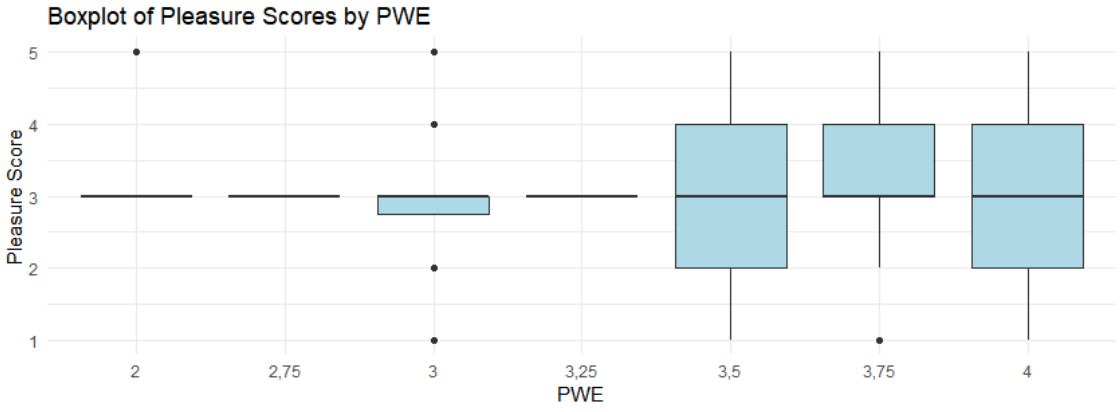


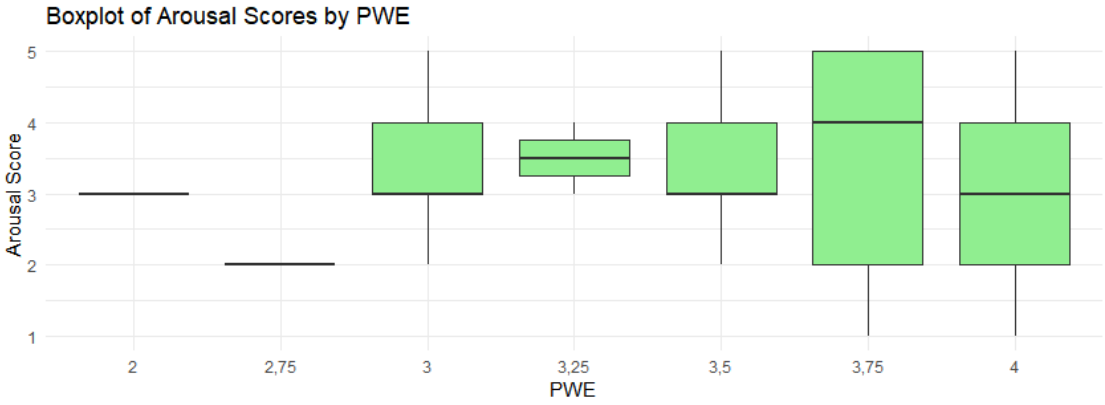


Annexe E: Boxplot showing the relationships between the emotional state of Pleasure for Satisfaction with Eating scores.



Annexe F: Boxplots showing the relationships between the emotional responses of Pleasure and Arousal, for Pleasure when Eating scores.

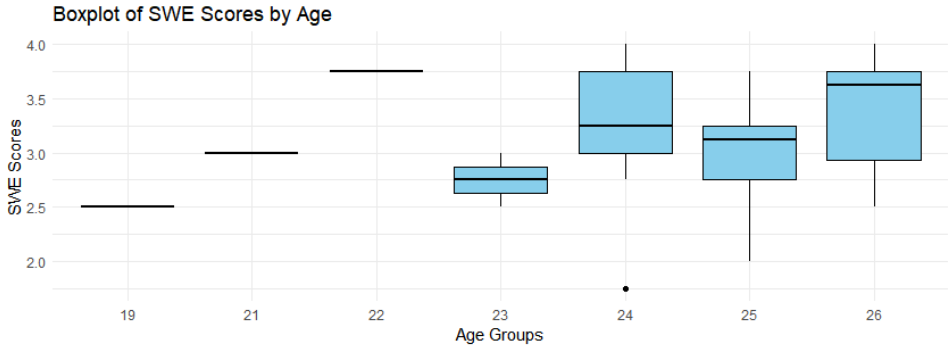


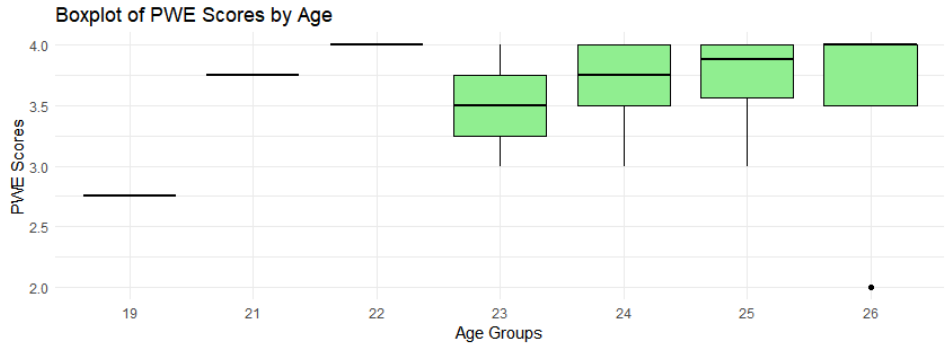


Annexe G: Summary of Correlation Coefficients and P-values between Satisfaction with Eating (SWE) and Pleasure with Eating (PWE) Scale Items

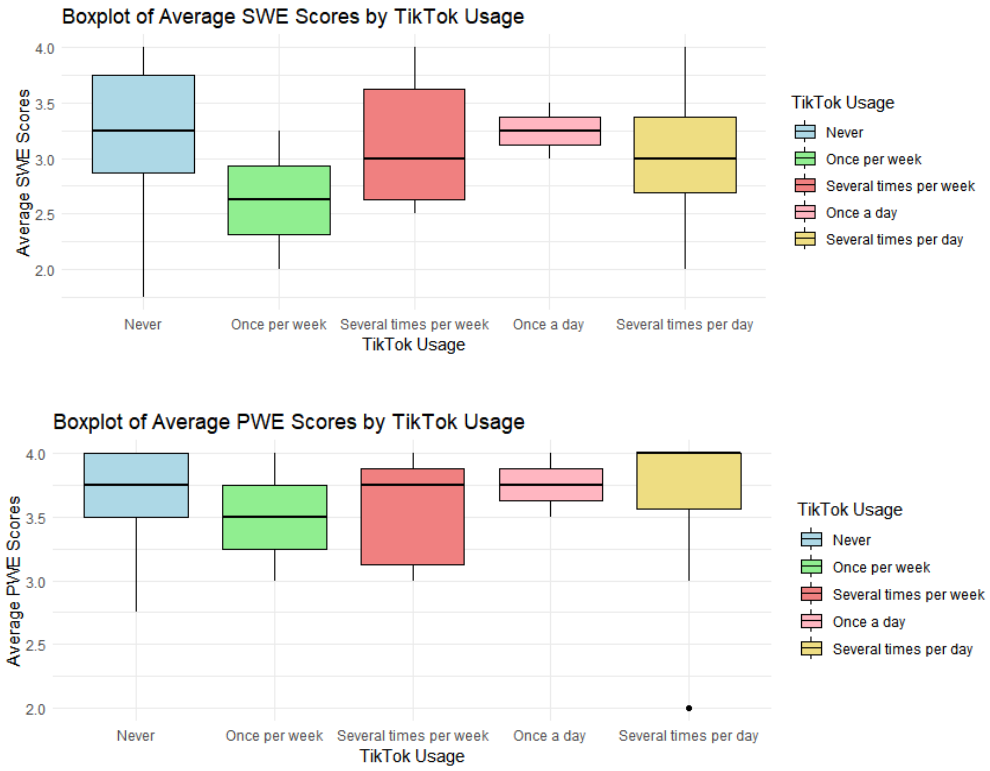
	Eating is a pleasure for me	I enjoy eating	Eating is fun for me	Eating is something nice for me	**Pleasure when Eating**
I eat in a way that makes me feel good	0.324 (p = 0.014)	0.421 (p = 0.001)	0.367 (p = 0.005)	0.468 (p = 0.0002)	
Overall, I am satisfied with my eating behaviour	0.117 (p = 0.386)	0.223 (p = 0.096)	0.156 (p = 0.248)	0.286 (p = 0.031)	
I am relaxed about eating	0.327 (p = 0.013)	0.363 (p = 0.006)	0.379 (p = 0.004)	0.435 (p = 0.0007)	
I have a good relationship with eating	0.224 (p = 0.094)	0.375 (p = 0.004)	0.336 (p = 0.011)	0.462 (p = 0.0003)	
Satisfaction with Eating					0.882 (p < 0.001)

Annexe H: Boxplots showing the relationships between Satisfaction with Eating and Pleasure when Eating scores, and age.

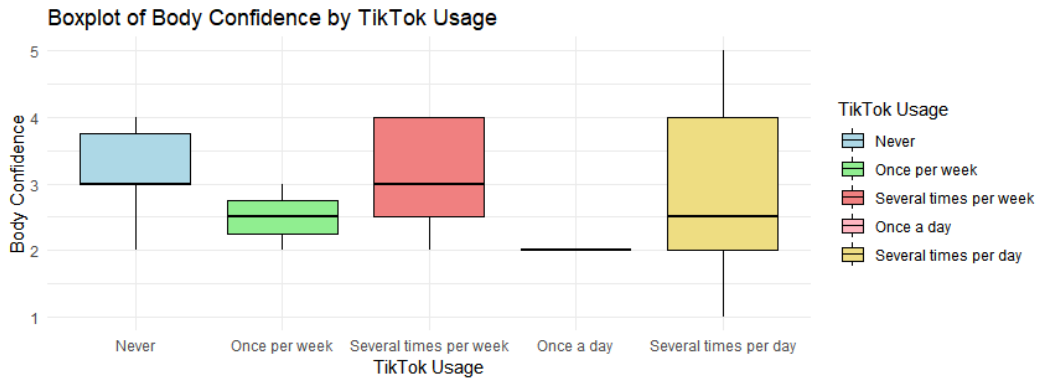




Annexe I: Boxplots showing the relationships between Satisfaction with Eating and Pleasure when eating scores, and TikTok usage patterns.



Annexe J: Boxplot showing the relationship between body confidence scores and TikTok usage patterns.



Annexe K: Table containing the summarisation of the responses to the open-ended question, part of the questionnaire, that inquiries about the potential harmfulness of food-related content.

Opinion	Respondent	Answer	Frequency
Harmful	R5	Yes	20 out of 44
	R6	Yes	
	R7	Yes definitely, seriously dangerous	
	R9	Definitely yes, harmful	

	R11	Yes	
	R12	Yes	
	R13	Yes	
	R16	Yes	
	R26	Yes	
	R28	Yes	
	R29	Yes	
	R30	Yes	
	R31	Yes	
	R32	Yes	
	R34	Yes	
	R36	Yes	
	R37	Yes	
	R38	Yes	
	R42	Yes	
	R52	Yes	
Good	R4	Good	2 out of 44
	R41	No	
Unregulated	R4	Too unregulated	2 out of 44
	R7	No regulations on social media content whatsoever	
More harmful to unconscious people	R5	Especially with people who are not conscious about healthy and correct diet	2 out of 44
	R9	Never received proper education about it	
Influence habits, decision-making process, and standards	R5	Influenced by wrong habits	6 out of 44
	R6	Endorse harmful eating habits or standards	
	R7	Affects people's decision-making process	
	R12	Promote unhealthy eating patterns	
	R31	Food easily influences aspects of our lives	
	R34	Touch upon some cravings we already have and if the content includes people eating food it can make us think that we will be feeling the same as them if we eat the same	
Misinformation	R7	Lead to huge misinformation	14 out of 44
	R11	A lot of misinformation everywhere	
	R14	People can get the wrong information	
	R26	Not science-based	
	R27	If communication is not done properly it may lead to misinformation	
	R29	Can misinform	
	R30	Influencers give superficial advice and do not have studied or researched enough to give backed-up advice	
	R32	Misleading	
	R37	Wrong information	

	R42	If you don't have enough information you can find wrong or misleading ones	
	R51	When claims have not been verified scientifically yet	
	R52	Diets offered that are completely wrong or not correct for the user's body	
Cause mental health issues and food-related problems	R6	Endorse harmful eating habits or standards	11 out of 44
	R7	Affects people's mental health	
	R9	Contribute to anxiety and poor self-esteem	
	R28	Trigger unhealthy eating	
	R29	Give a negative/unrealistic image	
	R42	Harmful food-related practices	
More harmful to teenagers	R7	This particularly affects young teenagers, who are vulnerable and easily misled by any type of trends or wrong advice regarding what they eat and what they "should look like"	2 out of 44
	R13	Especially for teenagers	
More harmful for people sensitive to the topic	R9	Especially for individuals who are already vulnerable and sensitive to the topic for different reasons (weight loss, food-related disorders)	3 out of 44
	R12	Trigger individuals with dietary restrictions or eating disorders	
	R38	Yes for people sensitive about this topic and insecure about their bodies	
Topics	R9	Unhealthy eating habits, unrealistic body images, disordered eating behaviours, anxiety, low self-esteem	5 out of 44
	R16	Calorie counting, unrealistic portions	
	R26	Strict diets, not science-based	
	R36	Depict behaviours that aren't healthy	
	R39	Perfect diets or idealised bodies	
Health issues	R9	Misleading nutritional advice can pose a health risk	2 out of 44
	R14	Content could be bad for health	
It depends	R8	It could go both ways. Some content is useful, but some content can be misleading	5 out of 44
	R12	Both negative and positive effects	
	R14	It could be	
	R15	Depends on the content-consumer	
	R39	It depends on what message is present	
Not affordable	R30	Health and fitness influencers advertise a lifestyle that is not so affordable	1 out of 44
Hard to rationalise/discern	R36	It can be extremely hard to distinguish between them and rationally analyse the contents	2 out of 44
	R42	If you don't have enough information you can find wrong or misleading content	

Annexe L: Table summarising the responses to the open-ended question, part of the questionnaire, that inquiries about whether the respondents have been influenced by social media content.

Opinion	Respondent	Answer	Frequency
Has been influenced	R4	Definitely	27 out of 44
	R5	Everyone can be influenced a bit	
	R6	Yes	
	R7	Yes	
	R8	Yes	
	R9	Yes to some extent	
	R10	Yes	
	R11	Yes	
	R12	Yes, definitely	
	R13	Yes	
	R14	Yes	
	R15	Yeah	
	R16	Yes	
	R26	Yes	
	R27	Yes	
	R28	Yes	
	R29	Yes but not much	
	R30	Maybe	
	R31	Yes as with any advertisement	
	R32	Not really	
	R34	Yes	
	R36	Yes, on several occasions	
	R37	Yes	
	R38	Yes	
	R39	Yes, sometimes	
	R42	Yes	
	R52	Yes	
Hasn't been influenced	R41	No	2 out of 44
	R51	Not really	
Where to eat	R4	Where to eat	1 out of 44
New recipes	R4	New recipes	15 out of 44
	R5	Change something in my diet	
	R6	Do better with what I eat	
	R7	Start craving food and eating it; Ideas of healthy recipes; Prepare and eat whatever I saw	
	R8	Cooking videos for ideas	
	R9	Different habits in my diet based on information I found trustworthy	
	R11	Cooks on social media preparing delicious dishes	