

Social Marketing as a Way to Address Excessive Food Waste at the Consumer Level

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Abstract

Food waste is one of the serious global and societal problems falling under the issue of sustainable development. All member states of the European Union are dedicated to preventing food waste, which is also one of the current priorities of the European Commission and its activities. Although many of the Earth's inhabitants suffer from hunger and deprivation, consumers in developed countries prefer a consumerist way of life, wasting limited resources and overburdening the environment. The presented paper aims to determine how the selected social marketing tool (social advertising) affects conscious and subconscious consumer reactions and behaviour concerning food waste. The research is divided into two parts and was carried out on two independent research sets – consumers in Research Set X (171 respondents aged from 20 to 46) answered questions in a prepared questionnaire and evaluated two social advertisements; consumers in Research Set Y (59 respondents aged from 17 to 50) rated the same social ads as consumers in Research Set X, and at the same time their emotional reactions from facial expressions (micro-mimics) were assessed using the Face Reader software. In the research, we have worked with two social audio-visual advertisements on the social networks TikTok and Youtube. The results of our research show that social advertising with emotional appeals, which evoke complex emotions, such as sympathy or emotion, has great potential to educate consumers and influence (in the desired direction) their behaviour and decision-making in the food market. It creates a counterpoint to commercial advertising and helps consumers realize the seriousness of the consequences of their behaviour in the context of food waste.

Keywords: food waste, social advertising, consumer reactions, emotions

JEL Classification: M37, M39, L66, Q18

1. Introduction

Food waste is a significant environmental problem that occurs throughout the food chain. It means that it concerns us all. Approximately 1/3 of the total amount of food produced ends up in waste. Because of this, we need about ½ more agricultural land and consume about ½ more fertilizers, pesticides, and energy than would be needed to feed all the people on Earth (WWF Deutschland, 2015). Animal food is a particular problem. Of the stated amount of wasted food, roughly ½ is thrown

away in households because too much is bought or cooked (Smarticular, 2020). The real reasons for excessive food waste are complex, and there is no universal model to explain consumer behaviour in this context. However, we have a large amount of partial research at our disposal, so we can assume that environmental damage occurs mainly due to people's consumerist way of life in developed countries.

We can define consumerism as a way of life that brings an excessive interest in consumption. Consumption is at the centre of a person's attention. Consumerism as a way of life is accompanied by the belief that our life is just a series of problems and solving them is the personal responsibility of each of us. Every problem has a solution that we can "buy" from professionals. Thus, consumerism as a lifestyle means that one has to run one's life like a small business (Shaw and Aldridge, 2003).

Marketing communication has a significant influence on the opinions and behaviour of consumers. This is also confirmed by the fact that more than 400 billion dollars are spent on advertising annually worldwide. If marketing communication, and especially advertising, did not work, companies would never spend such large sums on marketing activities. Hand in hand with such a massive sphere of influence should also go the responsibility for what kind of consumer behaviour marketing communication creates, alternatively, strengthens because it is the only way to a long-term sustainable society and a sustainable environment (Paulík, 2021).

The consumer society prioritizes material values, and its pillars are a large volume of production and sales and excessive consumption that outweighs other human needs. Fashion trends and rapid technological development primarily drive consumer society. Products wear out quickly and go out of fashion before they stop working. Consumers do not buy new things because they need them but because they want them, even though the "old" ones could still serve them reliably. The time of average use of products (until buying a new one, the next one) is getting shorter, for example, for clothes it is one year, for mobile phones about two years, we buy cars for about four years, etc. (managementmania.com, 2021; Fišerová et al., 2018). The result of the consumer society is the excessive generation of waste, including food waste.

The opposite of consumerism is the so-called anti-consumerism, which focuses on reducing excessive consumption and waste production, reducing factors that damage the environment, promoting quality over quick and easy profit, and regulating unethical business. Anti-consumerism as a sociopolitical ideology criticizes unlimited consumption and materialism (Fišerová et al., 2018). Anti-consumerism is subsequently associated with the concept of anti-materialism, representing the opposite of the materialism we associate with consumerism. While materialism focuses on acquiring and accumulating possessions, anti-materialism rejects such behaviour. However, a complete rejection of consumption is not possible - we need material things to live, and therefore instead of anti-materialism, as a more appropriate contrast to materialism, we use the term anti-consumerism (Lee and Ahn, 2016; Mladá, 2021).

Food waste is a global problem that occurs throughout the food supply chain. Although we have a wealth of information on global food loss and waste, there are still serious gaps. FAO states in a report from 2011 that up to 1/3 of food intended for final consumption ends up as waste. This represents 1.3 billion tons of food annually, even though every ninth person in the world (almost 900 million people) suffers from a lack of food (free-food.sk, 2021). About 45% of fruits and vegetables, 35% of fish and seafood, 30% of cereals, 20% of dairy products, and 20% of meat are thrown out of the whole food intended for humans. Food losses vary in different countries' food chains (Valmorbida Moraes et al., 2021). In developing countries, for example, significant losses already occur in the cultivation and

processing of agricultural products, mainly due to outdated technology and processing methods. In developed countries, most of the waste is in households (Fusions, 2016; Wisschers et al., 2016).

Utilizing leftover food is not difficult, but since we live in a hectic time, it is easier and faster to throw unused food and leftovers into the trash than to think about what to do with them. Consumers who keep pets have an easier decision. Food leftovers can be creatively processed instead of disposed of. For example, the remaining pasta, rice, potatoes, or other vegetables can be used as the basis of other dishes. Some parts of the food (for example, leaves and peels) can be further used to produce other valuable products (for example, apple cider vinegar from apple peels, food for California earthworms producing compost, home cosmetic products, etc. (Rybanská et al., 2021).

Excessive production of waste and its removal is currently among the biggest challenges for society and the environment. As consumers, we must realize that our comfortable lifestyle and food waste also contribute to waste creation. This is not only an ethical waste problem; food waste also represents a significant burden on nature and is one of the significant causes of environmental degradation (Rybanská et al., 2021).

Currently, we observe an increase in social, health, environmental and other social problems, which significantly reduce our subjective satisfaction and quality of life. Therefore, new methods are constantly being sought to alleviate these problems. One of the effective ways to draw attention to existing problems and solve them is social marketing. Social marketing campaigns can help educate and educate the consumer, thereby contributing to the mitigation or elimination of harmful factors. In professional literature, social marketing is a relatively discussed topic in both commercials, moreover, in non-commercial marketing, in recent decades, several different definitions of the term social marketing have been created (Galandová, 2021; Bačuvník and Harantová, 2014; Lincényi et al., 2022).

Although it might seem that the concept of social marketing is the domain of the 21st century, its roots go much more profound. The first mention of the use of social marketing can be found

in the fifties of the twentieth century (Kaňuchová and Čábyová, 2018). Social marketing is a separate discipline that mainly seeks to influence consumer behaviour leading to improved health, injury prevention, and environmental protection, contributing to community well-being, and enhancing financial well-being (Lee and Kotler, 2011).

The purpose of the submitted contribution is not only to point out the problem of food waste but, above all, to find out how this problem can be solved, primarily with the help of social marketing, which in this case can serve as an educational framework and help "educate" the next generations in a "better" way.

2. Data and Methods

The presented paper aims to find out how the selected social marketing tool (social advertising) affects conscious and subconscious consumer reactions and behaviour concerning food waste.

The research was divided into two parts and was carried out on two independent research sets – consumers in Research Set X (171 respondents aged from 20 to 46) answered questions in a prepared questionnaire and evaluated two social advertisements; consumers in Research Set Y (59 respondents aged from 17 to 50) rated the same social ads as consumers in Research Set X, and at the same time their emotional reactions from facial expressions (micro-mimics) were assessed using the Face Reader software.

In the research, we have worked with two social audio-visual advertisements on the social networks TikTok and Youtube.

The first video (Figure 1) was created primarily for research purposes. It was published on the social network TikTok on February 17, 2021, so we can create a hypothesis about its characteristics. The author of the video is influencer YUWAC (<https://www.tiktok.com/@yuwac?>). On the TikTok social network, its audience consists mainly of children, teenagers, and young adults between the ages of 8 and 35 from the Slovak and Czech Republic. At the time of the publication of the video, he had 50 thousand followers. The average age of the follower was approximately 16 years. In the investigated social advertising, the Slovak audience comprised approximately 53% and the Czech audience 46%. The average video viewing time during the monitored period (from February 17, 2021, to April 24, 2021) was 17.5 seconds.

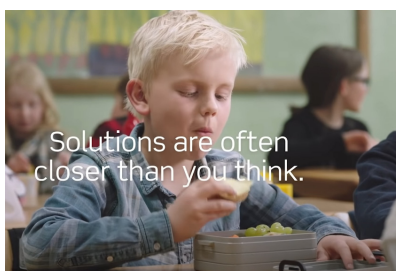
Figure 1: Social Advertising Warning about Food Waste



Source: <https://www.tiktok.com/@yuwac?>

The second video (Figure 2) is posted on the YouTube social network and is not primarily related to the issue of food waste. It is a Norwegian social campaign created in 2017 called The Lunchbox and was created for the Norwegian Directorate for Children, Youth, and Family Affairs. It draws attention to the fact that every child deserves to grow up in a family and the need for substitute family care. The social campaign hit the social network in the summer of 2017 and reached more than 3 million views in Norway (more than half of the Norwegian population) in 3 days. By September 1, 2017, the video had been viewed by more than 270 million people (Smith and Burnett, 2017). She is relatively unknown in Slovakia; only 7 of the respondents in the research knew her.

Figure 2: Norwegian Social Advertising Used in the Research



Source: https://www.youtube.com/watch?v=pYHZhoESs_8

3. Results

3.1 Evaluation of the questionnaire (1st part of the research)

We presented five selected environmental problems to 171 respondents in the questionnaire survey. Their task was to rank these problems from the most serious to the least serious, according to how

they perceived them. As we assumed, the consumers consider the least serious environmental problem among the presented problems to be food waste. Deforestation follows. The respondents consider the amount of plastic waste and air pollution to be approximately equally serious, moreover, they consider water pollution the most serious of the presented problems.

We asked the respondents where along the food chain, according to them, most food is wasted. They chose four categories: agricultural production and food processing, food retailers, restaurants and services, and households. Respondents considered stores, supermarkets, and food sellers the most frequent source of food waste (40.3%). Despite the established assumption, up to 39.7% of respondents said that households and individuals waste most food. Not a single consumer thought that the most waste was at the level of agricultural production.

Based on the knowledge of the colour semantic differential test and the psychology of colours, we evaluated the representation of colours in selected ten food categories. The respondents' task was to assign three colours from the 12 available colours to each food category according to their subjective feeling. At the end of the questionnaire, respondents ranked these 12 available colours according to popularity. Based on the popularity of colours, we evaluated whether consumers assigned more or less popular colours to a given food category. The most popular colours among consumers are generally white, black and light blue (ranked by consumers from 1 to 12, so more popular colours have lower numbers). However, there are significant inter-individual differences among consumers.

From evaluating the representation of colours in selected food categories, we can conclude that the most assigned colours correspond to the most prevalent colours in the given food category (e.g., vegetables – dark green, light green; meat – brown, red, etc.). In the categories of sweets, diet food, healthy food, and fast food, we believe

that the respondents could assign colours to them according to their subjective preferences and the popularity of specific products (e.g., pink and purple predominate in the case of sweets, which corresponds to the colours of the packaging of many popular candies; in the case of diet food, white and light green, which corresponds to the colours most often used on the packaging of diet foods; in fast food, red and black colours prevail, which correspond to the colours used in the marketing communication of fast food chains).

Despite the explicit instruction that the respondents should not assign colours to foods according to the colour of the specific food, but according to their feelings, the assigned colours correspond to the colours of the foods. We can therefore assume that consumers assigned colours to individual food categories based on unconscious associations.

Based on respondents' answers, we compiled a list of foods consumers often throw away. Consumers often throw away baked goods, followed by ready (cooked) meals, milk and milk products, fruit, vegetables, and meat and meat products. As many as 66 respondents (38.6%) said that they do not waste food at all; that is, they do not throw away any food. Ownership of domestic animals and home composting plants were most often mentioned. Nevertheless, we did not find statistically significant differences in food waste behaviour between urban and rural consumers. For some consumers, we assume the provision of socially desirable answers.

We also asked respondents about their favourite most popular foods among consumers in research set X are pasta, pizza, and pancakes. The most popular fruits include strawberries, bananas, and apples, and the most popular vegetables are tomatoes. We can state that the results found to copy the pan-European trend based on the obtained data and information. However, we cannot confirm the research assumption that consumers throw away foods they have a positive attitude toward less often.

Differences in consumer behaviour concerning food waste according to gender, age, education, and marital status were not detected. However, we found differences in consumer behaviour concerning waste among consumers with dietary restrictions (gastrointestinal disease, food allergy, or intolerance). Thirty-four respondents with dietary restrictions took part in the research.

We found that compared to consumers without dietary restrictions, they throw away food more often, $p = 0.036$ (Table 1, Table 2).

Table 1: Consumer Responses According to Whether They Have Any Dietary Restrictions

		Food waste				Total
		None	Low level	Mid level	High level	
Allergy or intolerance IBS, IBD	yes	57	10	34	36	137
	well	6	6	9	13	34
Total		63	16	43	49	171

Source: own processing

Table 2: Mann-Whitney U test

	Food Wasting
Mann-Whitney U	1812.000
Wilcoxon W	11265.000
FROM	-2.098
Asymp. Sig. (2-tailed)	0.036

Source: own processing

Food allergies are life-threatening, so consumers must be cautious when choosing and consuming food. Food intolerances and histamine intolerance are usually not life-threatening, but they can cause significant difficulties. There is currently no effective treatment for irritable bowel syndrome; the symptoms can only be alleviated by proper lifestyle and stress and anxiety management. Inflammatory diseases of the digestive tract are lifelong diseases, the treatment of which is difficult and tiring. We believe that consumers who suffer from some form of allergy, intolerance, or have IBS, IBD, or celiac disease choose their food very carefully moreover, they are much more careful than regular consumers. This may also be the reason why they throw away more food. They are not willing to take risks and prefer to throw away food whose freshness and properties they are not sure about.

Respondents in the questionnaire evaluated two social advertisements. In the following section, we present the results of evaluating these ads on bipolar scales and graphs of the semantic differential. The respondents evaluated the first social advertisement (video No. 1) on eight bipolar scales. Social advertisement No. 1 is considered by the respondents to be averagely interesting, pleasant, and fun. They believe it is not emotional, but they perceive it positively. It is good but weaker.

We also found differences in the evaluation of social advertising between men and women, between consumers depending on their place of residence and jobs, and we also investigated differences in evaluation according to the number of points achieved in a short empathy test.

Men evaluate social advertisement No. 1 as more optimistic and interesting than women who find it funnier. We can assume that the style of humour used in the video appealed to them more.

Between consumers, depending on their place of residence, there is a statistically significant difference only on the bipolar scale - social advertising appears more moving to consumers living in rural areas.

From the respondent's employment perspective, it can be said that consumers who do not have a job consider video No. 1 as more interesting, positive, better, and stronger. Unemployed respondents are mostly younger students who do not yet have a job or a part-time job. As we mention in the ad's description, it targets teenagers and young adults. Thus, we can assume that unemployed respondents evaluate social advertising more positively because they fall into the target category.

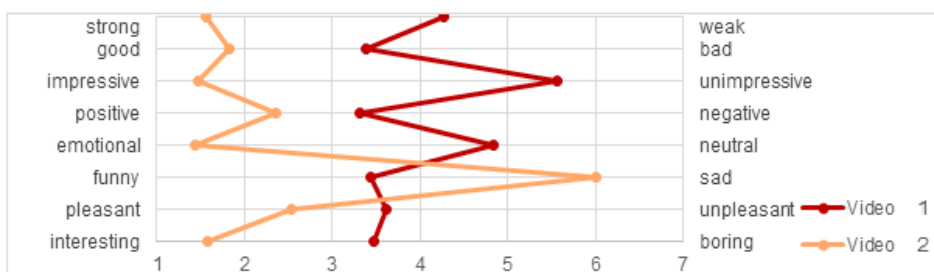
Respondents scored 3 to 9 points in a short empathy test. Accordingly, we divided them into two groups. Respondents who scored lower points on the test (3-5) rate the advertisement more positively on the three SD scales. Video No. 1 was liked by the majority of respondents (57%), and the majority of respondents (54%) also answered that social advertisement No. 1, according to them, sufficiently draws attention to the problem of food waste.

The respondents rated the second social advertisement (video No. 2) equally on eight bipolar scales. Social advertisement No. 2 is considered by the respondents to be very interesting, sad, and emotional but pleasant and positive. According to them, she is very touching, good, and strong. In social advertisement No. 2, we investigated the differences in ratings between men and women among consumers according to their marital status. We also investigated the differences between women on maternity leave and women who study or work. Finally, we verified differences in consumer evaluations of social advertising based on whether they scored lower or higher on the empathy test. Between men and women, statistically significant differences in the evaluation were found only on the bipolar scale. Men rate video No. 2 compared to women as better.

Differences in the evaluation of social advertising No. 2 among consumers according to selected characteristics were not detected. Advertising carries a strong emotional charge, so we believe strong emotional stimuli affect all consumers. Social advertisement No. 2 was disliked by only two respondents. 58% of respondents said that, in their opinion, the advertisement draws enough attention to the issue of food waste.

We compared the average ratings of both social ads (Figure 3), where we made sure that social ad No.2 was evaluated significantly more positively and appealed to more consumers. Social advertisement No. 2 carries a strong emotional charge, the emotional stimuli he works evoke negative emotions (e.g., sadness, worry, regret). However, the story presented ends with a "happy ending," which significantly positively affects consumers and evokes emotion.

Figure 3: Comparison of Ratings of Both Social Ads



Source: own processing

Based on the obtained results, we can conclude that a social advertisement that carries a strong emotional charge (and combines positive and negative emotions) is likely to appeal to more consumers than a social advertisement that contains humour. More research is needed to confirm this conclusion,

as more types of humour need to be included and to compare which type is liked by consumers of different ages.

3.2 Evaluation of emotional reactions of consumers (2nd part of research)

Fifty-nine respondents (research set Y) who took part in the second part of the research were presented with the same two social ads as respondents in research set X. All respondents gave their consent to participate in the research electronically and were instructed on collecting, evaluating, and using the obtained data.

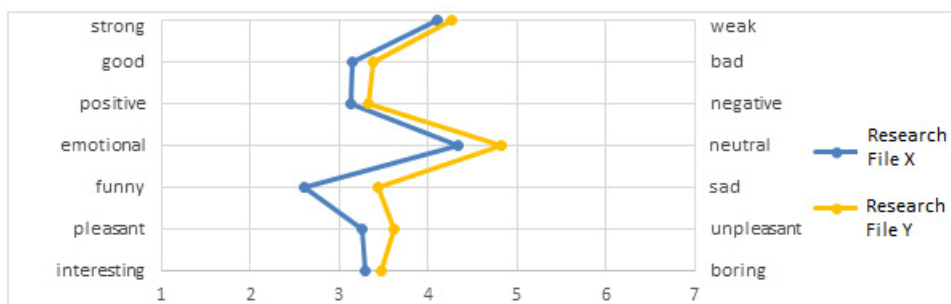
Based on the obtained data from the facial biometrics of the respondents, we found the prevailing emotions that the respondents experienced while watching the selected social ads.

In both social advertisements, it was found that a neutral expression prevails the most, which is natural, especially if the respondent knows that he is being observed. In video No. 1, emotions of joy and sadness prevail. Joy appears when the respondent smiles; therefore, we can conclude

that the respondents smiled while watching the video on average. Grief is recorded, e.g., if the respondent frowns. In video No. 2, sadness prevails because the emotional appeals that the ad contains are intended to evoke pity and compassion. The consumer is usually not aware of his micromimicry. When he knows he is being watched, he consciously pays more attention to his expressions, but some expressions are unconscious.

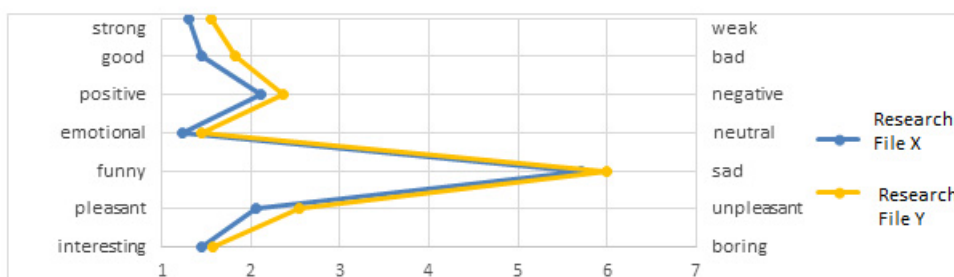
Respondents in research group Y rated two social advertisements also on seven bipolar scales of semantic differential. We also compared the ratings with those of the X research set (Figure 4 and Figure 5).

Figure 4: Evaluation of Video No. 1 on Bipolar SD Scales – Comparison of Research Files X and Y



Source: own processing

Figure 5: Evaluation of Video No. 2 on SD Bipolar Scales – Comparison of Research Files X and Y



Source: own processing

When evaluating social advertising No. 1, we found only one statistically significant difference in the evaluation by respondents from research sets X and Y. Respondents from research set Y rated the advertisement as funnier than research set X. When evaluating social advertising No. 2, we did not find statistically significant differences between respondents' evaluations from both research groups.

The interpretation of the obtained biometric data is quite tricky, mainly because we do not only experience simple but mostly complex emotions, which can be reflected in different ways in our micro-mimicry. Even negative emotional stimuli can cause an emotional response, which in micro-mimicry shows itself as joy or happiness. Therefore, e.g., in advertisement No. 2, we see how joy and sadness develop very similarly. Touching is not a negative emotion but carries elements of both sadness and joy. It is stimuli that evoke a complex emotional response that has great potential to appeal to the consumer or change consumer behaviour.

When we compare the simple conscious ratings of ads "liked/disliked" with ratings on semantic differential scales and biometric data, we see more minor or significant differences. In a simple evaluation, the consumer states what he thinks, but we must consider that he can provide socially desirable answers. With semantic differential scales, the consumer evaluates the presented advertisements using adjectives that often have an unconscious subjective meaning for him. Based on such evaluations, we get broader information about the consumer's feelings. For example, when he states that he did not like the video but simultaneously states on the SD scale that he sees the video as funny but unfavourable, we can assume that it did appeal to him on some level after all. If we add facial biometrics to the conscious evaluations, we get a comprehensive picture of the emotions that the presented stimuli evoked.

4. Conclusion and Discussion

The subject of the research was social advertising as a potential tool for influencing consumer behaviour in the context of food waste.

We make countless decisions every day, many without being fully aware. Such decisions often include whether or not to throw away food. We often treat food as an unlimited resource. A significant environmental problem has arisen from developed countries' abundance (an excess) and our attitude. Today, it is essential to educate in this area and to constantly draw attention to the fact that throwing away food and wasting it represents a significant environmental and ethical problem. Therefore, the paper aimed to provide an image of the issue of food waste and to find out which emotional stimuli in social advertising most influence consumer behaviour in the context of food waste.

We found that Slovak consumers do not consider food waste a serious problem and do not realize that households and individuals, i.e., the consumers themselves, are, to the greatest extent, responsible for food waste. We believe that the country's overall approach to environmental issues is responsible for the lack of awareness of the issue. We need to involve environmental education in schools to a much greater extent; we need to provide students with new scientific knowledge and teach them to think critically (minzp.sk, 2020). We also need more social communication tools for food waste and consumer education. There are several initiatives in Slovakia, but their activities are mainly invisible to the average consumer.

The findings of many authors, e.g., Bagozzi and Gopinath (1999), Passyn and Sujana (2006), Phelps et al. (2014), Achar et al. (2016), Janssen (2018), Světlík and Bulanda (2019) show that emotional stimuli largely influence consumer behaviour and decision-making. The evoked emotions subsequently influence the ongoing cognitive processes, thus, also the consumers' decision-making processes. Decision-making is also an emotional process. Selected studies also indicate that conscious consumer

reactions differ from unconscious ones, so we can assume that many evaluations and decision-making processes occur on an unconscious or partially unconscious level. Consumers are often unaware of how they react to specific stimuli and cannot express their feelings in words (Rybanská, 2017). Therefore, we investigated various dependencies between consumer behaviour and emotional stimuli in the present study.

We found, like the authors Ščepichin et al. (1992), Lindstrom (2011), and Dannhoferová (2012), that colours have a significant impact on how the consumer perceives a particular stimulus. Colours have different popularity among consumers; each consumer has specific colours associated with specific objects and experiences and has a built-up relationship with them. For some foods, we found that consumers could assign colours to them according to subjective preferences and the popularity of specific products and brands. We can therefore assume that consumers assigned colours to individual food categories based on unconscious associations.

We also found that consumers in poor health (have some digestive problems or illness) throw away food at a higher rate. We believe that such a consumer is more rational and carefully considers what he will consume. He is probably more afraid of consuming products nearing their use-by date and is much less willing to take risks. However, even such a consumer is not resistant to emotional stimuli in marketing communication if it is focused on a product of interest to him (Vukmirovic, 2015) (e.g., diet foods, health food products). We reached similar results in the past when we discovered that consumers who evaluate their health more positively behave more responsibly concerning food waste (Rybanská et al., 2020). Abdelradi (2018) found that consumers who are more concerned about their health and a healthy lifestyle produce more food waste.

Respondents who participated in the research evaluated two specific social advertisements containing emotional stimuli. One was specially created for research purposes, and the other, foreign, was chosen so that it was not known to consumers. The created social ad contains humour; the goal of the second social ad is to evoke emotion, pity, and compassion. All listed are strong emotional stimuli influencing human behaviour (Phelps et al., 2014; Achar et al., 2016). For example, humour and laughter subconsciously trigger positive thoughts and feelings. Negative stimuli, on the contrary, evoke fear, sadness, feelings of guilt, and other complex emotions, which are likely to influence consumer reactions (Janssen, 2018).

Based on the obtained results, we can conclude that social advertising that carries a strong emotional charge (that is, contains emotional stimuli) has a high potential to influence and change consumer behaviour in the desired way. Ads that evoke multiple emotions

moreover, complex emotions (e.g., guilt, shame, fear, regret, compassion, etc.) are more effective than ads that only make the consumer laugh, although they evoke positive feelings and emotions.

Food waste is a serious ethical and environmental problem. In our opinion, it is possible to change consumer behaviour and mitigate its negative impact on society and the environment with appropriately set social marketing tools.

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