Surfing & Snacking Content on Social Media:
The Constructivist Definition of Digital Junkfood

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Abstract

Digital Junkfood is introduced in this study as a concept analogous to edible junk food, referring to content consumed on social media platforms that contains similarities to junk food consumption. This study aims to develop a comprehensive understanding of Digital Junkfood by adopting a constructivist perspective, recognizing the subjective nature of user perceptions. Through an exploratory research approach, the study investigates user perceptions and experiences regarding Digital Junkfood. The data collected from this experiment was processed using the three steps of coding in grounded theory. The findings of this study reveal that Digital Junkfood can be seen from a constructivist viewpost as users described diverse subjective perceptions and experiences with Digital Junkfood. Moreover, three fundamentals were found to define Digital Junkfood in a constructivist way: content elements, evoked feelings, and behavioral responses towards Digital Junkfood. These fundamentals encompass the diverse perceptions and experiences among individual users. This study contributes to the understanding of Digital Junkfood and its potential implications for compulsive and addictive social media use.

Contents

1   Introduction

The act of consuming edible junk food (e.g., crisps or a hamburger) can evoke a range of feelings between individuals. There are times when a person finds it difficult to resist indulging in junk food, while on other occasions, it becomes easier for them to abstain from it. The experience of consuming junk food can be thoroughly enjoyable at one moment, while at another, the person might start questioning why they are consuming this type of food. After the consumption, there can be feelings of satisfaction, stemming from the enjoyment of the experience, but also moments of self-reflection where one wonders if they should have chosen healthier options instead. These feelings are subjective and can vary from person to person. Moreover, what food is considered as junk food can also differ among individuals.

Similar to the diverse range of feelings and perceptions associated with consuming edible junk food, consuming certain content on social media can evoke similar experiences. The experience and outcome of consuming content may be perceived as healthy or unhealthy potentially influenced by the content that is being consumed as a user puts their time and energy into this activity. Drawing parallels between the consumption of edible junk food and the consumption of content on social media, the term 'Digital Junkfood' is introduced to encompass content that exhibits similar characteristics and effects as edible junk food.

Users often find themselves spending excessive amounts of time on social media, even if they don't perceive it as an addiction (Machold et al., 2012). Therefore, understanding the potential impact of Digital Junkfood on social media use is valuable not only for preventing social media addiction but also for mitigating compulsive use based on the insights provided by this study.

As stated by Griffiths, Kuss, and Demetrovics (2014), there is a significant need for comprehensive and precise information regarding various behaviors exhibited by users on social media, in order to understand how to prevent compulsive use and treat addictive behavior. This exploratory research aims to contribute towards fulfilling this demand by examining the constructivist definition of Digital Junkfood, recognizing that its interpretation, much like edible junk food, can vary among users. Thus, the main research question for this study is formulated as follows:

RQ: *How can Digital Junkfood be defined in a constructivist way?*

Several studies in this research area often overlook the diverse conditions that exist on smartphones and incorrectly assume uniformity across all users (Wilmer, Sherman, & Chein, 2017). This oversight extends to the conditions under which content is presented to social media users. Researchers might assume that content provides a uniform experience for every user. However, the nature of the presented content, including Digital Junkfood, may influence

users' experiences and behaviors in their social media usage. Therefore, this study aims to shed light on this concept and investigate its potential impact on social media use.

Firtsly, the study addresses how users perceive and categorize content as Digital Junkfood, focusing on the elements of the content. The characteristics of the content perceived as Digital Junkfood can evoke a range of feelings, which are also examined in this study. Moreover, the study explores the behavioral responses towards Digital Junkfood potentially resulting from these feelings. To discuss these facets of Digital Junkfood, the following subquestions have been formulated:

SQ1: *What elements of the content contribute to its classification as Digital Junkfood?*

SQ2: *What feelings are evoked from the user when engaging with Digital Junkfood?*

SQ3: *What behaviors do social media users exhibit in response to Digital Junkfood?*

This study will commence by conducting a literature review to examine previous studies and their findings pertaining to Digital Junkfood. Due to the novelty of the term, there is limited existing research specifically focused on this area. The literature review will therefore explore topics associated with Digital Junkfood. This includes a general introduction to addictive behaviors including a dedicated chapter on addictive Internet behavior, the unintended consequences of excessive social media use, and potential indications of Digital Junkfood.

After conducting the literature review, this research will outline the research methodology, which involves employing surveys and semi-structured interviews as data collection methods to gather insights into users' perceptions and experiences with Digital Junkfood. The quantitative and qualitative results will then be presented, accompanied by diverse descriptions of how participants perceive and experience Digital Junkfood. Finally, the discussion and conclusion section will analyze the study's results and address the research questions to provide an overall understanding of the constructivist definition of Digital Junkfood.

2 Literature review

Digital Junkfood can be associated with various aspects of social media use, including compulsive or excessive use, regret, and addiction. Most research studies in this field primarily concentrate on social media addiction, possibly because researchers are mainly concerned with reducing addictive behaviors related to social media. Therefore, this literature review contains relatively more studies that focus on social media addiction. However, it is important to recognize that Digital Junkfood can also impact individuals who engage in compulsive or excessive social media use without experiencing addiction. By exploring different forms of social media use linked with Digital Junkfood, it can potentially provides information on how to reduce social media use overall, whether that would be addictive behavior towards social media or purely in situations of compulsive and excessive use.

The literature review commences by providing an overview of the broad concept of addictive behavior. Subsequently, it delves into the examination of addictive behavior specifically related to Internet usage. Following that, the review explores the impact of excessive social media use. Lastly, the focus shifts towards exploring the implications concerning Digital Junkfood. To conclude, the key findings of the literature review are summarized and a final conclusion is presented relating the collective evidence to the concept of Digital Junkfood.

2.1 The concept of addictive behavior

2.1.1 Definition and characteristics

The definition of addiction has always been a topic of much debate (Shaffer, 1997) (Nordenfelt, 2010). Sussman and Sussman (2011) examined the meaning of addiction by studying prior research on this concept identifying shared elements among various definitions in these studies. It was found that addiction contains the following five elements: (1) behavior performed to attain pleasurable effects, (2) obsessive focus on the behavior, (3) temporary satiation after the behavior, (4) inability to control the behavior, and (5) experiencing negative outcomes from the behavior. These elements will now be discussed in more detail below.

The first element of addiction describes that an addiction is not something that an individual develops overnight but it can rather be seen as a process. This addiction process differs between individuals as some individuals are more prone towards a certain addiction or it has different effects to someone's personal feelings. In some cases, people will experience an addiction while being in the process as something subjectively negative as side-effects start to develop such as loneliness and restless. However, in other cases people will have a subjectively positive experience as the addiction gives individual feelings like being aroused or excited.

Addiction can be defined as an obsessive focus on a certain behavior that can lead to decreased time spent on other activities and negatively impact an

individual's performance. This shows that addiction can have a wide-reaching impact on different aspects of an individual's life. Tolerance and withdrawal are also commonly associated with addiction. Tolerance refers to the need to engage in the behavior at a higher level than in the past in order to achieve the same level of pleasure. As tolerance increases, an individual may spend more time seeking out and engaging in the addiction. Withdrawal, on the other hand, refers to the discomfort or physical symptoms that occur when the addictive behavior is abruptly stopped. The presence and severity of withdrawal symptoms can indicate how much time an individual is spending recovering from the addiction and how much they are preoccupied with it. Craving is also related to addiction, and refers to an intense desire to engage in a specific behavior that can be recurring and difficult to resist.

The third element is a feeling of being satisfied or fulfilled after engaging in an addictive behavior which is known as satiation. However, this feeling is often short-lived and cravings for the behavior can return soon after. This temporary distraction from life problems or feelings of discomfort may be why some individuals find it difficult to resist addictive behaviors. Non-addictive alternatives may not provide the same feeling of satiation, which can make it challenging for individuals with addiction to refrain from the addictive behavior. Additionally, it is possible that after being addicted for a certain period of time, individuals may no longer be able to achieve the feeling of satiation from the addictive behavior. For this reason, it has been argued that satiation should not be considered an element of the concept of addiction.

The inability to control an addictive behavior, or difficulty in refraining from it despite attempting to do so, is a central aspect of addiction and refers to loss of control. An individual may not be able to predict when they will engage in the behavior, how it will manifest, or when it will stop as the behavior becomes more automatic. The feeling of losing control is often characterized by incomplete memory and impulsiveness. Incomplete memory refers to the association of positive emotions with the addiction while forgetting the negative consequences to one's physical and mental well-being. Impulsiveness can be identified as the spontaneous urges to engage in the addictive behavior, where executive inhibitory processes fail to operate as a result of the actions of addiction-related reinforcers on separate memory systems.

The final element describes that engaging in an addictive behavior in general tends to lead to negative consequences such as physical discomfort, social disapproval, financial loss, or decreased self-esteem. It can be challenging to stop the behavior for a variety of reasons, including the cognitive salience of the immediate gratification from the behavior (i.e., satiation) relative to its delayed adverse effects. Individuals may also fear having to cope with stress and other challenges in their daily lives without the behavior, as well as experiencing withdrawal symptoms if they try to quit the addiction (Sussman & Sussman, 2011).

Griffiths (2005), who performed many studies specifically on social media addiction, argues that six criteria must be met to classify a behavior as addictive. These criteria include forms of salience, mood modification, tolerance,

withdrawal symptoms, conflict, and relapse. This applies to both substance-based addictions and behavioral addictions (Kuss & Griffiths, 2011). The main distinction between the set of criteria from Sussman and Sussman (2011) and Griffiths (2005) for describing addiction is that Sussman and Sussman (2011)'s criteria include the development of an addiction in their first criteria, while Griffiths (2005) primarily focuses on when an addiction is already present in an individual's life along with the resulting consequences. The remaining elements of the two criteria sets correspond with each other where withdrawal symptoms and conflict together illustrate the experience of negative outcomes from the behavior while mood modification and tolerance describe the feeling of satiation after the behavior. Both researchers also consider salience (obsessive focus on the behavior) and relapse (inability to control the behavior) as important criteria.

2.1.2 Behavioral addictions vs. Substance-based addictions

Traditionally, addiction was only recognized in the context of substance use, as it was believed that addiction only occurred when an individual consumed some type of substance (e.g., alcohol, drugs, and food) (Pontes & Griffiths, 2014). However, it has been scientifically demonstrated that humans can develop an addiction to certain behaviors without the involvement of any substances known as behavioral addiction (Andreassen et al., 2016). Examples of behavioral addictions are shopping, work, exercise, sex, and video gaming (Pontes & Griffiths, 2014).

The Diagnostic and Statistical Manual of Mental Disorders (DSM) contains the first acknowledgement of behavioral addiction in their fifth edition as gambling was included as one of the discussed addictions (Pontes & Griffiths, 2014). Since the release of the fifth edition of DSM, research has grown to classify more and more common behaviors and activities as potential behavioral addictions (Kardefelt-Winther et al., 2017). Therefore, Kardefelt-Winther et al. (2017) argues that if the classification of behavioral addictions continues to expand, it may raise doubts about the credibility of the field of addictive disorders. Moreover, they noted that behavioral addiction is labelled by using key components of substance-based addiction. Therefore, Kardefelt-Winther et al. (2017) proposed a clear definition of behavioral addiction along with criteria for exclusion to prevent the medicalization of normal behaviors. This was done by looking at the dissimilarities between behavioral addiction and substance-based behavior. Behavioral addiction was defined in the following way: *"A repeated behavior leading to significant harm or distress. The behavior is not reduced by the person and persists over a significant period of time. The harm or distress is of a functionally impairing nature."*. This definition goes along with four criteria that exclude certain behavior to be labelled as addictive: (1) The behavior can be better explained as a symptom of an underlying disorder, (2) The negative impact on daily life is caused by an action that, while potentially harmful, is a result of a conscious decision, (3) The behavior can be described as a prolonged, intense engagement that takes time and attention away from other aspects of

life, but does not cause significant disruption or distress to the person, and (4) the behavior is a coping mechanism.

However, Griffiths (2017) challenges the viewpoint of Kardefelt-Winther et al. (2017) by suggesting that behavioral addiction and substance-based addiction should be defined by their similarities rather than their differences. According to Kardefelt-Winther et al. (2017), tolerance and withdrawal are difficult to apply convincingly, but Griffiths (2017) argues that this would instead lead to more behaviors being labeled as an addictive disorder. Additionally, Griffiths (2017) states that the exclusion criteria proposed by Kardefelt-Winther et al. (2017) would also exclude some types of substance-based addictions as many of substance-based addictions also involve underlying disorders (e.g., depression) and are either initiated by a conscious choice or are engaged in as a coping mechanism to address other issues in the life of an individual.

2.2 Addictive Internet behavior

2.2.1 Definition and characteristics

Over the past few decades, numerous researchers have employed various terms to describe Internet addiction, including digital media compulsion, virtual addiction, and Internet abuse (Greenfield, 2007). Schou Andreassen and Pallesen (2014) defines addiction in the context of Internet use as: *"Being overly concerned about online activities, driven by an uncontrollable motivation to perform the behavior, and devoting so much time and effort to it that it impairs other important life areas."*. Internet addiction is classified as a behavioral addiction, but also exhibits similarities with substance addictions as both types of addiction share some common characteristics as mentioned earlier. Besides, Internet addiction also has its own distinct characteristics compared to other addictions (Greenfield, 2007).

Before the emergence of Internet addiction, other types of both substance-based and behavioral addictions (e.g., consumption of alcohol and drugs, or sex) were already widely available, relatively inexpensive, capable of distorting time perception, interactive, anonymous, enjoyable, and prone to repetition. These characteristics are also part of Internet use addiction. Besides, every kind of addiction including Internet use addiction stimulate the production of dopamine, a neurotransmitter that promotes feelings of pleasure and joy when engaging in the addictive behavior (Greenfield, 2007).

However, Internet addiction also has some characteristics that distinguish it from other addictions. One of the main differences is that interactions on the Internet are more easily accessible than many other addictive activities. With the proliferation of the Internet, there is an almost limitless supply of content, which makes using the Internet a highly repeatable activity compared to, for example, the consumption of alcohol or drugs. While alcohol and drug abuse can have more severe impacts on physical health, being addicted to using the Internet can also have some negative physical health consequences, although not to the same extent. Individuals who are addicted to using the Internet

may experience physical discomfort when reducing their use, similar to what people who are reducing their alcohol or drug consumption may feel. However, alcohol and drug abuse have much more severe negative effects on physical health when consumed. Moreover, engaging with the Internet often leads to positive reinforcement, which increases the frequency of use (Greenfield, 2007).

There have been numerous studies that have attempted to classify Internet addiction, using a variety of techniques to identify addictive behavior. This makes it challenging to establish a clear set of criteria for determining whether an individual is addicted to the Internet (J Kuss, Griffiths, Karila, & Billieux, 2014).

2.2.2   Types of Internet addiction

There is ongoing debate in the field of behavioral addiction about whether certain excessive behaviors qualify as true addictions. This also applies for behaviors regarding Internet addiction (Griffiths et al., 2014). If being addicted to the Internet is considered as a true addiction, another debate arises about whether researchers should study internet addiction as a general concept or focus on specific types of internet addiction separately (Griffiths & Szabo, 2014) (Griffiths, 2000). Prior to the year of 2000, research on Internet addiction primarily focused on general Internet usage. However, in recent years, the focus has shifted to treating the Internet as a platform for various independent activities. This shift in approach suggests that online content and activities are more significant factors in addiction than the medium itself (Mihajlov & Vejmelka, 2017). Nevertheless, as the medium itself can alter the core elements of the activity, both the content/activity and the medium are crucial components of Internet addiction (Király et al., 2014).

Young (1999) has attempted to identify the different types of Internet addiction: *information overload* (i.e., Web surfing addiction), *computer addiction* (i.e., online gaming addiction), *net compulsions* (i.e., online gambling or online shopping addiction), *cybersexual addiction* (i.e., online pornography or online sex addiction), and *cyber-relationship addiction* (i.e., an addiction to online relationships). It is currently undetermined if subtypes should be included in the categorization of Internet addictions, such as distinguishing between different gaming genres within online gaming addiction, as these subtypes may have unique effects and treatment approaches (Pontes & Griffiths, 2014). According to research, engaging in educational activities such as researching useful information or completing school assignments is not associated with Internet addiction (Van den Eijnden, Meerkerk, Vermulst, Spijkerman, & Engels, 2008). Moreover, Tsitsika et al. (2014) found that adolescents who use the Internet for educational and research purposes are less likely to develop addiction.

Griffiths (1999) has argued that there is also a difference between being addicted to the Internet and being addicted on the Internet. Addicted individuals who use the Internet as a vehicle for other addictions (e.g., gaming -, and gambling addiction) are addicted on the Internet. However, these addicted individual are significantly prone to also become addicted to the Internet which

is when an individual is specifically addicted to being on the Internet (e.g., social media addiction) (Griffiths, 1999). Davis (2001) builds further on these findings by proposing a theoretical cognitive and behavioral model of pathological Internet use (PIU). The model separates Internet addiction into two types: Generalized Problematic Internet Use (GPIU), which refers to excessive use of the Internet as a whole, and Specific Problematic Internet Use (SPIU), which pertains to pathological engagement in a specific online activity or function.

2.3 Unintended effects of excessive social media use

The first three sections of this chapter discuss the following three terms in relationship to social media use: regret, compulsion, and addiction. These terms express in the presented order a continuum scale of negative social media use. Users who feel like they could have spent their time in a better way instead of engaging in social media can experience regret (Rasmussen, Frydendahl, Mekler, & Hornbæk, 2021), which is referred to as regretful use. This can transition into compulsive use when the user uses social media more frequently in irresistible situations where this is not desirable for them (De Cock et al., 2014). Compulsive use overlaps both regretful - and addictive use as a user can still experience regret while compulsively using social media as well as that addictive social media use can be seen as an extreme version of compulsive use but also having a grey area of when a user is actually addictive or only experiencing compulsion (Elhai, Yang, & Montag, 2019).

2.3.1 Regretful use of social media

Over the past decade, there has been a significant increase in the amount of time people spend using their smartphones. As the amount of time spent on smartphones has risen, concerns have grown over whether this time is being used effectively and does not lead to regretful use (Rasmussen et al., 2021). Individuals who are addicted to social media may feel regret after using it, but even those who are not addicted can still experience regret after engaging on social media (Turel, 2015) (Cao & Sun, 2018). Regret is an unpleasant emotion that people feel after making a poor decision, which is based on cognitive processes (Zeelenberg, 1999). One of the reason why a user perceives their smartphone use as a poor decision could be that they feel like they have wasted their time. Regret associated with the use of smartphones can be linked to dissociation, as dissociation can lead to feelings of regret (Baughan et al., 2022). Dissociation includes a state of absorption, characterized by a narrow focus of attention, as well as reduced self-awareness, along with a distorted sense of time, a lack of control, and gaps in memory (Butler, 2006). Brühlmann, Vollenwyder, Opwis, and Mekler (2018) discovered that a lack of understanding behind the reason for using technology is associated with decreased feelings of energy, self-determination and proficiency, however it is not related to overall satisfaction with life. This implies that using technology is not always perceived as beneficial, even when it does not lead to direct negative effects on happiness.

So far, most studies related to social media regret relate this effect with privacy concerns, social overload and posting on social media (J. Wang, Zheng, Liu, & Yu, 2020) (Xie & Kang, 2015) (Cao & Sun, 2018). It has been shown that 32% of social media users experience feelings of regret about the information they have shared publicly (Stillman, 2020). Besides, younger users are more likely to experience regret after posting on social media, which also leads to them removing their posts more frequently (Croteau, 2013). The most common causes that result in regret originate from posting about personal secrets, lies, sensitive topics, and strong sentiment. The potential reasons why users share regrettable posts is due to impulsively posting content without considering the potential consequences, driven by strong emotions and failing to anticipate how their posts will be received by both intended and unintended audiences (Y. Wang et al., 2011). Moreover, individuals who score high in personality traits such as agreeableness, conscientiousness, and emotional stability are more likely to experience regret after posting on social media, while extraversion is negatively associated with regret (Moore & McElroy, 2012).

According to Monge Roffarello and De Russis (2022), the current interface of various social media platforms consist of so-called attention-capture dark patterns. These dark patterns are features that have three principles in common. The first principle is that it takes away a person from it's focused goal at a given time, thereby compromising their independence. Secondly, it causes a person to feel a disconnection with time and a lack of control. Finally, it results in a person feeling regretful about the time spent on the service in hindsight. The five dark patterns that were identified by Monge Roffarello and De Russis (2022) and thus lead to regretful feelings are recommendations, autoplay, pull-to-refresh, infinite scrolling, and social investment. Another study from Lukoff et al. (2021) that specifically reviewed dark patterns on YouTube also found that advertisements can cause a user regretful feelings besides the features of recommendations and autoplay. These examples amongst other features are further discussed in detail in chapter 4.

2.3.2   Compulsive social media use

As technological interventions have come along with the whole development of technology, several studies have found an increased vulnerability of compulsive social media use among students (J.-L. Wang, Jackson, Zhang, & Su, 2012) (Durkee et al., 2012) (Tonioni et al., 2012). Some research in the past has supported the problematic nature of compulsive social media use (De Cock et al., 2014), while other studies have not found evidence for negative effects (Alwagait, Shahzad, & Alim, 2015). This difference in outcome might be due to the inability to replicate real-world conditions in these studies or the differences in conditions between studies (Wilmer et al., 2017).

Nevertheless, there has been a collection of studies that did found negative consequences when users compulsively engage with social media. One of these negative consequences is that the academic performance of students are decreasing when they excessively use social media (Karpinski, Kirschner, Ozer,

Mellott, & Ochwo, 2013). Compulsive social media use makes it more likely that students experience consequences related to problematic learning (Aladwani & Almarzouq, 2016). These consequences go as far as a strong negative correlation between the achieved grades by students and the time they spent on Facebook (Junco, 2012).

Moreover, compulsive social media use has been negatively associated with various personality traits. Aladwani and Almarzouq (2016) have indicated that self-esteem has a significant negative influence on compulsive social media use while interaction anxiousness is significant positive related to compulsive social media use. Additionally, Ali, Ali, Iqbal, and Zafar (2021) found that social interaction anxiety increases compulsive social media use through fear of rejection and fear of negative evaluation, with the latter being the strongest predictor. Females are more likely to compulsively use social media as they are more sensitive to social interaction anxiety and fear of negative evaluation, while men are more vulnerable to fear of rejection. Marttila, Koivula, and Räsänen (2021) examined life satisfaction in relationship to compulsive social media use where it was found that loneliness is triggered when users excessively engage on social media.

The research of Klobas, McGill, Moghavvemi, and Paramanathan (2018) performed a study on compulsive use on YouTube, globally one of the most widely used social media platforms, to look into use motivations in combination with different personality traits to see what influences compulsive use. They examined use motivation of YouTube by comparing informational and learning purposes compared to using the platform for only entertainment intentions. It was found that the entertainment motivation effect on compulsive use is three times stronger as the opposing information motivation effect. Additionally, students who possess traits of agreeableness and conscientiousness are better able to resist the urge of using YouTube compulsively, whereas those who are neurotic are more likely to engage in compulsive behavior on the platform. The use motivation and personality traits were found to be independent but both predictors together also provided a more satisfactory explanation of compulsive YouTube use rather than one of them alone. This suggests that compulsive social media use does rely on different factors.

The concept of rumination has been associated with compulsive social media use (Mitra & Rangaswamy, 2019) (Davila et al., 2012). Rumination involves repetitive and passive contemplation of negative emotions and the symptoms of distress, along with excessive worry about the significance of the distress (Lyubomirsky, Caldwell, & Nolen-Hoeksema, 1998). The study of Davila et al. (2012) suggests that rumination is caused by the quality of social media use instead of the frequency of social media engagement. Furthermore, rumination appears to amplify the link between negative social media interactions and symptoms of depression. However, Mitra and Rangaswamy (2019) claims that rumination of a user does increase in the case of social media addiction, which is discussed later in this chapter.

Another term that has been linked to compulsive social media use is social media fatigue (Dhir, Yossatorn, Kaur, & Chen, 2018). Social media fatigue is

a phenomenon where individuals experience mental exhaustion due to the excessive demands from technology, information, and communication on various social media platforms (Zhang, Zhao, Lu, & Yang, 2016). An increasing number of individuals are withdrawing from social media participation due to encountering social media fatigue (Post, 2017). The research of Dhir et al. (2018) suggests that compulsive social media use leads to social media fatigue, which afterwards causes increased anxiety and depression. The study also attempted to see if fear of missing out as related to compulsive usage predicts social media fatigue but it was only found as a weak predictor.

2.3.3 Social media addiction

Many scientists have discussed the relationship between excessive use of a smartphone and the mental cognition of the user. Research areas of mental cognition such as attention, memory & knowledge, delay of gratification & reward, and everyday cognition & executive functioning have been studied associated with smartphone use (Wilmer et al., 2017).

Regardless of the number of benefits that a smartphone has for a user in everyday life, most research focuses on the negative effects on a smartphone user like mental health (Montag & Diefenbach, 2018) (Scholz et al., 2018). Studies suggests that smartphones interrupting users in their daily life decreases the productivity at work (Duke & Montag, 2017) as well as the person's overall well-being (Twenge, Martin, & Campbell, 2018). Other studies imply that social interactions and emotions are negatively affected by high frequent use of smartphones where it reduces exchanging smiles between strangers (Kushlev, Hunter, Proulx, Pressman, & Dunn, 2019), less enjoyment in face-to-face interaction (Dwyer, Kushlev, & Dunn, 2018), and resulting in less empathy from the user (Melchers, Li, Chen, Zhang, & Montag, 2015).

However, it is yet to be proven that a causal relationship exist between smartphone use and different negative developments (e.g., anxiety and depression) on mental health (Elhai et al., 2019). This is mostly due to it being very challenging to simulate overall smartphone use as a condition in human subjects research. Until this day, each study related to smartphone use includes different smartphone conditions (e.g., using various apps, notification settings, etc.) (Wilmer et al., 2017).

Moreover, research on specifically social media addiction has been limited so far. Existing studies in this research area fall into one of the following four categories: (1) studies on how users perceive their own addiction to social media, (2) studies that use a specific scale to measure social media addiction, (3) studies investigating the connection between social media usage and other types of internet addiction, (4) studies investigating the link between addiction to social media and its impact on personal relationships (Griffiths et al., 2014).

Studies on how users perceive their own addiction to social media
Multiple studies have researched the self-perception of (potential) addictive individuals regarding social media behavior (Griffiths et al., 2014). For example, Machold et al. (2012) studied the self-reflection amongst Irish teenagers where it was found that a third of the sample felt they engaged in social networking too often. Cha (2010) examined the stimulus behind the frequent use and large amount of time spent on social media amongst excessive users. The outcome of this study showed that interpersonal utility, perceived easy use, fewer privacy concerns, and having a younger audience predicts the frequency of using social media. The time spent on social media is stimulated by also a high amount of interpersonal utility, escapism with the use of social media, and having an audience with a high experience regarding engaging in social media.

The earlier mentioned six criteria from Griffiths (2005) that describe when a behavior can be considered as an addiction can be explained in the context of social media addiction (Griffiths et al., 2014).

Salience is when social media use becomes the primary focus in an individual's life, influencing their thoughts and actions, even when they are not actively using social media. It is when social media activities are the most important in a person's life, it is the one that stands out in their mind and dominate the other things that they are doing.

Mood modification is the use of social media as a coping mechanism to improve one's emotions and avoid dealing with real-world problems. It is an extensive usage of social media to achieve positive feelings and provide an escape from reality.

Tolerance is the increased need to use social media more often in order to achieve the same level of emotional relief or mood enhancement that was previously obtained with less use. It is a process when the individual find themselves needing to use social media more frequently to experience the same level of mood modification again.

Withdrawal symptoms are negative feelings or physical sensations that appear when an individual is unable to access or engage in social media, they can occur as a result of temporary or permanent restriction of social media use. These symptoms can happen in any moment when the individual can not engage with social media for any reasons.

Conflict arises when excessive social media use disrupts an individual's ability to manage personal relationships, attend to important responsibilities, or regulate their thoughts and emotions, resulting in difficulties and struggles in their life. It hinders a person's ability to manage their personal life and causing them to struggle with their daily activities and relationships.

Finally, *relapse* is a common occurrence in individuals who struggle with excessive social networking, characterized by a return to previous patterns of use and the rapid restoration of extreme behavior, even after periods of successfully exerting control (Griffiths et al., 2014).

Cabral (2011) has attempted to investigate how users perform self-reflection regarding these six criteria. The sample contained 59% of users who felt addicted to social media. Almost half of the user perceived trouble with tolerance, 80%

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struggled with salience, 23% had negative experiences with withdrawal, and 17% encountered relapse problems. This might suggest that the addicted individual is more aware or is more vulnerable to some criteria.

Griffiths et al. (2014) argues that studies in this research area like the ones discussed in this section often lack methodological qualities as they rely on self-report data, small sample sizes, convenience sampling and not using an assessment scale.

Studies that use a specific scale to measure social media addiction
Numerous scales have been employed across various studies to assess social media addiction. Additionally, several social media addiction scales have been created based on existing scales (Griffiths et al., 2014).

Wan (2009) utilized the Internet Addiction Test (IAT) developed by Young (2009) to examine addiction to a specific Chinese social media platform among students. The IAT, which consists of 8 questions, assesses Internet addiction and can be modified to predict specific types of Internet addictions such as social media addiction. Results indicate that users of this social media platform are more susceptible to addiction when they experience feelings of loneliness.

Researchers have developed their own scales (e.g., Facebook Addiction Symptoms Scale (FASS) by Alabi (2013) & Facebook Addiction Scale by Çam and Isbulan (2012)) specifically to study addiction on Facebook based on the content of the IAT scale from Young (2009). Researchers like Andreassen, Torsheim, Brunborg, and Pallesen (2012) preferred to use the six criteria from Griffiths (2005) to create their scale to measure Facebook addiction. Furthermore, other studies like Turel and Serenko (2012)'s research focused on existing scales that are more specifically related to Internet addiction such as Charlton and Danforth (2007)'s online gaming addiction scale that is based on another type of Internet addiction. While other researchers like Wolniczak et al. (2013) take a more comprehensive view by using a more general scale related Internet addiction such as the scale by Echeburúa (1999) called the Internet Addiction Questionnaire.

Other researchers used more general existing addiction scales such as the Addictive Tendencies Scale used by Wilson, Fornasier, and White (2010) that measures salience, loss of control, and withdrawal. Another approach that is considered is using behavioral theories that relate to addiction such as the theory of planned behavior (TPB) which was expanded by Pelling and White (2009) to predict intentions and usage of social media. This included variables such as intention, attitude, subjective norm, and perceived behavioral control. Additionally, factors such as self-identity, belongingness, and past and potential future use of social media were examined. The research found that past behavior, subjective norm, attitude, and self-identity have an impact on social media behavior.

Griffiths et al. (2014) argue that these quantitative studies have various methodological shortcomings. They aim to evaluate addiction on social media platforms, but simply measuring addiction tendencies is not enough to iden-

tify actual pathology. Empirical studies must ensure that they are measuring addiction, rather than just excessive use or preoccupation.

Studies investigating the connection between social media usage and other types of internet addiction

Kittinger, Correia, and Irons (2012) used the IAT from Young (2009) to determine if engaging on Facebook excessively contributes to problematic use of the Internet. It was found that users are prone to Internet addiction when they use Facebook in a excessive way. The most valuable predictors for this relationship are the frequent use and amount of time spent on Facebook.

Andreassen et al. (2016) found that there is a weak relationship between the addiction of social media and online gaming, as these two types of digital technology are often used for different reasons. Social media tends to be used for the purpose of forming social connections, while online gaming is motivated by factors such as personal accomplishment, immersion in the game world, and the desire to escape from reality. Additionally, females are more prone to developing an addiction to social media, while men are more likely to become addicted to online gaming. This difference may be due to females' tendency towards activities related to co-operation and social interaction, while men tend to be more focused on activities that involve competition (Andreassen et al., 2016). It has been found that an individual's personality plays a role in their susceptibility to addiction to social media and online gaming. Low levels of conscientiousness and openness are associated with a higher risk of becoming addicted to online gaming, while extroverted individuals are more likely to become addicted to social media. This suggests that the personalities of individuals may differ in their predisposition to addiction to these two forms of internet use (C.-W. Wang, Ho, Chan, & Tse, 2015).

However, both social media addiction and online gaming addiction also share some similarities. This includes an increased sensitivity among younger people to becoming addicted to these two types of technology. Furthermore, single people are more prone towards both addictions. Social media gives single people the potential to meet their future partner and this potentially makes social networking be a more significant aspect of their lives. Loneliness may also increase the likelihood of developing an online gaming addiction (Andreassen et al., 2016).

Zhou and Leung (2012) used the IAT scale from Young (2009) to study gaming addiction on social media websites. This research found that gaming addiction on social media website is stimulated by mostly loneliness and leisure boredom. Also, being a male and feeling rewarded in forms of social inclusion & achievement induces this specific kind of addiction.

Karaiskos, Tzavellas, Balta, and Paparrigopoulos (2010) focused on one specific individual who was eventually diagnosed as being addictive to social media. Symptoms that resulted from this addiction were anxiety and insomnia. Cases like these have caused researchers to acknowledge that being addicted to social media is one of the Internet addictions nowadays. It also suggests that being

addicted to social media requires professional treatment as it have significant negative effects on various life aspects of an individual. Therefore, it is recommended to further investigate individual cases to explore these negative effects besides researching social media addiction in a quantitative way (Griffiths et al., 2014).

Studies investigating the link between addiction to social media and its impact on personal relationships
Elphinston and Noller (2011) have studied whether Facebook intrusion has any effect on jealousy and outcomes within romantic relationships using the Facebook Intrusion Questionnaire from Griffiths (2005). They found that Facebook intrusion causes relationship dissatisfaction by an increase in jealousy and surveillance behavior. Although the amount of time spent on Facebook did not affect the romantic relationship in any way.

Turel and Serenko (2012) proposed three distinct but potentially overlapping theoretical perspectives to understand the development of social media addiction. The first theory about the cause of social media addiction, referred to as *Cognitive-behavioral model*, is that it starts with the emergence of maladaptive thoughts and beliefs which then get reinforced by external factors. This progressive process leads to compulsive and/or addictive behaviors related to social media use. The second model, *Social skill model*, suggests that social media addiction stems from a deficiency in self-presentation skills, which makes individuals favor virtual communication over face-to-face interactions. The third model called the *Socio-cognitive model* states that addiction is formed through the expectation of positive outcomes, which are the result of one's self-efficacy on the internet, and the lack of self-regulation when it comes to internet usage.

Griffiths et al. (2014) emphasize that it is important that studies regarding the relationship between social media addiction and personal relationships require a high standard level of sampling. This makes the outcome of these studies more reliable.

2.3.4 Treatment to compulsively social media use and addiction

Previous studies have shown that compulsive behavior can be decreased by mindfulness (Gámez-Guadix & Calvete, 2016) (Arslan, 2017), which lead Apaolaza, Hartmann, D'Souza, and Gilsanz (2019) to investigate whether mindfulness can specifically reduce compulsive social media use. Mindfulness involves paying attention to and being aware of current events and experiences both within and outside of oneself (Brown & Ryan, 2003). Apaolaza et al. (2019) found that compulsive social media use causes stress but mindfulness can decrease this stress. Moreover, mindfulness has a positive impact on compulsive social media use through self-esteem and social anxiety as mediators. This is because those with higher mindfulness tend to also have higher self-esteem, leading to a decrease in social anxiety and compulsive use of social media. This reduction in compulsive behavior may be due to increased mindfulness allowing for greater awareness of

present experiences and reducing negative beliefs and critical thoughts associated with lower self-esteem and higher social anxiety.

Furthermore, Turel and Osatuyi (2017) imply that compulsive social media use can be reduced by social pressure self-efficacy. This term can be described as the capability to reject or withstand utilization of social media in high-stakes social circumstances, including instances where one is surrounded by peers who are utilizing it. Individuals who lack control over their actions and are unable to resist temptations find that the subjective impulses they experience become increasingly compulsory. This often leads to the development of compulsive habits that are frequently detrimental. In contrast, a person can curb their desires to use internet applications and avoid compulsive use when the executive function of that person is functioning accordingly in, for example, a work-related context (Turel, 2017). Turel and Osatuyi (2017) also found that active social media use from peers stimulates compulsive social media use. This means that compulsive social media behavior can be prevented when the social environment of an individual is not significantly focused on engaging on social media.

Currently, there is limited research on the treatment of social media addiction. There is a strong demand for more comprehensive and accurate information on addiction to social networking and the most suitable and effective treatment programs. This would make the clinical relevance of social media more clear as well as making it possible to establish criteria for diagnosing social media addiction (Griffiths et al., 2014). Gupta, Arora, and Gupta (2013) also stress the need for further research on methods to increase motivation for treatment and the various forms of brief interventions related to problematic social media use.

Treatment for social network addiction, unlike other forms of addiction, cannot aim for complete avoidance of the internet as it is an integral part of modern society and culture, whether for work or leisure. The goal of the treatment needs to be defined differently as abstaining completely from the internet is not practical in today's society. It is suggested that the best approach for psychological treatment of internet addiction would be using stimulus control and gradually exposing the person to the internet, followed by using cognitive-behavioral techniques to prevent relapses (Enrique et al., 2010).

However, it is possible to stop using social networking on the internet while still engaging in other internet activities such as playing online games. Gupta et al. (2013) state that corrective strategies for addiction to social media may include using content-control software, counseling, and cognitive-behavioral therapy. They suggest a set recommendations that treatment practitioners should use to encourage clients to implement strategies for managing and treating social media addiction. Examples of these recommendations are to reflect on your activities on social media, to keep track of the time you spend on each platform, to determine what activities are valuable on social media, and to turn off notifications for specific applications.

2.4 Exploring indications of Digital Junkfood

2.4.1 Addictive social media features

App developers aim to design their online platforms in a way that keeps users engaged and occupied for as long as possible (Alter, 2017). Increased engagement on online platforms allows app development companies to collect more user data, which can be used to display more targeted and personalized advertisements to users. This creates opportunities for app developers to generate revenue through advertising (Matz, Kosinski, Nave, & Stillwell, 2017).

Montag, Lachmann, Herrlich, and Zweig (2019) have identified six features that can help keep users engaged in an application for longer periods of time. One of these features is the creation of a sense of time distortion, which can be achieved through features like endless scrolling or by designing the app to encourage a state of 'flow' in the user. Flow occurs when a task strikes a good balance between being challenging and achievable, and the user feels a sense of control and purpose in what they are doing.

The second element that encourages user engagement is the endowment effect. This is a psychological phenomenon that occurs when an individual values an item higher simply because they own it or have invested time or effort into it. This can lead to difficulty in detachment from a product, such as a smartphone app, especially if the user has invested a lot of time or money into it and has created their own online world within the app. This effect is related to the mere exposure effect, which states that the more an individual is exposed to something, the more they tend to like it.

Thirdly, applications often use techniques to encourage users to engage with them by creating a sense of social pressure. Example of these feelings of social pressure are fear of missing out when others use certain apps or feeling obligated to respond quickly to messages, even if they would prefer not to. These user experiences can be achieved by implementing these nudging elements as default settings such as the 'double tick function' in WhatsApp. This feeling of social pressure can extend beyond the online world and impact an individual's real-life social interactions.

Applications use algorithms to personalize content in the 'Newsfeed'-page on social media. These algorithms analyze the user's online behavior, including what content they like and how long they view it. The algorithms try to show more of the content they think the user will enjoy and engage with. If the user is not shown engaging content, they may close the application.

Social comparison on social media apps can drive users to revisit the app, as they seek positive acknowledgement from other users. When an individual receives positive feedback, it can lead to a rewarding feeling and increased engagement with the app. However, if the user feels that they are not receiving enough positive recognition, it can lead to a decline in self-esteem and potentially cause them to reduce their use of, or even delete, the app.

The final element that motivates users to stay longer on smartphone apps is the Zeigarnik/Ovsiankina effect. The Zeigarnik explains that tasks that are

interrupted are more likely to be remembered by the user. The Ovsiankina effect builds on this by stating that users are motivated to complete interrupted tasks. In the context of smartphone use, this means that when users are interrupted while consuming content on an app, they are likely to feel motivated to finish what they were doing before they were interrupted (Montag et al., 2019).

As previously mentioned in chapter 3, Monge Roffarello and De Russis (2022) identified five different attention-capture dark patterns on social media. An attention-capture dark pattern is defined as: *"a design or system functionality that exploit people's psychological vulnerabilities to maximize time spent, daily visits, and/or interactions on a digital service against the person's will"*. In the scientific world, a dark pattern is sometimes also referred to as a negative nudge (Cordeiro et al., 2015). Nudging refers to any slight modifications made to the 'choice architecture' of a system that can influence people's actions in a predictable manner (Sugden, 2009). Initially, nudging was viewed as a way to utilize our understanding of users' systematic biases in decision-making to help them make the best choices. However, it has now become evident that these same mechanisms and psychological weaknesses can also be used against users (Burr, Cristianini, & Ladyman, 2018).Unlike traditional dark patterns, attention-capture patterns go beyond merely manipulating user interfaces, they encompass the functionality of the system as well.

The first dark pattern acknowledged by Monge Roffarello and De Russis (2022) is recommendations as most recommender systems provide unlimited content to which the user can lose track of time and their initial objective. The next dark pattern is autoplay which is a feature that plays recommended content automatically when the currently viewed content is finished. The user only has a few seconds to react to click the recommended content away before it automatically plays this content. It has similar effects as recommendations but is unique in a way that, in contrast to recommendations, it also gives users a feeling of less control and agency over their decision to watch what is recommended as new content is played automatically. Another dark pattern is pull-to-refresh which is a mechanism where a users swipe the interface of the app downwards to load all new relevant content that is available. It creates an exciting feeling of potential reward as the system reveals the content which is related to similar feelings in gambling. Infinite scrolling is also one of the dark pattern since it encourages mindless scrolling. It creates comparable effects to the user as the pull-to-refresh mechanism. The final dark pattern is social investment which impacts users by creating the notion that they need to continue using the platform to prevent losing the social progress (e.g., likes, views, comments, etc.) they have made.

2.4.2   Regretful behavioral social media patterns

Cho et al. (2021) investigated features on various social media apps that causes feelings of regret after the user has engaged with those features. These features has been studied by letting users label these features with the four main rewards of social media app usage (i.e., social, informational, personal interests, and

entertainment) that describe what the participants gained after engaging with a certain feature. Additionally, users had the opportunity to report what they could have gained (e.g., mental and physical health conditions, productivity, positive impact on social relationships) had they not engage with that same feature. This made it possible to explain when and why certain features can cause regretful use.

The outcome of this study resulted in three different feature-level patterns that potentially make users experience regret. The first category can be described as habitual checking on feed-based and story-based features. These feed-based and story-based provide users content based on what pages or channels users are following or are subscribed to. This mean that the content is finite as other users have to provide this content which can result in experiencing lack of content causing regret afterwards. Most of the time this occurs relatively fast as the user realises that there is no new content to engage with. Habitual checking does not always result in regret because in some cases it also provides informational rewards in forms of reading news and science articles.

The second feature-level pattern occurs when the user checks habitual their social media app and finds out their initial expected reward cannot be achieved (e.g., no new content can be shown in the feed-based page). The user then starts exploring other features that they did not intend to use before opening the app. This can also happen when users are done or still trying to achieve their initial expected reward but then unconsciously start wandering around the app to discover new features. Users who get distracted this way frequently end up on a recommendation page that provides infinite amount of content. According to regret theory, deviating from the original reason for opening the app and instead start using recommendation-based features can lead to regret because the intended rewards may be delayed and the cost of time and alternative rewards may increase as a result of prolonged use.

This prolonged use is the third feature-level pattern as it results in regret because the initial anticipated reward is not achieved due to deviating use. Users reported difficulty in stopping the cycle of viewing recommended content, even when they intended to limit their usage. The infinite amount of content that users can view by performing one easy gesture in most cases makes them go down a rabbit hole which makes them forget about their initial objective.

Current findings on the relationship between scrolling and viewing content on social media and the aftermath of regretful feelings are limited as the research on this topic is relatively new. Recently, Wong (2022) discovered a possible link suggesting that mindless scrolling on social media may lead to feelings of regret. Additionally, Baym, Wagman, and Persaud (2020) found that users also feel regret when they attempt to view new content but only get similar results as content that has been shown to the user before. Similar effects occur when the user is being aroused by intentionally polarising headlines or topics, and responding to 'clickbait' (Munger, Luca, Nagler, & Tucker, 2020). Kaur, Dhir, Chen, and Rajala (2016) investigated how the flow experience of the user affects their regret. It was found that the flow experience has significantly more effect on regret compared to any demographic variables. Flow creates this playful and

immersed feeling for users which makes users potentially feel regretful as their awareness fades away during their flow experience.

Sleeper et al. (2013) performed a study in which regretful feelings were compared between social interaction in person and on Twitter. The study discovered that individuals who experience regret from using Twitter or a conversation in person have different regret patterns, ways of realizing the regret, and methods of fixing the consequences of their regretful action. In person people become quickly aware of regret, typically from physical cues. However, users on Twitter do not have these cues to recognize that they should consider regretting their tweet so they find it more difficult to become aware of their regret. Delays on Twitter and the absence of direct reaction from the audience also result in a slower recognition and resolution of regrets on Twitter compared to regrets from conversations in person.

These findings provide initial design suggestions for avoiding and fixing Twitter regret. The first suggestion is a tool that provides behavioral nudges when it recognize when a user might later regret posting a tweet. Different characteristics of a tweet can be used to recognize a potential regretful tweet such as containing negative-sentiment keywords or the device where the user tweets from as almost half of the deleted tweets are from mobile devices. Users that experienced regret after posting a tweet in the past explained that they felt like they revealed too much of their thoughts as well as sharing it with an unintended and unanticipated audience since they do not realize who can view the tweet at the moment of publishing it. This suggests that making users be more aware of which individuals can read their tweet before publishing should better prevent any feelings of regret. Visualizing the sentiment of the tweet might also support users as they do not have any physical cues to recognize awareness of regret. Lastly, presenting a tool to users where they can review their tweets will not only help them become aware of regretful tweets but the system might also be able to spot these kind of tweets more accurately (Sleeper et al., 2013).

2.5   Summary of the literature review

Related topics to Digital Junkfood have been discussed, as this concept is yet to be a common term that is used in the scientific world. These topics consist of addiction and regret related to the Internet including specifically social media. Additionally, features and behavioral patterns on social media that potentially provoke addiction and regret are explored.

The first chapter about general addictive behavior highlights the importance of defining criteria for what constitutes addictive behavior to prevent confusion and ambiguity. It also emphasizes the importance of understanding the similarities and differences between behavioral and substance-based addictions, as they can have different causes and effects. This understanding is crucial in identifying the characteristics of behavioral addiction to explain why certain digital elements are considered Digital Junkfood that can lead to behavioral addiction among users.

The following chapter examines Internet addiction and its unique characteristics by categorizing the different types of Internet addiction. Different causes and effects of Internet addiction are identified in various contexts on the Internet. This makes it possible to understand the constructivist definition of Digital Junkfood better in several scenarios on the Internet.

The third chapter discusses social media addiction and regret as Digital Junkfood is mostly associated with social media. This is often in relation to how it makes users become addicted to these platforms but also how it makes them waste more time which causes regret. The reasoning on why users become addicted and regretful is discussed in different contexts on social media platforms to help identifying when Digital Junkfood is present on these platforms.

Finally, it has been attempted to explore indications of Digital Junkfood as most common examples of Digital Junkfood are often closely related to certain features and their corresponding behavioral patterns on social media. The discussed characteristics of the collections of features can support the recognition of Digital Junk as well as the explanation on why certain elements on social media are perceived as Digital Junkfood by users.

2.6 Reflection on the literature review

A lot of research has already been performed on related topics to Digital Junkfood such as compulsive social media use and social media addiction. This provides valuable information when and how users could experience feelings (e.g., regret) related to Digital Junkfood. These feelings are most of the time linked to external factors such as demographic and (inter)personality variables. These studies however overlook how these feelings conceivably are caused by specific digital content. It is important to consider this as every user engages with different content which might lead to various outcomes of feelings and other consequences such as addiction.

There have been some studies that have attempted to identify addictive features as well as regretful behavioral patterns on social media that potentially link to Digital Junkfood. Nevertheless, this is only a part of what Digital Junkfood exist of as any digital content can possibly be Digital Junkfood. For instance, there is a lack of research on content that fall under a specific subject-related category (e.g., political, societal, erotic, etc.) or contain specific intentions (e.g., polarising or sponsored post) of posting certain content on social media which results in users feeling like they have wasted their time after the interaction. Users may experience different emotions and feelings when reflecting on how they spent their time on social media, due to the distinct sentiments and messages conveyed by different types of content on social media. Untouched elements of Digital Junkfood like these makes it valuable to consider all different aspects of this concept and to determine the definition of Digital Junkfood in a constructivist way.

3 Methodology

3.1 Research approach

An exploratory experiment was conducted in this study to examine the constructivist definition of Digital Junkfood. The objective of the experiment was to enable individuals to subjectively identify the social media content that was seen as Digital Junkfood, as this could vary between different users.

During the experiment, participants were instructed to review their past engagements on a specific platform in order to identify content that they considered as Digital Junkfood. To assist them in this process, participants had access to a review tool that displayed their history of content engagement. Once the participant identified a post as Digital Junkfood, they were asked to complete a survey consisting of six questions and participate in a semi-structured interview. These methodological approaches were designed to gather information about the participant's perception of Digital Junkfood. The collected data included insights into the characteristics of content perceived as Digital Junkfood, the feelings evoked by Digital Junkfood, and how users act towards Digital Junkfood. By identifying common aspects, it was possible to get an understanding how the majority of users would view particular social media content as Digital Junkfood but also gain insights into the diverse perspectives of users towards Digital Junkfood.

3.2 Participants

A sample of 30 participants was recruited for the experiment to ensure a certain level of statistical power regarding the outcome of the study. The most important requirement during participant recruitment was that the participants actively used at least one of the six included social media platforms. The minimum threshold for active use was set at once a week to ensure that participants had access to recent content during the experiment, facilitating their ability to recall their feelings when engaging with the content.

All participants were 18 years or older, considering that different social media platforms provide either child-friendly filtered content for users below the age of 18 (Media, 2023) or have separate applications specifically designed for children (Google, n.d.) (Meta, n.d.). The participants were selected from a diverse pool of users with various demographic characteristics, including gender, age, and education level, to ensure that the findings were representative of a broad range of social media users.

The primary recruitment method involved convenience sampling, utilizing the personal network of the researcher. Colleagues, friends, and family within the researcher's network played an important role in recruiting the 30 participants. The researcher either contacted the participants through text messages or made personal requests, such as approaching colleagues at work, to participate in the experiment. The study focused exclusively on Dutch participants due to the recruitment strategies that were expected to yield a relatively large

sample of Dutch users. Providing participants with the opportunity to conduct the experiment in their native language would also create a more comfortable environment for them to explain their thoughts and opinions.

3.3 Materials

The setting of the experiment mostly took place in the home or work environment of the participants. However, if that was not possible at the moment, the experiment could also be conducted in an alternative environment agreed upon by both parties, where the participant felt comfortable and had sufficient privacy to review their history of social media activity. In one instance, a participant conducted the experiment at the home of the researcher.

The participants were given the option to choose between their personal smartphones or laptops to review their social media activity. They received instructional videos from a designated website on a separate laptop, helping them understand how to use the review tool that allowed them to access their history of content engagement on the selected social media platform. Screenshots of the designed website, including the instructional videos, are provided in Appendix A. These instructional videos were accessed on a different device, allowing the participants to navigate through the tool on their personal devices while watching the videos. Links to the instructional videos are provided in Appendix B. To ensure the correct video was shown, participants were asked to indicate which device and social media platform they would be using. The instructional videos demonstrated the activity tool through screen recordings and provided explanations of the types of activity data (e.g., liked posts, watched videos, etc.) that could be analyzed.

3.4 Review tools

Every social media platform that was included in this study provides their own online tool where a user can view their own history of activity for that specific platform. These online activity tools contain different types of data from a user's activity on a social media platform. The data that is presented is based on the actions that are possible to perform on a social media platform as well as the decision from the social media company on how much time and money should be invested in the tool to create an extensive overview for the user. Any activity tool is both available on a laptop or PC as well as on a smartphone with the exception of the activity tool of TikTok which is only available on a smartphone. Users can either access the activity tools from the different social media platforms on their smartphones through the application of the platform or on the website through a web browser. In this section, every activity tool from each social media platform is briefly discussed to portray what activity data can be analyzed by the participants.

Instagram has categorized activity data by interactions from the user, published content by the user, and changes to account settings and profile page (see figure 1. The user is able to view their interactions on the platform by all liked

posts, comments they shared on posts, replies they left on stories, and published reviews. The published content is divided by posts, reels, videos and highlights (i.e., saved stories) which are all different types of content on Instagram containing unique elements.
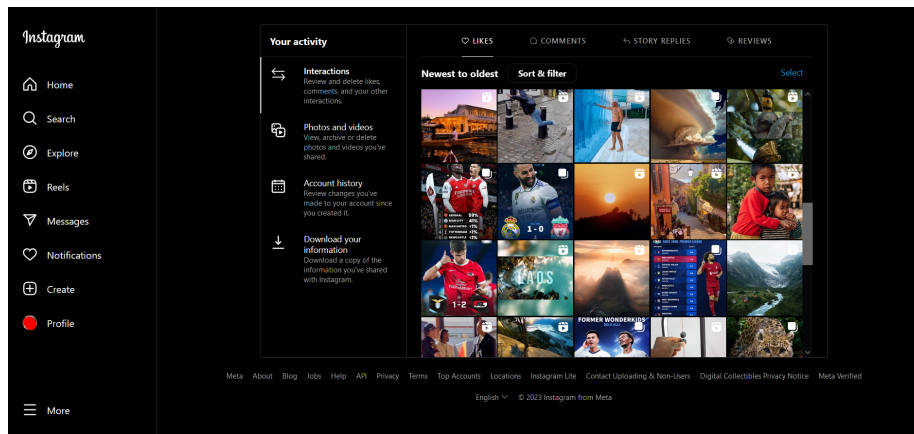

Figure 1: Screenshot of the Instagram activity tool on a browser.

Facebook contains the most extensive tool of all platforms where it shows every action that the user has performed on the platform (see figure 2). The tool has categorized the activity data in the following pages: the user's posts, activity the user is tagged in, interactions, groups, events and reels, profile information, connections, and logged actions and other activity. These pages includes activity data such as published photos, search history, interactions to timeline posts (e.g., likes and comments), videos the user has watched, new friendships, interactions in groups, changes to your profile information, and much more other activity data. It provides the possibility to search for specific kinds of activity (e.g., only activity in Facebook groups) as well as creating a list of all activity performed on Facebook included in one page. All activity data can be filtered by date.
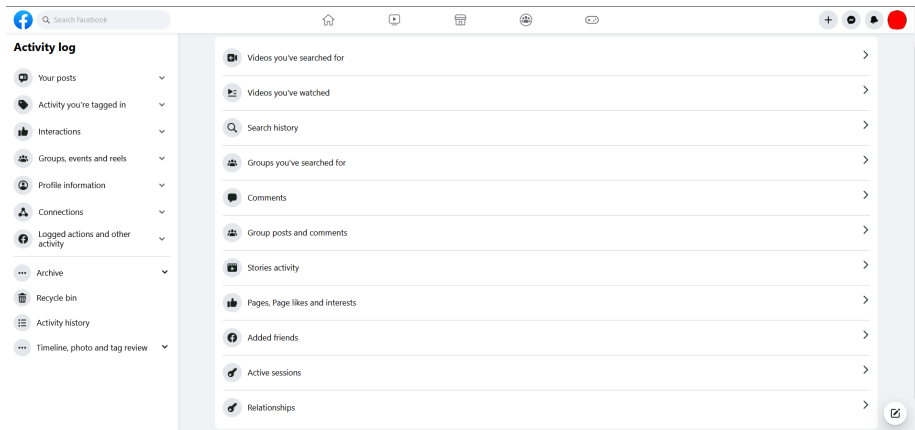
Figure 2: Screenshot of the Facebook activity tool on a browser.

YouTube showcases interactions to video-related content by displaying all liked and disliked videos, liked and disliked comments on videos, comments on videos and to other comments, and posted chat messages on livestreams (see figure 3. Besides, the platform presents other activities like subscriptions to channels, interactions with community posts, purchase history and paid memberships to channels in the past. As shown in figure 4, YouTube has a separate page where all the watched videos by the user appear with some additional metadata (e.g., device the user has watched the video on).
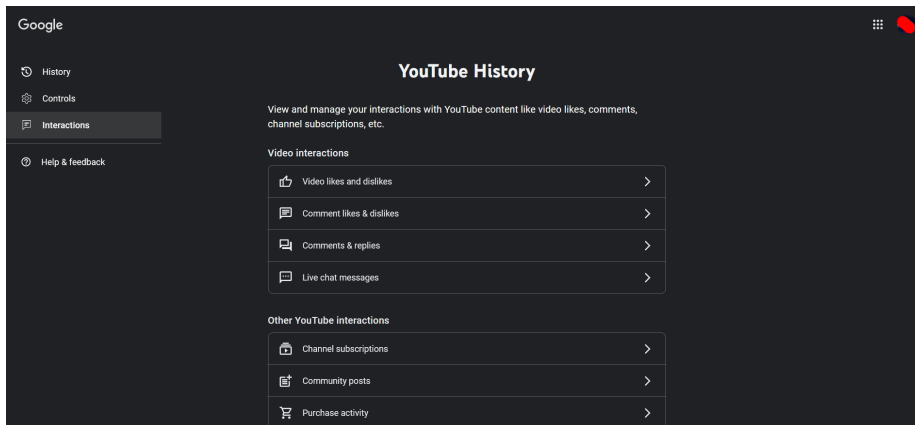

Figure 3: Screenshot of the YouTube interactions activity tool on a browser.
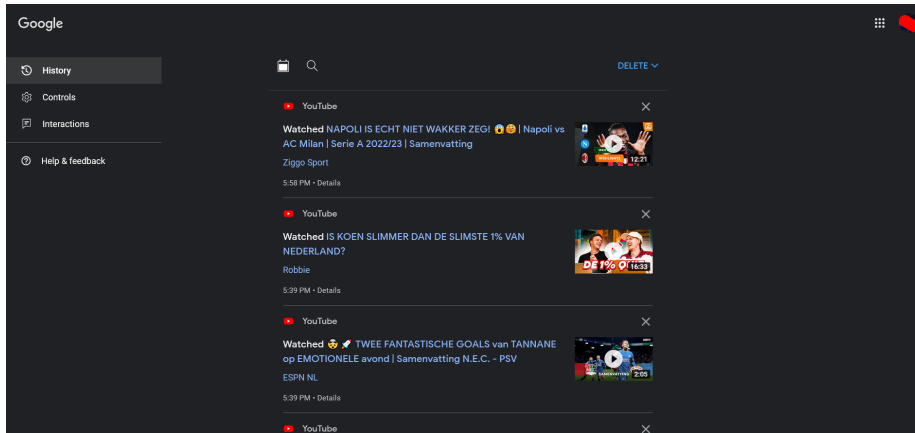
Figure 4: Screenshot of the YouTube history activity tool on a browser.

TikTok is, in contrast to other social media platforms, the only platform where users can only view their activity on the smartphone application (see figure 5). Users can see all the videos they have watched, liked, and saved as well as all the comments they have posted on specific videos. Additionally, users have insight into their screen time and how many times per day they have opened the TikTok application.
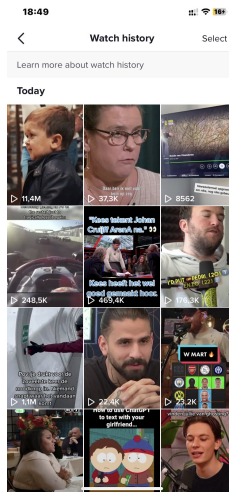

Figure 5: Screenshot of the TikTok activity tool in the smartphone application.

Reddit collects and lists all the posts in their tool by a specific interaction from the user as shown in figure 6. These interactions are published posts, shared comments on posts, viewed posts, saved posts, hidden posts, up- and downvoted posts, and posts that the user has received or given awards to.

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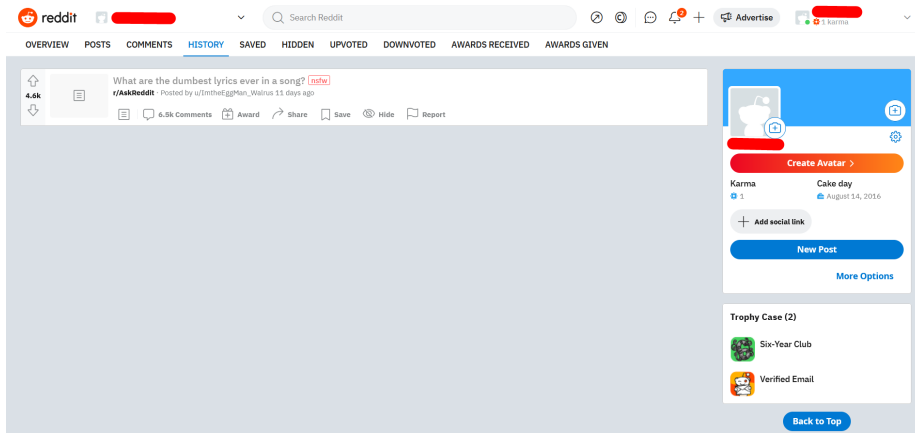
Figure 6: Screenshot of the Reddit activity tool on a browser.

Finally, LinkedIn has a relatively simple tool where users have four options to review their activity (see figure 7). Users can first look at all activity which also includes liked posts and shared comments on posts. Additionally, users have three other possibilities where they can explore all articles, posts, and documents that they have shared.
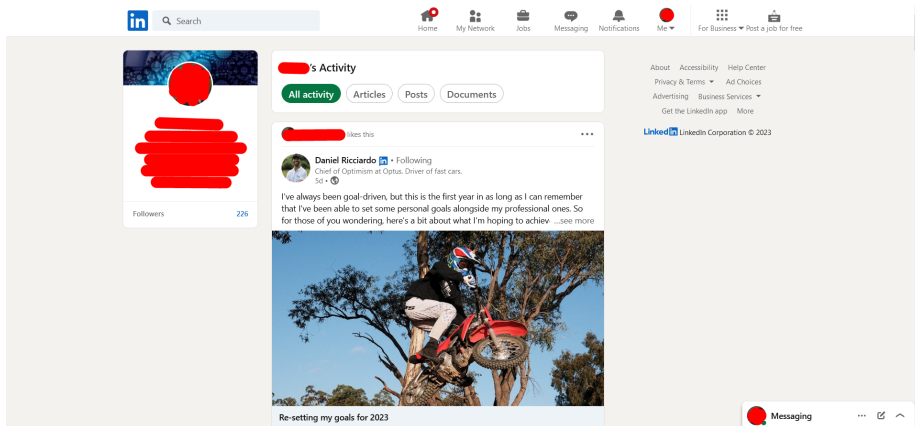
Figure 7: Screenshot of the LinkedIn activity tool on a browser.

3.5   Procedure

The experiment commenced with the introduction of the concept of Digital Junkfood. This was achieved by describing different scenarios where various feelings can typically emerge when one encounters edible junk food. Following that, participants were informed that different opinions exist regarding what food is considered as edible junk food. The relationship between edible junk

food and Digital Junkfood was then explained, emphasizing that engaging with certain content on social media, identified as Digital Junkfood, can evoke similar feelings as consuming edible junk food. It was also highlighted that different users may have varying perceptions of what content is seen as Digital Junkfood.

The participant was introduced to the task they had to perform in the experiment, which involved searching through content they had engaged with in the past and identifying it as Digital Junkfood. After comprehending the experimental process and granting their consent to participate in the research, they were asked to choose the social media platform (Instagram, Facebook, YouTube, TikTok, Reddit, or LinkedIn) they wanted to use for the experiment. They were instructed to actively use the platform at least once a week and advised to select the platform where they believed they could identify Digital Junkfood. Furthermore, participants were informed that they could use multiple platforms for the experiment if they believed they could find Digital Junkfood on different platforms. They were also asked to choose the device they preferred to use for the experiment, either their personal smartphone or PC/laptop.

The participant entered their device and social media platform choices on the provided website on a different laptop, which then presented an instructional video explaining how to use the activity tool on their selected device and social media platform. While watching the instructional video, the participant was free to explore the tool using their own device to become acquainted with it. Once the participant understood the presented data in the tool and felt comfortable with the tool's navigation, they were instructed to search for content that they personally considered Digital Junkfood from their past engagement on the platform.

Once the participant had found a post that was considered as Digital Junkfood, they filled out the survey (see Appendix C) consisting first of two demographic questions regarding gender and age, and then six questions that were about the content they selected and perceived as Digital Junkfood. Next, the participant was instructed to find another post and fill out the same six questions again regarding that particular post. This process was repeated until the participant felt that they had found all the Digital Junkfood they were able to find. The survey was handed out in paper format to the participant as it provided the most convenient method for them to quickly answer the questions while using their own personal device to search for Digital Junkfood.

Subsequently, the researcher conducted a semi-structured interview with the participant that was recorded, concerning the content they had designated as Digital Junkfood. All the questions from the interview are placed in Appendix D. The first section of the interview involved questions about the subject and sentiment of the content that was selected by the participant. In the second part of the interview, the participant was asked to describe what they thought were the motives from the publisher to publish the selected content, as well as the feelings they experienced when reflecting on their engagement with the content. The interview was semi-structured to create the opportunity to let the participant elaborate on certain question to collect valuable examples and reasoning behind their perceptions on Digital Junkfood. Once all the questions had been

addressed, the participant was thanked for their participation by being given a small gift. Lastly, they were given the opportunity to share any comments or questions.

3.6 Privacy concerns

Once the methodological procedure was established, the Utrecht University Quick Scan was completed for the defined process (Utrecht University, n.d.). This Quick Scan includes a mandatory initial assessment of ethics and privacy. It serves as a tool to evaluate whether the research poses minimal risks in terms of ethical and privacy considerations. The result of utilizing this tool indicated that the methodological procedure did not raise any significant concerns.

The experiment required participants to provide information regarding their interactions with specific social media posts. This information could have included personal data of the user which they preferred not to share. Therefore, it was recommended to the participant to search for content that they would label as Digital Junkfood while also feeling at ease with divulging most of the information related to the content. Nevertheless, it was made clear to the participant that they were not obligated to respond to any questions that they did not feel comfortable answering.

Furthermore, the researcher ensured that they did not view the screen of the participant's device. This precaution ensured that the participant did not unintentionally disclose any confidential information. Therefore, the instructional videos contained sufficiently clear directions for the user to work with the activity tool independently, without requiring assistance from the researcher.

Participants were informed about the purpose of the experiment and how their data would be used. They were given the opportunity to ask questions and withdraw from the study at any time. The researchers obtained informed consent from the participants before collecting any data.

Finally, the data collected was anonymized before analysis to protect the privacy of the participant. This meant removing any identifying information that could link the data back to the participants. This ensured that the participants' personal information was not shared or used without their consent.

3.7 Data preparation & processing

3.7.1 Quantitative data

The survey data, which was filled out on paper, was manually entered into Excel. Four responses were excluded from the dataset as they pertained to content from platforms (Twitter, Pinterest, and Snapchat) that were not included in the study. The demographic information was organized in Excel on a per-participant basis, while the content-related answers were recorded in Excel on a per-response basis, resulting in multiple data points per participant.

The participant's responses in the interview regarding the platforms they actively use were processed by extracting the relevant information from the

transcribed interviews and compiling a table of platforms per participant. The same approach was taken for the question concerning the presence of clickbait in the selected content. These two questions were included in the interview instead of the survey to allow participants to provide additional background information related to their answers.

Once all the data was collected, it was put into Jupiter Notebook where with the use of *Pandas*, a Python Data Analysis Library, bar graphs were being created for each question. The bar graphs were plotted with the use of the *Seaborn* library and can be seen in section 4.1.

3.7.2   Qualitative data

The recorded audio from each interview was imported into Microsoft Word, which has a feature for automatic transcription of audio to text. However, due to potential inaccuracies in the automatic transcription, the transcribed text was manually checked by listening to the interview audio and correcting any significant errors in the transcribed text.

After ensuring the accuracy of the transcriptions, the data was imported into Nvivo for coding the interview answers. The data processing involved applying the three coding steps of grounded theory (Delve, n.d.).

First, open coding was conducted for each question, assigning tentative labels to chunks of answers that summarized the answer being described by the participant. These particular scopes of answers included all answers that essentially conveyed the same message but were expressed in varying ways. Different individuals have reported having similar experiences with Digital Junkfood, but they have referred to various platforms and situations, leading to diverse explanations for their responses. For instance, one user expressed dissatisfaction with engaging in social media content while spending time with friends, while another user preferred reading a book but also indulged in consuming content, both providing explanations for their preference to engage in alternative activities afterward.

Next, axial coding was performed to explore the relevant relationships between the codes. This process revealed that perceptions, subjects, feelings, and behaviors related to Digital Junkfood could be further categorized, as certain answers overlapped in terms of their purport. For example, users exhibited various approaches when describing the content's topic, such as the category of lifestyle, within which they mentioned sub-topics like life quotes, DIY tutorials, and astrology. This categorization facilitated the creation of bar charts illustrating the frequency of mentions for specific categories by participants, shown in Section 4.2.

Finally, through the process of selective coding, the identified categories were analyzed to determine the core fundamentals that define Digital Junkfood in a constructivist way. This analysis resulted in the formulation of the three subquestions in this study, as mentioned in Section 1.

4 Results

The results of the carried out experiment, as outlined in the methodology section, is presented in this section. First, the quantitative results are presented that were mostly obtained from the participants' responses to the survey. Next, the qualitative results deriving from the conducted interviews are discussed and analyzed.

4.1 Quantitative results

The experiment consisted of a total of 30 participants, all of whom provided valid quantitative results through their survey responses. Each participant completed the whole survey consisting of six questions, resulting in a total of 132 responses regarding identified Digital Junkfood posts. However, there were three participants who filled out the survey four times for platforms (Twitter, Pinterest, and Snapchat) that were not included in the study. Consequently, these four responses were excluded from the collected data, bringing the total number of valid responses to 128. On average, participants were able to identify approximately 4-5 Digital Junkfood posts throughout the duration of the experiment.

4.1.1 Demographics

Figure 8 illustrates the distribution of participants who took part in the experiment based on their gender and age category. Participants were given the options of selecting their gender from Men, Women, Non-binary, or Prefer not to disclose. The age groups included the options 18-24, 25-34, 35-44, 45-54, and 55-64 years old. Out of the 30 participants, 14 (47%) identified as men, while 16 (53%) identified as women. None of the participants identified as non-binary or preferred not to disclose their gender. The most common age group among the participants was 18-24 years old, with 15 participants. The age groups with the lowest number of participants were 35-44 and 45-54 years old, with two participants each. The unequal distribution of the age groups is related to the convenience sampling, described in Section 3.2, that was applied in this study.
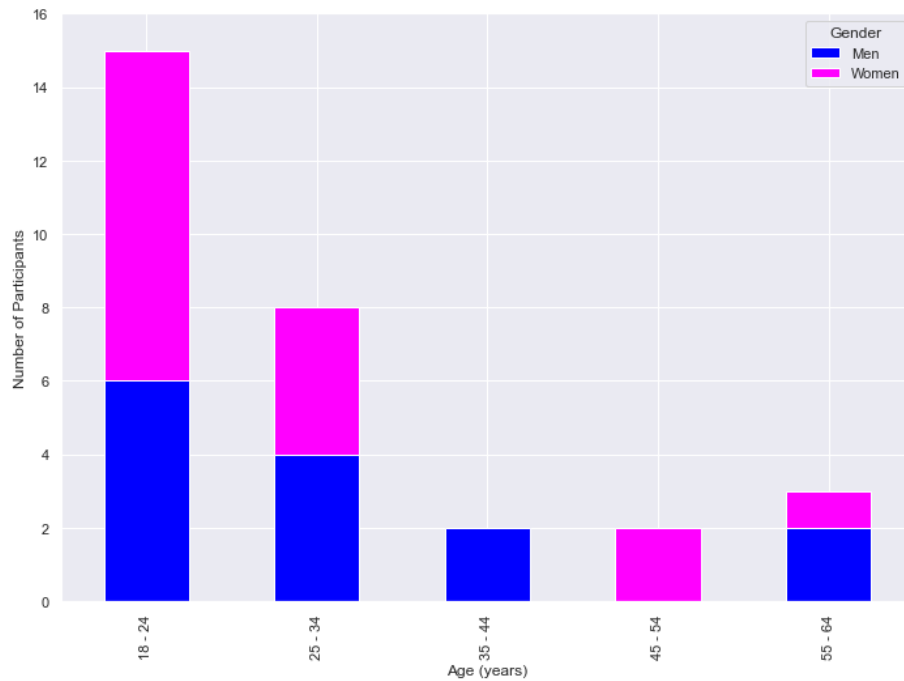

Figure 8: The distribution of participants who took part in the experiment regarding gender and age category.

4.1.2 Active users per platform

During the experiment, participants were asked about the social media platforms they actively use. In this study, an active user is defined as someone who engages with content on a specific platform at least once a week, regardless of whether they themselves publish content or not. The distribution of active users per platform is depicted in Figure 9. Among the participants, YouTube had the highest number of active users, with 28 out of 30 participants using the platform. Instagram and LinkedIn followed with 22 active users each. Reddit had the fewest active users, with only 4 out of 30 participants using the platform.

Various participants who were not active users on a particular platform reported that they had never used that platform in the past. Some participants also mentioned that they had previously used Instagram, Facebook, and TikTok but had since deleted their accounts or the respective social media applications due to various reasons, such as feeling that they spent excessive time on those platforms. In such cases, participants were not considered active users. None of the participants mentioned transitioning from being active users to inactive users on YouTube, Reddit, or LinkedIn.
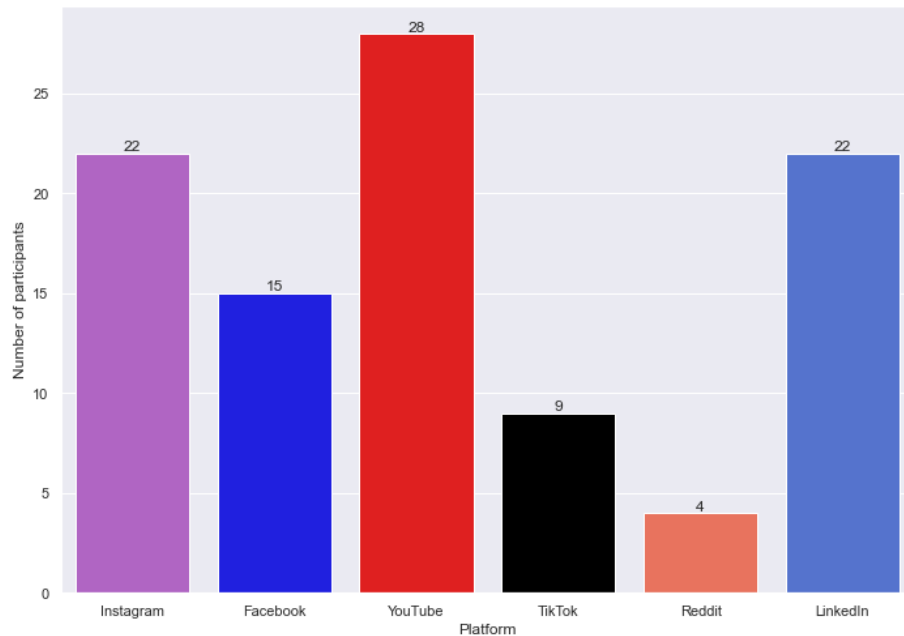
Figure 9: The distribution of active users per social media platform.

4.1.3 Digital Junkfood perceived by users per platform

Figure 10 illustrates the number of participants who identified content they had previously interacted with as Digital Junkfood, categorized by platform. Instagram had the highest number of users, with 18 participants, who identified at least one example of Digital Junkfood. YouTube followed behind with 15 users. It is worth noting that both Instagram and YouTube also had the highest number of active users, as shown in Figure 9. LinkedIn had the fewest number of users with two participants who identified content on this platform as Digital Junkfood.

Figure 10: The number of participants who at least identified one posts as Digital Junkfood on a specific platform.

4.1.4 Normalized Digital Junkfood perceived by active users per platform

Figure 11 represents the normalized number of active users who identified Digital Junkfood for each platform. To calculate these results, the number of participants who found content they had previously interacted with and perceived as Digital Junkfood per platform (see Figure 10) was divided by the total number of active users per social media platform (see Figure 9).
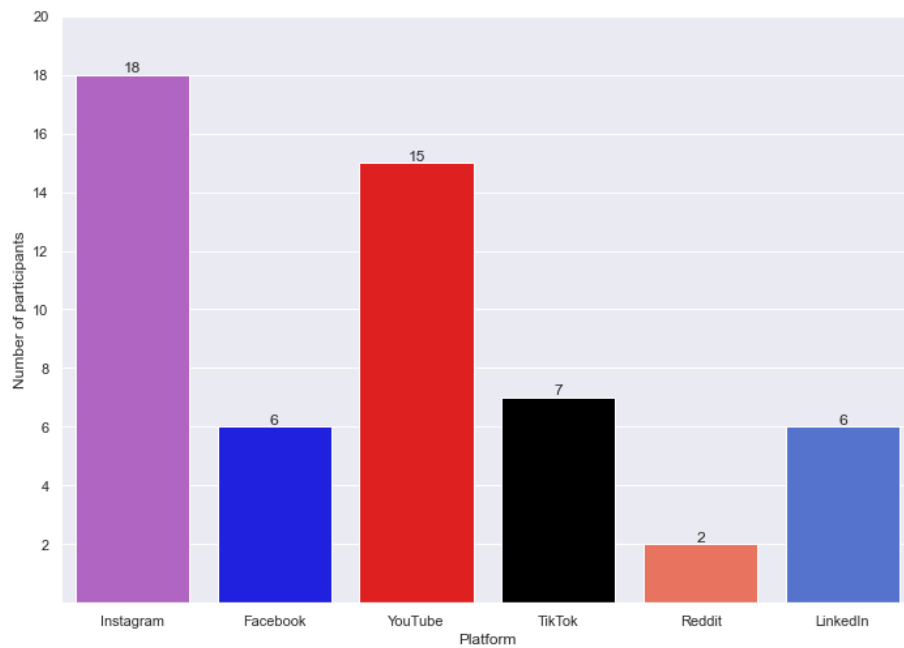
Instagram exhibited the highest percentage of active users who encountered Digital Junkfood among all the included platforms, closely followed by TikTok. Conversely, LinkedIn had the lowest percentage of active users who reported engaging with Digital Junkfood on that platform.
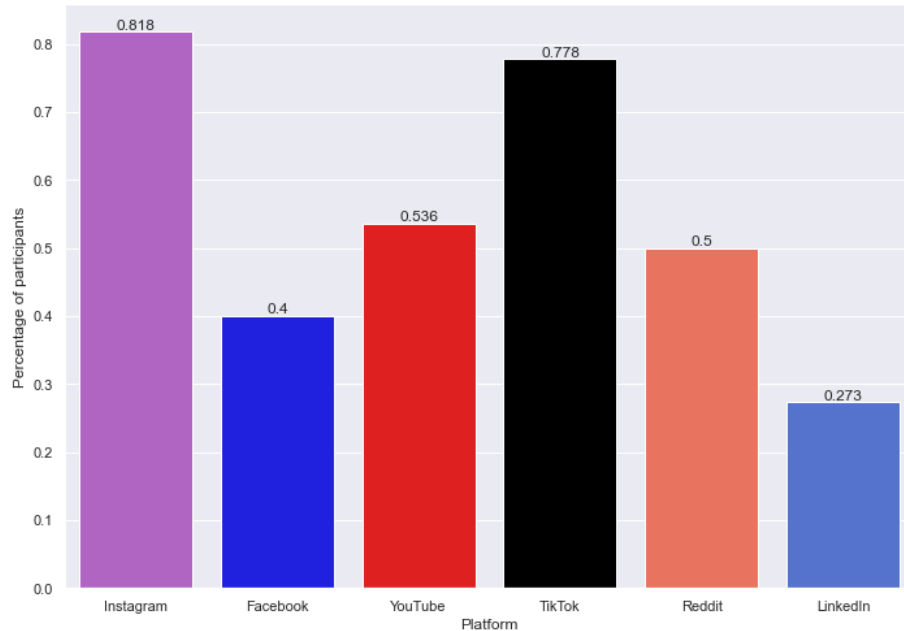
Figure 11: The normalized number of active users per platform who have identified content as Digital Junkfood.

Despite YouTube having more active users overall, Instagram emerged as the platform with the highest number of active users in the experiment who were able to identify one or more posts as Digital Junkfood. Participants discovered Digital Junkfood on Instagram through various features such as the discovery page, content from their timeline and stories, as well as Reels videos. The content covered a wide range of topics, including product advertisements, comedic posts, food-related content, celebrity-related content, and more.

Facebook users who identified Digital Junkfood on the platform described encountering a lot of suggested posts in their timeline that they perceived as

Digital Junkfood. Users who did not find Digital Junkfood on Facebook mostly utilized the platform for birthday reminders and event-related information.

Approximately half of the YouTube users were able to find Digital Junkfood on the platform. Those who did not perceive the content they watched on YouTube as Digital Junkfood explained that they primarily used the platform for finding specific information and less for entertainment purposes. The other half who did identify Digital Junkfood on YouTube mentioned that the information they searched for was often not applicable, and this group tended to watch more recommended and followed content that focused on entertainment.

While TikTok had a relatively small number of active users in the experiment, almost all participants were able to identify Digital Junkfood on the platform. Several participants who were inactive on TikTok deliberately chose not to use it because they had heard from other users or experienced themselves how distracting the platform can be. The majority of Digital Junkfood on TikTok consisted of suggested content that is continuously provided to users on their feed.

Reddit had only four active users, and out of those, two were able to identify Digital Junkfood. The Digital Junkfood on Reddit originated from posts published in followed communities that aimed to share personal stories and memes.

LinkedIn, being perceived by most participants as a professionally-oriented platform, resulted in most users not identifying any content as Digital Junkfood. However, the small number of Digital Junkfood encountered by LinkedIn users included personal success stories (e.g., someone who got fired and worked hard to develop a successful career), advertised courses, recruiters sending mass messages to multiple users, and political statements that participants felt did not belong on LinkedIn. Another participant mentioned that receiving annual job anniversary congratulations from connections felt like Digital Junkfood, as it gave the impression that most people reaching out wanted something from them.

4.1.5 Digital Junkfood posts per platform

The graph depicted in Figure 12 illustrates the number of Digital Junkfood posts selected by participants for each platform in the experiment. Instagram (44 posts) and YouTube (41 posts) emerged as the platforms where the highest number of Digital Junkfood posts were identified, which aligns with the findings of the number of users who at least could identify one post as Digital Junkfood on a specific platform (see Figure 10). It is important to note that participants were only able to search for Digital Junkfood posts on platforms that they actively used at the time of the experiment, as shown in Figure 9. Among the active users in the experiment, TikTok (2.1 posts per active user) and Instagram (2.0 posts per active user) users identified a relatively higher number of Digital Junkfood posts compared to the ratio of Digital Junkfood posts per active users on other platforms.
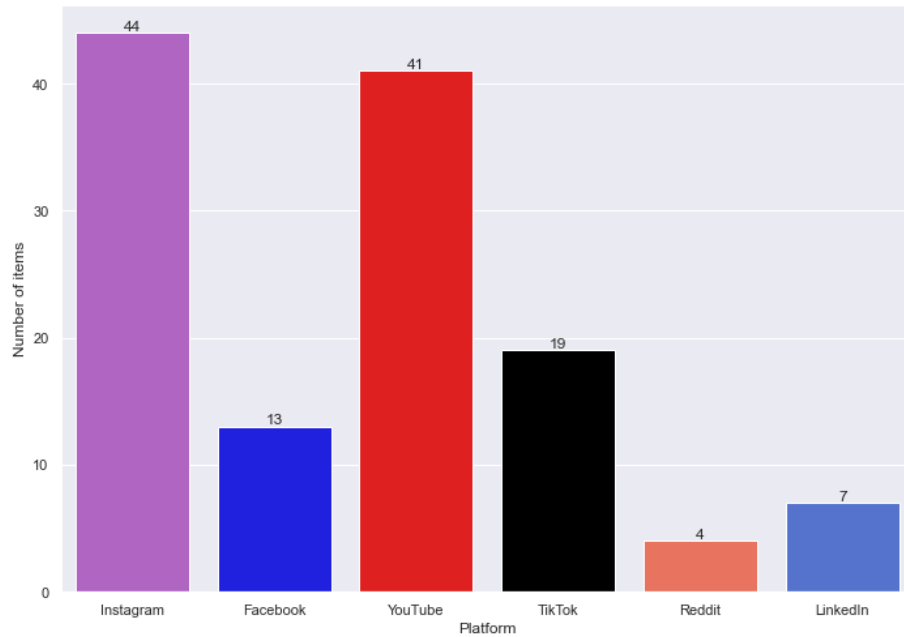
Figure 12: The distribution per platform regarding the number of posts that were identified by the participants as Digital Junkfood.

4.1.6 Digital Junkfood posts per type of content

Figure 13 presents the distribution of Digital Junkfood posts per type of content (Text/Image/Video) selected by participants in the experiment. The majority of the identified Digital Junkfood posts, totaling 83 items, were in the form of solely a video. There were relatively fewer posts that consisted of a different content type, with images being the second most common at 25 items. There were only a few posts that contained a mix of different content types, as also depicted in Figure 13.

Overall, participants identified 86 Digital Junkfood items that consist of a video, 36 items containing one or more images, and 19 items consisting of text. Examples of videos that were considered Digital Junkfood included vlogs, advertisements, comedic compilations, and DIY tutorials, among other topics. Images often featured advertised products, comedic content, photos regarding food, celebrities, influencers, life style, beauty, etc. Text-based content primarily comprised personal stories or descriptions related to a video or image.
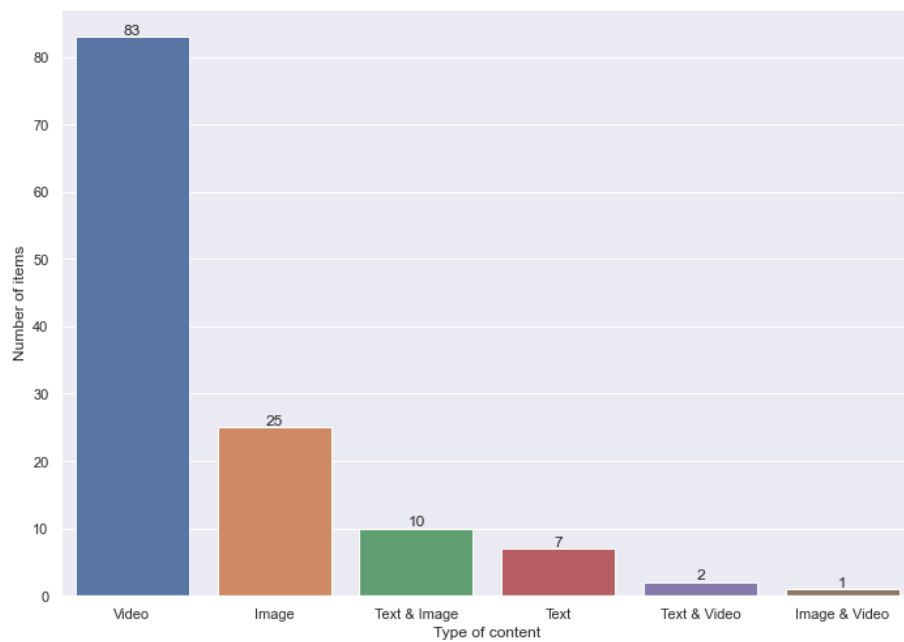
Figure 13: The number of Digital Junkfood posts per content type (Text/Image/Video) that were identified by users.

4.1.7   Reactions to Digital Junkfood posts

Figure 14 illustrates the number of Digital Junkfood posts that participants reacted to with comments, along with the sentiment expressed in those comments. Overall, participants tended to exhibit a passive approach towards Digital Junkfood, as most users refrained from leaving comments on these posts. However, when participants did comment on Digital Junkfood posts, their comments were predominantly positive.

Several participants mentioned that they preferred to share only positive comments in general on social media which mostly included compliments towards the publisher of the post. Neutral comments included instances where users tagged someone in the post or asked for additional information related to the post's topic. For example, users may inquire about the song playing in the background of a video or request a recipe link when watching a video that only displays the final result of a baked cake. Negative comments left on Digital Junkfood posts conveyed frustration and criticism towards the content. These users felt that the account deliberately attempted to deceive users into grabbing their attention or spending money on products.
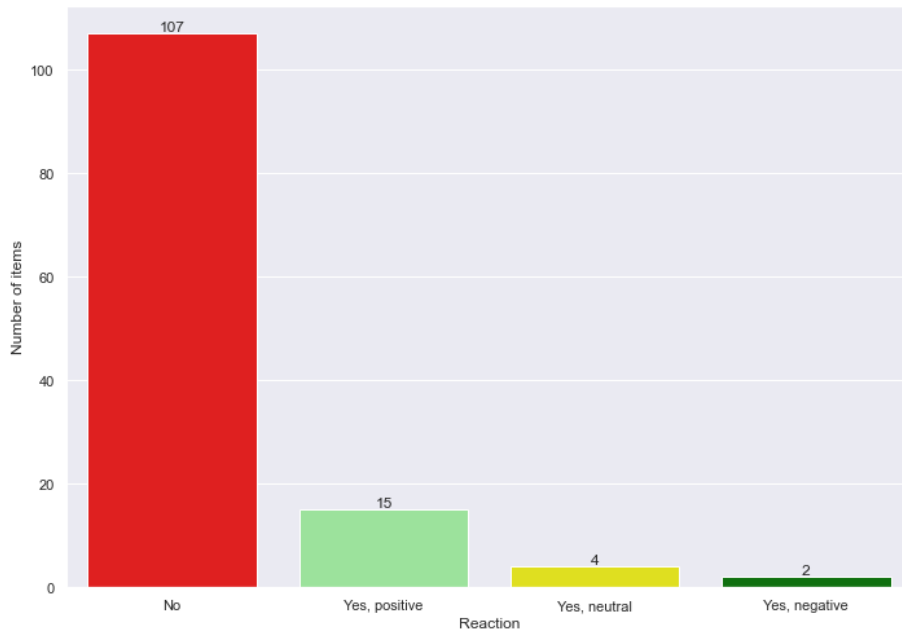
Figure 14: The distribution of Digital Junkfood posts where the user left a comment including the sentiment of the comment.

4.1.8 Sponsored Digital Junkfood posts

Figure 15 displays the number of Digital Junkfood posts that participants perceived as sponsored content. The majority of Digital Junkfood posts (111 items) were not recognized as sponsored by the participants. It is possible that within these 111 items, some posts may have been sponsored but went unnoticed by the users.

The 17 items that were perceived as sponsored posts were primarily seen as advertisements that appeared before the start of a video where the user clicked on or as sponsored posts intermixed with their followed content while scrolling through their timeline. Users were less likely to identify sponsored posts by influencers, possibly because it is generally less evident that these posts are sponsored by a third-party brand.
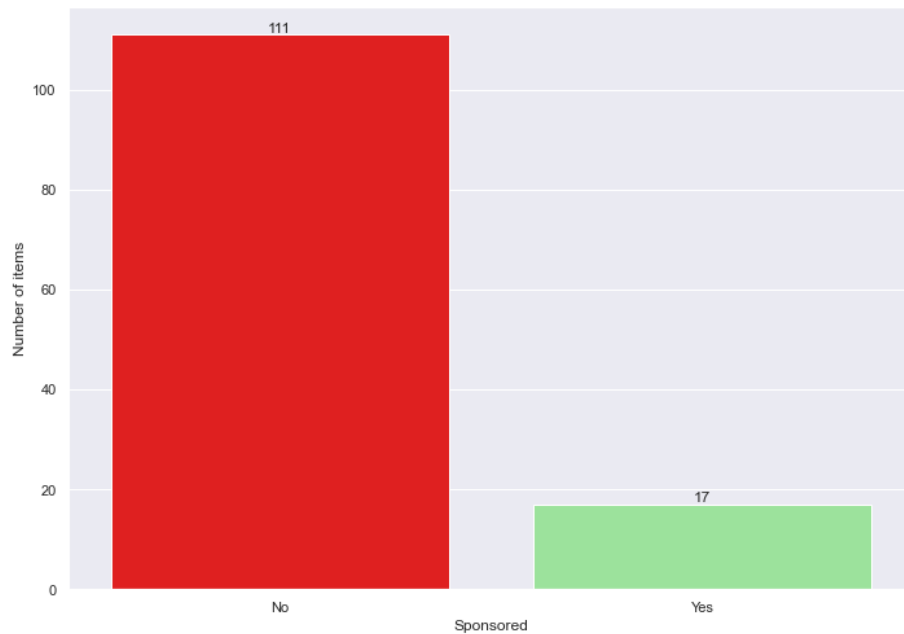
Figure 15: The distribution of Digital Junkfood posts where the user perceived the post as sponsored.

4.1.9 Clickbait incorporated within Digital Junkfood posts

The bar graph in Figure 16 illustrates the number of participants who have encountered clickbait while engaging with Digital Junkfood in the past. A majority of participants reported experiencing clickbait in their engagement with Digital Junkfood. Most examples provided by participants originated from YouTube, where misleading video titles or thumbnails were present. Some users mentioned that clickbait is not prevalent on TikTok, as the platform automatically plays suggested videos. However, other participants noted that while watching TikTok videos, initial expectations were often set at the start of a video but not fulfilled by the end of the video, which they also considered to be clickbait. On Instagram, participants identified clickbait in the form of out-of-context quotes from interviews. Additionally, one participant mentioned that LinkedIn posts related to job applications created the expectation of finding a dream job even though each candidate has different requirements to apply for a job.

Several participants admitted to being susceptible to clickbait, even when they were aware that their expectations might not be met after engaging with the content. There were also participants who were unfamiliar with the concept of clickbait. Some participants claimed to be less vulnerable to clickbait, as they could easily recognize when publishers were attempting to capture their attention, due to their years of experience using social media.
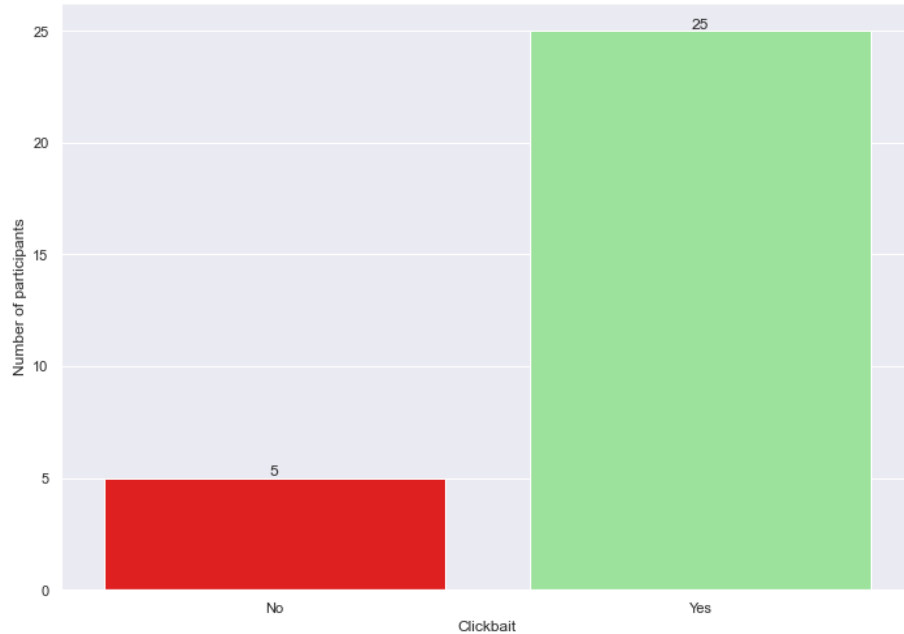
Figure 16: The distribution of users that experienced any form of clickbait when engaging in the past with Digital Junkfood.

4.1.10 Personal acquaintance with the publisher of the Digital Junkfood posts

The graph in Figure 17 presents the number of Digital Junkfood posts where the participant personally knows the publisher of the content. The majority of Digital Junkfood posts were found to be published by accounts whom the participants did not personally know. These accounts belonged to celebrities, influencers, organizations, or impersonal profiles. However, there were instances where participants identified certain Digital Junkfood posts that were shared by individuals they knew. These instances included congratulatory messages for job anniversaries on LinkedIn, travel photos on Instagram from individuals whom the participants had not interacted with in years, and individuals announcing their birthdays through selfies on Instagram.
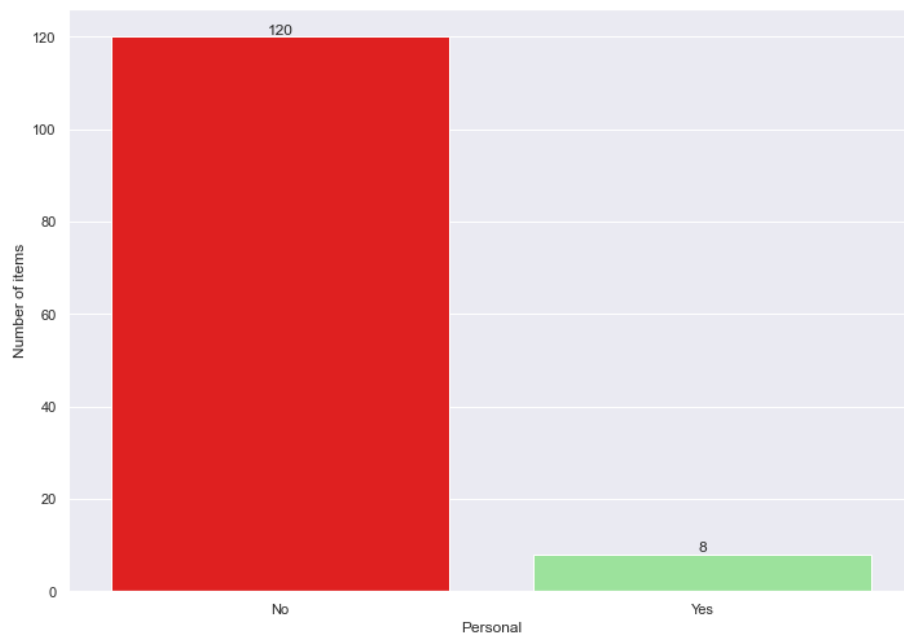
Figure 17: The distribution of Digital Junkfood posts where the user personally knows the publisher of the content

4.1.11 Time spent on Digital Junkfood posts per platform

The graph displayed in Figure 18 illustrates the average duration (in minutes) spent by participants on Digital Junkfood posts across different platforms. Participants reported spending the most time on Digital Junkfood posts on YouTube, which can be attributed to the platform's wide range of content, including longer videos such as livestreams and TV episodes, in addition to shorter videos on the YouTube Shorts page. Conversely, participants spent the least amount of time on TikTok, given its emphasis on short-form videos.

LinkedIn, known for posts with more text and links, such as personal stories and job applications, had a higher average time spent compared to platforms like Instagram and TikTok, which predominantly focus on images and short videos. Participants reported experiencing varying durations on Facebook and Reddit, as the types of content on these platforms vary widely.
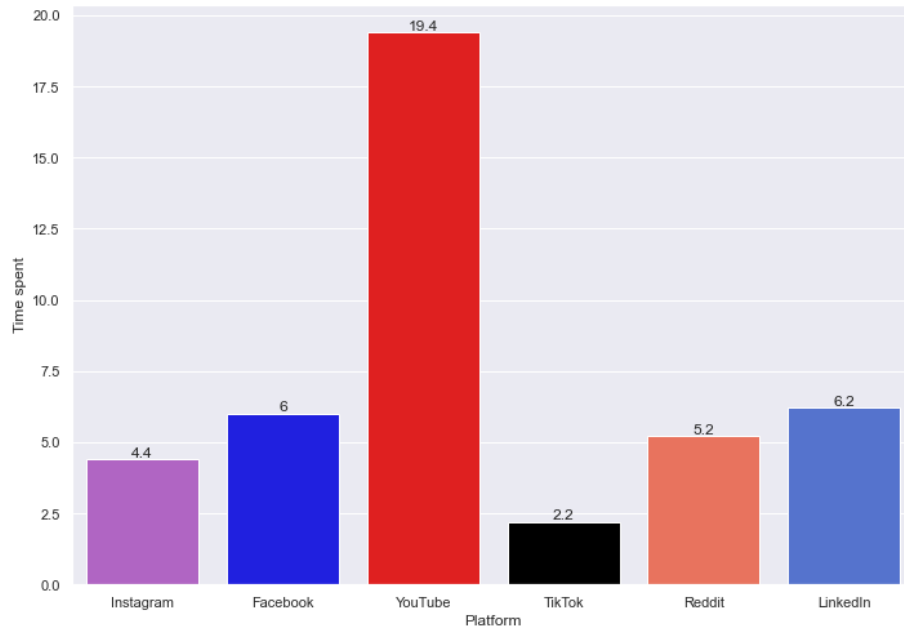
Figure 18: The distribution of time spent (in minutes) on a Digital Junkfood post per platform.

4.1.12 Time spent on Digital Junkfood posts per type of content

The bar graph depicted in Figure 19 illustrates the average duration (in minutes) spent by participants on Digital Junkfood posts based on the type of content (Text/Image/Video). Participants reported spending the most time on Digital Junkfood posts that contained video content. Different participants mentioned engaging with relatively long videos such as livestreams and TV episodes, which they considered as forms of Digital Junkfood.

Both text and image-based content received approximately equal amounts of time from users. Text-based posts, such as personal stories on platforms like Reddit or LinkedIn, required a certain amount of time to read entirely. Similarly, images featuring products, for instance, on Instagram, often led users to explore linked webshops, contributing to longer engagement times.
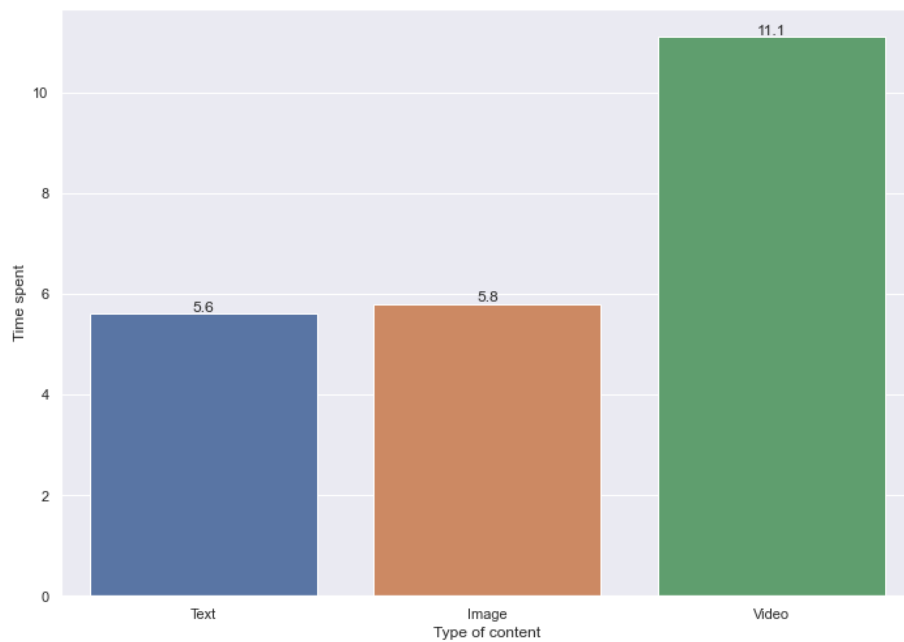
Figure 19: The distribution of time spent (in minutes) by the user on a Digital Junkfood post per type of content (Text/Image/Video).

4.1.13 Summary of quantitative results

The platform with the highest number of active users was YouTube, followed by Instagram and LinkedIn. To determine the ratio of active users who could identify Digital Junkfood on each platform, the total number of active users who identified at least one post as Digital Junkfood was compared to the total number of active users per platform. According to this calculation, Instagram had the highest ratio of active users who could identify Digital Junkfood, followed by TikTok. LinkedIn had the lowest ratio of active users who could identified at least one post as Digital Junkfood.

Regarding the types of content identified as Digital Junkfood, the majority consisted of videos. In different instances, the content categorized as Digital Junkfood also included one or more images. Text-based content was relatively less prevalent. Moreover, some users encountered Digital Junkfood posts that consisted of a combination of these three types of content.

Most users did not leave comments on the identified Digital Junkfood posts. However, if they did, the comments were predominantly positive. Users generally did not perceive the identified posts as sponsored. Furthermore, a majority of the users mentioned that while certain Digital Junkfood posts contained clickbait, they also encountered content perceived as Digital Junkfood that did not employ clickbait techniques. The majority of Digital Junkfood content was published by accounts that the user did not personally know, although some users did provide examples where they personally knew the creator of the content.

In terms of time spent on Digital Junkfood posts, participants reported spending the most time on YouTube, while the least average time was dedicated on a specific post on TikTok. Moreover, participants indicated that they tend to spend more time on Digital Junkfood posts when the content consists of one or more videos.

4.2 Qualitative results

All 30 participants in the semi-structured interview provided valid responses to the list of questions posed by the researcher, ensuring the integrity of the qualitative results. The researcher promptly corrected any participants who mentioned platforms not included in the experiment, ensuring the inclusion of accurate and valid data. As a result, all qualitative data obtained from the interview are included in the final results.

The aim of gathering qualitative data through interviews was to investigate the reasoning behind users' classification of certain content as Digital Junkfood. This data enabled the description of both shared patterns and variations in users' perceptions of Digital Junkfood.

4.2.1 Topics mentioned regarding Digital Junkfood content

The graph in Figure 20 portrays all the topics that were mentioned in the interview when participants talked about their selected Digital Junkfood posts and past experience regarding Digital Junkfood.
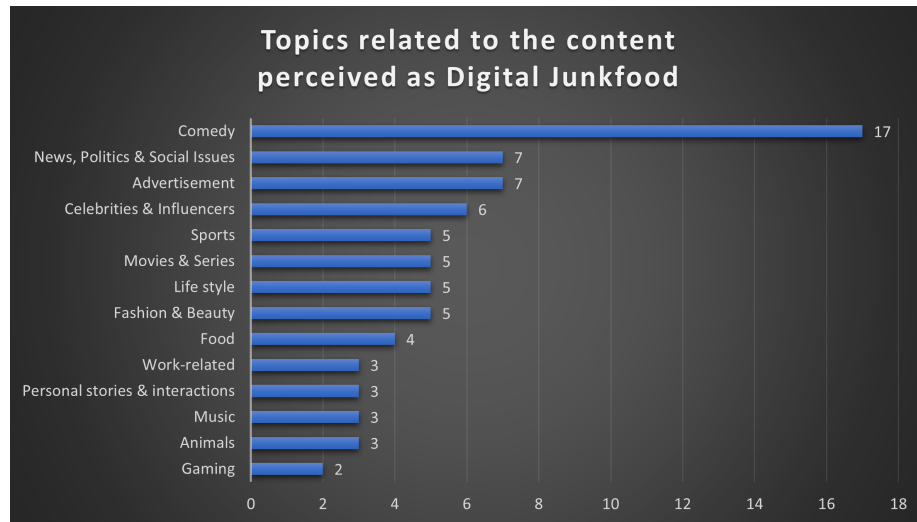
Figure 20: The distribution of topics that were mentioned by users regarding Digital Junkfood content.

During the experiment, the participants selected content related to various forms of comedy (e.g., sketches, fail compilations, etc.) as the most prominent type of Digital Junkfood, with 17 out of 30 participants discussing this category. Participant 17 gave the following example regarding comedy content: *"I watch content creators that are interviewing people on the street and asking funny and weird questions. I like to see how people react to those kind of questions."*.

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Additionally, topics such as Advertisement (e.g., non-skippable ads, sponsored posts in a user's timeline, etc.) and News, Politics & Social Issues (e.g., uninteresting news articles, podcast clips about social issues, etc.) were frequently mentioned by both seven participants during the interview. Participant 21 gave a relatively less obvious example regarding advertisements where they described the following: *"I encounter people selling themselves on LinkedIn to find a new job or when a business person is trying to sell their course, which I see in both instances as advertisements."*. Moreover, participant 27 described they got interested by the following societal issue: *"I encountered a Facebook group where people published videos of football hooligans fighting with each other. For me I felt interested in this content as it was sensational and controversial."*.

Celebrities & Influencers encompassed mostly vlogs, interviews, and gossip while Fashion & Beauty primarily included tutorials on dressing up and applying makeup. Regarding the topic of Celebrities & Influencers, participant 12 described the following example: *"I was curious about the personal life of a particular footballer and whether he was still together with his partner. So I looked up his account on Instagram and liked one of his photos."*. Lifestyle content covered for the most part astrology, DIY tutorials, and life-related quotes. Participant 23 also gave the example of gardening tutorials: *"I watch YouTube videos from a Japanse man who lives in England who loves bonsai trees. He explains sometimes ten times what kind of gardening tools he has and how to use it. It is kind of adorable."*.

Movies & Series focused on trailers and specific scenes from films or TV shows. Also, participant 24 described sometimes watching entire episodes of reality shows: *"On YouTube I sometimes get shows recommended like Kitchen Nightmares where it is fun to watch how Garden Ramsey acts."*. Sports content consisted mainly of match highlights and stunts. Participant 8 gave the following example: *"There was someone on a motor who drove really fast through a tricky landscape which was pretty dangerous."*. Food content revolved around recipes and visually appealing food-related aesthetics. Participant 2 described the following food content seen as Digital Junkfood: *"There was this video of a cake that looked really delicious but they did not explain on how to actually bake this cake."*.

Animals content included cute or funny content featuring animals. Music content featured festivals, music-making tutorials, and specific songs. Personal stories & interactions encompassed shared personal experiences and any form of interaction (e.g., congratulating someone) on social media. Work-related topics involved subjects related to participants' professions, such as educational material for teachers or tutorials on AI for programmers. Lastly, Gaming content included streamers playing specific games and tutorials on how to overcome challenging levels.

4.2.2 Feelings during the engagement with Digital Junkfood content

The graph displayed in Figure 21 demonstrates what participants mentioned when they talked about their feelings during the engagement with the selected

Digital Junkfood posts and past experience regarding Digital Junkfood. This bar graph specifically focuses on the feelings experienced during engagement with Digital Junkfood, whereas Section 4.2.3 delves into the feelings evoked after engaging with posts perceived as Digital Junkfood.

Figure 21: The distribution of the feelings that users experienced when engaging with Digital Junkfood content.

The feelings during the engagement with Digital Junkfood varied between the participants from negative, neutral, and positive feelings. Nevertheless, the majority of participants reported predominantly positive feelings during their engagement with Digital Junkfood content.

Negative feelings such as feeling useless, regret, uninterested, and jealousy were mentioned. The feelings of useless and regret primarily stem from the realization during the engagement that the user invest excessive time and energy in consuming Digital Junkfood content. Participant 1 said: *"Sometimes I realize that I should do something more useful when scrolling through certain content. I think to myself that I should go off my phone and get up to do something like cleaning for example."*. The user feeling uninterested arises when the initial impression of the content appears intriguing, but as the user engages with it, they realize it does not capture their genuine interest. Lastly, feelings of jealousy emerge from content featuring individuals who possess attractive appearances and wealth, leading users to compare themselves and conclude that these individuals have a better life than they do.

Neutral feelings like numb, unaware or accepting were shared during the experiment. The feeling of numbness arose from the content having neither a positive nor negative impact on the user. Participant 2 described it as: *"I think*

the content is Digital Junkfood for me when it does not give me any specific feelings or any degree of satisfaction. There is an abundance amount of this type of content which causes to not giving me any feelings about the content.". Some users felt unaware during the engagement with Digital Junkfood as the user did not actually realize what they were consuming at that moment. Finally, one participant described that they did realize the kind of content they were consuming but was acceptable towards the situation as in their opinion it is alright to sometimes consume Digital Junkfood content. Participant 28 argues this in the following way: *"Well it is just part of the Internet. When you watch the content it gives you the impression that it provides you with conveniences as if a world opened up for you but in reality there is always a price tag attached to it in different forms. At the end it is just a business model.".*

Most participants mentioned positive feelings during the engagement with Digital Junkfood like feeling entertained, easily accessible, recognition, curiosity, and informed. Participants in the experiment reported experiencing feelings of entertainment, being informed, and a sense of recognition or relatable when engaging with certain Digital Junkfood posts that had the ability to evoke those emotions in the moment. Participant 10 referred to the feeling of recognition by giving the following example: *"It is partly a feeling of recognition when I read a post about my star sign that I occasionally see in my timeline.".* Additionally, many users found the Digital Junkfood content easily accessible, as it was often suggested to them by the platform's algorithm, requiring minimal effort to consume. Furthermore, participants expressed a sense of curiosity while consuming Digital Junkfood. This curiosity could arise from the initial impression of the post, captivating the user's interest and leading them to fully engage with the content. Participant 13 explained the following: *"It gives me the feeling of curiosity because I want to watch the video until the end to see what will happen and how it ends.".* For other user, Digital Junkfood could also spark curiosity to explore more similar content or click on links to access external sources associated with the content.

4.2.3   Feelings after the engagement with Digital Junkfood content

The graph shown in Figure 22 displays what participants mentioned when they discussed their feelings after the engagement with the selected Digital Junkfood posts and past experience regarding Digital Junkfood. The feelings after the engagement with Digital Junkfood also varied between the participants from negative, neutral, and positive feelings. However, the prevailing sentiment expressed by the majority of participants was negative after the engagement with Digital Junkfood content.
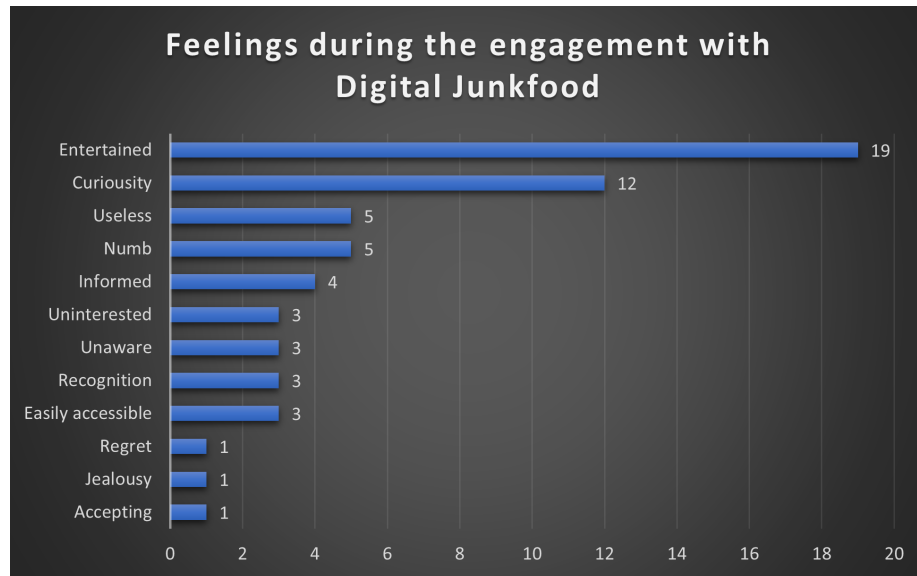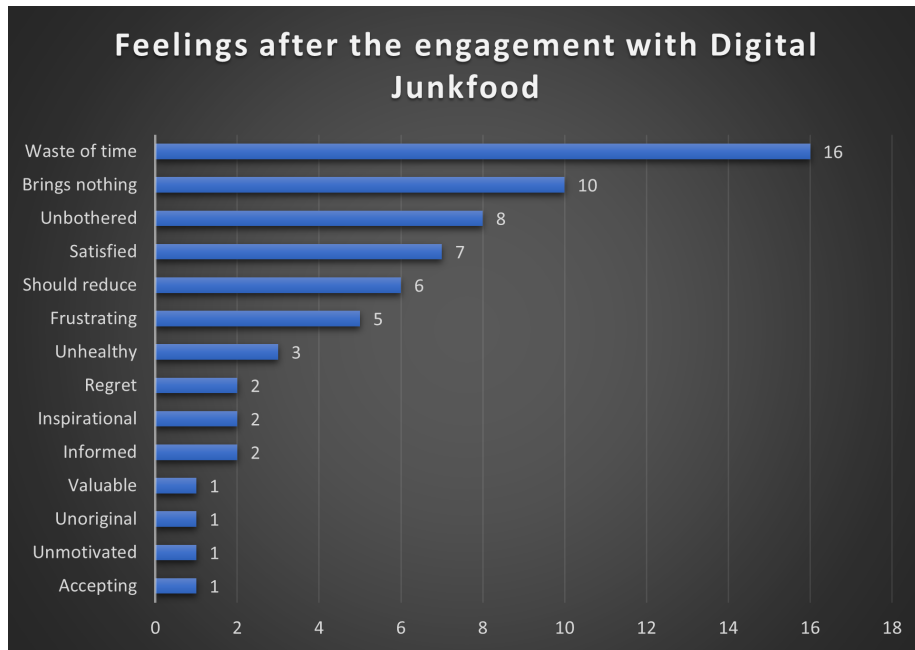
Figure 22: The distribution of the feelings that users experienced after engaging with Digital Junkfood content.

Positive feelings such as feeling inspirational, valuable, informed, and satisfied were mentioned. The feeling of satisfaction was mostly due to the content bringing the participant joy when consuming the content which left the user with a satisfied feeling. The content sometimes also contained encompassing specific information that inspired or informed the user to a certain degree. Participant 16 described their inspirational experience with Digital Junkfood as: "These Do It Yourself videos might come in handy in the future when I apply them. Or it could be a good investment as it may inspire me for other chores even though it is for me not valuable at the moment.".

Neutral feelings like unbothered or accepting were shared by users during the experiment. Those feelings were caused as looking back at the moment of consumption there was no better alternative to do (e.g., one of the participant was sitting in a waiting room). Participant 3 explained: "I do not mind to scroll through this kind of content when I am, for example, sitting the train. Also when I am at work I do not mind to open Reddit after working for an hour or so and look at some posts as well as reacting with a comment.". Other participants just accept that some content exist and is sometimes directly or indirectly forced towards the user.

Most participants mentioned negative feelings like they have wasted their time, feeling frustration, regret, unhealthy, unoriginal and/or unmotivated, feeling of not bringing them anything valuable, or that they should reduce their

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time spending on Digital Junkfood. Various participants felt afterwards that engaging with Digital Junkfood content did not provide any valuable outcomes and did not contribute anything to their life. In comparison to alternative activities, like painting and watching a documentary mentioned by one participant, they felt that they did not learn anything from consuming Digital Junkfood content, leading to a decreased motivation to engage with it or even to open social media apps to seek out content that was not considered as Digital Junkfood. One participant felt unoriginal because they believed everyone sees the same popular content, and their attempts to find unique content were unsuccessful. While some participants acknowledged that Digital Junkfood could be wasting their time, they did not take any measures to avoid spending excessive time on it. Participant 4 reasoned this feeling by saying: *"I am definitely not happy that I wasted my time on the content. However, it also not terrible enough to start changing anything."*. Other participants did recognize the need to take action and reduce their consumption of Digital Junkfood content. Participant 20 explained that due to this perception they took the following action: *"I only still use LinkedIn for my own career and tasks for my current job but I have deleted all other social media apps from my phone as I found that I did spend too much time on those apps."*. Others felt that not every post needed to bring something meaningful to their lives, as relaxation and downtime also had their place. Participant 26 explained this by saying: *"I will not change how I deal with the selected content. I know that everyone does it and it is just how I behave towards such content as for me it is not something good nor bad."*.

4.2.4 Transition of feelings regarding the engagement with Digital Junkfood

Figure 23 depicts the transition between emotional states experienced during and after engagement with Digital Junkfood. The flow chart displays feelings during Digital Junkfood engagement on the left side, while feelings after engagement are illustrated on the right side. The flows that connect the feelings are indicated by green, grey, and red based on whether the corresponding feeling is positive, neutral or negative.
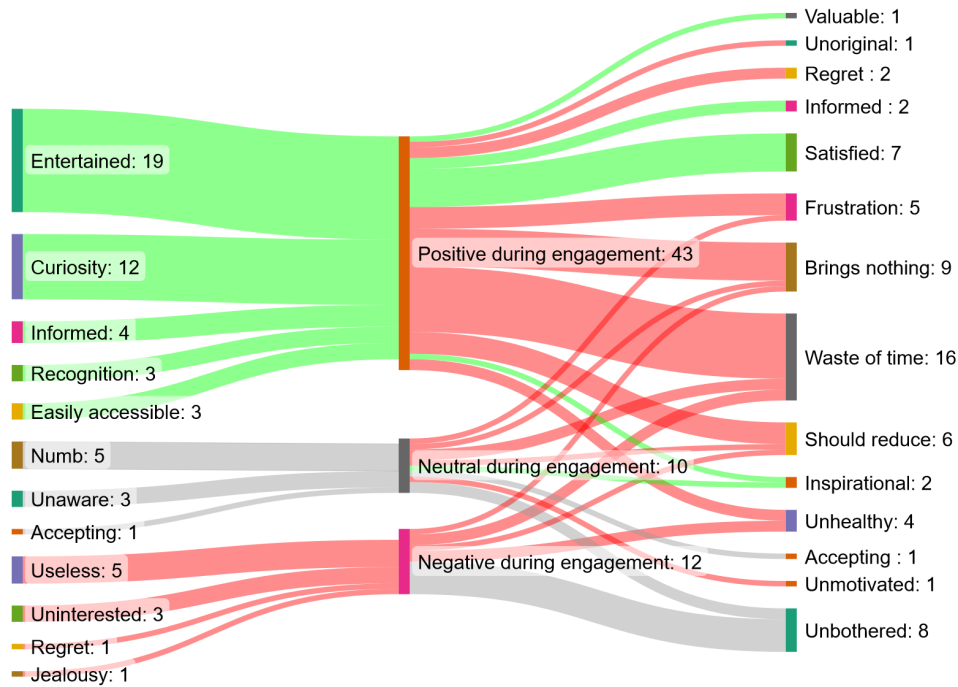
Figure 23: The shift in states of feelings from during engagement to after engaging with Digital Junkfood.

The flow chart reveals a significant trend where the majority of positive feelings during engagement with Digital Junkfood transitioned into negative feelings afterward. Users who initially felt entertained, curious, or found the content easily accessible reported experiencing negative feelings such as frustration, a sense of wasted time, and feeling unhealthy afterward. Participant 3 described it as: *"In the moment I enjoy when I am busy with the content but afterwards I think to myself that it would have been better if I invested my time differently."*. However, it is noteworthy that there were instances where positive feelings persisted after engaging with Digital Junkfood. This occurred when users experienced positive feelings during engagement, leading afterwards to feelings of satisfaction, inspiration, and a sense of value derived from the content. On the other hand, no positive feelings were reported afterward when users experienced neutral or negative feelings during engagement with Digital Junkfood.

Neutral and negative feelings experienced during engagement with Digital Junkfood translated also into neutral or negative feelings afterward. For example, users who experienced neutral feelings like being unbothered or unaware during the engagement tended to feel afterward that their time was wasted,

frustrated, or that the content lacked value. Participant 2 explained this by saying: *"The content does not give me a particular feeling when I see it but afterwards I realize that the content did not give me any form of satisfaction which makes me feel like it was a waste of my time."*. In some cases, users reported a more neutral emotional state afterward, describing feelings of being unbothered or accepting regarding their engagement with the content. Additionally, users who experienced negative emotions like feeling useless or uninterested in the content during engagement transitioned to feeling neutral afterward, displaying a sense of being unbothered about the situation where they were uninterested in the content while engaging with it.

4.2.5 Aspects of the perception regarding Digital Junkfood

The graph portrayed in Figure 24 demonstrates the number of times the participant mentioned a certain categorized aspect of the perception regarding Digital Junkfood. These categories primarily stem from the responses provided during the interview's final question, which inquired about the reasons behind perceiving the selected content as Digital Junkfood. Furthermore, participants expressed their perceptions on Digital Junkfood throughout performing the task and in earlier interview questions, and these viewpoints were also considered when categorizing the definitions. The perspectives were initially analyzed using open coding and subsequently refined through axial coding, resulting in the categories presented in Figure 24.
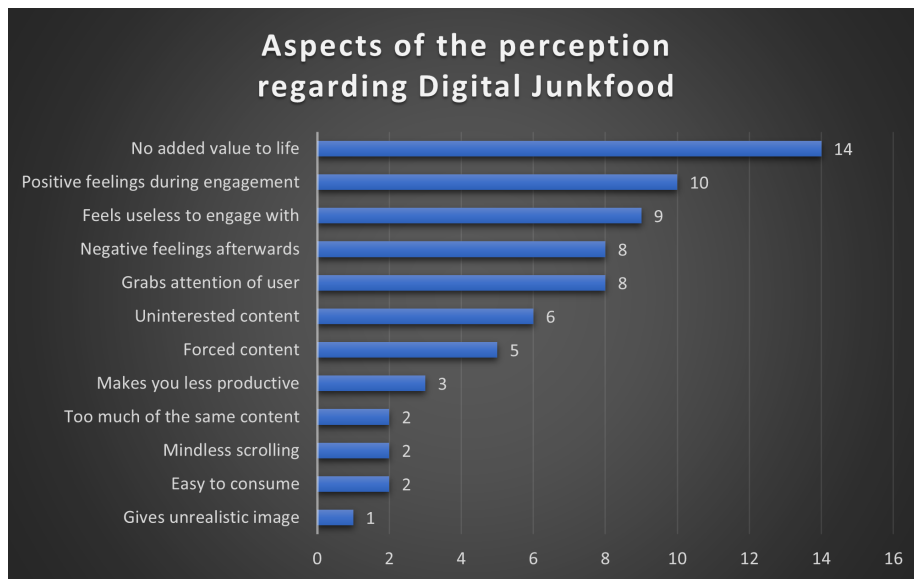

Figure 24: The distribution of aspects on how users perceive Digital Junkfood.

No added value to life

The aspect that received the most mention during the experiment is that participants expressed that Digital Junkfood provided no added value in their real lives. According to participants, the content lacked information that they could apply or benefit from in their own lives. Participant 16 clarified this by saying: *"It does not add anything to my life. All those simple videos, it does not give me any new insights in a certain way, at least not something that I can apply in my life. It is just pure leisure."*. Participant 19 also mentioned: *"The content is Digital Junkfood for me because I could have lived without it. I do not think that my life would have been bad if I did not watch the content."*. These participants evaluate the content based on its impact on their lives and if it fails to provide any value, they consider it as Digital Junkfood.

Positive feelings during engagement

A group of participants said that they see Digital Junkfood as content that results in positive feelings while engaging with the content. Participant 14 said: *"But what I like about this kind of content is that it gives me short-term pleasure."*. This quote aligns with the results of the positive feelings during the engagement with Digital Junkfood, displayed in Figure 21. Participant 22 also mentioned: *"The content can make me laugh sometimes and when I watch a funny video in the morning when I am in bed it can really be a good start of my day."*. This example corresponds with the positive feelings after the engagement with Digital Junkfood that are included in Figure 22. Interestingly, participant 11 described their positive feelings regarding Digital Junkfood by making a comparison with edible junk food: *"It is content that I crave sometimes. Similar to that hamburger from McDonalds that I also crave and enjoy once in a while and there is nothing wrong with that."*.

Feels useless to engage with

A collection of participants feel like they are acting useless while engaging with Digital Junkfood content. Participant 5 said the following about this: *"I feel like I waste my time when I get in this wormhole of content that I cannot get out of. After engaging for a while, I question myself why I am actually watching the content."*. This is not necessarily seen as something negative as some participants say that it is sometimes good to not always feel useful as everyone needs time to recharge. Participant 4 explained this: *"The content that I see as Digital Junkfood is not actually bad for me, even though it is unproductive, it is sometimes just 'delicious' to watch this content."*.

Grabs attention of user

A group of participants mentioned that Digital Junkfood posts contain certain psychological tricks to grab the user's attention in a way that they are not even aware that they start engaging with the content. Participant 20 explained this by saying: *"The content triggers you in a certain to start watching even though I do not really understand how it does this to me."* The phenomenon of

clickbait, as shown in Figure 16, can also contribute to this element. Participant 30 mentioned about this: *"I used to be very susceptible of clickbait when I was younger but the experience of using social media over the years made me less vulnerable for this trick."*. This explains that when certain users start to recognize clickbait they do not fall for it as often as before.

Negative feelings afterwards
A collection of participants said that they see Digital Junkfood as content that results in negative feelings after engaging with the content. This aligns with the results in Figure 22. Participant 8 who mentioned having critically reviewed the time invested in social media said: *"I feel frustrated that I get caught in certain content that I watch. It gives me so many dopamine hits to try to hold my attention. However, I realize afterwards that I am overstimulated by certain content."*. This suggests that even users who are relatively aware what particular content is aiming to do, it still gives them negative feelings. Users also questioned themselves afterwards whether they should have engaged with the content. Participant 11 described this the following way: *"For me content is seen as Digital Junkfood when afterwards I asked myself if it was really necessary to watch the content. In some instances, it was nice to watch but afterwards I realize that I should not do this too much."*.

Uninterested content
A group of participants said that all the content that they get suggested on their social media platforms which they do not find interesting is Digital Junkfood as they invest time on exploring what the content is about. This makes it that it takes time for the user to find the content that they are actually interested in. For example, participant 21 mentioned: *"The content (on LinkedIn) is totally unrevelant for me as a person. The content exist of perfect stories or commercial text which are shared in the hope that people response to it and perform a desired action like downloading a whitepaper or purchasing a course. It does not link to my interests or desires at all."*. Some users also said that they think that certain content is not the right place to publish on a specific social media platform. Participant 26 said: *"The content that I selected on LinkedIn feels like it belongs more on Facebook or on Instagram as LinkedIn should be used not be used for personal stories but only for business-related content."*. This indicates that the user did not anticipate encountering the selected content on a particular platform but rather on another platform, leading to its perception as Digital Junkfood.

Forced content
Some participants experienced that certain content such as non-skippable ads or sponsored posts in the user's timeline was forced towards them. Sponsored posts, as displayed in Figure 15, can also contribute to this aspect. Participant 15 illustrated it as: *"Sometimes the content appears on my screen when I do not want to see like an advertisement that appears out of nowhere. You do not*

have a choice but to watch it even though most of the time I do not want to do that.". This describes that some users experience a lack of control over the content being displayed, particularly when it comes to advertisements. Other cases regard that they would have to scroll through so much Digital Junkfood to find content that they would not perceive as Digital Junkfood that the content was also experienced as forced upon the user.

Makes you less productive
A couple of participants felt like content that they perceive as Digital Junkfood will distract them to a certain level where important tasks in life (chores, studying, working, etc.) become less prioritized compared to engaging with the Digital Junkfood posts. For example, participant 27 stated: *"Well when I look critically at the content, I would say that I could have done some chores in the house. However, consuming such content is still a form of leisure activity similar to back in the old days where you would go through different television channels.".* This suggest that specific users perceive certain alternative activities as more productive, although the importance of leisure time is also recognized. The participant further explains that before the advent of social media, similar activities such as watching television had the potential to make one unproductive.

Easy to consume
Digital Junkfood was seen by some participants as content that contains a very low threshold to engage with such as suggested content that automatically starts playing on their screen. The user does not have to put in any or almost no effort to engage with the content. Participant 30 said: *"When I am tired or do not know what to do at that moment I open social media without even thinking about it, which is exactly what I do with ordering fries when I do not know what to cook or when I am too tired to prepare anything in the kitchen.".* The participant already made their own comparison between Digital Junkfood and edible junk food, where similar feelings like boredom and tiredness caused the participant to go for the option with the lowest threshold and thus easiest to consume.

Mindless scrolling
A few participants mentioned that they could not remember specific content after a certain time of scrolling. They sometimes caught themselves scrolling through content without realizing what they were actually doing and what content they were engaging with. Participant 17 expressed it as: *"It feels like a trap where I cannot tell you what I watched after scrolling further through some other videos.".* This indicates that while the user engages with the content, there is nothing within the posts that is memorable for them which makes them perceive such content as Digital Junkfood.

Too much of the same content
Some participants mentioned that one specific post is not necessarily Digital

Junkfood but it is rather the collection of multiple posts regarding the same topic (e.g., short comedy videos on TikTok) that makes the collection Digital Junkfood. Participant 14 describe it as: *"I do not mind looking at some of these similar videos, which I encounter a bit too often, but I do not want to spend my whole afternoon watching these similar videos."*. This creates the perception that an abundance of similar posts makes users feel like they are not spending their time in the way they desire.

Give unrealistic image
One participant considered posts that give an unrealistic image of real-life where a perfect life (e.g., luxury or photoshopped posts) is portrayed on social media as Digital Junkfood. Participant 15 said: *"All the content on social media that I see is about looks and money, where it almost seems normal to have things like a nice house, a beautiful car, and a slim & perfect body, but that is not realistic."*. The reasoning of the participant was that looking at these posts resulted in joy but always left with negative feelings as the participant started to compare the unrealistic image with her own life.

4.2.6   Dimensions of Digital Junkfood

These dimensions presented in Figure 25 show all the additional differences between the various participants on when and how they perceive, experience and act towards Digital Junkfood. The dimensions discussed in this study were identified through a two-step coding process. Initially, open coding was conducted on the transcribed interviews to capture various perspectives, experiences and behaviors related to Digital Junkfood. Then, axial coding was employed to categorize these dimensions by identifying contrasting coded perspectives, experiences and behaviors concerning Digital Junkfood.
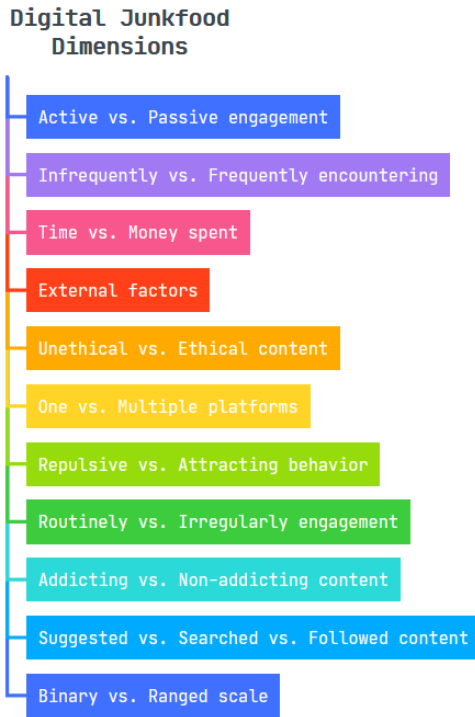
Figure 25: The various dimensions of Digital Junkfood.

Active vs. Passive engagement

The level of active engagement with Digital Junkfood varied among participants. Some individuals explained that they had shared, liked, or saved Digital Junkfood content. Sharing content with friends provided a sense of satisfaction when their friends enjoyed or could relate to the shared content. Liking posts served as a form of support for some users. Participant 12 liked a post of someone who passed away and reasoned their action as followed: *"It feels as my duty to like this post to pay my respect to the person who passed away. The TV program who followed this person's life also made a significant impact on me."*. Others could not give a specific reason behind their likes, perceiving them as mindless actions. Some participants simply enjoyed liking posts that they found funny, enjoyable, relatable, or informative. Saving Digital Junkfood content was primarily driven by the belief that it might be useful in the future, such as recipes or do-it-yourself (DIY) videos.

Some participants acknowledged that sensational or provocative posts prompted them to read the comments section to gauge others' opinions, with a few expressing approval by liking such comments. Furthermore, users explained that their level of engagement, such as liking or commenting, varied across different platforms due to the distinct form of content on each platform. For instance,

YouTube typically provides user with longer videos compared to Instagram. One user argued that the additional effort put into creating YouTube content made them more likely to like or comment on that platform. Another participant highlighted that Instagram and TikTok are platforms where showcasing personal preferences is more prominent, as others can view this activity, while YouTube does not have this feature.

On the other hand, a subset of participants passively engaged with Digital Junkfood posts, limiting their likes and comments to posts from friends which they did not perceive as Digital Junkfood. One participant mentioned encountering posts where the content creator posed questions, such as asking about a favorite scene from a movie. However, as they did not find themselves susceptible to such questions, they refrained from responding. Some participants also noted encountering accounts that explicitly requested likes, but the majority deliberately chose not to engage with such posts.

One participant argues that commenting on social media feels like screaming in the desert as an expressing to a belief that in most cases, nobody would read or respond to their comments, particularly on posts with high engagement. Another participant explained that when they encountered provocative or offensive content, they preferred discussing it with friends to gather their perspectives instead of commenting on the post, as interactions with friends held more value than engaging with strangers. Additionally, one user expressed discomfort in having their political opinions visible to others on social media. Participant 15 reasoned this in the following way: *"When I see something related to politics that I totally agree or disagree with then I prefer to share it personally with friends instead of everyone being able to see my opinion and not knowing who will read it."*.

To summarize, participants in the study demonstrated divergent approaches to engaging with Digital Junkfood content. While some actively shared, liked, and saved such content, finding satisfaction in social sharing and support, others opted for a more passive engagement. The latter group limited their likes and comments to posts that were not seen as from friends. For them, commenting on social media seemed futile, and they preferred discussing provocative content in person with friends instead.

Infrequently vs. Frequently encountering
A subset of participants faced challenges in locating Digital Junkfood posts they had engaged with in the past, either due to their decreased activity on social media or their conscious efforts to avoid such posts. In contrast, another group of participants reported encountering multiple Digital Junkfood posts on a daily basis. Generally, this latter group displayed a higher level of acceptance toward encountering Digital Junkfood. Some participants within this group explained that while individual posts may not be classified as Digital Junkfood, the collective series of posts as a whole fell under that category. Participant 4 reasoned this by saying: *"Watching one video cost such a small amount of time which actually makes you watch more videos which in the end does make*

you spend a lot of time without even realising it.". Additionally, one participant suggested that the more time they spent on social media, the more frequently they engaged with Digital Junkfood, as content not seen as Digital tended to be prioritized and displayed at the top of their timeline.

Different platforms employ distinct algorithms for content recommendations, leading some participants to report varying frequencies of encountering Digital Junkfood across platforms. Furthermore, participants highlighted that certain platform features, such as the discovery page on Instagram or the auto-play of suggested videos on YouTube, increased their engagement with Digital Junkfood compared to when they intentionally avoided utilizing those features. Another participants explained that sometimes ads are displayed before watching a video and that he will do something else in the meantime while the ads are shown.

In summary, participants either faced challenges in locating previously engaged Digital Junkfood posts due to reduced activity or intentional avoidance, while another group encountered multiple Digital Junkfood posts daily and was more accepting towards encountering Digital Junkfood. Engagement frequency could potentially be influenced by time spent on social media, distinct platform algorithms, and the presence of features like discovery pages and auto-play.

Time vs. Money spent

The majority of participants primarily dedicated their time to consuming Digital Junkfood posts, and Figure 22 illustrates that many of these participants consider it to be a time-wasting activity. However, it should be noted that several participants mentioned instances where they actually spent money on specific products due to direct influences, such as sponsored posts appearing in their timeline, or indirect influences, such as influencers showcasing how to dress for certain occasions. The impact of Digital Junkfood on their purchasing decisions varied. Some participants expressed disappointment when the received product did not match their expectations.

The behaviour of participants towards Digital Junkfood that focused on certain products differed. Among the participants, there was a subgroup who expressed an interest in specific products featured in these types of posts. This subgroup comprised participants who were primarily driven by curiosity and had no intention of making purchases, as well as those who were more susceptible and occasionally succumbed to buying products showcased in Digital Junkfood. Participant 10 described this as: *"When I see certain posts on how to dress it makes me feel like I do not own enough clothing. This makes me occasionally look for clothing online and sometimes buy some.".* Another participant highlighted the more satisfying experience they derived from shopping in a city center compared to online purchases. However, this participant still acknowledged spending time getting distracted by looking at products through social media. Finally, one participant mentioned subscribing to YouTube Premium to avoid encountering advertisements before watching videos on YouTube.

In conclusion, the majority of participants consumed Digital Junkfood posts by only spending time when consuming such content. However, some partici-

pants made purchases influenced by sponsored or showcased products, leading to varied satisfaction levels. A subgroup expressed interest in specific products featured in these posts, driven by curiosity or susceptibility, while others preferred subscribing to ad-free services to avoid these distractions.

External factors
Several participants highlighted that external factors play a role in how they perceive certain content as Digital Junkfood. One external factor mentioned by multiple participants during interviews was the context in which they engage with social media. For instance, one participant viewed certain content differently as Digital Junkfood, depending on whether they were using public transport or needed to focus on studying. Another participant shared a similar example, explaining that during work hours, they were not interested in Reels videos on Instagram, which were considered Digital Junkfood, but after work, they enjoyed engaging with those same videos. Moreover, one participant preferred shorter videos during public transport due to a shorter attention span, but had more patience for longer videos while lying in bed.

Another external factor mentioned by participants was their motivation to engage with specific content on social media that is perceived as Digital Junkfood. One participant emphasized the importance of staying informed about news and politics, even though the content itself could sometimes be offensive or provocative, resulting in occasional feelings of anxiety. Consequently, the participant had to consider whether to engage with such content. Another participant described instances when their motivation was too low to sit through a series of ads, which were perceived as Digital Junkfood, before watching a selected YouTube video that was not seen as Digital Junkfood. Participant 28 described this as: *"Sometimes I will wait until the ads are finished while doing something else in the meantime. My motivation is high enough to wait until the ads are finished. However, there are also instances when I see how long these ads will take to finish and it makes me quit the app because I am not curious enough to wait that long for the actual video to start."*.

Finally, some participants explained that their mood also played a role in their engagement with Digital Junkfood. For instance, one participant mentioned that when feeling tired, they sought out Digital Junkfood as alternative activities required too much energy, making it the most appealing option at that moment. Another participant expressed how Digital Junkfood could brighten their day, particularly when the content was humorous. When the need arose, the participant clarified that Digital Junkfood was actively sought out for that specific reason.

In sum, participants emphasized the influence of external factors on their perception of content as Digital Junkfood. Contextual factors, such as being on public transport or during work hours, affected their view of certain content. Additionally, participants mentioned their motivation to engage with specific content, weighing the importance of staying informed against the potential negative aspects of the content. Mood also played a role, with some seeking out

Digital Junkfood as a low-energy alternative or for a mood boost by engaging with humorous content.

Unethical vs. Ethical content

Participants had differing perspectives on the ethical nature of various Digital Junkfood posts. While some posts were perceived as unethical, others were considered ethical. None of the participants expressed the inclination to report a post solely based on its classification as Digital Junkfood. Participants argued that reporting a post was more applicable to impersonation on social media or content containing racism, abuse, sexual material.

The Digital Junkfood posts that participants deemed unethical were primarily related to advertised content. For instance, one participant cited the example of posts that concealed advertised products without explicitly mentioning that the post was an advertisement. Another participant shared an experience of nearly falling victim to a scam, where an account impersonating a well-known supermarket brand posted false discounts and requested credit card details. Participant 22 described this as followed: *"Luckily I let my son check whether the advertisement was fake or not. He got frustrated that I almost fell for this scam but it looked really real to me."*. Another participant mentioned forced advertisements for sports betting, which they considered unethical due to the likelihood that most individuals would lose money through such betting activities.

In conclusion, participants held differing views on the ethical nature of Digital Junkfood posts, with some perceived as unethical due to concealed advertisements, scams, and forced sports betting promotions. Nevertheless, participants did not express a willingness to report posts solely based on their classification as Digital Junkfood.

One vs. Multiple social media platforms

At the beginning of the experiment, participants were asked which social media platform where they had previously engaged with Digital Junkfood. Some participants inquired about the possibility of selecting multiple platforms, as they had come across Digital Junkfood on various platforms. One participant who actively used all six platforms mentioned that, in their opinion, only Instagram, Facebook and TikTok contained content that aligned with the concept of Digital Junkfood. Participant 11 reasoned this as followed: *"For me these platforms do not provide any background information regarding certain content that is shown in contrast to other platforms like LinkedIn. This makes it for me that Digital Junkfood exist on specifically those platforms."*. During the interviews, some participants shared that they heard stories about certain platforms (i.e., Instagram & TikTok) being flooded with Digital Junkfood to such an extent that they were concerned about their productivity, leading them to avoid using those platforms altogether.

Conversely, there were participants who could only find Digital Junkfood on a specific platform. Some of these participants were exclusively active on a

single platform, while others believed that certain social media platforms never exposed them to any Digital Junkfood. For instance, a group of users explained that they did not encounter Digital Junkfood on LinkedIn as they solely used it in a professional context.

To summarize, participants reported encountering Digital Junkfood on various social media platforms, with some expressing concerns about certain platforms being flooded with such content. However, there were also participants who could only find Digital Junkfood on a specific platform or who believed that certain platforms never exposed them to such content.

Repulsive vs. Attracting behavior
A subset of participants shared their repulsive behaviors towards Digital Junkfood. For some, this involved scrolling faster whenever Digital Junkfood appeared. One participant specifically mentioned that any animation that started automatically without clicking on it (e.g., video previews that let you see a 3-second preview of a YouTube video before watching) triggered them to scroll faster. Other participants exhibited the same behavior when encountering offensive or uninteresting content. Participant 13 described this by saying: *"I sometimes press on the button 'Uninterested for me' when advertisement are shown that do not match with my interests. I prefer to see advertisements that potentially give me interesting suggestions."*. Participants also described repulsive behavior as immediately closing the social media application upon encountering Digital Junkfood. In the case of advertisements that did not align with their interests, one participant expressed their displeasure by clicking on the provided option indicating the mismatch. Similarly, another user considered certain Digital Junkfood content as low quality and liked a negative comment posted by another user. One participant cited an example of reporting a post containing a conspiracy theory about COVID-19, which they considered as Digital Junkfood.

On the other hand, some participants acknowledged that their attention is easily and quickly captivated by Digital Junkfood, often without even realizing they have engaged with it. One participant mentioned that a friend sent them a post, which led them to explore all the content posted by the account after viewing the initial post. Another participant explained an experience on TikTok where a video would only reveal at the end that there was another part to be watched in order to know the conclusion of the shown content. This would irritate the participant, but they still ended up watching the additional part most of the time, as they felt invested and curious enough to search for it in the account's list of posted content.

In sum, some participants exhibited repulsive behaviors towards Digital Junkfood, such as scrolling faster or immediately closing the application upon encountering it. Others acknowledged being easily captivated by it, often succumbing to curiosity by delving deeper into the content despite initial irritation.

Routinely vs. Irregularly engagement
Several participants described having a routine of regularly consuming content

from specific accounts that they personally considered as Digital Junkfood. For example, one participant mentioned watching daily vlogs on YouTube from a particular account, expressing interest in following the adventures and daily experiences of the account owner. Participant 18 explained this the following way: *"It is just nice to watch a video of one of my favorite content creator every morning when having breakfast. It has become a habit of mine."*. Another participant shared that they had a routine of staying updated on various topics, such as fashion, housing, art, and their profession, by regularly engaging with Digital Junkfood content.

On the other hand, some participants encountered Digital Junkfood more sporadically. This occurred when they opened social media platforms without a specific purpose and relied more on suggested content, which occasionally included Digital Junkfood. Additionally, one participant mentioned being tagged unexpectedly by a friend in a post that they perceived as Digital Junkfood.

In conclusion, while some participants had a routine of regularly consuming Digital Junkfood from specific accounts, others encountered it more sporadically when opening social media platforms without a specific purpose or being unexpectedly tagged by friends in such content.

Addicting vs. Non-addicting content

Several participants expressed experiencing a feeling of getting triggered by addictive elements of Digital Junkfood, where they found it difficult to indulge their desire for certain content. This addiction could lead them to click on links within posts or visit the profiles of content publishers to consume more of the same type of content. These participants often lost track of time, realizing only after a considerable period had passed that they had been engrossed in the content. The duration of these engagements varied among participants, with some spending 10-15 minutes and others several hours. Additionally, one participant admitted to mindlessly liking Digital Junkfood, even though they did not find the content particularly worthwhile.

To mitigate excessive social media usage, some participants implemented measures such as setting restricted timers for specific social media apps. The duration of these restrictions ranged from half an hour to four hours per day. However, a few participants admitted that they struggled to resist spending more time on social media even after their designated time had elapsed. Participant 9 said the following about this: *"I have put a timer on TikTok of a daily limit of 4 hours. However, I still often go over this time as I frequently use the app when I do not have anything to do as well as when I need to study."*. Another strategy employed by participants was deleting social media apps. However, some participants who had deleted apps chose to reinstall them due to fear of missing out (FOMO) when hearing friends discuss content or when friends shared content through other apps like WhatsApp that could not be accessed without the social media app being reinstalled. One participant noted that before using certain social media apps, they did not experience FOMO, but once they understood the appeal and addictive nature of those apps, it became

harder to resist reinstalling them. Another reason for reinstalling social media apps was the participants' desire to view content that was not perceived as Digital Junkfood (e.g., posts from friends) or to indulge in the feeling of getting lost in Digital Junkfood once again.

Moreover, one participant highlighted that when encountering a post they disagreed with, they spent more time on it out of curiosity to see if others also held opposing views. The participant observed a recent trend of people posting extreme opinions and provocative content to entice users to spend more time engaging with their content. Additionally, participants noted that accounts on social media platforms compete for user attention, employing tactics to keep users engaged for as long as possible, even at the risk of creating a negative perception of the content. This phenomenon was particularly evident in short-form video content on platforms like YouTube Shorts, Instagram/Facebook Reels, and TikTok.

Furthermore, one participant revealed that in social settings such as bars or clubs with friends, they sometimes engaged with Digital Junkfood unconsciously, prioritizing conversation with friends as more valuable. The participant could not explain the exact reason for this behavior but acknowledged that addictive triggers within the content compelled them to engage with it.

Contrarily, participants did not feel particularly vulnerable to selected Digital Junkfood posts and had no trouble disengaging from such content. One participant noted their lack of enthusiasm or investment in eagerly opening social media apps after work. Furthermore, some participants deleted most of their social media apps and found that they did not miss out on anything significant. They had no plans to reinstall the deleted apps, as they valued the additional time they gained for other aspects of their lives, considering them more valuable.

In summary, several participants experienced getting triggered by addictive elements and losing track of time while consuming content seen as Digital Junkfood. Some implemented measures like restricted timers or app deletion to mitigate excessive usage, but some found it challenging to resist reinstalling apps due to fear of missing out. On the other hand, some participants felt unaffected by Digital Junkfood, easily disengaging from it and valuing the extra time gained for other activities of their lives.

Suggested vs. Searched vs. Followed content
Digital Junkfood can originate from various sources on social media platforms. Pages on these platforms that suggest content to users are a significant source of Digital Junkfood, as mentioned by several participants. Several participants expressed disbelief on how accurately the suggested content aligns with their interests. Many participants viewed recommended content as predominantly Digital Junkfood, perceiving it as an endless stream of content provided by the platform. One participant who usually watches food recipe videos received a recommendation for a video featuring someone consuming excessive food portions. Intrigued and distracted by the recommendation, the participant watched

the video, considering it as Digital Junkfood. Other participants also described attempting to influence the algorithm by interacting differently with content to receive more accurate suggestions aligned with their wishes.

Another group of participants mentioned that they specifically open social media to search for a particular post. However, they found the search results to contain Digital Junkfood. For instance, participants reported searching for tutorials on dressing up for a specific occasion or checking updates about celebrities, which they considered as Digital Junkfood. Additionally, participants experienced distractions from Digital Junkfood before or after finding the content they initially sought. Participant 19 described the difference between recommended content and searched content as followed: *"The recommended content by the platform feels endless to me while when searching for specific content it makes it possible after a while to come to the conclusion that you have watched all the high-quality and related content to a specific search term. This makes it less addicting to me."*. This was attributed to unrelated and sponsored content appearing in the search results, as well as recommendations while engaging with the initially clicked video from the search results. Some participants intentionally prioritized searching for content rather than relying on followed and suggested sources, as they believed the latter contained more Digital Junkfood.

Lastly, some users intentionally follow accounts that post Digital Junkfood content. Following such accounts sometimes leads to feelings of lacking certain products, like clothes in their closet, as reported by some participants which was perceived as Digital Junkfood. Another example involved a user being curious about their friend's content creation, despite viewing it as Digital Junkfood. Similarly, one participant began following gardening accounts because their friend also followed these accounts and works as a gardener, but the user eventually grew bored of the content and decided to unfollow those accounts who posted Digital Junkfood according to the user. Several users pondered whether they should unfollow these accounts who post Digital Junkfood or certain participants had already taken that step recently.

In conclusion, participants highlighted various sources of Digital Junkfood on social media platforms. Recommendation pages provided an endless stream of content including posts seen as Digital Junkfood which align with the user's interests. Additionally, participants encountered Digital Junkfood in their search results and experienced distractions from unrelated content when searching for particular content. Some users intentionally follow accounts that post Digital Junkfood content, leading to feelings like materialistic dissatisfaction and curiosity, and some users eventually grew bored and unfollowed those accounts.

Binary vs. Ranged scale
Some participants adopted a binary perspective, categorizing content as either Digital Junkfood or not. Most of the time, these participants perceived two separate Digital Junkfood posts in similar ways. This tendency may stem from their identification of content as either forced or unforced Digital Junkfood. One participant raised the question of whether certain topics, like beauty, could be

considered Digital Junkfood, as a makeup tutorial could be educational but the value it adds to one's life was debatable. Another participant planned to review their social media activity log after the experiment to assess whether they had recently engaged with a significant amount of Digital Junkfood.

On the other hand, another group of participants viewed the concept of Digital Junkfood as a sliding scale, varying based on the degree to which they perceived content as such. These participants considered both forced and unforced content as Digital Junkfood. For instance, one participant believed that a forced advertisement represented a higher extent of Digital Junkfood compared to a short, humorous video, although both were still considered Digital Junkfood. Participant 19 also gave the following example: *"I see some content related to my work as Digital Junkfood as I do not always apply it for my work. However, I see this content as less 'unhealthy' to consume compared to watching a video of a person eating extreme portions of food."*. Another participant expressed the opinion that all content on social media fell under the category of Digital Junkfood, as they believed they could live without it and preferred alternative sources such as books or informative websites that did not contain any Digital Junkfood. A different participant distinguished between memorable yet valueless content, which they considered as Digital Junkfood to a lesser degree, and content that is quickly forgotten after five or ten minutes, which they regarded as more strongly aligned with Digital Junkfood.

In summary, participants generally categorized content as either Digital Junkfood or not, based on their personal experience. Alternatively, some saw Digital Junkfood as a sliding scale, considering the extent of Digital Junkfood.

Summary of all dimensions
In Table 1, a summarized overview of all dimensions of Digital Junkfood are presented. This brief overview provides all the identified contradictory experiences of users regarding Digital Junkfood.

Active vs. Passive engagement	
Active engagement: Some users actively engaged with Digital Junkfood posts, sharing, liking, and saving content for social interaction and support.	**Passive engagement:** Other users solely viewed Digital Junkfood posts without engaging in sharing, liking, or saving such content.
Infrequently vs. Frequently encountering	
Infrequently encountering: Some users intentionally avoid Digital Junkfood posts, resulting in infrequent encounters with such content.	**Frequently encountering:** Other users utilize platform features that lead to more frequent encounters with Digital Junkfood.
Time vs. Money spent	
Time spent: Most users only invests time when engaging with Digital Junkfood.	**Money spent:** Some users spend money on products that are advertised in different ways.
External factors	
Context: The external environment where the user currently is could potentially affect their experience with Digital Junkfood. **Mood:** The current mood that the user has could cause them to seek or experience Digital Junkfood in different ways. **Motivation:** The motivation of the user to watch specific content could influence their behavior on social media.	
Unethical vs. Ethical content	
Unethical content: Some users found certain Digital Junkfood posts unethical in terms of advertisement presentation.	**Ethical content:** Most users viewed Digital Junkfood as ethical and saw no need to report it.
One vs. Multiple platforms	
One platform: Some users exclusively encountered Digital Junkfood on one platform, limiting their exposure to it on other platforms.	**Multiple platforms:** Most users encountered Digital Junkfood across multiple platforms they actively used.
Repulsive vs. Attracting behavior	
Repulsive behavior: Some users reported that encountering certain content labeled as Digital Junkfood prompted them to scroll faster, close, or even delete social media platforms.	**Attracting behavior:** Other users expressed attraction to Digital Junkfood content, leading them to engage with it, sometimes unconsciously.
Routinely vs. Irregularly engagement	
Routinely engagement: Some users integrated a specific moment into their daily routine for actively seeking Digital Junkfood.	**Irregularly engagement:** Other users encountered Digital Junkfood more unexpectedly as they engaged with social media spontaneously.
Addicting vs. Non-addicting content	
Addicting content: Certain users found that specific elements of the content led them to engage with Digital Junkfood.	**Non-addicting content:** Other users did not feel vulnerable or susceptible when they came across Digital Junkfood.
Suggested vs. Searched vs. Followed content	
Suggested content: A set of users encountered Digital Junkfood when the platform suggested content to these users. **Searched content:** Some users purposely sought out Digital Junkfood or stumbled upon it while searching for other content. **Followed content:** Other users deliberately chose to follow accounts that regularly share Digital Junkfood content.	
Binary vs. Ranged scale	
Binary scale: A group of users perceive content on social media as either Digital Junkfood or not.	**Ranged scale:** Another group of users assessed Digital Junkfood on a continuum, distinguishing varying degrees of content as Digital Junkfood.

Table 1: A summary of all dimensions of Digital Junkfood.

5 Discussion

This section begins by addressing the three subquestions of the study. These three subquestions were established by performing selective coding regarding the qualitative results where each category could either be associated with elements of the content itself, the feelings that are evoked by Digital Junkfood, or the behavior towards such content by the user. Therefore, these three subquestions are discussed by linking both the quantitative and qualitative results with findings from the literature review. Lastly, the section discusses the limitations of the study and suggests areas for future research on Digital Junkfood.

5.1 Content elements of Digital Junkfood

Studies on Internet addiction used to be predominantly centered around overall Internet usage. However, in recent times, there has been a notable shift in focus towards considering the Internet as a platform for diverse individual activities. This change in perspective implies that online content and activities play a more crucial role in addiction than the medium itself (Mihajlov & Vejmelka, 2017). Consequently, it becomes intriguing to examine the specific elements of content that are perceived as Digital Junkfood, given their potential significance in understanding and addressing this concept.

The findings from the experiment revealed that among the active users, Instagram and TikTok were perceived to have the highest proportion of content seen as Digital Junkfood followed by YouTube. An explanation for this observation could potentially be derived from that participants predominantly identified videos as Digital Junkfood. YouTube and TikTok are platforms primarily focused on video content, while Instagram encompasses both images and videos through specific pages such as Reels, stories, and tagged photos. This distinction may account for the higher perception of Digital Junkfood on these platforms. In contrast, platforms such as Facebook, Reddit, and LinkedIn include a relatively larger amount of images and text-based content. This discrepancy suggests that the perception of Digital Junkfood might be influenced by the presentation style and content format employed by different social media platforms. These diverse formats in which content is presented across different platforms may also correspond to the observation that some users perceive Digital Junkfood on only one platform, while others encounter such content on multiple platforms as various users are active on different platforms.

The topics associated with content perceived as Digital Junkfood exhibited significant variation among users, influenced by their individual interests which the algorithms of the platforms picked up on or the user itself even searched up or followed the content regarding a specific topic. Consequently, Digital Junkfood does not adhere to a predefined set of topics, as the content shown encompasses a wide range of subjects. However, a discernible trend emerged among participants, with many examples provided indicating a lack of informational value regarding the topic of the content. For instance, one participant mentioned a post where the content only showcased the end result of baking a cake without

presenting the process involved. This aligns with the most commonly mentioned aspect of Digital Junkfood in the experiment, where the content was perceived as lacking value or not contributing anything meaningful to the user's life. As Digital Junkfood can be associated with Internet addicition, this finding can be supported by the study of Tsitsika et al. (2014), who revealed that adolescents who utilized the Internet for educational and research purposes were less likely to develop addiction. This finding is further supported by the work of Van den Eijnden et al. (2008), who found no association between Internet addiction and engaging in educational activities such as researching useful information or completing school assignments. Thus, this corresponds to the fact that most users perceive Digital Junkfood as content that lacks educational value or fails to provide informative elements.

In contrast to what may have been expected, the majority of users in the study provided examples of content perceived as Digital Junkfood that were not sponsored posts. While a portion of Digital Junkfood was identified as sponsored content, primarily falling within the realms of advertisement, beauty, and fashion, this finding suggests that Digital Junkfood encompasses more than just posts with commercial purposes or content in which publishers pay platforms to promote their material. Similarly, the presence of clickbait and posts from unfamiliar publishers were also observed in the content perceived as Digital Junkfood, indicating that these elements are not necessary requirements for content to be classified as such. In essence, Digital Junkfood encompasses a broader range of characteristics beyond sponsored content, including non-sponsored posts that may or may not exhibit clickbait or originate from unknown publishers.

The content perceived as Digital Junkfood by users in the study originated from three main sources: recommendations by the platform, user-initiated searches, or accounts followed by the user. Among these sources, the largest proportion of examples provided by participants came from content recommended by algorithms. These algorithms, as described by Montag et al. (2019), are employed by platforms to personalize the content displayed in the timeline section of the platform. By analyzing the user's online behavior, such as their liked posts and viewing duration, these algorithms aim to show more of the content they believe the user will find enjoyable and engaging. The objective of these algorithms is to keep the user on the platform for as long as possible, as a lack of engaging content may lead to the user closing the application. Consequently, these recommendations often include content that captivates and holds the user's attention (Alter, 2017). The reason why platforms do this is collect more user data, which can be used to display more targeted and personalized advertisements to users. This creates opportunities for app developers to generate revenue through advertising (Matz et al., 2017). This corresponds with the findings that users tend to associate Digital Junkfood with content that grabs their attention. Moreover, this finding aligns with the observation that the content is easily consumable, as the algorithm takes the initiative to provide users with engaging and interesting content, eliminating the need for them to search for it themselves. These two perceptions of Digital Junkfood can also be

associated with the overall experience of edible junk food, where consumers are easily captivated by its visual appeal and enticing smell. Additionally, edible junk food is often easy to consume, as it is typically affordable and does not require extensive preparation.

Monge Roffarello and De Russis (2022) identifies these recommendation algorithms as a dark pattern due to their potential to distract users and make them lose track of time or deviate from their initial objectives on the platform. This also aligns with the experiences shared by participants who reported being sidetracked by recommended content while searching for specific content. In contrast to the list of posts obtained from search results and followed accounts, the recommendations pages also incorporate the feature of infinite scrolling. As highlighted by Monge Roffarello and De Russis (2022), this aspect promotes mindless scrolling, which some participants identified as a contributing factor to their perception of Digital Junkfood.

5.2 Evoked feelings by Digital Junkfood

Users' experiences during the engagement with Digital Junkfood elicit primarily positive feelings such as feeling entertained or informed. Although some users also reported experiencing neutral or negative emotions while engaging with such content. This aligns with the participants' perception of Digital Junkfood as content that results in positive feelings while engaging with the content. It also explains that users experience Digital Junkfood in different ways. According to Greenfield (2007), Internet use stimulates dopamine production, leading to pleasurable and joyful experiences during engagement, which could explain the prevalence of positive feelings among the majority of participants. Furthermore, Greenfield (2007) suggests that positive reinforcement from Internet engagement contributes to increased frequency of use, which corresponds to one of the dimensions of Digital Junkfood identified in this study.

Certain users have described experiencing a sense of unawareness and numbness as neutral emotions while engaging with content. This aligns with the findings of Monge Roffarello and De Russis (2022), who suggest that when users interact with content that utilizes attention-capture dark patterns, they may feel a lack of control and a disconnection with time. Furthermore, this type of content can divert users from their intended goals, compromising their autonomy and potentially leading to feelings of unawareness and numbness, as users may not always be conscious of their actions associated with the engagement.

Moreover, a subset of users reported experiencing negative feelings while engaging with the content, such as feelings of uselessness or regret. This corresponds as one of the identified aspects of Digital Junkfood where users feel like it is useless to engage with such content. Baym et al. (2020) discovered that users may feel regret when they attempt to explore new content but are presented with similar results to content they have previously viewed. This finding may also apply to users who described Digital Junkfood as an excessive amount of the same content, as they expressed that spending more time on such content does not feel worthwhile in that moment. This could explain why some users

perceive Digital Junkfood as content that lacks usefulness or value in terms of engagement.

In contrast to the feelings experienced during engagement with Digital Junkfood, the feelings after engagement were predominantly negative, although some users also expressed neutral and positive feelings. The prevalence of negative feelings among users aligns with the perception of Digital Junkfood as content that elicits negative feelings after engagement as identified as one of the aspects of Digital Junkfood. Negative feelings, such as a sense of wasted time, lack of value, and regret, can be experienced by users who are not necessarily addicted to social media (Turel, 2015; Cao & Sun, 2018). Monge Roffarello and De Russis (2022) & Lukoff et al. (2021) suggest that these negative feelings can be attributed to attention-capture dark patterns, including recommendations, advertisements and infinite scrolling, which were exemplified by participants' experiences. The role of these features in eliciting negative emotions associated with Digital Junkfood was highlighted through participants' specific examples that were present in those features. Mindless scrolling, identified as one of the aspects of Digital Junkfood by various participants, can also cause negative feelings such as regret (Wong, 2022). Furthermore, these negative feelings may be caused by inducing a dissociative state in users, characterized by absorption, narrowed attention, reduced self-awareness, distorted sense of time, lack of control, and gaps in memory (Baughan et al., 2022; Butler, 2006).

Some users appeared to be unbothered, expressed as a neutral feeling, after engaging with Digital Junkfood. This could be attributed to a lack of understanding of the purpose behind using technology, which can be associated with decreased feelings of energy, self-determination, and proficiency. However, this lack of understanding is not necessarily related to overall satisfaction with life. It suggests that using technology is not always perceived as beneficial, even when it does not directly lead to negative effects on happiness (Brühlmann et al., 2018).

Additionally, a small number of users reported experiencing positive emotions after engaging with Digital Junkfood, including feelings of satisfaction and being informed. The diversity of feelings between users after engaging with Digital Junkfood also supports the subjectivity of this concept. Moreover, it corresponds with the influence of external factors, such as context, motivation, and mood, which can impact the experienced emotions of users during and after engaging with Digital Junkfood. These feelings can be compared to the experience of individuals after consuming edible junk food as it is similar to how some consumers may feel the need to reduce their consumption or perceive it as the food bringing them nothing as it lacks nutritional value, while others feel satisfied and enjoy indulging themselves.

As shown in

5.3 Behaviors in response to Digital Junkfood

When users come across content that is perceived as Digital Junkfood, they often engage with it passively, by for example refraining from responding to

the post with a comment or like. This passive engagement is observed despite social media platforms implementing various techniques aimed at generating a sense of social pressure among users (Montag et al., 2019). However, it is possible that these techniques are more effective when the user has a personal connection with the content's publisher, which was not often the case in the examples of perceived Digital Junkfood in the experiment. Nevertheless, some users were susceptible to these techniques, experiencing FOMO (fear of missing out) when they deleted their social media app or account, as their friends excitedly discussed or shared posts, leading them to reinstall the app in some instances.

This could be attributed to the fact that certain users lack the ability to resist or refrain from using social media in social situations, as the active use of social media by peers can trigger compulsive social media use (Turel & Osatuyi, 2017) (Turel, 2017). Furthermore, some users explained that they utilize social media for valuable interactions or engagement with content that is not perceived as Digital Junkfood. This highlights the perception of social media as an integral part of modern society and culture, serving purposes both for work and leisure. Consequently, completely abstaining from social media is considered impractical in today's society, as indicated by different users (Enrique et al., 2010). Instead, users who aim to decrease their engagement with Digital Junkfood may find it more beneficial to adopt different measures to fulfill their desire for reduction, as described by several participants in the experiment. These measures may include reflecting on their social media activities, monitoring the time spent on each platform, identifying the valuable activities on social media, and disabling notifications for specific applications (Gupta et al., 2013).

Users who deleted their social media apps or accounts predominately did this to redirect their time towards activities they deemed more valuable and meaningful, aiming to avoid getting automatically open social media and losing track of time while engaging with Digital Junkfood. The easy accessibility and vast content options on the Internet, including social media, contribute to its highly repetitive and irresistible nature (Greenfield, 2007). Consequently, users often find themselves routinely and frequently engaging with Digital Junkfood, which potentially can have adverse effects on social interactions and emotional well-being (Kushlev et al., 2019) (Melchers et al., 2015) (Dwyer et al., 2018). Moreover, the productivity of users can suffer, which was identified as one of the aspects of Digital Junkfood, as they become compelled to excessively use social media due to the allure of such content (Duke & Montag, 2017). Notably, users' perception of Digital Junkfood as uninformative or purely entertaining further exacerbates the likelihood of compulsive social media use, making them three times more prone to engage with it compared to educational or informative content (Klobas et al., 2018).

Several users in the study experienced encounters with Digital Junkfood that align with the behavioral patterns described by Cho et al. (2021). These patterns include habitual checking of the timeline, either by following accounts that post Digital Junkfood or being exposed to such content in the form of sponsored posts and ads, which can even lead to impulsive purchases made by

the user. Additionally, some users engaged with recommended content to pass the time or explore new interesting posts, as their timeline did not provide an infinite amount of content. These align with the second behavioral pattern that led users to encounter Digital Junkfood. The third pattern occurred when users had the intention to search for specific content but were distracted by recommended content, deviating from their original objective. These behavioral patterns, which can be associated with instances of encountering Digital Junkfood, have the potential to elicit feelings of regret (Cho et al., 2021). Mindless scrolling through content, as reported by various users in the experiment, is also associated with the experience of Digital Junkfood and can lead to feelings of regret (Wong, 2022).

Users allocate a significant amount of their time to consuming video-based Digital Junkfood, which aligns with the type of content that was most frequently identified as Digital Junkfood in the experiment. The platform's restrictions and focus on video length may influence this where YouTube offers distinct pages catering to different types of videos, in contrast to other platforms, including lengthy livestreams lasting several hours and a separate page dedicated to short videos with a maximum duration of one minute. Whereas TikTok, another platform where a majority of active users could identify Digital Junkfood, primarily features short-form videos resulting in lesser time spent on the post compared to YouTube. The allure of spending time on Digital Junkfood may be driven by a desire for escapism when using social media, allowing users to momentarily forget about current personal concerns (Cha, 2010).

Users held diverse perspectives on Digital Junkfood, with some perceiving it more positively while others had a more negative perception. This difference in perception can be attributed to certain users primarily focusing on the moment of engagement, which generally elicited positive feelings. In contrast, others evaluated the value of the content after the engagement, which was predominantly seen as negative. In the latter case, users associated Digital Junkfood with content that they perceived as lacking value in their lives, and some even expressed that engaging with such content felt useless to them. These two perceptions, along with the perception that Digital Junkfood can evoke positive feelings during engagement, are the three most prevalent perspectives regarding Digital Junkfood. Furthermore, the majority of users approached the identification of Digital Junkfood using a binary scale, categorizing a post as either Digital Junkfood or not. However, some users employed a sliding scale in their evaluation, expressing that certain posts felt more 'unhealthy' compared to others, while still perceiving both posts as Digital Junkfood.

5.4   Implications

The study's findings reveal numerous parallels between Digital Junkfood and edible junk food, as already discussed some earlier in this discussion. Social media platforms present Digital Junkfood in an enticing manner to keep users engaged, similar to how junk food franchises encourage consumers to spend money on their products. Users' time spent on Digital Junkfood can be com-

pared with the high calorie consumption associated with edible junk food and the money spent on it.

Users in the study expressed feeling Digital Junkfood in some instances being forced upon them, reminiscent of encountering appealing advertisements or the alluring sights and smells of edible junk food in city centers which also cannot be avoided. Both Digital Junkfood and edible junk food are easily available, as users can always access and consume such content which also applies to edible junk food. Various users initially thought that the Digital Junkfood looked very appealing which companies also aim to achieve when edible junk food is advertised. Users have expressed that their initial expectations were not met when interacting with Digital Junkfood, similar to how consumers of edible junk food may feel when the food they see in advertisements does not match its actual appearance or taste after consumption. Moreover, various users have reported instances in Digital Junkfood where products were secretly promoted by content creators, which aligns with the practice of covertly advertising edible junk food in movies or TV shows.

Discussions and occasional implementation of regulations aim to minimize the consumption of both Digital Junkfood and edible junk food. For instance, content creators are expected to disclose sponsorship information on various platforms (ETtech, 2023). In certain countries, students are advised by the government to not use smartphones during school hours (NOS, 2023). Similarly, in various countries, there have been discussions about imposing taxes on the purchase of edible junk food as a potential measure (Hooker, 2023). Implementing a strict limit on the consumption or publication of Digital Junkfood would pose significant challenges, primarily because the concept itself is subjective and dependent on individual perspectives.

Users have also shared their strategies for reducing their consumption of Digital Junkfood, such as setting timers for their daily usage or deleting certain platforms. This parallel can be drawn with edible junk food, where individuals strive for a healthier diet. However, in both cases, it is not always easy to resist, as Digital Junkfood and edible junk food are easily accessible, visually appealing, and can elicit various positive emotions, especially during consumption. The barrier to consuming Digital Junkfood may even be lower than that of edible junk food, as temptations like notifications occur multiple times a day for most users, whereas temptations related to edible junk food arise only through advertisements or when passing by a junk food franchise store.

5.5   Limitations

The participants in the experiment were recruited using convenience sampling, which resulted in an unequal distribution across age groups, with a higher representation of younger participants. This imbalance may introduce selection bias, as it could hinder the discovery of perspectives from relatively older participants and limit the whole range of perspectives regarding Digital Junkfood, despite having included participants from all age groups in the experiment. Additionally, the relatively small sample size employed in the experiment as well as only

including a singular cultural background with the experiment solely consisting of Dutch participants could further impact this. The studies in this research area, as discussed by Griffiths et al. (2014), frequently encounter these limitations.

Participants were provided with a restricted set of social media platforms (Instagram, Facebook, YouTube, TikTok, Reddit, or LinkedIn) to choose from in the experiment. This limited selection of platforms may not fully encompass the wide variety of content that individuals perceive as Digital Junkfood. Participants mentioned platforms like Twitter, Pinterest, and Snapchat during the experiment, indicating that these platforms also contained content considered as Digital Junkfood by them. Unfortunately, these platforms do not provide a review tool that allows users to assess their activity. Moreover, the review tools on certain platforms were found to be limited in providing a comprehensive overview of all the content that users had engaged with. For instance, Instagram only displays the posts that were liked, saved, or commented on, rather than showing all the posts that the user had viewed. This limitation potentially undermines the comprehensiveness and applicability of the findings, including the identification of elements within Digital Junkfood content, as well as the exploration of associated feelings and behavioral responses towards such content.

Furthermore, participants were tasked with retrospectively reviewing their past engagements on a specific platform to identify content that they deemed as Digital Junkfood. However, this reliance on participants' memory introduces the risk of memory inaccuracies or omissions, which could potentially affect the validity and comprehensiveness of their perceptions and past experience with Digital Junkfood. It is noteworthy that most participants heavily relied on the review tools provided by the social media platforms themselves, suggesting that relying solely on memory might have limited their ability to recall numerous examples of Digital Junkfood. In fact, some participants even expressed that content that fails to leave a lasting impression in their memory is considered as Digital Junkfood. This limitation should be taken into account when interpreting the findings, as the participants' ability to recall and accurately assess Digital Junkfood content may have been influenced by memory biases and limitations. Additionally, Wilmer et al. (2017) has identified a general limitation in the field of human subject research concerning smartphone use, which is also relevant to this study. This experiment does not include an overall smartphone use condition, as individual users may have varying smartphone conditions such as smartphone interfaces as well as device, platform, and notification settings.

Finally, the data collected in the experiment relied on participants' self-reporting of their perceptions, feelings, and behaviors related to Digital Junkfood. Self-reporting can lead to social desirability bias, where participants may provide responses they believe align with societal expectations or the perceived intentions of the researchers, leading to less accurate or biased data. Moreover, participants might have chosen not to disclose certain information about their perspectives, engagement and interaction with specific content perceived as Digital Junkfood.

5.6 Future work

The present exploratory experiment has shed light on the constructivist definition of Digital Junkfood and individuals' subjective identification of such content. However, there are several areas regarding Digital Junkfood that warrant further investigation, possibly using the findings found in this study. In this section, potential avenues are proposed for future research that can expand upon and enrich the knowledge gained from this study.

As mentioned in section 5.5 about the limitations of this study, the current experiment employed a modest sample size, including only one cultural background and exhibited an imbalanced distribution across age groups. To obtain a more comprehensive understanding of individuals' perceptions and experiences regarding Digital Junkfood, future research could aim to increase the sample size, cultural backgrounds and ensure a more representative inclusion of participants from various age groups.

Similarly, the limited selection of social media platforms utilized in this experiment may have restricted the breadth of content considered as Digital Junkfood. To capture the full spectrum of individuals' engagement with such content, future studies should broaden the range of platforms included. Additionally, considering factors such as social media usage patterns would contribute to a more nuanced exploration of Digital Junkfood across diverse demographics.

It could also be intriguing to explore the distinctions between Digital Junkfood on social media platforms and Digital Junkfood found on other sources, as highlighted in the interview by a few participants who also mentioned examples beyond social media (e.g., television or streaming platforms like Netflix). Investigating these differences would offer valuable insights into the unique characteristics, effects, and user perceptions associated with Digital Junkfood across various media sources.

Moreover, observational data or analysis of participants' actual interactions with Digital Junkfood content could potentially yield deeper insights into their engagement patterns and preferences. Also, conducting a longitudinal study could yield valuable insights into the evolution of these perceptions and behaviors, as well as shed light on the long-term effects of exposure to Digital Junkfood content.

Finally, designing and implementing experimental interventions aimed at mitigating the negative effects of Digital Junkfood can provide practical insights into effective strategies for healthier online engagement. By evaluating the impact of these interventions on participants' behaviors, researchers can contribute to the development of evidence-based interventions. These interventions have the potential to promote more mindful and responsible engagement with social media content.

By pursuing these future research directions, the current understanding of Digital Junkfood can advance in its implications. The findings from these investigations will contribute to the development of informed interventions and recommendations aimed at fostering a healthier and more meaningful digital environment.

6 Conclusion

The aim of this research was to examine the concept of Digital Junkfood from a constructivist perspective, by drawing parallels to edible junk food. Throughout the study, several connections were established between these two terms, and it became evident that Digital Junkfood can indeed be understood within a constructivist framework, as users described diverse perceptions and experiences with Digital Junkfood. Some users view Digital Junkfood as an occasional indulgence which they do not mind, while others perceive it more negatively and seek to avoid it. In both cases, Digital Junkfood attempts to entice users or is even forced upon them, which may result in some users experiencing more negative feelings afterwards compared to their feelings when initially engaging with the content.

Through the application of grounded theory and its three steps of coding, three key fundamentals were identified. These fundamentals provide support for defining Digital Junkfood through a constructivist viewpoint.

The first fundamental pertains to the presented elements consisting of the content. Users identified Digital Junkfood based on various content elements, such as the topic and source of the content. This variability in content elements is similar to the varying perceptions of consumers whether certain food belongs to edible junk food.

Secondly, Digital Junkfood can elicit a range of feelings in users during and after engagement, including positive, neutral, and negative feelings. However, it should be noted that a majority of user experienced positive feelings while engaging with the content while most users expressed negative feelings after the engagement with such content. Many of those described feelings are parallel to the feelings experienced by individuals while and after consuming edible junk food.

Lastly, the third fundamental pertains to the behavior exhibited by users towards Digital Junkfood, which can range from repulsive or passive engagement to attracted or active engagement. This behavior may be influenced by the first two fundamentals. Once again, this parallels the experience of edible junk food, where different consumers display varying behaviors, such as attempting to resist or becoming excited to consume junk food, as well as ordering either a relatively high or low amount of food. Moreover, additional factors such as the external context, mood, and motivation of the user can also play a role, as similar in the situation of junk food consumption. Therefore, it is also worth considering these additional factors when exploring the concept further.

These fundamentals, which contribute to a constructivist understanding of Digital Junkfood, can support the exploration of compulsive social media use and addictive behaviors on social media. By understanding the content elements, feelings, and behaviors associated with Digital Junkfood, insights can be gained into what triggers users and leads to the development of these behaviors. Therefore, this research can help shed light on the underlying content that contribute to compulsive and addictive social media use.

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Appendices

Appendix A: Link and screenshots of the designed website used in the experiment

Link to website

https://joukestaring.wixsite.com/digital-junkfood-exp

Home page of the website

Figure 26: The home page of the website that includes a short explanation of the experiment.

Platform options page on the website

Figure 27: The platform options that are displayed for the user on the website.

Device options page on the website

Figure 28: The device options that are displayed for the user on the website.
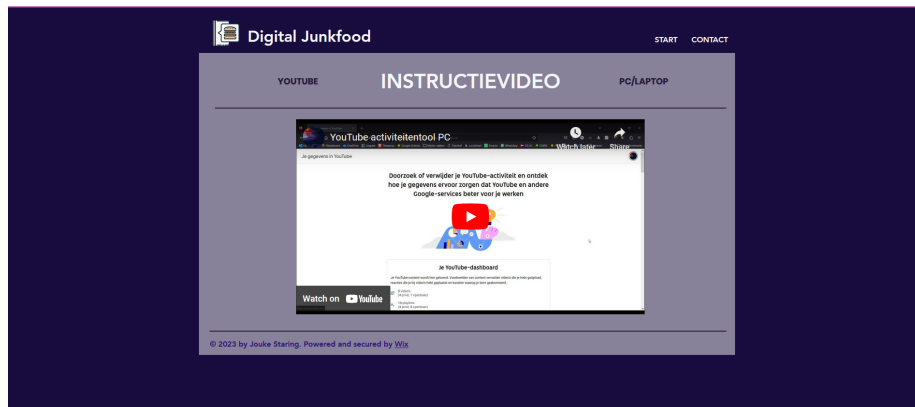
One of the instructional video pages on the website

Figure 29: The instructional video that is displayed based on the selected platform (e.g., YouTube) and device (e.g., PC/Laptop) by the user.

Appendix B: Links to the instructional videos about the review tools

Instagram

PC/Laptop: `https://www.youtube.com/watch?v=iP_Q6a5mC40`
Smartphone: `https://www.youtube.com/watch?v=_WDSYnimC2E`

Facebook

PC/Laptop: `https://www.youtube.com/watch?v=xMOuVl_h3K0`
Smartphone: `https://www.youtube.com/watch?v=_g8O69ADevA`

YouTube

PC/Laptop: `https://www.youtube.com/watch?v=U6kj2vK4sIo`
Smartphone: `https://www.youtube.com/watch?v=W8bPoajJ_nw`

TikTok

PC/Laptop: The review tool of TikTok is not available on PC/Laptop.
Smartphone: `https://www.youtube.com/watch?v=n-vJGX1qFJ4`

Reddit

PC/Laptop: `https://www.youtube.com/watch?v=YOpqMI_y54`
Smartphone: `https://www.youtube.com/watch?v=-3b5LiEqvY4`

LinkedIn

PC/Laptop: `https://www.youtube.com/watch?v=DFlIE1vuJmI`
Smartphone: `https://www.youtube.com/watch?v=cnRkPb2ZlHQ`

Appendix C: Survey questions

Demographical questions

- What is your gender?
  (Men — Women — Non-binear — Prefer not to specify)

- To what age group do you belong to?
  (18-24 — 25-34 — 35-44 — 45-54 — 55-64 — 65+)

Content-related questions

- On what platform have you found the selected post?
  (Facebook — Instagram — YouTube — TikTok — LinkedIn — Reddit)

- What type of content does the post exist of (select all applicable answers)?
  (Text — Image — Video)

- Do you leave a comment to the selected post? If so, what sentiment does the comment contain?
  (Yes, positive — Yes, neutral — Yes, negative — No)

- Is the selected post sponsored?
  (Yes — No)

- Do you personally know the publisher of the selected post?
  (Yes — No)

- How much time do you think you have spent on the selected post?
  (... minutes and ... seconds)

Appendix D: Semi-structured interview questions

Introduction question

- At the moment, what platform do you engage on at least once a week?

Subject of the content

- How would you categorize the subject of the selected content?

Sentiment of the content

- In general, do you perceive the selected content as something positive, neutral, or negative? And why?

- Do you feel like the content has attempted to make you post any kind of reaction to it?

- Have you liked or disliked any of the selected posts? If so, why?

- Do you feel like one or more posts are offensive towards an individual or group? If so, why?

- Do you feel like one or more posts are being provocative? If so, why?

- Do you feel like one or more posts contain clickbait? If so, why?

- Did you report one or more posts as content that should not be visible on the social media platform? If so, why?

Motive regarding the content

- What goals did you think that the publishers had in order to post the selected content?

- Do you think that those goals are achieved in your individual case? And why?

- Why did you think that the selected content appeared when using the social media platform?

- Why did you think that you initially engaged with the selected content?

Feelings regarding the content

- What feelings did you experience while engaging the first time with the selected content? And why?

- What feelings do you experience when looking back at engaging with the content? And why?

- Would you have acted differently towards the content when looking back at engaging with the content? And why?

- Will you look differently at content on social media after this interview? And why?

Final question

- What have been the reasons why you perceive the selected content as Digital Junkfood?