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Article

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Businesses

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Suggested Citation: Mamalikou, Maria; Gkatzionis, Konstantinos; Panagiotou, Malamatenia (2024) : Do social media likes affect food consumption?, *Businesses*, ISSN 2673-7116, MDPI, Basel, Vol. 4, Iss. 4, pp. 620-631, <https://doi.org/10.3390/businesses4040037>

This Version is available at:

<https://hdl.handle.net/10419/338774>

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Article

Do Social Media Likes Affect Food Consumption?

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Abstract: Social norms can affect food consumption. Although social media could be used to disseminate such norms, there is limited experimental research on the subject. The purpose of the study was to examine the effects of socially endorsed social media food posts, in the form of Instagram likes, on participants' eating behavior of wheat food products. The survey was conducted in sensory booths where 149 participants were assigned to one of three conditions viewing three types of images: traditional Greek foods, modern foods, and home decoration as control. However, only one type was socially endorsed with likes. Participants self-reported on a series of questionnaires and were offered traditional Greek rusks (paximathia) and modern crackers as a snack reward during break time on two separate dishes. The hypothesis was that those who had paid attention to socially endorsed images of traditional foods would prefer to consumer Greek rusks, whereas those having paid attention to socially endorsed modern foods would opt for the crackers. Using the ANCOVA model, there was not identified any significant effect of condition on rusk or cracker consumption in grams after controlling the covariates. The results propose that exposure to socially endorsed images with Instagram likes, as a form of social media norm, do not incite people to consume more of either traditional rusks or modern crackers.

Keywords: social norms; social media; Instagram; food consumption



Citation: Mamalikou, M.; Gkatzionis, K.; Panagiotou, M. Do Social Media Likes Affect Food Consumption? *Businesses* **2024**, *4*, 620–631. <https://doi.org/10.3390/businesses4040037>

Academic Editor: Lester Johnson

Received: 11 August 2024

Revised: 19 September 2024

Accepted: 14 October 2024

Published: 1 November 2024



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1. Introduction

Unhealthy eating habits contribute to an increase in health problems such as obesity, diabetes, and cardiovascular disease [1]. Food intake and food choice as human behavior are influenced by a plethora of interconnected factors, including product-related, personal, situational, and social factors such as social media today [2,3]. It is said that altering a person's food choice behavior is difficult since external factors are difficult to regulate, and unconscious behavior is difficult to affect [4,5]. Exposure to social norms, which are unspoken rules that explain how other people generally perform, is one possible technique to influence food choice and consumer behavior. Foodstuff and eating are intricately interwoven with our public life, with food functioning as more than simply a form of nutrition. Moreover, Rozin ([6], p. S108) characterized it as 'a social vehicle' used to set up social relationships and create social distinctions. Taking that into consideration, it may come as no total surprise that social factors have a substantial effect on our food preferences and eating habits. According to the literature, we appraise our personal eating habits by comparing ourselves to the eating behaviors of other individuals and utilize this to derive conclusions about what kind of food we ought to eat, how much we ought to eat, and even how we ought to feel about what we have eaten [7]. Exposure to social norms has recently been revealed to influence eating behavior. For instance, questioning participants about their thoughts of what sort of food friends and family eat has been proven to predict their own intake of food and beverages [8,9], along with the kind of food that is eaten [10]. Similarly, Liu, Thomas, and Higgs [11] in their study found that participants' intention to eat vegetables and reduce the intention to consume unhealthy food was moderated by their

social identification with norm reference groups. The same was found about actual intakes of vegetables and fruit.

Taking into consideration the constantly dynamic scenery for social interactions in the twenty-first century, it could potentially be worthwhile to investigate the way that social norms of what kind of food we eat and how much we consume are disseminated in the digital era. As an example, a newly discovered system through which social norms regarding food preference and intake can be transmitted is via social media. Social media platforms can be a strong tool affecting food consumption and food choice as an external element. Social networking sites (SNSs) (such as Facebook and Instagram) have emerged as a major factor influencing consumers' behavior, shaping attitudes by advertising messages on these media [12]. Social media is a web-based service that enables human beings to form a public network or profile inside a restricted system, and also build a list of other users with whom they share a connection and see their own list of connections, along with those made by other individuals, in the system [13]. The abovementioned platforms enable people to find others with common interests and to share those via the internet. In 2022, the Hellenic Statistical Authority (ELSTAT) released data on the degree of use of technology information and communication (ICT) by households and their members [14], highlighting that 8 out of 10 (83.2%) aged 16–74 used the internet, and a 6.0% increase in use was recorded compared to 2021. Furthermore, there were 7.49 million social media users in Greece in January 2023, 72.3% of the total population. At that time, 48.9% of Greek social media users were female, while 51.1% were male. Data published in Meta's advertising resources indicate that Facebook had 5.00 million users and Instagram had 4.05 million users in Greece in early 2023 (<https://datareportal.com/reports/digital-2023-greece>, accessed on 10 January 2024).

People's food habits are being influenced by social networks through marketing, news, and posts on different websites [15]. Food images are exceedingly popular on social networks, and they are one of the six most popular posting groups on Instagram [16]. Furthermore, sites like Instagram allow the sharing of pictures, along with potential social validation actions, including liking and commenting, which indicates social endorsement. Besides the benefit of allowing consumers to publicly approve something online, the use of likes may impact consumer behavior in several ways. The effortless act of clicking the like button might indicate changes in consumers' attitudes and behaviors regarding products and brands [17,18]. Even for consumers who do not share their thoughts on the internet, the display of the number of likes may subconsciously influence their information processing and decision-making [17,19–22]. Individuals that have many followers on social networking sites have been reported to be a significant reference group for dietary behavior; see, e.g., [10]. Facebook is a social media platform that has been studied regarding social norms and eating behavior. A recent investigation revealed that self-reported fruit and vegetable consumption of the participants corresponded to the level of fruit and vegetable consumption assessed by the users of Facebook [10]. The impact of Instagram on people's eating behavior has also been investigated [23,24]. Instagram is a social media platform for sharing photos that consequently makes people feel more connected to people they follow and potentially to possibly mimic their eating behavior [24]. More specifically, people can follow others online who support a specific form of eating, for example, only consume healthy foods [25]. Actually, Turner and Lefevre [24] discovered that greater use of Instagram was linked to increased orthorexia symptoms. The researchers speculated that this result possibly could be clarified by selective exposure to images, in which users choose who they want to follow online and are exposed to additional accounts with similar content. Several recent investigations have examined the contribution of social networks and social endorsement in influencing how people interact with posts related to food. In fact, it has been mentioned that due to the significant presence of photos displaying unhealthy food and famous brands, a large number of images posted on social media co-occur with personal comments and might have a greater potential effect than advertising [26]. Advertisements with a large number of likes, for example, were more likely to elicit interaction and were evaluated more highly compared to those with fewer likes, particularly by people that

used social media regularly [27]. Social media commercials promoted by celebrities were more favorable and generated higher arousal [28]. Furthermore, Kim, Lee, and Yoon [29] have also revealed that social norms strengthened the model's explanatory statistical power in predicting peoples' interactions with social media commercials, implying that these could be useful in forecasting behavior in the social media environment. Consequently, social norms may be a means of affecting eating behavior. Researchers, Sharps et al. [30] investigated how social media posts displaying the standard consumption portion size could affect adolescents' desired portion sizes of healthy eating foods. They found that after fourteen days, this did indeed decrease the preferred portion sizes of HED (high energy dense) snacks, signifying that social media may perhaps be an effective tool to promote healthy eating habits. However, apart from Sharps et al. [30], these investigations did not directly investigate the ways that these interactions with social networks have an effect on eating behavior. Hawkins et al. [31] sought to determine whether socially endorsed images, like those found on Instagram, would affect the quantity and percentage of grapes and cookies eaten by participants. Even though socially endorsed images had no effect on participants' individual consumption of grapes and cookies, looking at socially endorsed images of LED (low energy dense) foods (as opposed to healthy foods) resulted in participants eating a larger proportion of grapes in grams than cookies. Furthermore, watching the socially endorsed images of LED foods caused individuals to consume a greater proportion of grapes as calories than cookies. The previously mentioned findings demonstrate that exposure to images of LED foods endorsed by society might contribute to healthy and balanced nutrition by encouraging people to choose and consume more LED foods (such as grapes) than HED foods (such as cookies).

It is mentioned in the literature that perceived norms regarding various groups and, to a certain degree, various norms, may possibly predict the consumption of food, e.g., [32–34], although there is limited experimental support available about the ways that social media norms in the form of Instagram “likes” affect eating behavior. Therefore, the current research aimed at examining the extent to which social norms within social media groups influenced the consumption of wheat food products. In particular, it aimed to assess whether social endorsement with likes of images of traditional Greek foods (TRAD), modern foods (MOD), and interior design (as control), in Instagram posts, affected the amount of food participants chose to eat. The hypothesis was that people who viewed socially endorsed images of TRAD (compared to control or MOD) might possibly consume more traditional Greek rusks, whereas those viewing socially endorsed MOD (compared to control or TRAD) would consume more modern crackers (see Figure 1). This study contributes to the literature on social media users' eating behavior by exploring a potential approach to affect food consumption via social media likes and thereby address unhealthy and unconscious food choice behavior and therefore decrease health-related problems.

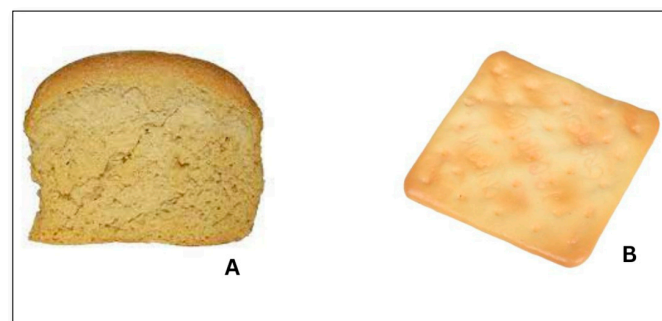


Figure 1. Wheat products: (A) traditional Greek rusk, (B) modern cracker.

2. Materials and Methods

2.1. Participants

A total of 149 volunteers ranging in age from 18 to 60 years (mean = 33.39) participated in this study. They were invited via email, telephone, or in-person communication. All

participants reported that they had no clinical history of food allergic diseases, eating disorders, or diabetes, had not eaten two hours prior to the study, were not smokers, and did not correctly guess the purpose of the study. Being Instagram users was a prerequisite. The experimental procedures were ethically approved by the Department of Food Science and Nutrition at the University of Aegean. The sessions were carried out in individual sensory booths at the Laboratory of Consumer and Sensory Perception of Food & Drinks of the University of the Aegean. The booths were closed sensory analysis cabins ensuring soundproofing. Room temperature was controlled at 22 °C and testing in booths was run under white lighting conditions. Informed consent was obtained from all participants. Both men and women participated in the present research, compared to another mentioned in the literature that only had women [31]. The participants were assigned to one of three conditions (control $n = 48$; TRAD $n = 50$; MOD $n = 51$).

2.2. Experimental Design

The experimental design was conducted as described in Hawkins, Thomas, and Farrow [31] with minor modifications. The design that was used was a between-subjects design, with one factor: socially endorsed images of three types: control images (house decoration), traditional (TRAD) Greek food images, and modern (MOD) food images. Each and every one of the participants was exposed to all types, but under their condition of assignment the image collection was 'socially endorsed', i.e., had a higher number of 'likes'. The dependent variable was total food intake of the participants in grams.

2.3. Measures

The research was operated using the online survey platform Google Forms and comprised a set of questionnaires: a lifestyle questionnaire that included questions on age, gender, eating disorders, food intolerances, height and weight (BMI), as in [35–37]. To verify that the participant had not eaten for two hours before arriving at the laboratory, an eating questionnaire was used. It consisted of two open-ended questions asking participants what they had eaten and drank that day and when based on a similar measure used by Thomas et al. [35]. As regards access to Instagram and social media usage, a 9-item scale was used, including questions about types of post made, frequency of use, time spent on social media, as in [38]. For the main task, participants were presented three sets of fictitious Instagram posts containing 20 TRAD food images, 20 MOD food images, and 20 control images (house decoration). The pictures were shown one by one, in a randomized order. A VAS (visual analogue scale) item was given under each image, requesting participants to evaluate to what extent they liked each one, on a scale from 0 (not at all) to 100 (very much). Participants viewed 60 pictures. However, to elicit a perceived norm for a particular set of pictures, one of these sets was liked more than the others (e.g., under the TRAD condition, the TRAD food posts had significantly more likes—see Figure 2). The images were evaluated prior to the present study with a different sample of participants ($n = 50$), to verify that the images could be accurately defined as TRAD (traditional Greek food), MOD (modern food), or control images, by a significant majority of the participants.

Food stimuli: Two dishes containing Greek rusks (paximathia are rusks of Greek origin, common in Greece, a principal component of the Mediterranean diet, and widely exported to numerous countries. In recent year, the paximathia of several Greek regions were accredited PDO status and the profile of the product was standardized) and crackers were provided to participants with the information that that was a treat for them during break time. Digital scales were used to weigh each food item (in grams) prior to each test session and again after each test session to determine how much of each snack each participant had consumed, as in [33,37]. The Three Factor Eating Questionnaire (TFEQ-R18) was used to assess eating behavior and possible eating disorders in the sample [39]. The Usual Food and Drink Intake Questionnaire was also used to measure participants' personal habitual consumption, and liking of traditional and modern products, as well as Greek rusks and crackers. This was included as part of the randomization checks and to check whether this

should be controlled. To conclude the survey, participants were questioned on what they believed the study’s goal was, providing an open-ended response as a manipulation check. Each session lasted no longer than 35 min.



Figure 2. Example of socially endorsed images.

3. Results

3.1. Randomization Checks

The characteristics of the participants were analyzed by condition, using one-way ANOVA (Analysis of variance), the chi-square test, and Spearman rho to investigate whether the following variables that were theoretical covariates differed between the three conditions or significantly correlated with the dependent variables. Condition showed a significant effect of on age $F(2.146) = 3.49, p = 0.033$, the dimension of ‘uncontrolled eating’ of TFEQ-R18, $F(2.146) = 5.56, p = 0.005$, and the item in the usual eating questionnaire, ‘How often do you consume crackers’ $\chi^2(10) = 25.75, p = 0.04$. There was also significant correlation of BMI with the dependent variables $r_s = 0.30, p < 0.01$ and with the item, ‘How much do you like crackers’ $r_s = 0.38, p < 0.01$. There were no other significant differences (Tables 1 and 2).

Table 1. Sample descriptive statistics characteristics for all participants, split by condition.

	Group							
	All Participants N = 149		MOD Condition N = 51		Control Condition N = 48		TRAD Condition N = 50	
	M	SD	M	SD	M	SD	M	SD
TRAD liking	4.85	1.66	4.82	1.55	4.94	1.73	4.78	1.72
MOD liking	4.14	1.72	4.37	1.62	3.96	1.77	4.08	1.76
Age	33.49	8.73	31.96	7.92	36.17	8.68	32.48	9.12
BMI	24.85	5.35	24.63	6.08	25.73	5.83	24.24	3.88
TFEQ-R18 UE	19.62	5.90	20.73	5.91	17.35	5.73	20.68	5.52
TFEQ-R18 CR	14.96	3.69	15.55	3.49	14.19	3.82	15.10	3.72
TFEQ-R18 EE	6.55	2.95	6.84	2.74	5.85	3.14	6.92	2.91

TRAD liking—traditional rusk (paximathi) liking; MOD liking—modern rusk (cracker) liking; Three Factor Eating Questionnaire three-factor eating; UE—uncontrolled eating; CR—cognitively restrained eating; EE—emotional eating.

Table 2. Sample descriptive statistics characteristics for all participants and split by condition—continuous variables.

		Group							
		Total		Modern		Control		Traditional	
		Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %
Gender	Male	41	27.5%	10	19.6%	16	33.3%	15	30.0%
	Female	108	72.5%	41	80.4%	32	66.7%	35	70.0%
Profession	Private employee	38	25.5%	17	33.3%	10	20.8%	11	22.0%
	Freelance	18	12.1%	3	5.9%	11	22.9%	4	8.0%
	Public employee	64	43.0%	20	39.2%	19	39.6%	25	50.0%
	Unemployed	12	8.1%	3	5.9%	3	6.3%	6	12.0%
	Other	17	11.4%	8	15.7%	5	10.4%	4	8.0%
	Farmer/breeder	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Education level	Junior/high school	43	28.9%	14	27.5%	10	20.8%	19	38.0%
	IEK	14	9.4%	3	5.9%	6	12.5%	5	10.0%
	University	50	33.6%	17	33.3%	17	35.4%	16	32.0%
	MSC	42	28.2%	17	33.3%	15	31.3%	10	20.0%
	PHD	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Time on Instagram	No time	13	8.7%	4	7.8%	3	6.3%	6	12.0%
	<10 min	19	12.8%	4	7.8%	7	14.6%	8	16.0%
	10–30 min	44	29.5%	16	31.4%	17	35.4%	11	22.0%
	31–60 min	34	22.8%	14	27.5%	12	25.0%	8	16.0%
	>60 min	39	26.2%	13	25.5%	9	18.8%	17	34.0%
Picture uploads	Never	28	18.8%	10	19.6%	7	14.6%	11	22.0%
	<1/month	84	56.4%	27	52.9%	28	58.3%	29	58.0%
	2–3/month	22	14.8%	8	15.7%	9	18.8%	5	10.0%
	1/week	6	4.0%	3	5.9%	1	2.1%	2	4.0%
	2–3/week	7	4.7%	3	5.9%	2	4.2%	2	4.0%
	Daily	2	1.3%	0	0.0%	1	2.1%	1	2.0%
Picture content	Family, friends, famous	1	0.7%	0	0.0%	0	0.0%	1	2.0%
	Other content	25	16.8%	8	15.7%	3	6.3%	14	28.0%
	Other objects	6	4.0%	1	2.0%	3	6.3%	2	4.0%
	Animals	1	0.7%	0	0.0%	0	0.0%	1	2.0%
	Memes/quotes	3	2.0%	1	2.0%	0	0.0%	2	4.0%
	Landscapes and locations	35	23.5%	14	27.5%	15	31.3%	6	12.0%
	Food	3	2.0%	0	0.0%	3	6.3%	0	0.0%
	Selfies	18	12.1%	7	13.7%	9	18.8%	2	4.0%
Pictures with you and friends	57	38.3%	20	39.2%	15	31.3%	22	44.0%	
Facebook account	Yes	142	95.3%	49	96.1%	44	91.7%	49	98.0%
	No	7	4.7%	2	3.9%	4	8.3%	1	2.0%
Twitter account	Yes	24	16.1%	11	21.6%	4	8.3%	9	18.0%
	No	125	83.9%	40	78.4%	44	91.7%	41	82.0%
Time FB	No time	0	0.0%	0	0.0%	0	0.0%	0	0.0%
	<10 min	25	17.6%	9	18.4%	7	15.6%	9	18.8%
	10–30 min	54	38.0%	20	40.8%	18	40.0%	16	33.3%
	31–60 min	34	23.9%	9	18.4%	11	24.4%	14	29.2%
	>60 min	29	20.4%	11	22.4%	9	20.0%	9	18.8%
Time on Twitter	No time	48	80.0%	19	76.0%	18	94.7%	11	68.8%
	<10 min	5	8.3%	3	12.0%	0	0.0%	2	12.5%
	10–30 min	5	8.3%	3	12.0%	1	5.3%	1	6.3%
	31–60 min	2	3.3%	0	0.0%	0	0.0%	2	12.5%
	>60 min	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Table 2. Cont.

		Group							
		Total		Modern		Control		Traditional	
		Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %
Rusk consumption	Not at all	23	15.4%	8	15.7%	6	12.5%	9	18.0%
	1–2 times a month	39	26.2%	19	37.3%	10	20.8%	10	20.0%
	1 time/week	27	18.1%	4	7.8%	13	27.1%	10	20.0%
	2 times/week	30	20.1%	11	21.6%	8	16.7%	11	22.0%
	3–6 times/week	24	16.1%	6	11.8%	9	18.8%	9	18.0%
	Daily	6	4.0%	3	5.9%	2	4.2%	1	2.0%
Cracker consumption	Not at all	37	24.8%	4	7.8%	16	33.3%	17	34.0%
	1–2 times a month	54	36.2%	22	43.1%	20	41.7%	12	24.0%
	1 time/week	31	20.8%	12	23.5%	6	12.5%	13	26.0%
	2 times/week	19	12.8%	6	11.8%	5	10.4%	8	16.0%
	3–6 times/week	6	4.0%	5	9.8%	1	2.1%	0	0.0%
	Daily	2	1.3%	2	3.9%	0	0.0%	0	0.0%

3.2. Instagram Task VAS Liking Ratings

To verify whether manipulation and randomization was successful and if the liking ratings corresponded to the number of likes for each condition, the liking ratings for the three types of images were compared among different conditions. The type of image showed no significant effect on the socially endorsed images of TRAD $F(2,146) = 2.23$, $p = 0.80$, the socially endorsed images of MOD $F(2,146) = 1.947$, $p = 0.146$, or the controlled socially endorsed images $F(2,146) = 1.011$, $p = 0.366$. However, as can be seen in Table 3, TRAD images rated as the most liked ($M = 56.6$) compared to MOD ($M = 54.6$) in traditional condition, MOD images rated as most liked ($M = 56.8$) compared to TRAD ($M = 55.8$) and control condition ($M = 50.6$) in modern condition, and socially endorsed controlled images were rated as the most liked ($M = 65.3$) compared to TRAD ($M = 61.1$) and MOD ($M = 62.8$) in control (Table 3).

Table 3. Means and standard deviations for the liking rating for each image type split by condition.

Image Type		N	M (SD)
VAS TRAD	Modern	51	54.6 (15.6)
	Interior	48	56.7 (16.7)
	Traditional	50	56.6 (19.9)
	Total	149	55.9 (17.4)
VAS MOD	Modern	51	56.8 (16.8)
	Interior	48	50.6 (14.8)
	Traditional	50	55.8 (18.6)
	Total	149	54.5 (16.9)
VAS control	Modern	51	62.8 (13.9)
	Interior	48	65.3 (13.0)
	Traditional	50	61.1 (17.1)
	Total	149	63.0 (14.8)

TRAD—traditional; MOD—modern.

3.3. Main Analysis: Food Consumed

A one-way analysis of covariance (ANCOVA) was conducted to determine a statically significant difference between groups (TRAD, MOD, control) on Greek rusk and cracker consumption after controlling for covariates. Using the ANCOVA model, there was no main effect of condition on rusk consumption in grams $F(2,136) = 1.604$, $p = 0.205$, or cracker consumption in grams $F(2,136) = 0.210$, $p = 0.811$, (see Table 4 for means) after

controlling for covariates. Consumption of Greek rusks and crackers was not significantly different between the TRAD, MOD, and control groups. The effect of MBI as a covariate was significant on rusk consumption $F(1,136) = 7.468, p = 0.007$; more specifically, BMI was significantly negatively correlated with rusk consumption ($r_s = -0.30, p < 0.01$). The effect of age as a covariate was almost not significant on rusk consumption $F(1,136) = 3.064, p = 0.082, \eta^2 = 0.022$ and also the items ‘consumption of crackers’ ($F(1,136) = 1.134, p = 0.346, \eta^2 = 0.40, ns.$), uncontrolled eating ($F(1,136) = 3.033, p = 0.084$), and ‘generally like crackers’ as covariates did not significantly affect Greek rusk consumption $F(1,136) = 2.98, p = 0.86, ns.$

Table 4. Estimated marginal means and standard error for rusk and cracker consumption split by condition.

Food Consumed	Control Condition Estim. M (SE)	TRAD Condition Estim. M (SE)	MOD Condition Estim. M (SE)
Rusk consumption (grams)	14.9 (1.8)	12.0 (2.1)	11.2 (1.8)
Cracker consumption (grams)	9.2 (2.2)	9.2 (2.1)	8.0 (1.8)

The general liking of the cracker as a covariate was significant in cracker consumption, $F(1,136) = 9.66, p = 0.002, \eta^2 = 0.066$. BMI was not significant in cracker consumption $F(1,136) = 0.012, p = 0.911$, likewise age $F(1,136) = 0.054, p = 0.816, ns$, and the item ‘uncontrolled eating’ $F(1,136) = 3.151, p = 0.078$ did not significantly affect cracker consumption (Table 4).

4. Discussion

There has been substantial research on the numerous social factors that affect human eating behavior, but there has been little research on how social media factors in the form of ‘likes’ on Instagram can affect eating behavior. With the continuous rise of digital food social media and its growing impact, it is critical to understand how social media influences eating behavior and particularly food consumption. A small number of studies investigated the relationship between eating-related social media content and food intake or willingness to eat. Coates et al. [40] proposed that influencer marketing of unhealthy items boosted children’s rapid food consumption, but marketing of healthier foods had no effect. Likewise, according to Gascoyne et al. [41], a study involving a representative sample of school students revealed that exposure to food or drink advertisements on social media at least one time during the prior week was linked to a higher intake of unhealthy drinks. Similarly, liking or sharing a food or drink post at least once a month before was associated with a higher intake of unhealthy food and beverages. Another investigation showed that exposure to Facebook postings about fruit and vegetable intake boosted participants’ fruit and vegetable consumption but had no effect on those exposed to book and movie postings [42].

A few more studies found that exposure to images of food that is unhealthy on social media [41], images with likes of low calorie food [31], and profile pages with different food postings and pictures of people of the ideal size [43] increased intake or willingness to eat the type of food depicted in the image. However, another experiment found no significant differences in the effect of viewing food images that revealed different degrees of social media information on the likelihood of consuming the items in the images [44]. In another study, a substantial proportion of university students selected fast food as their preferred food after seeing food videos on social media [45]. Another study found that users of Twitch who were more sensitive to extrinsic food and food stimuli were more likely to report craving a food product after seeing food commercials on Twitch [46].

In conclusion, the available evidence generally supports the link between exposure to certain types of eating-related material and increased consumption or inclination to consume the foods depicted in the content or specific food categories, notably unhealthy

meals. In contrast, a limited number of research studies revealed that there is no relationship between specific forms of eating-related material and food consumption.

The aim of the present study was to extend current knowledge by examining the association between eating-related social media content, and viewers' eating behavior, and more specifically, to address whether socially endorsed images (socially endorsed with likes), similar to those found on the social media site Instagram, altered the proportion of food products (Greek rusks and crackers) eaten by the participants. The hypothesis was that people who viewed socially endorsed images of traditional food might possibly consume more Greek rusks, whereas those viewing socially endorsed modern food would consume more crackers. First, we checked if the randomization was successful and if there were potential covariates. According to the findings, it was observed that age, the dimension of 'uncontrolled eating' of TFEQ-R18, and the item of the usual eating questionnaire 'How often do you consume crackers' was significantly different across groups and BMI and the item 'How much do you like crackers' had a significant correlation with the dependent variable. Therefore, the mentioned covariates were used in the final ANCOVA model. Likewise, manipulation was checked according to liking ratings among conditions. The main findings of this study indicated that the two types of socially endorsed images did not significantly affect the individual consumption of rusks and crackers by participants in grams, meaning that participants under TRAD condition were not led to consume a higher proportion of rusks and under the MOD condition were not led to consume a higher proportion of crackers. Therefore, according to our findings, no association was found between viewing Instagram likes on food posts and food consumption as hypothesized. The abovementioned findings suggest that social media likes are probably not an effective way of transmitting social norms within social media groups and thus influencing eating behavior. Instagram likes as a form of social endorsement may constitute a subconscious way of social endorsement within social media groups and for that reason could have a small effect on human behavior, since there was no explicit mention of the norm (likes) to the participants and participants did not explicitly mention the number of likes or speculate on the purpose of the experiment. Moreover, the absence of an effect may indicate that likes might not have been evaluated as social validation by the participants, but rather as numerical information that was hard to process. These findings add to the literature stating that perceived liking norms does not significantly predict participants' HED and LED food consumption [31]. Some earlier studies have reported no effects compared to control conditions, e.g., [47] or even counterproductive effects, where social norm interventions increase unwanted eating behaviors, e.g., [48–50]. These mixed results suggest that the ways in which social media norms affect eating behavior are not yet fully understood, and, moreover, social norms in the forms of Instagram likes may constitute an unconscious way of social endorsement, making it difficult to conclude how and why different eating-related content would affect food consumption. Social media endorsement as a form of social media likes is a relatively new phenomenon, especially in the field of food science. An extensive amount of research is needed in order to understand the underlying mechanisms and the impact of social media likes on actual food consumption. Similarly, further research is required to understand the impact of digital food marketing.

As with all research, the findings of this study have to be seen in light of some limitations. First, both products used in this study (traditional Greek rusk and modern cracker) were wheat products. Choosing more distinctly different foods, for example olive oils and pizza, or a comprehensive selection of traditional and modern foods, would probably provide clearer findings. Second, while no effect of Instagram likes on food consumption was found in the laboratory controlled settings, where fictitious Instagram posts were shown to the participants, we do not know whether this result is an effect in real life social media use. Future research could aim to investigate the impact of Instagram likes in real online social media posts and accounts. Future research could reconfirm the findings by conducting studies with younger target groups, to better depict social media users. In spite of these limitations, this study is one of the very few regarding social norms,

in the form of Instagram likes, communicated via social media, and their effect on actual food consumption.

5. Conclusions

This study found that social networks in the form of Instagram likes do not affect eating habits by transmitting social norms. In this study, socially endorsed images of traditional Greek and modern foods did not result in a higher proportion of Greek rusks or crackers being consumed by participants. Therefore, increasing the promotion of healthy and traditional foods on social media may not be an effective strategy to encourage healthy dietary behaviors. Future research can extend the present study to other social media platforms, such as Tik Tok and Snapchat, types of social media eating content and food categories. Moreover, eye tracking technology could be used to reveal possible differences in visual attention between experimental groups.

Author Contributions: Conceptualization, M.M. and K.G.; methodology, M.M., K.G. and M.P.; validation, M.M., K.G. and M.P.; formal analysis, M.M., K.G. and M.P.; investigation, M.M., K.G. and M.P.; resources, M.M., K.G. and M.P.; data curation, M.M., K.G. and M.P.; writing—original draft preparation, M.M.; writing—review and editing, K.G. and M.P.; visualization, M.M.; supervision, K.G.; project administration, K.G.; funding acquisition, K.G. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethics Committee of Department of Food Science and Nutrition at the University of Aegean (protocol code 33434, date of approval 26 July 2024).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors on request.

Conflicts of Interest: The authors declare no conflict of interest.

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