Swipe and solve?

Exploring conflicting perspectives on food waste apps

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Abstract: This paper examines how environmentally conscious Rotterdammers' perceive themselves in relation to the food waste problem and their discourses and practices related to food waste apps as a solution to this problem. The public discourses about food waste apps tell a rather one-dimensional story, praising these apps as a simple solution to a complex issue, thus yielding the assumption that everyone concerned about food waste should be welcoming and using these apps. However, there is hardly any critical engagement with the reception of these apps, neither in the media nor in academia. To address this blind spot, the paper challenges the one-dimensional understanding of these apps and their users by critically engaging with the discourses and practices surrounding food waste and food waste apps and placing them in the neoliberal context they emerged in. Fourteen qualitative in-depth interviews were conducted, transcribed, and analysed to explore 1) citizens' discourses and practices related to food waste; 2) their discourses and practices related to food waste apps; and 3) the tensions evident in these discourses and practices. A discourse analysis of the interviews shows that depending on the perspective, the respondents adopt two different social identities in relation to food waste. Those identities are based on different beliefs and aspirations and thus entail different discourses and practices regarding food waste reduction. The respondents adopted the "conscious citizen" identity when talking about their concerns about the food waste problem and switched to the "bargain hunter" identity as the discussion turned to food waste apps. However, when prompted to consider food waste apps from the "conscious citizen" perspective, their perception of these apps changed. These findings show that the discussion about food waste apps is much more complex than presented in the current public discourses.

Keywords: food waste; food waste apps; discourse; neoliberalism; governmentality

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1. Introduction

"An app that lets everyone do their bit to reduce waste, while also getting delicious food and supporting local businesses. The businesses get to reduce their waste and also have potential new customers try out their food. Both contribute to a better environment. Win-Win-Win!" (toogoodtogo.co.uk).

Those are the words used on the Too Good To Go (TGTG) website to describe what the food waste app is: a simple and fun way to reduce food waste and help the environment. Food waste is a major contributor to the current environmental crisis, and every year roughly one-third of the food produced worldwide goes to waste (Lucifero, 2016). Food waste is generally defined as any food, raw or cooked, that would be fit for human consumption but is not consumed and consequently thrown away. It occurs at all stages along the food supply chain, including production, distribution, and consumption (Abiad & Meho, 2018). The problem of food waste is linked to several environmental issues such as the loss of biodiversity and natural habitats, soil erosion, and climate change (Lucifero, 2016).

Governments are recognising the problem and are developing plans to address it. According to the report *Circulair Rotterdam* (Gladek et al., 2018), about 82,300 tonnes of food are wasted annually in Rotterdam alone. To reduce this number and waste more generally, the municipality of Rotterdam launched the campaign *Van Zooi naar Mooi*. It is aimed at raising awareness and changing perspectives to make Rotterdam waste-free by twenty-fifty. The report on which the campaign is based suggests some possible actions to reduce food waste, one of which is the use of apps. There are many different kinds of food waste apps. Most work by connecting retailers or restaurants with customers so they can buy leftovers or expiring food at a reduced price. However, not all apps are available everywhere. In Rotterdam, users can opt for apps like Olio, NoFoodWasted, or the most popular one: TGTG.

Food waste apps have been around for about five years and based on the media coverage they appear to be the ultimate solution to the food waste problem. According to Bozhinova (2018) writing for *foodtank*, "organisations and individuals around the world have developed and promoted numerous apps to alleviate the problem" of food waste. *Vogue* claims that "with the help of technology, sustainable eating can be more straightforward than ever before" (Roy, 2019). In *The Telegraph* food waste apps are praised for "facilitating social good and solving some of society's ills" (Bennett, 2020), and Murray (2020) writing for the *BBC* calls TGTG chief executive Mette Lykke "the entrepreneur stopping food waste".

Following this narrative told by companies like TGTG, promoted in the media, and picked up in policy reports such as *Circulair Rotterdam*, the solution to the food waste problem appears to be fairly simple, yielding the assumption that anyone who has access to the technology and is concerned about the impact of food waste on the environment should be using these apps. However, even though

this does not seem the case and despite a lack of robust academic evidence for the effectiveness of food waste apps (Reynolds et al., 2019), there is hardly any critical engagement with the one-dimensional public discourse on food waste apps, neither in the media nor in academia.

The purpose of this research is to challenge the simplistic depiction of food waste apps by giving room to alternative perspectives and allowing for a more nuanced conversation about the role these apps can play in solving the food waste problem. The research explores (1) citizens' discourses and practices related to food waste; (2) their discourses and practices related to food waste apps; and (3) the tensions evident in these discourses and practices. It looks at the question how environmentally conscious Rotterdammers understand and act upon food waste and which role they ascribe to food waste apps in their efforts to address this problem?

To gain an understanding of concrete discourses and practices related to food waste and food waste apps the discussion is placed in the specific local context of Rotterdam, for the municipality profiles itself as innovative with regards to sustainability, works towards becoming waste-free, and recommends the use of apps to reduce food waste (Gladek et al., 2018). Moreover, a nuanced engagement with food waste apps also requires the consideration of neoliberalism as the socio-political context in which the apps are developed, promoted, and used. Approaching neoliberalism from a governmentality perspective provides insights into how people conduct themselves and others and how questions of responsibility and participation play into their practices related to food waste and food waste apps. A discourse analysis of the interviews conducted with environmentally conscious Rotterdammers shows that depending on the vantage point from which the respondents approach the topic of food waste apps, they alternate between two different identities, which in this paper are referred to as the "conscious citizen" or the "bargain hunter".

To start with, the theoretical framework is outlined. The framework is based on neoliberalism and governmentality, focusing specifically on the concepts of responsibility, participation, and conduct. The discussion of these three concepts is followed by considerations about technological determinism. Next, the method section describes why and how the respondents were chosen and interviewed, and how the data was analysed using discourse analysis. The findings are divided into two parts according to the research question: food waste and food waste apps. Finally, the conclusion elucidates how the theory and method contributed to the analysis of the data, the theoretical implications of the findings, and some limitations of the study. The paper ends with some suggestions for future research.

2. Theory

2.1. Neoliberalism and governmentality

An integral characteristic of neoliberalism is its focus on individual freedom and the resulting celebration of individuality and personal choice (Adams & Estrada-Villalta, 2019; Hall, 2011). To ensure this freedom, government involvement is minimised and its role reduced to creating the

conditions under which the market, and consequently the people, can thrive (Ganti, 2014; Triantafillou, 2016). The minimisation of government involvement also minimises the responsibilities carried by the government. Instead, responsibility is passed on through the market to individuals. That also applies to social and environmental issues. Individuals are seen as free agents who communicate their needs and values through their consumption (Crouch, 2012). Thereby they indirectly take on the responsibility for problems like food waste, for such issues are seen as the results of poor choices made by individuals (Adams & Estrada-Villalta, 2019). Accordingly, it is also individuals who are responsible for rectifying these problems through their choices and actions, for example through participation (Baumgarten & Ullrich, 2016; Markantonatou, 2013; Prince & Dufty, 2009).

Thus, participation has arguably been co-opted by neoliberalism (Clarke, 2013). It is framed as an opportunity for people to get involved, empowering them and strengthening democracy (Walker, McQuarrie, & Lee, 2015). However, as pointed out above, participation in a neoliberal context corresponds to the minimisation of governmental involvement, resulting in the transferral of responsibility for solving problems like food waste to civil society (Clarke, 2013). Hence, non-state actors such as communities, social enterprises, NGO's and individuals are required to step in (Baumgarten & Ullrich, 2016; Markantonatou, 2013).

With regards to food waste, this form of participation involves small scale actions like food assistance organisations, which are aimed at providing food to people who cannot afford it themselves by recovering food that would have otherwise gone to waste. According to Galli, Hebinck, and Carroll (2018), such organisations are reflective of the neoliberal endeavour to individualise responsibility by shifting it from the government to civil society. The transfer of responsibility and the corresponding commitment of non-state actors, therefore, turns large-scale problems into matters of individual potential (Prince & Dufty, 2009). What is more, the principles of individual responsibility and participation reinforce themselves: people are made to feel responsible for certain issues; they participate in order to address the issue; however, by participating, they relieve governments from their responsibility, which further intensifies the issue (Markantonatou, 2013). Concerning food waste, organisations and apps appear to be a means for people to meet their responsibility in addressing the problem. They are not forced to volunteer for organisations or use these apps but are inspired to do so by the people and institutions around them.

Moreover, concerning apps specifically, their playful approach to addressing the issue could be another factor motivating people to use the apps. Apps like TGTG gamify the reduction of food waste. Gamification can be "defined as the use of game elements [such as competition and fun] in a non-game context" to better achieve a particular goal (Maturo & Moretti, 2018, p. 1). This strategy is applied in many areas of human life and is becoming a popular tool to encourage people to adopt pro-environmental behaviours by enlisting their active participation (Froehlich, 2015). Hence, within neoliberal governmentality, techniques such as gamification are employed to utilise participation as a tool to encourage the self-governing of people.

As shown above, placing food waste apps in a neoliberal context allows for a more critical discussion of these apps. However, neoliberalism should not be taken as an omnipresent "abstract causal force" that makes things happen (Ferguson, 2010). Such a deterministic understanding of neoliberalism denies individuals any kind of agency and overlooks the diversity of specific configurations of neoliberalism (Clarke, 2008). Thus, it is important to study concrete instances (Ouellette & Hay, 2008). Conceptualising neoliberalism as a form of governmentality can aid in that as it places particular emphasis on context-specific discourses and practices.

A closer look at governmentality illustrates how, in a neoliberal socio-political context, individuals and collectives become involved in the minimisation of governmental intervention and responsibility. The term governmentality was developed by Michel Foucault and is derived from the words government and rationality or mentality (Dean, 2010). Governmentality describes the attempt to influence and shape the conduct of individuals and collectives by making certain kinds of ideas and practices desirable and discouraging others (Corry, 2010; Gordon, 1991). This practice involves a plethora of social and cultural actors and institutions, which create and transmit the knowledge informing the interests, beliefs, and aspirations of individuals and collectives (Dean, 2010). In turn, those interests, beliefs, and aspirations guide how individuals and collectives conduct themselves and others (Lindegaard, 2016; Prince & Dufty, 2009; Rutland & Aylett, 2008).

2.2. Food waste: Guiding action through public discourse

As mentioned above, many different actors are involved in spreading information and thus conducting people's conduct. Concerning food waste, for example, a study by Raippalinna (2020), identifying discourses on food waste employed in a major Finnish newspaper, found three main discourses, all primarily placing the responsibility to reduce food waste on the consumer as an individual. Similarly, in an analysis of communications about environmentally friendly behaviour in France, Rumpala (2011) noticed that public discourses about environmental issues reflect a governmentality which is based on the rationale of individual responsibility.

Other studies show that people's awareness of the problem of food waste affects their attitudes on it and the amount of food waste they produce (Parizeau, von Massow, & Martin, 2015). Hence, educating people and increasing their awareness appears to be a crucial step in reducing food waste by encouraging a shift in social norms (Aschemann-Witzel, de Hooge, Amani, Bech-Larsen, and Oostindjer (2015). By focusing on the need to shift social norms by making individuals more aware, these studies coincide with the individualising discourses on the responsibility for addressing environmental issues.

2.3. Technological determinism

Viewing apps as the ultimate tool to solve the food waste problem by calling on personal responsibility presupposes a deterministic understanding of these apps. A deterministic view on technology sees new technologies as the drivers of social change (Freedman, 2002; Wyatt, 2014).

From a deterministic perspective, they do so through built-in tendencies which promote certain practices, leading to predictable and inevitable outcomes (Spier, 2017).

Technological determinism is often linked to technological optimism which equates technological progress with social progress (Tiles & Oberdiek, 2014). Optimistic determinism is useful for telling a simple story and endorsing new technologies and their potential for doing good (Wyatt, 2014). It can thus serve the interests of tech developers to promote their products rather than necessarily addressing the social problems these new technologies are supposed to solve. (Freedman, 2002). In that sense, technological optimism can serve to depoliticise social issues by presenting new technologies as solutions to the problems, rendering any kind of political intervention redundant. The news coverage of food waste apps mentioned in the introduction is an example of this kind of optimistic technological determinism. A pessimistic view of technology, on the other hand, does not see technology as the necessary driver of social good. Instead, it looks at technologies as artificial creations that not only govern themselves according to their own rules, but also govern humans. Technological pessimists criticise the dependency on technologies and regard them as external forces that control human life (Tiles & Oberdiek, 2014).

Critics of technological determinism, in general, argue that while new technologies are designed in ways that favour certain values and practices, they can be utilised in ways that contradict developers' intentions (Freedman, 2002; Spier, 2017). This also means that the consequences of technologies are not predictable simply based on the technologies themselves. Instead, the development of technologies is shaped by the social and political environment they emerge in and there is the possibility for users to use them in unexpected ways (Freedman, 2002; Spier, 2017). A deterministic view of technology disregards important aspects of reality, impeding careful engagement with the possibilities and limitations of new technologies, making it empirically problematic (Wyatt, 2014).

3. Data and Methods

To examine how environmentally conscious Rotterdammers understand and act upon food waste and which role they ascribe to apps in their efforts to reduce food waste, fourteen qualitative semi-structured online interviews were conducted. Interviews are better suited than other methods to gain a deep understanding of people and how they make sense of their social world (Hermanowicz, 2002). Therefore, interviews were chosen as the method for data collection because the research is aimed at understanding how people conceive of and interact with food waste and food waste apps. Moreover, interviewing (potential) app-users acknowledges their expertise as those who engage with these apps in real life. Understanding how they think about and interact with food waste apps is crucial for assessing these apps more critically, because it expands the conversation about food waste apps beyond the one-dimensional narrative dominating current public discourses. Opting for semi-structured interviews helped to achieve a balance between maintaining control over the topics to be

discussed while also allowing respondents to tell their story. Moreover, because of the use of an interview guide, a certain degree of comparability between the different interviews was achieved (Bryman, 2012).

3.1. Sampling and data collection

To find respondents, purposive and snowball sampling were used (Babbie, 2017). The two sampling criteria were that respondents live and/or work in Rotterdam and consider themselves to be environmentally conscious. No attention was paid to age, gender, or ethnicity because there are no indications in the literature that these criteria are relevant for exploring the discourses and practices related to using food waste apps. A detailed description of the sample follows in the first section of the findings.

To recruit respondents, friends and acquaintances who are known to be concerned about the environment were contacted to participate and asked for further contacts. They were sent a call for respondents which stated that the research was focusing on efforts to deal with food waste in Rotterdam and asked for interviewees who are concerned about the environment and food waste. The recruitment and interview process lasted from March 30th to May 14th, 2020. Due to the social distancing measures related to the Covid-19 pandemic, all but one interview were conducted online using different platforms, including Zoom and Skype. A total of fourteen interviews were conducted. They lasted between thirty to sixty minutes and were audio-recorded, transcribed, and uploaded to ATLAS.ti for analysis. In the presentation and analysis of the results, the names of the respondents were changed to ensure their anonymity.

3.2. Interview guide and operationalisation

The interview guide and questions were designed to collect data that provides insights into how environmentally conscious Rotterdammers (1) problematise and act upon food waste; (2) think about and interact with food waste apps; and (3) relate their use of food waste apps to their other efforts to address the problem of food waste.

The interview guide was organised into four different parts. The first section centred around the respondents' general concerns about the environment, followed by the second part focused specifically on the respondents' thoughts on food waste. The next section included questions about respondents' knowledge about and participation in food waste organisations. Lastly, respondents were asked about their thoughts on and practices related to food waste apps and about the role the respondents ascribe to food waste apps in their efforts to reduce food waste. The first three sections serve to answer the first part of the research question about the respondents' understanding of and actions related to food waste. The last section helps to address the second part of the research question regarding the role respondents ascribe to food waste apps in their efforts to reduce food waste.

As outlined in the theory section of this paper, the central concepts for the analysis of the data are responsibility, participation, and the conducting of the self and others through discourses and

practices. Questions of responsibility and participation were addressed by asking participants whom they believe to be responsible for addressing the food waste problem; if they are actively involved in food waste organisations; and if and how they use food waste apps. To learn about how participants conduct their behaviour and that of others concerning food waste reduction, they were asked how they became aware of the food waste problem and food waste apps; what they do to reduce food waste; how they educate themselves about these topics; and if they talk to others about food waste.

3.3. Discourse analysis

Methodologically, the analysis draws on discourse analysis as outlined by Tonkiss (1998). He defines discourse as "a system of language which draws on a particular terminology and encodes specific forms of knowledge" (Tonkiss, 1998, p. 247). Discourse analysis is the examination of these systems as a constitutive part of social practices and society (Taylor, 2013; Tonkiss, 1998). From a discourse analysis perspective, speech and language are not seen as natural transmitters of information, but as constituent elements of the formation of knowledge that shapes the social world. Hence, social meanings and identities are created and reproduced through language (Tonkiss, 1998). Discourse analysis is interested in the production of these meanings and identities. Thus, the work associated with discourse analysis is textual, but it is aimed at relating language to the larger societal context (Tonkiss, 1998). Moreover, discourse analysis pays attention to the power of certain groups to dedicate or challenge the knowledge that is considered to be true by using language to construct different versions of reality (Taylor, 2013). Discourse analysis can be used to examine any form of language, including spoken language, written texts, images, and practices (Taylor, 2013).

To explore the discourses and practices surrounding food waste apps among environmentally conscious Rotterdammers, the analysis paid attention to several things. By looking for the repetition of keywords, utterances, and metaphors, the main interests and themes were identified (Raippalinna, 2020; Tonkiss, 1998). Moreover, the analysis focused on consistencies but also on conflicting ideas, uncertainties, and different understandings of reality within and between different texts (Tonkiss, 1998). Attention was also paid to implicit assumptions, which privileged certain kinds of knowledge and overlooked other information. Taking those steps served to identify (1) how subjects are defined and define themselves in different contexts; (2) how different objects, such as food waste or food waste apps, are understood and problematised; and (3) what kind of relationships between subjects and objects are established in the discourse (Caruana, Crane, & Fitchett, 2008).

4. Findings

To give some background for the discussion of the findings, a more detailed explanation of the app TGTG and a brief introduction of the respondents is provided. The main findings are divided according to the two parts of the research question: food waste and food waste apps. The first part explores how the respondents understand and act upon food waste. The analysis follows the steps described by Caruana et al. (2008) and identifies how respondents define themselves as subjects, how

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they problematise food waste, and lastly, what relationship they establish between themselves and food waste through their practices. The discussion shows that the respondents think of themselves as "conscious citizens".

The second part focuses on the respondents' perceptions of food waste apps. At first, the analytical steps of Caruana et al. (2008) are followed again to understand how the respondents think about and interact with food waste apps. This analysis shows that in relation to food waste apps the respondents adopt a "bargain hunter" identity. Secondly, the discussion explores how the respondents' perception of food waste apps changes when they are prompted to approach them from the "conscious citizen" perspective. Finally, a comparison between the respondents' perception of food waste organisations and food waste apps highlights the tensions between the discourses and practices the respondents engage in as "conscious citizens" and as "bargain hunters".

4.1. TGTG and respondents

The only food waste app that was mentioned by all eleven respondents who were previously familiar with the concept of food waste apps was TGTG. This app offers restaurants, cafés, and supermarkets the opportunity to sell their leftovers at a reduced price. Participating retailers make their offers available online, usually earlier in the day or a day in advance. App users then get the opportunity to reserve a so-called Magic Box and pay upfront. They are called Magic Boxes because the app-users do not know what kind of food they will get in the box. If users manage to reserve a Magic Box online, they have to pick it up at the location at a specific time.

As shown in Table 1, six of the respondents are currently using the app and one respondent, Finn, has tried using it in the past. However, he quit using the app after about half a year because he was always too late to reserve anything he was interested in and thus not successful in securing any food through the app. All but one participant who are currently using the app are students at Erasmus University Rotterdam. Two of them, Lola and Josie, volunteer for the food waste organisation Groente zonder Grenzen [vegetables without borders] (GzG) and Steph used to be a board member of the Erasmus Sustainability Hub (ESH) at Erasmus University. The only active app user who is not a student at Erasmus University is Ella. She works as a lecturer at the university.

The four respondents who know about TGTG but do not use it, decided against using the app because they already do other things, they believe to be more effective in reducing food waste. All of them are active in food waste organisations in some capacity: Tim and Anna volunteer for GzG, Thea co-founded and works for the foundation Zero Food Waste Rotterdam (ZFWR), and Robert is currently setting up a branch of the food waste organisation BuurtBuik [neighbourhood belly] (BB) in Rotterdam. ZFWR focuses on redistributing waste streams so that food which does not make it into supermarkets is distributed to different projects and people in need. GZG and BB save expiring food from grocery stores or the market. Both organisations work with volunteers to collect food, prepare it, and serve it to guests.

Most respondents who were aware of TGTG before the interview said they had heard about the app through someone in their social circle. Only Steph mentioned that she learned about TGTG when she was researching sustainability initiatives in Rotterdam for ESH. The three respondents who did not previously know about the concept of food waste apps are not involved in any food waste organisations and do not work in food waste related jobs. Yet all three mentioned food waste as one of their main environmental concerns.

Table 1: Overview respondents

Name	Occupation	App use	Food waste organisation
Lola	Student	Yes	GzG
Steph	Student	Yes	ESH
Philippa	Student	Yes	none
Nelle	Student	Yes	none
Josie	Student	Yes	GzG
Ella	Lecturer	Yes	none
Finn	Lecturer	Tried	none
Rose	Lecturer	Not familiar	none
Rita	Other	Not familiar	none
Susan	Other	Not familiar	none
Robert	Food waste	No	BB
Thea	Food waste	No	ZFWR
Tim	Food waste	No	GzG
Anna	Food waste	No	GzG

4.2. Making sense of food waste

4.2.1. *Defining the subject: The "conscious citizen"*

As discussed in more detail in the theory section, the beliefs and aspirations people hold influence how they conduct themselves and others (Dean, 2010; Lindegaard, 2016). In a neoliberal context, the pervasive belief in individual freedom resulting in aspirations of self-fulfilment is often equated with the accumulation of personal property and wealth (Crouch, 2012; Hall, 2011). Accordingly, the dominating discourses and practices are those related to the well-being of and personal benefits for individuals. However, those beliefs are not all-encompassing and are challenged by counter conducts which are grounded in different sets of beliefs and aspirations leading to different ways of conducting the self and others (Dean, 2010). The respondents' perception of the world and their role in it presents such a counter conduct, for their beliefs and actions are fundamentally shaped by concerns about other people and the environment.

All of the respondents expressed serious concerns about the impact humans have on the environment and about the consequences it will have for the planet and the people living on it. When asked about her biggest environmental worries, Lola responded that she is "concerned for ourselves, for future generations, for people in other countries who are already feeling the consequences and are already suffering from them". The notion that these consequences do not affect everyone equally was also pointed out by Anna who remarked that sustaining a current lifestyle in the West often "goes to the cost of many other people that do not live in this society".

Many respondents alluded to the inability to recognise this interconnectedness of all people and nature as one of the major issues of the current environmental crisis. Lola and Tim mentioned that individuals are not separate from each other or the planet, and harming others only results in harming ourselves. Yet, this foresight seems to be clouded by the pervasive focus on individual freedom in neoliberal economic systems. According to Anna, the current economic system is driven by the continuous want for more, training individuals to be good consumers who do not critically think about the consequences human actions can have on the environment. Instead, a lot of respondents believe individuals and companies to be preoccupied with their own benefits such as accumulating more property or wealth. Those practices often take place at the expense of other people and the environment.

4.2.2. Defining the object: Food waste

The preoccupation with the accumulation of property and wealth in a neoliberal context is rooted in an emphasis on individual freedom which goes hand in hand with the minimisation of government intervention and the transferral of responsibilities from the government to civil society (Ganti, 2014; Hall, 2011). This logic is communicated through various actors, including educational and cultural institutions, which are essential in shaping people's interests, beliefs, and aspirations and thus have the power to spread and normalise certain discourses and practices (Dean, 2010; Gordon, 1991). Via these actors, people are instructed how to conduct themselves and others without the need for governmental interference through laws and regulations (Prince & Dufty, 2009; Rutland & Aylett, 2008). This also applies to ideas about environmental issues and how to solve them. Such issues are often portrayed as something that needs to be solved on the individual level, transferring responsibility from government to individuals ((Raippalinna, 2020; Rumpala, 2011). However, critics argue that many of these problems cannot be solved by individuals (Crouch, 2012). This criticism also becomes apparent in the respondents' beliefs about food waste, which they define as a political problem, not an individual one.

The respondents agreed that the food waste problem cannot be solved by individuals alone. Some respondents pointed out that food is wasted at every step along the food production chain. According to Thea, "most of what happens in the [food production and distribution] companies is not even visible to the consumers" and Steph added that "there is a lot of food waste in the harbour which

no one sees, so … you cannot really do something about that as an individual". Additionally, Nelle mentioned that the problem is not just that food is wasted, but that the production of this food already puts enormous strain on the environment: "the amount of land that is wasted just to grow it, then all the transportation, the processing, the packaging and all that".

Consequently, the respondents believe that the responsibility for addressing the food waste problem lies with everyone involved in the production, distribution, and consumption of food. They mentioned the need for individuals, businesses, and governments to act because "change can happen from the bottom or the top, and maybe also from both sides at the same time" (Josie). According to Nelle, this means that supermarkets need to find creative solutions to reduce food waste and to educate their customers about the issue. Moreover, twelve out of fourteen respondents mentioned the government's responsibility to adopt appropriate food hygiene and donation regulations that enable companies to reduce their food waste. Ella and Josie added that governments need to provide the necessary infrastructures, and several respondents pointed to the government's responsibility to educate people. Finn and Rose, both lecturers at Erasmus University, also emphasised the responsibility of educational institutes to teach students about environmental issues like food waste. Moreover, many participants talked about media such as the news, social media, and documentaries as important educational platforms. In addition to documentaries, Rose also pointed to the representations of food and food waste in fiction films as a considerable source of information, for they can "create some knowledge about the problem". Hence, the respondents recognise not only the responsibility of those directly involved in food production, distribution, and consumption but also that of educational and cultural institutions to change the discourses and practices related to food waste.

4.2.3. The "conscious citizen" and food waste

Since these institutions play an important role in shaping people's knowledge about their environment, they are also a factor in how individuals, as free agents, conduct their behaviour and that of others based on that knowledge (Lindegaard, 2016; Rutland & Aylett, 2008). In a neoliberal context, a lot of responsibility is placed on individuals and their behaviour. It is through their actions, including participation in the market, that people can communicate their needs and wants to shape their environment according to their beliefs (Crouch, 2012). Even though the respondents define food waste as a political problem that cannot be solved by individuals alone, they also see individual responsibility and partially adopt the neoliberal view of the empowered consumer and citizen.

Concerning food distribution, some respondents mention the responsibility of consumers to make informed purchasing decisions to guide the practices of food distributors. According to Steph and Philippa, it is up to consumers to communicate their concern about the environment to supermarkets by opting for environmentally friendly products. This translates into the idea that a lack of environmental action taken by supermarkets stems from the consumers' preference for non-

environmentally friendly products. Similarly, at the level of regulation, Susan mentioned that, it is up to the people to bring their concerns onto the agenda.

The respondents also focused on the responsibility of individuals to adopt environmentally friendly practices in their personal lives. A common idea expressed by respondents was that home is always a good place to start and that it is difficult to "complain about other people not doing their part or being environmentally conscious when you at home are throwing away everything" (Josie). The respondents mentioned several practices to avoid food waste, including keeping leftovers, freezing food, planning their groceries, and "reflecting a little bit on what you are buying" (Ella).

Moreover, many respondents referred to the importance of informing other people about food waste to conduct their behaviour related to the issue. Nelle mentioned the value of talking to people and trying to "at least make everyone aware of the problems and aware of… small steps they could take to make it a bit better" (Nelle), because, as Rita put it, "once people are more aware of things they start to think about it". However, telling people is often not sufficient. According to Finn, making the problem more relatable to people is extremely important. One way of doing that is to address people's self-interest by illustrating that wasting food means wasting money, because "then it is not just about your beliefs and convictions, but it translates to something more comprehensible" (Robert).

In addition to trying to address food waste on an individual level, seven respondents are also involved in organisations which offer them the opportunity to educate themselves and others about the food waste problem by creating a strong and caring community. Previous research has questioned civil society organisations because they contribute to the transfer of responsibility for social and environmental issues from the government onto civil society (Galli et al., 2018). Robert (BB) acknowledged that food waste organisations take on the responsibility to address problems of food waste and food insecurity. However, he and the other respondents clearly recognise food waste as a political problem that cannot be solved through organisations alone. At the same time, many respondents emphasised the importance of doing what they can to inspire people to change their behaviour. As Thea (ZFWR) put it,

> I thought I have to fix this problem and now I am just in it to do whatever I can because I know I will not fix the entire food industry… It is more important to inspire people with what you are doing, because everyone I have a conversation with gets inspired by what we do.

Most respondents share Thea's conviction that organisations are a powerful tool to inspire change. According to Anna, being involved in GzG made her "more passionate about the goal" to reduce food waste. Moreover, many respondents mentioned food waste organisations as a valuable source of information about the topic. According, to Robert (BB), this not only applies to those who are actively involved in the collection and preparation of the food, but also to BB guests who only come to eat the prepared meals:

I have had so many conversations with people who are really poor and food waste is not the first thing they care about but still, eating at BB, I have just heard many stories that they start to adjust their own behaviour.

Moreover, food waste organisations are not just aimed at reducing food waste but also at "supporting social structures and maybe people in need of good food or social interaction" (Josie, GzG). Food waste organisation thus combine the respondents' environmental and social concerns. All of these practices do not force people to adopt certain behaviours. Instead, they provide people with knowledge about food waste to change their beliefs regarding the issue and give them the tools to exercise their freedom in a way that aligns with these beliefs.

In short, as "conscious citizens" the respondents acknowledge their responsibility and express the need to do their part in addressing the problem. However, as pointed out by Finn, the ability to make environmentally conscious choices requires knowledge and resources: "it is a lot of effort that you have to make, and I am highly educated, I have a good salary and I am already struggling in making those decisions". Hence, individuals' ability to substantially reduce food waste at all stages of food production and distribution is limited by peoples' socioeconomic background. Accordingly, the respondents agree that food waste is a political problem and that the current economic system needs to change to effectively address the problem. In Rose's words, that means that "we have to stop everything and change everything". Many respondents shared this sentiment. They believe that a fundamental rethinking of the economic system is needed because the current system is built on the notion of a free and competitive market, which disregards the well-being of people and the planet.

4.3. Making sense of food waste apps

4.3.1. Defining the subject: The "bargain hunter"

When respondents talk about themselves in relation to the use of food waste apps, the concerns they have as "concerned citizens" are largely absent. Instead, their discourses and practices are more reflective of behaviours that are rooted in individualistic motives and aspirations to maximise their subjective and material welfare (Froehlich, 2015). In that sense, their conduct approximates a neoliberal governmentality focused on individual freedom, responsibility, and self-fulfilment in which personal advantage takes precedence over the universal well-being of the planet and people (Adams & Estrada-Villalta, 2019; Crouch, 2012). The respondents were also receptive to technological optimism, portraying technologies like food waste apps as the drivers of social progress and as easy solutions to social and environmental problems (Tiles & Oberdiek, 2014; Wyatt, 2014). This view of technology lends itself to the neoliberal focus on individual responsibility because it offers individuals the opportunity to assume their responsibility by using technologies.

Some respondents echoed the media coverage of food waste apps presented in the introduction of this paper. Finn, who tried but failed to use TGTG, called it "a brilliant solution" for

consumers and Ella (app-user) pondered if "it might be that some people feel…accomplished by [using the app] and then feel more responsible and happier about it and they want to do new things for the environment".

Additionally, users and non-users of TGTG pointed out that food waste apps have the advantage of raising awareness on a large scale. The respondents also mention several other things they like about the app, including the surprise factor and the opportunity to learn about and try out new restaurants. However, what respondents like most about using TGTG is the chance to get large amounts of food for little money. Take for example Josie's story about how she became aware of TGTG and why she started using it:

> a few nights a week [my roommate] came back with a big bag of bread and cake and whatever. And I was like, why did you get so much stuff and then she told me about the TGTG app, and I found that pretty interesting. Also, because as a student money is usually a bit of a tight situation, so if there is a lot of cheap food that you can get, you will probably go for it.

This sentiment is apparent in the responses given by everyone who currently is or at some point tried using the app. Hence, contrary to their beliefs and aspirations expressed as "conscious citizens", regarding food waste apps respondents appear to adopt a "bargain hunter" identity.

4.3.2. Defining the object: Food waste apps

As outlined in the discussion about participation, it is used as an instrument in neoliberal governmentality to transfer responsibility for societal and environmental issues from the government to the individual (Clarke, 2013). One tool to attract the active participation of individuals is gamification (Froehlich, 2015). Food waste apps like TGTG appear to gamify the reduction of food waste, thereby facilitating the transferral of responsibility from governments to individuals. According to Steph (app-user), TGTG "is a really engaging type of thing. It is kind of fun, even if you do not think about food waste that much, just the fact that you can get stuff at a reduced price from a restaurant". Similarly, Josie (app-user) mentioned that she is under the impression that the main users of the app are students and young professionals who "just like the hunt for cheap produce". This impression is also reflected in the user-behaviour reported by respondents.

The hunt for food waste via TGTG requires active involvement on the part of users. They need to spend time on the platform to find the food they are interested in, be quick enough to reserve that food before someone else does, and then pick it up at a specific time and location. Successfully obtaining food via the app thus demands commitment and, just like winning a game, can be thrilling: "I always feel very lucky when I get the things I like, so it is always very exciting" (Philippa).

4.3.3. The "bargain hunter" and food waste apps

 As mentioned previously, the discourses and practices people adopt in relation to certain topics are based on their knowledge and beliefs about them. This knowledge is not only shaped by educational and cultural institutions, but also by the social circles that people are a part of (Corry, 2010; Dean, 2010; Lindegaard, 2016). Hence, people's beliefs and actions are often similar to those of others in their social circle.

This also becomes apparent in the conversations that respondents have about food waste with their friends. According to most app users, the exchanges they have about TGTG primarily revolve around where to go to get a lot of cheap food. In fact, most respondents said that in their social circles, food waste apps are not often discussed. Yet, most respondents who were familiar with food waste apps mentioned that they learned about the app from other like-minded people and that they also recommend the app to others.

The app users' practices related to TGTG are reflective of the app's gamified approach to food waste. Most respondents' use of the app is noncommittal and playful. According to Ella, she does not use TGTG regularly but "plays along with" it from time to time. Five out of the six respondents currently using the app said they do not have a structured use of the app, but instead browse through it spontaneously if they are looking for something specific. They also mentioned that they only go to specific places to have some degree of control over the food they will get. Only Lola reported that TGTG plays a role in her regular groceries. She uses the app about "every two weeks or sometimes more often". However, she notes that due to the uncertainty regarding the contents of the Magic Box, using the app in that way requires a lot of planning on her part. Lola's approach to using the app differs from that of other respondents, refuting the deterministic notion that technologies have built-in tendencies which result in a pre-determined way of using them.

In summary, as "bargain hunters" the respondents using TGTG no longer see food waste as a political problem but as an opportunity for personal gain. Through the gamification of food waste reduction, individuals voluntarily take on the responsibility to address the problem by actively participating in a competitive hunt for cheap food. In that sense, using TGTG encourages people to behave according to principles of individualism, responsibility, freedom, and competition, which are associated with neoliberal governmentality. Their practice of using the app is largely detached from the goal of saving food and primarily attached to the notion of personal gain, namely obtaining large quantities of affordable food.

4.3.4. The "conscious citizen" and food waste apps

However, prompted by questions about possible downsides of food waste apps and how using TGTG fits in with other efforts to address the food waste problem, the respondents adopted a more critical tone. Many things that they as "bargain hunters" considered to be advantages of the app are considered to be more problematic. According to Ella (app-user), it is important to be open but critical

towards using the apps because it is not "a unidimensional thing. It can be interesting, and it can have good parts in it, but you have to know the limitations". The main limitations of food waste apps mentioned by respondents are the apps' reach, the devaluation of food, the shift of attention away from food waste, the lack of social justice, and the transferral of responsibility from distributors to individuals.

Initially, app-users and non-users alike mentioned the advantage of apps to reach many people and raise awareness. However, after closer consideration, respondents voiced the concern that the apps' reach might be limited by the fact that the people who use it likely already know about the food waste problem, which is why they use the app in the first place. As put by Tim (non-user): "I do not see [the app] as a hugely impactful thing, I think a lot of people would have already been quite aware". Steph (app-user) also believes that "a lot of people are not really aware" of the app and mentioned her sister who "had no clue that the app was existing". Similarly, Rita and Susan, two respondents not previously familiar with the concept of food waste apps, were surprised that they had never heard about TGTG from anyone in their respective networks even though they are concerned about environmental issues, including food waste. Those observations challenge the effectiveness of food waste apps as a tool to increase awareness.

Nonetheless, even if apps like TGTG reach a wide and diverse audience, the respondents see other issues with the apps that might even intensify the food waste problem rather than solve it. Many respondents agree that the quantity and price of the food obtained through TGTG adds to the devaluation of food by creating a sense of abundance. According to Anna (non-user), a constant surplus of food "makes the food worth less to people because you can always get it, so there is no feeling of scarcity…, so you might as well just chuck it out". Thus, the app's concept of selling leftovers at a reduced price further adds to "the decrease of the worthiness of the product because it comes so cheap" (Josie, app-user). In that sense, the app could even be counterproductive. Moreover, many respondents express the concern that the combination of selling large quantities of surprise food for little money can contribute to household food waste as app-users might throw away parts of the contents of the Magic Box because they do not like or cannot finish all of the food. They also noted that discarding the contents of the Magic Box does not feel as bad as throwing away other food because little money was spent on it and people feel like they already did something good by at least saving some of the food. In the words of one of the app-users:

> food waste is about having too much food… And when you tell me this is an app against food waste that sells huge amounts of food, then it makes no sense because you are actually fostering food waste… in that sense, it is not very good for the concept because you do not learn to only buy what you need. And when you make it so cheap, then it also harms you, because it is like, oh, I can just wait, buy more for less money and then I do not feel that guilty for throwing it away for two reasons. Why? One, I already saved it once, so I am a food

warrior. And two, I did not spend that much money on it. So that might be counterproductive (Ella).

Thus, using TGTG is problematic because it can alter the beliefs and aspirations informing the app-users' practices. The knowledge that the food would have gone to waste essentially makes the practice of throwing away food more acceptable.

Moreover, Ella believes that engagement with the app is not necessarily about food waste, but more about the game, and that using the app is not "changing the way people perceive food and their waste". Instead, the gamification of food waste reduction shifts the focus from saving food to saving on food. This distinction also shows in the conversations that respondents have with their friends. While many respondents said they regularly talk about their environmental concerns with friends and share "solutions that might be better for the environment" (Phillipa), they reported that conversations about TGTG primarily revolve around where to go to get a lot of cheap food. Only Lola noted that when she recommends the app, she also uses it as an opportunity to mention her "personal concern about food waste". Overall, respondents are worried that food waste apps like TGTG distract from the core driver of the food waste problem, namely the continuous need for more and the resulting systemic mismanagement of resources.

Respondents also expressed the concern that the app offers suppliers the opportunity to make a profit off of food waste. On the one hand, this results in fewer donations to food waste organisations, which means that "people who cannot even afford very cheap will be getting less" (Finn, failed user). On the other hand, it makes respondents question the effectiveness of the app in the long run, for it could make suppliers "less inclined to try to reduce the amount of food they have at the end of the day" (Nelle, app-user), meaning that the app "could actually prevent [other] measures or steps" (Lola, app-user). Ultimately, food waste is not reduced but handed over to the individual, absolving suppliers from their responsibility.

In sum, from the "conscious citizen" perspective, the respondents are more critical of food waste apps, as these apps do not reflect the respondents' beliefs in social and environmental justice. While the respondents do not denounce these apps completely, they do recognise the importance to question the use of them. As "conscious citizens", the respondents define food waste as a political problem that cannot be solved by individuals. They are concerned about the way in which using food waste apps could contribute to the encouragement of discourses and practices that devaluate food. From a governmentality perspective, people's actions are shaped through different techniques which promote certain discourses and practices (Corry, 2010; Dean, 2010; Gordon, 1991). Based on the respondents' experiences, food waste apps can be seen as a tool of neoliberal governmentality which encourages discourses and practices rooted in self-interest and profit maximisation. By turning food waste reduction into a competition and shifting the focus onto personal gain, food waste apps distract from the systemic issues underlying the food waste problem. In that way, they contribute to the

minimisation of governmental responsibility and intervention regarding social and environmental issues (Clarke, 2013; Ganti, 2014). However, the respondents are not completely opposed to individual responsibility. In the case of food waste organisations, they are willing to take on responsibility because, contrary to food waste apps, the organisations aim to contribute to the well-being of other people and the planet.

4.3.5. *Comparing food waste apps and food waste organisations*

The respondents believe food waste organisations to be more effective than apps in motivating people to reduce food waste. While apps emphasise the competition of hunting down cheap food, organisations make the magnitude of the food waste problem more visible and thus inspire pro-environmental behaviours. In Robert's words:

> I think we [BB] are more tangible. There is a difference in getting a story through your phone or really seeing the story and knowing the suppliers. And I think that is a big difference. They [TGTG] will be doing great work as well, but I feel it is further from you, more distant. You can just click and scroll and see this is what I want. I question are they [app-users] really concerned with [food waste] or do they just want to have a fancy Magic Box.

While apps might shift the focus away from the goal of reducing food waste, organisations are rooted in a community concerned about the problem and determined to address it. Being involved in such a community of concerned citizens makes people more passionate about the problem and encourages them to change their behaviours. Based on the respondents' experiences with TGTG, using the app does not have an equally transformative effect on people. Moreover, apps like TGTG, contribute to the redistribution of food waste away from organisations which support people in need towards app-user who are able to pay for it.

In short, food waste apps, contrary to organisations, do not address the respondents' concerns about building a supportive community, educating people about the food waste problem, and caring for others. Accordingly, while half of the respondents, some involved in food waste organisations, have tried using or are using TGTG, most of them remarked that using the app does not fit in with their other efforts to behave more environmentally friendly. As Philippa put it: "To be honest, it is more of a gimmicky thing to use the app. I do not think it actively contributes to my personal food waste because I am still just buying more food". The comparison between organisations and apps serves to further illustrate the shortcomings respondents see with TGTG, and the tensions between respondents' general concern about food waste and their use of the app. Compared to the positive reception of food waste apps from the "bargain hunter" perspective, the criticism voiced by respondents from the "conscious citizen" perspective aligns with pro-environmental behaviours that are not grounded in individualism but in environmental concern and selflessness (Froehlich, 2015).

5. Conclusion

5.1. Main findings and theoretical implications

This paper aimed to challenge the one-dimensional public discourses on food waste apps as a simple solution to the food waste problem. To do so, it explored the question how environmentally conscious Rotterdammers understand and act upon food waste and which role they ascribe to food waste apps in their efforts to address the food waste problem.

Regarding the first part of the research question, the analysis showed that the respondents understand food waste as a political problem that cannot be solved by individuals alone. They believe everyone to be responsible for addressing the problem: government, industry, and individuals. Moreover, all respondents expressed concern for the well-being of the environment and other people. Hence, in relation to food waste, all participants adopted the "conscious citizen" identity.

With respect to the second part of the research question, respondents' understanding of food waste apps was less straightforward. Initially, most respondents, particularly app-users, talked about food waste apps as a tool for them to obtain large quantities of food for little money. In that sense, the aspects the app-users mentioned most about the apps are not reflective of the concerns they expressed as "conscious citizens". Instead, they adopted a "bargain hunter" identity. From this perspective, the respondents joined in the technological optimism dominating the public discourse, which portrays food waste as a problem that individuals can solve with the help of food waste apps. The dichotomy between the "conscious citizen" identity and that of the "bargain hunter" illustrates that efforts to reduce waste and using food waste apps are two separate entities that are based on different interests and aspirations, resulting in distinct discourses and practices. This observation was underscored by the shift in the respondents' perception of food waste apps when they were prompted to consider the role that these apps play in their general efforts to reduce food waste. From the perspective of the "conscious citizen", the respondents were more critical of the apps.

The analysis thus shows that the conversation about food waste apps is much more complex than depicted in public discourses. In that effect, this research is a first step towards opening up the discussion about food waste apps. The research also shows that it is simplistic for people, but also for industry and governments, to use or recommend the use of apps as the ultimate solution to the food waste problem. Even though this does not mean that apps should be counted out completely as a possible part of the solution, it is important to look at food waste apps more critically.

Neoliberal governmentality served as the theoretical framework for the analysis. Grounding the analysis in the socio-political context in which the apps are developed, promoted, and used helped to question the public discourse about these apps and to contextualise the respondents' understanding of food waste and food waste apps. However, particularly the comparison between food waste apps and organisations showed the importance of a nuanced engagement with neoliberalism. The emergence of apps and organisations can both be seen as a result of neoliberal governmentality, transferring responsibility for solving social and environmental problems from the government to civil

society. Yet the respondents were critical of the former and supportive of the latter because the organisations correspond with their beliefs about environmental and social justice while the apps do not. Hence, the findings substantiate the call to not treat neoliberalism as a uniform force that denies individuals their agency (Clarke, 2008; Ferguson, 2010). Furthermore, approaching neoliberalism from a governmentality perspective aided in understanding the divergent perception of food waste apps and organisations, by placing attention on how people conduct themselves and others and how questions of responsibility and participation play into their practices related to food waste and food waste apps.

The data for the analysis was collected through semi-structured qualitative interviews. The conversational nature of this method and the resulting co-creation of knowledge moved the respondents' considerations about food waste apps beyond the surface level. This critical examination of the phenomenon revealed the conflicting opinions the respondents' have on food waste apps. Furthermore, the current public discourse about food waste apps is removed from the practical use of these apps. Interviewing (potential) app-users moved the conversation into a concrete real-life context and acknowledged the expertise of those who are concerned about and work to address the food waste problem.

5.2. Limitations

One limitation of this research is the sample. Fourteen respondents were interviewed, of which seven are currently using TGTG or have tried using it in the past. Four respondents knew about the app but decided not to use it and three of the respondents were not familiar with food saving apps and how they work. Firstly, to achieve a higher degree of comparability between the first two groups, a bigger sample for each group would be preferable. Secondly, during the interviews, it became apparent that those respondents who were not familiar with any food waste apps before the interview had little to add to the conversation. Even though the three respondents gave useful input about the other themes they could only speculate about food waste apps. Since these apps are a major part of this research, good knowledge about food waste apps should have been a sampling criterium.

Another limitation of this research was the data collection. Due to the social distancing measures related to the Covid-19 pandemic, most interviews were conducted online. Generally, online interviews are more difficult to manage than in-person interviews and misunderstandings are more likely to occur (Hermanowicz, 2002). Moreover, during some of the interviews, the call quality was unstable, possibly compromising the conversation.

5.3. Suggestions for future research

Food waste apps are seen as a tool to enable people to reduce food waste and to educate them about the problem. However, many respondents questioned the effectiveness and the reach of food waste apps. Hence, future research could explore those two aspects. Firstly, the sample only included people who are concerned about the environment and food waste. Consequently, the respondents

could only speculate about the ways in which food waste apps influence the actions of app-users who are not concerned about food waste. Secondly, regarding the reach of food waste apps, it could be telling to compare the knowledge about and engagement with food waste apps between different occupational and age groups. Although not representative, the data collected for this research suggests that people who are not connected to a university context are less likely to know about food waste apps. Examining this further could provide valuable insights into the ability of apps to reach and educate different groups of people.

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Appendix A

Interview guide
1) Concern about the environment
    a. Are you concerned about human impact on the environment?
    b. What are your biggest concerns? Do you try to address them? How?
    c. How do you educate yourself about these concerns?
    d. In what ways do these concerns play into the social interactions you have? Do you talk to other people about your concerns?
    e. In what way do you feel responsible for addressing the environmental concerns you have? How do your concerns about the environment inform your behaviour?
    f. What role do you think does food waste play in those larger concerns?
2) If food waste is a concern…
    a. When and how did you become aware of the food waste problem? Are you concerned about it?
    b. How do you educate yourself about food waste? Does this differ from the way you inform yourself about other environmental concerns?
    c. Do you talk to other people about food waste?
    d. Do you feel responsible for reducing food waste? What did you decide to do about food waste? Why?
    e. Who do you think is responsible? Why?
3) Food waste initiatives
    a. Are you aware of any initiatives aimed at reducing food waste? How do they work?
    b. Are you active in any of these initiatives?
    c. For how long have you been active in the initiative?
    d. What does your involvement in the initiative look like?
    e. What impact do you think it makes?
    f. Has your involvement in the initiative and engagement with the topic changed your perception of food waste?
4) Food waste apps
    a. Are you aware of the existence of food waste apps? Which apps do you know? What are the differences between these apps?
    b. How did you first become aware of food waste apps?
    c. What do you think about these apps?
    d. Which apps do you use? Why?
    e. Why did you decide to (not) use them?
    f. Can you describe to me how you use the app(s)? What do you (dis)like about these apps?
    g. How do you think using these apps fits into your other efforts to reduce food waste? How does this relate to other environmental efforts more generally?
    h. Do you recommend using food waste apps to other people?
    i. Do your friends use food waste apps?

Appendix B

List of codes

Code Group	Definition	Codes
Awareness	How did participants become aware of the food waste problem? Participants' beliefs about population's awareness? (food waste or environmental crisis)	Awareness: inherent concern Awareness: primed Awareness: upbringing Assuming general awareness of problem Increase awareness society Societal ignorance/lack of awareness
Conversation	With whom do participants talk about their environmental concerns? With whom do participants talk about food waste? How do they navigate these conversations?	Conversations: family Conversations: friends Conversations: strangers Conversations: unaware people Social bubble Networking Conversations: avoidance Conversations: not being too pushy Subtle education
Environmental concerns	What are the participants' biggest environmental concerns?	Consumerism Animal agriculture CO2 Fashion industry Food industry Global warming Loss of biodiversity Plastic Resources Sewage system
Food waste	Which beliefs do participants hold about food waste? What do they think plays into the problem?	Food waste: approachable Food waste: resource Food scarcity Food waste: high-quality food Food waste: not personally concerned Food waste: devaluation Food waste: common Food waste: habit Overproduction of food Scale of the problem
Information	How do participants inform themselves about the environmental crisis? How do participants inform themselves about food waste? What do they say about the practice of informing themselves about environmental issues/food waste?	Common sense Documentaries Governmental campaigns Organisations Internet Lectures Media Podcasts Public persona Social circle Social Media Research Passive Critical engagement

Organisations	What do participants think about food waste organisations? Benefits of food waste initiatives? Why do participants participate in food waste organisations? What does participation in a food waste organisation include?	Awareness Community Inclusive Influence action Reach Spill-over effect Tangible Scale of problem Social bubble Rotterdam Food scarcity Impact: drop in the ocean Participation: being creative Participation: working with people Participation: volunteering Participation: guest
Practices: environment	What do participants do to address their environmental concerns? Why do they address their concerns? How/why are they struggling to address their concerns?	Avoid flying Conscious purchases Question impulses Less plastic Recycle (paper) Reusable cups/boxes Second-hand Connectedness of everything Sympathy/empathy Solve problems: fundamental rethinking Disconnect: beliefs/actions Complexity of issue: overwhelming
Practices: food waste	What do participants do to address their concerns about food waste? Why do they address their concerns? How/why are they struggling to address their concerns?	Composting Conscious purchases Question impulses Creative cooking Eat before it goes bad Reframe expiry date Freezer Keeping leftovers Planning Sharing food Shop stickers Using whole vegetables Vegetarian/vegan Disconnect beliefs/actions Complexity of issue: overwhelming
Practices: food waste apps	What do they use food waste apps for? How do participants use food waste apps?	Bakery Groceries Restaurants Supermarkets Low on food Occasionally/spontaneously Regularly Planning Not a hot topic Critically Gamification

TGTG: Problems	Which problems do participants see with TGTG?	Abstract Availability Cheap Competition initiatives Distracts from core problem Inconvenience Ineffective Impact: drop in the ocean Once home Planning for waste Profit oriented Quality Reach Sense of achievement Surprise Too much
TGTG: Strengths	Which advantages do participants see with TGTG?	Awareness Cheap Conversation starter Easy to use Emergency solution It's something Food is saved Experimentation Helping suppliers Reach Surprise Take-out
Recognition	How did participants recognise that food waste is a large-scale problem?	Best before date relabelling Documentaries Hearing about dumpster diving Working in hospitality sector Participation in organisation
Responsibility	Whom do participants believe to be responsible for addressing the food waste problem?	Companies/industry Government Individual Restaurants Supermarkets System Solve problem: fundamental rethinking
Conduct	How do participants try to conduct other people's behaviour? How do people conduct their own behaviour?	Subjectification: changing environment/circumstances Subjectification: informing others Subjectification: inspiring change Subtle education Bad conscience Feeling good Learning from others Putting thoughts into action Sympathy/empathy