Normalising the “ugly” to reduce food waste: Exploring the socialisations that form appearance preferences for fresh fruits and vegetables

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Normalising the 'Ugly' to Reduce Food Waste: Exploring the Socialisations that Form Appearance Preferences for Fresh Fruits and Vegetables

Abstract:

Fruits and vegetables that fail to conform to an aesthetic standard are labelled suboptimal and are often devalued and ultimately discarded. Although consumers perceive suboptimal produce negatively, little is known about how these perceptions are formed and indeed the socialisation process behind them. Using 11 focus group discussions with New Zealand children aged 5-11 (N = 97), this study explores these socialisations. The results show that family practices around growing and repurposing suboptimal produce, learning about suboptimal produce waste, and acting on that knowledge when making produce choices, facilitates the acceptance of suboptimal produce. Alternatively, observations of parents' produce choice behaviors, and parents' instructions or norms for choosing, preparing, and eating produce socialise the rejection of suboptimal produce. The implications of the study show how environmental sustainability with respect to the food waste problem could be effectively addressed if public policy moves towards strategies that 'normalise' suboptimal produce. The interventions recommended show how public campaigns would be more effective by targeting children, who are not only concerned about environmental sustainability, but also through their growing agency and positive pester-power may influence households to reconsider how food is valued.

Keywords: consumer behaviour, consumer socialisation, environmental sustainability, food waste, children

Background

The Food and Agriculture Organisation of the United Nations (FAO) estimates that one-third or 1.3 billion tonnes of food produced for human consumption is either lost or wasted annually (Gustavsson et al., 2011). In 2015, the United Nation's set forth Sustainable Development Goal #12 which describes meeting "Target 12.3" to halve per capita food waste throughout the food supply chain by 2030 (United Nations, 2015), a goal that was also adopted by governments representing 50% of the world's population and 50 of the world's largest food companies (Flanagan et al., 2019).

Of all the food categories, the fruit and vegetable category (including roots and tubers) records the highest share of food waste at 45% (FAO, 2017), a significant proportion of which could be avoided (Gunders, 2012). Of the many contributors (such as the perishable nature of fruits and vegetables), aesthetic or cosmetic standards are repeatedly mentioned as an important cause of fruit and vegetable waste (Gustavsson et al., 2011, Parfitt et al., 2010, Lebersorger and Schneider, 2014, Beretta et al., 2013, Göbel et al., 2015, Halloran et al., 2014, Porat et al., 2018). Fresh produce that consumers consider inappropriate or undesirable because it visually deviates from the normative appearance is called "suboptimal" (Aschemann-Witzel et al., 2015). Specifically, fruits and vegetables that have an atypical shape, size, colour, and/or have skin blemishes are deemed suboptimal because they are visually unappealing, however, when compared to 'optimal' produce they do not lack nutritional or hygiene qualities (Hyde et al., 2001). The lack of consumer demand to buy and consume produce that look atypical, and retailers' opportunity to generate greater profits from perfect-looking produce, have propagated the use of cosmetic standards (Stuart, 2009a, Gunders, 2012). Retailers reject imperfect produce on the rationale that consumers expect produce to look perfect (Block et al., 2016, Aschemann-Witzel et al., 2016). Indeed, empirical research shows that consumers typically exhibit low willingness to buy and

consume suboptimal produce (e.g., Rohm et al., 2017, Jaeger et al., 2018) because of poor quality perceptions, which inadvertently calls for price discounts, and arguably also facilitates food devaluation (Janssen, 2018, de Hooge et al., 2017, Aschemann-Witzel, 2018, Loebnitz and Grunert, 2018, Loebnitz et al., 2015); although, selling suboptimal produce in a manner where buyers find value in purchasing and consuming them without price discounts continues to be challenging (Aschemann-Witzel et al., 2017).

Although consumers are wary about the edibility of suboptimal produce, little is known about the factors contributing to this wariness. This article adopts a sociological approach to understand why consumers are averse to suboptimal produce. With public policy moving towards achieving greater food well-being (FWB) by fostering "a positive psychological, physical, emotional, and social relationship with food at both the individual and societal levels" (*p.* 6), a consumer food socialisation perspective allows researchers to understand how consumers engage with food and what shapes their relationship with food (Block et al., 2011). From a food waste perspective, greater FWB would imply that consumers waste food less because food is valued more and not treated as a disposable commodity (Scott and Vallen, 2019). At a time when fruits and vegetables are an indispensable component of a healthy and disease-free life (Aune et al., 2017), finding solutions that may encourage consumers to value, accept, and not waste suboptimal produce is necessary. Indeed, if suboptimal produce is saved from landfills, it could potentially meet global hunger and nutritional needs (Royte, 2016), thereby achieving the food waste reduction target and greater FWB.

Despite efforts to reduce food waste, researchers now reconcile that waste behaviours are complex (Quested et al., 2013) and are often embedded in the social and material contexts of everyday life (Evans, 2011). This underlines the need to understand food waste from a sociological lens (Southerton and Yates, 2015). Whilst past literature has taken an empirical

approach to profile consumers who are willing to accept suboptimal produce (e.g., Loebnitz et al., 2015) and to test various marketing techniques to sell suboptimal produce in-store (e.g., Cooremans and Geuens, 2019, van Giesen and de Hooge, 2019), there is a significant dearth of research exploring the socialisations which might help to explain consumer suboptimal produce avoidance and acceptance behaviour. Further, most food socialisations (including food appearance preferences) are developed in childhood and persist through adulthood (Gelman and Echelbarger, 2019). This paper therefore explores children's experiences with fruit and vegetable appearance to understand the socialising factors that form appearance preferences for fresh fruit and vegetables. The research questions are: (1) What are the socialisations that contribute to the acceptance of suboptimal produce?; and (2) What are the socialisations that contribute to the rejection of suboptimal produce?

Food Socialisations

Food appearances are significant cues from which quality inferences are drawn, which are then used to predict choice (Steenkamp, 1990, Cardello, 1994). This is exemplified for fresh fruits and vegetables because they are either sold loose or with transparent packaging, leaving appearance as the sole criteria for quality evaluations (Deng and Srinivasan, 2013). Thus, retailers have (for a long time) used cosmetic standards to provide consumers with impeccable produce to represent the supreme quality of food products they offer (Fulponi, 2006). This intentional invisibility of suboptimal fruits and vegetables has arguably helped form distrust towards suboptimal produce. As consumers have grown more distant from the foods they consume and food systems have become more institutionalised and structured, food is less valued (Block et al., 2016), altogether assisting in turning a blind eye to the waste that is occurring.

Consumer food preferences are rooted in familiarity, especially for unfamiliar fruits and vegetables (Rozin, 2005, Birch and Marlin, 1982, Tuorila et al., 1994). The effect of familiarity has been seen for suboptimal produce as well. For example, Yue et al. (2007) showed that consumers who grew apples and purchased them regularly were more willing to accept blemished fruit. Similarly, children who were exposed to and had experience of eating suboptimal fruits and vegetables were less likely to perceive cosmetic defects to affect quality attributes (Makhal et al., 2020). At the store level, consumers are more likely to choose suboptimal products if they are familiar with the labelling scheme used to market them (Aschemann-Witzel et al., 2018a). Familiarity ties in strongly with food socialisations, which is a product of the food environment one is raised in (Rozin, 1977).

The complex nature of food waste behaviours requires that a broader sociological context of waste behaviours is explored (e.g., O'Brien, 2013, Evans et al., 2013). Thus, researchers advocate applying social practice theories to explain why food waste exists when it is environmentally, socially, and economically deplorable (Ganglbauer et al., 2013). From a broader sociological standpoint, Evans et al. (2013) highlight the geo-political and economic policies of the post-war rationing period (the 1950's) which propelled food supply (through food production) without taking demand as an upper ceiling for supply limits. This led to surplus food production, excess food availability, and lower food prices, which altogether made food a disposable commodity. Hence, O'Brien (2008) calls the modern world "rubbish societies". These factors, among others, have since engendered a culture of food devaluation and waste (see Evans et al., 2013). A similar argument has been used for suboptimal produce: producer organisations and retailers have been blamed for endorsing perfect-looking produce which has *trained* consumers' preferences for produce that fit a specific appearance aesthetic (Devin and Richards, 2018, Osborn, 2016). This training reflects the socialisation of appearance preferences. Consumer socialisation is fundamentally a learning process of

acquiring the relevant knowledge, skills, and attitudes to function as a consumer in the marketplace (John, 1999). Exploring consumer socialisation is useful in understanding how preferences form (Ekström, 2006). Similarly, understanding food socialisations uncovers how food preferences form. Parents play a key role in moderating the types of food children are exposed to, which may affect the food choices people make throughout their lives. For example, increasing exposure to different types of fruits and vegetables early on in childhood sustains fruit and vegetable preferences into adulthood (Connell et al., 2016). This means that consumers are hardwired to keep going back to what is familiar. Therefore, food socialisations influence how consumers learn to perceive and value food.

Arguably, consumers are exposed to the appearance of fresh produce during food consumption, cooking or food preparation, growing produce at home, and grocery shopping (Burton and May, 2016). Research shows that when families facilitate children's active engagement in such activities, it increases fruit and vegetable familiarity, liking, and consumption (Burton and May, 2016, Chu et al., 2014), paralleling greater FWB (Scott and Vallen, 2019). Family food practices help socialise what is considered normal, which eventually leads children to follow the family's and/or society's standardised consumption practices (Donovan, 2016). The socialisation process results from simply observing how family members behave (observational learning/implicit food socialisation) or by following instructions set out by parents and family members (instructional learning/ explicit food socialisations) (Block et al., 2011). This learning leads to beliefs, values, attitudes, and preferences being internalized, eventually forming normative beliefs (Moore et al., 2002). For example, consumers who are more food involved, waste less food as opposed to those who are less food involved (Mallinson et al., 2016). Explicit socialisation also happens through learning and acquiring information. For instance, providing information about food waste avoidance is effective in increasing suboptimal food choice in-store (Aschemann-Witzel et

al., 2018a, Aschemann-Witzel, 2018). Similarly, knowledge and awareness about sustainability issues result in children's use of positive pester power to influence family consumption practices at home (O'Neill and Buckley, 2019). As children's involvement in the family's food decisions has increased (Marshall et al., 2007, Ekström, 2010), their voices are being increasingly heard by parents, governments, and researchers (Gram, 2015, Gram and Grønhøj, 2016). We are witnessing global campaigns (such as 'Fridays for Future') spearheaded by child activists whose knowledge and concern about the environment is influencing government policies around the world (https://www.fridaysforfuture.org/about). This research, therefore, explores through children's own voices how appearance preferences for fresh fruits and vegetables are socialised, thereby demonstrating how these affect the rejection and acceptance of suboptimal produce. See figure 1 for a theoretical framework of the constructs informing this research.

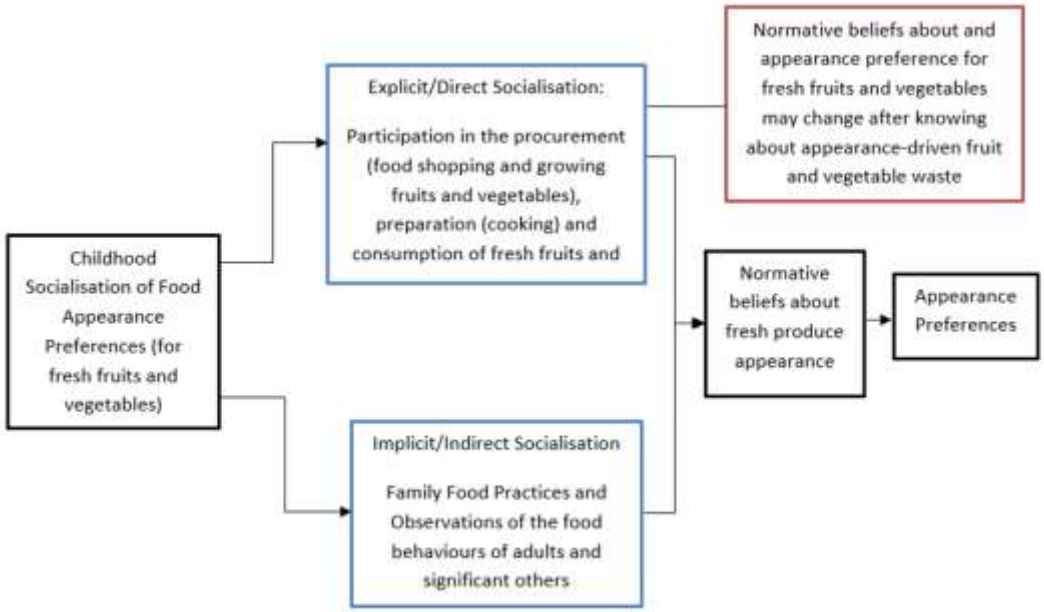

Figure 1: A theoretical framework of the main constructs informing the socialisation of food appearance preferences for fresh fruits and vegetables

Methodology

A qualitative research design was deemed most appropriate to explore the socialisation of appearance preferences for fresh produce (Gummesson, 2005). Focus group discussions were conducted with children aged 5-11. Focus groups are useful with children because the group setting allows children to bounce ideas off each other and build on other's opinions (Gibson, 2007, Gibson, 2012), without feeling the pressure to answer every question. The study had ethical approval from the University of Otago and the school, and the child participants and their parents had given their written and informed consent. To reduce selection bias, participants were recruited from a large (approximate enrolment of 500 students annually), co-educational, central primary school in the South Island of New Zealand, where the school's teachers distributed the information sheets and consent forms to students. To prevent response bias, children were told that the study was about their preferences for fruits and vegetables. To help children feel at ease we collected data on the school's premises, a familiar environment, allowing free expression of knowledge, experiences, and perceptions (Morgan et al., 2002). This study is part of a larger research project on children's fruit and vegetable appearance preferences.

Sample and Stimuli

Of the 170 information and consent sheets distributed, 97 children (≈ 57%; 46 boys, 51 girls) returned the forms. The sample properties are presented in Table 1.

Total Sample (N) = 97	**Boys (*n*=46)**	**Girls (*n*=51)**
5-6 year olds (*n* = 13)	6	7
7 year olds (*n* = 19)	9	10
8 year olds (*n* = 22)	10	12

9 year olds (*n* = 18)	9	9
10-11 year olds (*n* =25)	12	13

Table 1: Sample Properties by age and gender

To group children by age, parents were asked to provide their child's age on the consent forms. In total, our sample comprised 11 focus groups, including two groups of five to six year olds (n = 7 and 6 respectively), two groups of seven-year olds (n = 9 and 10 respectively), two groups of eight-year olds (n = 11 and 11 respectively), two groups of nine year olds (n = 9 and 9 respectively), and three groups of ten to eleven year olds (n = 9, 8, and 8 respectively). The focus group sizes were similar to those conducted with children in past research (Bertol et al., 2017). Stimuli (suboptimal varieties of a carrot, apple, pear and banana) were used as cues during the discussions (see figure 2) to help anchor the discussions to the topic (Kennedy et al., 2001, Krueger and Casey, 2009, Stewart and Shamdasani, 1990).

Figure 2: Suboptimal fruits and vegetables used for the focus group discussions (Clockwise from top left - carrot, pear, banana, and apple)

Procedure

A semi-structured question protocol was designed and pilot-tested with children aged between 5 and 11. This helped with identifying language that was familiar to children, e.g., using 'looks' instead of 'appearance'. The questions focused on situations where children are exposed to fresh produce. Specifically, questions pertained to family practices around the purchase (e.g., *Do you go shopping for fruits and vegetables with mum or dad? How do you choose produce in-store? What do mum or dad say when you are choosing produce?*); procurement and use (e.g., *Do you grow fruit or veg at home? Can you share some of your experiences with growing produce at home? Do some of them turn out like this (show stimuli)? What do you do with them?*); and consumption of fresh fruits and vegetables (e.g., *What do you do with bruised/wonky fruit and vegetables at home?*). At the end of the interview, children were also asked about their knowledge about food waste (e.g., *What do you think about food waste? What have you learnt in school/from your parents?*"). The semi-structured protocol ensured consistency, whilst also allowing flexibility for respondents to freely express themselves (Ghauri, 2005). The focus groups were facilitated by trained moderators who are experienced with working with children and ensured every member got a chance to answer questions. The facilitators probed children to explain their answers further, to gather a richer understanding of their experiences. Questioning was ceased when knowledge saturation was reached, and the themes discussed were being repeated. The focus group discussions were conducted during two school days within an hour slot allocated to every age group. Upon the arrival of the participants, the instructions for the group discussion were explained in addition to assuring anonymity and confidentiality. Hence, we report our results using fictitious names. The focus group discussions lasted between 25-40 minutes approximately.

Data Analysis

The focus group discussions were transcribed verbatim, and thematic analysis was undertaken to identify themes (Braun and Clarke, 2006, Saldana, 2009). All authors were engaged in coding and analysing the data, and the themes were reviewed at every stage of the coding process. Initially, the transcripts were thoroughly read multiple times after which the raw data was coded allowing for general topics and themes to emerge from the data. Following this, a more focussed closed coding scheme was used to identify an exhaustive list of sub-themes (Corbin, 2008). These sub-themes were then merged into broader and meaningful themes. This inductive approach revealed themes that serve to specificallly answer the research questions representing (1) socialisations that lead consumers to accept suboptimal produce and (2) socialisations that lead consumers to reject suboptimal produce (see figure 3 and 4 for an overview).

Results and Discussion

The findings reveal a total of six major themes related to socialisations of appearance preferences for fresh produce. These are separated into two groups: First, those related to **accepting and valuing suboptimal produce,** and second, those which seem to encourage young consumers to **reject and devalue suboptimal produce**.

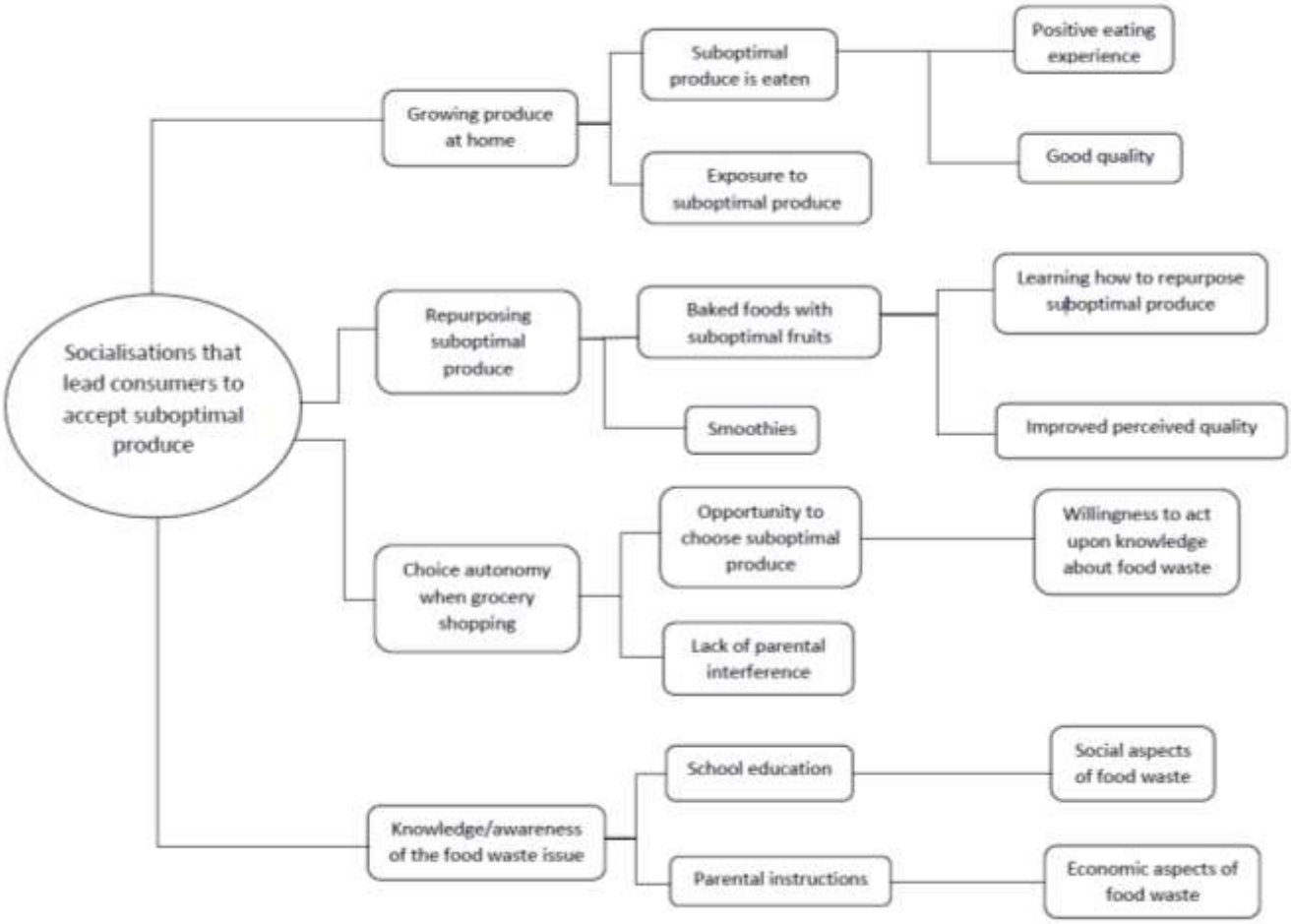

Figure 3: Thematic representation of the socialisations that contribute towards the acceptance of suboptimal produce

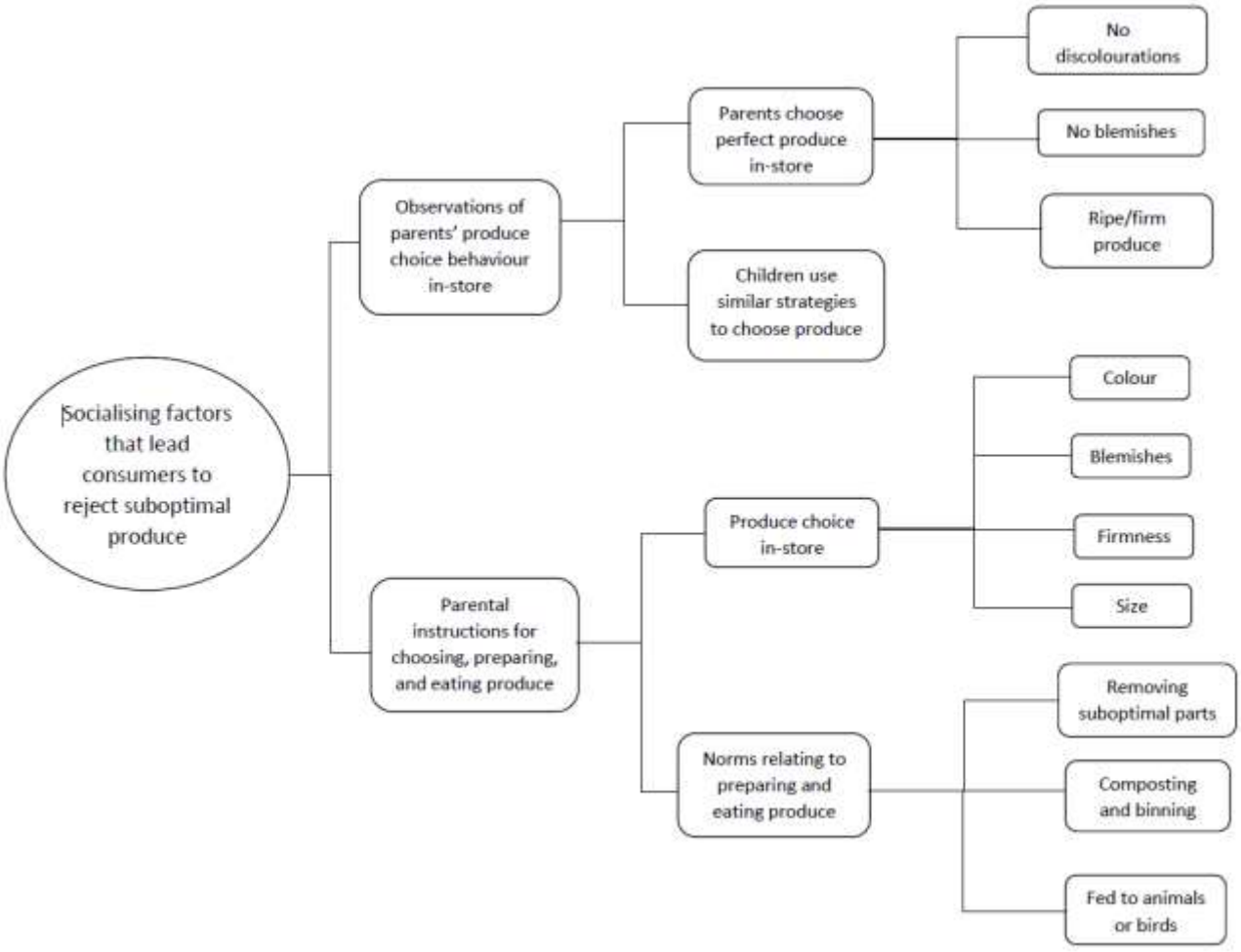

Figure 4: Thematic representation of the socialisations that contribute towards the rejection of suboptimal produce

Socialisations that contribute towards the acceptance of suboptimal produce

The four themes discussed here represent the ways exposure to, and familiarity with, suboptimal fruits and vegetables can be increased, leading the way to their acceptance and use. An overview of the themes uncovered is presented in figure 3.

Growing produce at home

Children who were more familiar with growing produce in their home environment, appeared to be generally more accepting of suboptimal produce. When discussing about

gardening, Marcus (10) said he grows, "*spring onions, lemons and chives"* and added*, "I help out quite a lot, and I like to water them a lot*". Similarly Tim (9) said that he has the role of, "… *the spotter for the potatoes*". Such gardening projects help improve children's attitudes towards fresh produce (Ratcliffe et al., 2011, Parmer et al., 2009), which in turn increases fruit and vegetable consumption (Heim et al., 2009). Of importance to the present study, Yue et al. (2007) reported that adults who grew their own produce are more tolerant of blemished produce. Speaking about her experience, Alice (10) mentioned*, "The strawberries grown at home had little clumps of strawberries coming out of it (laughs). I did eat it, it was very good!*" and Tim (9) recalled, "*We have lots of bendy carrots at home. My grandad grows them and we always clean out the dirt from that split very carefully, but they are very good. My grandad gardens at home and my grandma always cooks whatever he grows*". Likewise Stan (6) remembered, "*Last year we got a little carrot plant, and one of the carrots was yellow, and it was fun. Me and my brother ate [it] and it tasted so yummy!*" This shows that for children too, growing fruits and vegetables at home not only exposes them to suboptimal produce, but also that when the suboptimal produce is eaten, it is accepted and perceived positively. Despite the imperfect appearance, some children believed that home-grown produce is superior to store-bought ones in terms of taste and freshness. For example, Aron (9) and Betty (8) explained, "*they [home-grown produce] are fresher, and they often taste better"* and *"…to me always fruit from home are fresher",* respectively. Similarly, Maria (10) said, "*They look worse but they are nicer".*

These experiences helped children learn that appearance has little to do with quality – thus underlining the role of exposure and familiarity leading to the acceptance of suboptimal produce (Aschemann-Witzel, 2018). Public policy has prescribed transforming urban spaces with community gardens and school gardening projects as a means to enhance consumers' nutritional knowledge and FWB (Block et al., 2011, Parmer et al., 2009, Ratcliffe et al.,

2011). As consumers are more likely to eat the produce they grow (Kortright and Wakefield, 2011, Gibbs et al., 2013), this paper suggests that growing fresh fruits and vegetables impacts how young consumers learn to value food, leading the way for more consumers to accept, buy, and consume suboptimal produce as opposed to rejecting and discarding them. Indeed past research shows that children who partake in gardening activities are more likely to eat different types of fruits and vegetables (Heim et al., 2009, Ratcliffe et al., 2011). Some children were surprised that although produce grown at home looked imperfect, they tasted better and fresher than the supermarket ones: *"… when we had silverbeet for dinner, I got some out of the garden, and then dad cooked it. The garden ones were spotty. So we also cooked the one we got from the supermarket, and the one from my dad's garden tasted much better. That's weird!"* (Brian, 8). This may be because impeccable appearance has long been associated with fresh fruit and vegetable quality (Imram, 1999). Therefore, growing produce at home challenges pre-existing 'appearance-quality' normative beliefs and reconfigures/re-socialises consumers' edibility perceptions.

Repurposing suboptimal produce

Repurposing food is one of the best ways to prevent household food waste (Stancu et al., 2016, Cappellini and Parsons, 2012). The same applies to suboptimal fruits and vegetables, as these can be repurposed into soups and various baked goods (Neff et al., 2015). Family practices around repurposing suboptimal produce is therefore important for normalising suboptimal produce. Repurposing suboptimal fruit, and in particular, bananas into various baked goods is a regular family practice: "*We always make banana choc chip muffins with the bananas we don't use; we put them in the freezer for another day*" (Adele, 9). As it is a common family practice to bake with brown bananas, children are aware about different baked goods that brown bananas could be turned into ranging from "*banana bread*" (Pete, 10), to "*banana cookies*" (Steffi, 7), to "*sugar scones*" (Taz, 7). Importantly,

children's knowledge about repurposing suboptimal bananas could be because children tend to participate more with baking than cooking. For example, when asked about their participation with food preparation, most children admitted: "*I do help with baking, not cooking*" (Luna, 11) and "*I don't really help with dinner, but I help when we're making cookies*" (Hattie, 7). Children's participation in baking, therefore, allows parents and caregivers to teach children about the different ways of repurposing suboptimal produce: "*I like baking, and my mother says it's [brown bananas] good for baking*", said Anita (7) and "*I usually give them to my grandma to make banana bread, or I put them in the freezer cause they'll last longer. It depends on what we want to do. Sometimes we'll make stuff with them, and otherwise, we'll just eat them. It does turn black, but it doesn't matter*" explained Joy (9). Children, therefore, find value in suboptimal bananas, even preferring them over the optimal ones: "*They are better bananas because they're better in banana cake*" (Lydia, 5), by perceiving them to be tastier: "*The bruises taste nice and sweet*" (Jaden, 9) and "*I just eat it, it's even yummier*" (Bonny, 10), and healthier: "*…we get bananas [for school lunches] that are a bit bruisy because me and her [friend] think that they're the healthiest*" (Mia, 9).

In comparison, children exhibited limited to no knowledge about repurposing the other fruits and vegetables shown. Repurposing them as ingredients in smoothies was the only other way children were aware of repurposing other suboptimal produce. For instance, Liam (11) said, "*Mum would just make it [carrot] into a smoothie*" and Larry (8) mentioned, "*Cool. I'll put it [apple and pear] into a milkshake*". This limited knowledge may be because families do not repurpose the other suboptimal produce as much as the brown bananas, or do not include children in the process of repurposing them. For example, suboptimal fruits could be used to make jams and chutneys, sweet pies, and fruit paper; and suboptimal vegetables could be used as ingredients in soups, curries, and savoury pies (Stuart, 2009b). However, for

families who are time-poor it could be more convenient to discard the produce rather than invest the time to repurpose them (Mallinson et al., 2016).

Marketing strategies that have been applied to date include creating shelf space for suboptimal produce for greater visibility and bolstering retail sales through price discounts (Lombart et al., 2019). However, these strategies appeal to more deal-prone consumers and arguably devalues suboptimal produce due to other optimal products being priced higher (connoting better quality) (Raak et al., 2017). For better well-being, it is important that fresh produce (irrespective of appearance) is valued and becomes an integral part of family meals (Scott and Vallen, 2019). For this we recommend public policy to now steer towards familiarising consumers with the potential uses of suboptimal produce. From a food socialisation perspective, it takes repeated exposures for food preferences to form for novel fruits and vegetables (Connell et al., 2016, Heath et al., 2011). Similarly, this theme shows that the lack of familiarity with the practice of using the other suboptimal produce meant they were less preferred as children were less knowledgeable about repurposing them. This has implications for policy makers (such as, Love Food Hate Waste) who use food influencers, such as popular celebrity chefs, to influence consumer choices at the household level. For example, Jamie Oliver brought food standards to public notice on his cooking show informing families about how they could use otherwise discarded produce and play a part in reducing suboptimal food waste (Bell et al., 2017). Thus using such opinion leaders may help familiarise, popularise, and normalise the use of different types of suboptimal produce in recipes for everyday family meals.

Allowing choice autonomy

Grocery shopping as a family provides children with opportunities to execute their consumer power by making choices for themselves and/or on the behalf of the family (Gram

and Grønhøj, 2016, Marshall, 2014). The older participants in this study (10-11 years) reported that on such grocery shopping trips, parents allow them the autonomy to choose the produce they like: "*I help my dad whenever he needs something, and I get the fruit and vegetables for him. I usually tell him what fruit we need for the week, and then I choose some of them, and he chooses the rest*" (Nadine, 10). This autonomy gives children the opportunity to choose produce that are typically not preferred by other family members. Nadine (10) continued, "*I like to get interesting produce. And then my dad picks perfect looking ones for my brothers cause they don't like the one's I choose"* and Cathie (10) added, "*I do the same. I always take the wonky ones and I think they are cute!*" Similarly, Tom (11) stated, "*If they [parents] tell me to get something I run across aisles and get them… The fruit and veg, I usually pick randomly, usually whatever ones that are the closest to reach… I don't check how it looks*". On probing into what influences children to not differentiate produce based on appearance, awareness about suboptimal food waste was mentioned. For example, Maria (10) mentioned, "*We've learned that sometimes some countries in the world don't get food any time, but then we still have our food, but then we don't want to eat them, they could be eaten*". Educating children and conversing with them about social and environmental issues empowers them to take meaningful action (Mackey, 2012). Likewise, educating and sustaining conversations about food waste may potentially empower children to play an active role in the public discourse on food waste (Rodgers, 2005). Globally, school students have called for strikes to influence policy makers to consider climate change in their policy making and implementation (Thunberg, 2019). Therefore, it is imperative for public policy to engage the younger audience by not only spreading awareness about food waste, but also educating them about how they can play a part in the fight against food waste.

Learning about food waste

Learning about food waste mostly takes place from school and through parents. Research shows that children worldwide are highly concerned for the environment (Francis and Davis, 2015), who as future consumers will bear the consequences of the unsustainable choices made now (Donovan, 2016). In this regard, our participants expressed strong views about suboptimal food waste explaining that it is "wrong" and "bad".

In school, children learn about food waste through lessons, movies, and projects. Marcus (11) mentioned, "*We learnt it last year. We had to make a home enquiry and write about it and make a website on food waste in our home*". Such projects helped children fathom the scale of food and resource waste: "*We learnt that one in three slices of bread are wasted! One in three! When you're making toast, one will go into the bin!*" said Isabel (9) and Mia (9) added, "*With things like beef, if you throw it out then you're actually throwing out like half of your grain because cows eat a lot of grain*". Children mostly recalled the social costs of food waste from what they have learnt in school. For example, Jade (5) mentioned, "*…there are a lot of people in the world who are really-really hungry and haven't got enough to eat*". Hence, most children mention about food donations "*…give it to people who'd eat it*" (Luna, 11). Children considered wasting food as a waste of the effort to grow produce. Millie (8) called this, "*Wasting growing*". In comparison, only one child (Bridget, 8) mentioned about the environmental cost of food waste: "*…it's just killing the environment*". Of importance to this study, children also expressed concerns about suboptimal produce waste. Becky (7) expressed, "*It's just sad and it's a bit rubbish that like throwing away half-and-quarter of fruits and veggies and not using it. Like farmers and rich supermarkets can keep them if they want… There is always someone who will buy!*" Ella (9) elaborated on similar views, *"… There's just so much food waste in the dumps. You know a lot of bananas are thrown away cause they're green and brown, but you know the skin does not matter. Why not just have it in the store?*" To this Craig (9) added, "*That's such a waste of bananas… Some*

fruits like mango take very long to grow… When you buy mangoes from the store, it actually takes a very long time, longer than a cow, to grow" This shed light on the scale of unnecessary waste caused by appearance standards. For example, Bill (10) explained, "*A big percentage of bananas are thrown away because they don't look very curved like a banana does. Like you don't need bananas to be curved to taste good!*" Likewise Adam (9) stated, "*We learnt [in school about standards] heaps of fruits from orchards are not sold because they look bad. That's just a waste, there's people and children who don't have enough and we are just fussy with the looks*". As young consumers express strong environmental concerns, policy makers would benefit by highlighting the environmental effects of suboptimal food waste to younger audiences, who by their familial and current societal influences could be change makers in getting more people to value food irrespective of the appearance.

Parents could also be involved in school projects. Adam (9) recalled: "*We did it in class, and they [the school] made us watch a documentary with my mum. We had to choose a fact and then we had to do a poster about it on why we should be actually using them instead of throwing them out. We also learned about standards. We also learnt that people waste more food than they are actually eating*". Knowledge acquired in schools is shared and practiced at home: "*Sometimes on your food it says the best-before date. You shouldn't always go by the best-before date. It means that it's best before but it could be still fine at that time to eat… Earlier we would throw away the best-before food but now we check it is okay to eat*" (Joy (9). Food waste awareness made children globalise the consequences of locally wasted food: "*if we just throw vegetables away then the people across the world, like in South America - I saw on the news at home that she was twelve, and she looked like a baby, she was really skinny and that's because we are throwing away food. It's bad!*" (Nelly, 7). Food waste was also understood as a paradoxical problem as Wayne (9) explained, "*I've*

noticed that the wealthier countries are usually the ones that waste more food, despite New Zealand having many homeless people, we've still got a lot of food waste" (Wayne, 9).

The participants shared that at home their parents' concerns about food waste pertained to the cost and/or the time they invest in preparing food for the family. For example, Tim (9) mentioned, "*My parents say that food waste is bad because they can't waste time*" and Alice (10) said, "*Cause you're wasting money… they say don't waste money*". Children recall their parents getting angry when food is wasted at home. Brian (7) recounted his parents scolding his sister for wasting food, "*All they say … 'Don't you dare throw it out (in a strict tone)!' because she throws them all out. Then my parents get really mad at her cause that's food waste*". Lisa (9), similarly added, "*Honestly, my parents just say eat that or you're going to bed. Parents say it costs money so it's a waste of money*". As a result, children have learned how to save food (leftovers) for later or for other family members: "*I would put it in the fridge for dad's lunch or mums lunch*" (Bella, 8) and "*I just save it for in case I'll need any more after dinnertime*" (Teddy, 6).

We find that learning about food waste conveys the message that food is valuable and should not be wasted. Being aware about the different facets of the food waste problem can empower children to take actions in their own way to help reduce waste, such as choosing suboptimal produce for oneself. Further, discussing sustainability issues in school is effective in continuing such conversations in the home (O'Neill and Buckley, 2019, Larsson et al., 2010), potentially socialising families to value food and reduce food waste.

Socialisations that contribute to the rejection of suboptimal produce

The two themes discussed here are predominantly sociological barriers to acceptance of suboptimal produce. These are (1) observations of their parents' produce choice behaviours in retail stores and (2) instructions from parents about how produce should be chosen, prepared, and consumed. See Figure 4 for an overview of the themes.

Observations of parents' produce choice behaviour in-store

Children spoke about how their parents choose fresh fruits and vegetables. Their recollections demonstrate that parents use appearance cues such as colour, shape, blemishes and firmness to determine produce choice in-store. For example, Brian (8) mentioned, "*My parents say about the colour. So usually for apples they usually choose ones that are like red and nice*". Similarly, Lina (8) spoke about firmness, "*The mandarins, we always look for harder than squishy*". Children understand why parents use these strategies. Sarah (11) said, "*For apples, my dad looks for ones that are not soft so that they are hard... so that you know they are crunchy*". Children suggested that parents choose produce that look perfect. Wynn (7) stated, "*They just get the ones that look good. If there were little things on it and weren't looking nice, they would take the nice ones instead*". Based on their observations of how parents choose produce, some children replicate these behaviours by "*always taking time and checking if they are all perfectly good*" (Liam, 11). For instance, Sage (9) mentioned, "*If there's lemons or oranges, I see which ones are the orange-est or the hardest, cause then you know that they could be a bit harder to peel but they are ripe on the inside*" and Minnie (6) said, "*I pick the good ones. The ones that aren't bruised… If you had tomatoes, you need them hard enough before you can eat them because otherwise they'll go too squishy when you try to eat them*". These examples show that like their parents, children use similar appearance-based strategies when making produce choice in-store. This demonstrates observational learning (Bandura, 1977), showing how norms around desirable appearance characteristics for produce are modelled, practiced, and potentially normalised.

Parental norms conveyed through instructions for procuring, preparing, and consuming suboptimal produce

Parents instruct children on how produce should be chosen in-store. This is mainly with respect to size, "*I'm told choose the big capsicums so I can get more*" (Jade, 5) and ripeness, "*Mum and dad tell me to look for the carrots that are ripe. I just look at them and tell they are ripe*" (Matt, 6). Understandably, children are taught how to identify ripe produce, with most children referring to firmness. For example, Becky (7) said, "*Mum tells me that kiwifruits are usually hard so if you squeeze them and they're soft then don't choose them*" and Scott (10) said, "*With apples, what me and my mom do is we grab the apple, we feel it, and if it's hard and it's not squishy, it's good*". Similarly, colour and blemishes are another appearance criteria parents have taught children to use when selecting produce. For instance, Bridget (8) mentioned, "*Mum tells me to choose no bruises and just green or red apples*". In this manner grocery shopping trips with parents serve to directly socialise appearance preferences for fresh produce.

Similarly, when preparing and eating fresh produce, food appearance ideals are conveyed to children. Children's participation in cooking with parents involve peeling and cutting fruits and vegetables: "*I help with peeling the carrots all the time*" (Sean, 8). As suboptimal produce connotes inedibility (Aschemann-Witzel et al., 2015), strategies such as peeling and cutting off sections of the produce show how by removal, the perceived edibility risk or disgust is managed, presenting an opportunity for parents to show children what is or is not acceptable for consumption. For example, Adele (9) said, "*I cut up all the vegetables and sometimes help mum cut up fruit also. I tell my mum if there's like a mark or bruise cause sometimes that can be bad or spoilt… Mum sometimes tells me its fine and sometimes she cuts 'em off*" and Tina (7) mentioned, "*I peel the veggies and mum chops them. If there's like little marks or something she says it's bad to have them in the food*". These instructions convey to children norms around family food preparation, specifically parts of produce to keep and parts to discard. Edibility perceptions are subjective and norm-driven, sometimes

even unique to certain households (Nicholes et al., 2019). Similarly, we found that children are cognizant of such norms around preparing and consuming produce. For instance, Tom (11) mentioned, "*We always peel carrots if it's for a meal, but it is okay to not peel them for lunch boxes*" and Edna (7) added, "*I think you should peel all your veggies, we always do*". Alternatively, Cathie (10) said, "*Carrots don't need to be peeled! We don't peel carrots*".

When produce grown in the garden is suboptimal in appearance, some families resort to feeding it to pets and birds, or composting, implying that the produce is unfit for human consumption. For instance, when shown suboptimal produce (stimuli items), Pete (10) mentioned, "*We'll put it in the compost*" and Sarah (11) said, "*We give it to my bunnies, or I just chuck them in the bin*". Similarly, Selena (6) stated, "*When me and my mum pick strawberries from the garden, we leave the bad-looking strawberries for the birds to eat*" These examples show how the practice of not consuming produce with suboptimal appearance conveys desirable appearance norms for consuming fruits and vegetables.

Everyday food routines and practices influence food waste generation (Evans, 2012, Evans et al., 2013, Watson and Meah, 2013, Schanes et al., 2018), thus highlighting the need to identify the socialising factors embedded in these food-related practices that cause food waste (e.g., Ganglbauer et al., 2013). For example, food planning and shopping routines significantly influence the amount of food waste generated (e.g., Stefan et al., 2013). These practices and routines also affect how consumers acquire/learn and adopt edibility perceptions (Waitt and Phillips, 2015, Watson and Meah, 2013). The norms around keeping the perfect and removing/discarding imperfect resounds with how society perceives the atypical as undesirable and potentially dangerous (Douglas, 2003); thereby removing (or discarding) the imperfect means avoiding any perceived unwanted risks (Cappellini, 2009). Past research has shown that suboptimal produce is less preferred due to perceived edibility risks (e.g., Loebnitz and Grunert, 2018). Here we highlight how family food practices

transfers appearance-edibility norms from parent to child establishing how produce should be chosen, prepared, and consumed (Moore et al., 2002). In other words, these practices socialise appearance preferences for fresh produce. Children pick up norms early (Marshall, 2014), as they are capable of replicating adult behaviours as early as age three (Drenten et al., 2008), exhibiting shared values and beliefs with parents (Grønhøj and Thøgersen, 2009). From the sociological standpoint, this demonstrates that appearance preferences for perfect produce are socialised through the routines and practices of one's food environment. By observing and modelling behaviours that are considered 'normal' resonates with Bandura's (1977) social learning theory. Here we show how appearance preferences and edibility perceptions are steeped in the social environment where children observe, and model the behaviours of others (Grønhøj, 2016). This supports the accidental or unintentional nature of food waste behaviours (Block et al., 2016), a reflection of the conspicuous consumption culture (Ganglbauer et al., 2013), and that everyday food-related norms and practices influence food-valuation (Watson and Meah, 2013).

Conclusions, Implications and Limitations

Persuading consumers to choose and prefer suboptimal produce to reduce avoidable food waste is still challenging (Grewal et al., 2019), which makes it important to identify the best possible strategies to normalise atypical fruit and vegetable appearances. This article has addressed the call in previous literature to investigate the underlying socialisations driving consumer behaviour towards suboptimal produce (Block et al., 2016, Makhal et al., 2020). To do this, focus group interviews with children aged 5-11 were conducted and thematic analysis was used to report two main themes: (1) the socialisations that contribute to the acceptance of suboptimal produce, and (2) the socialisations that contribute to the rejection of suboptimal produce. Exploring these themes showed how appearance-driven food preferences are

socialised through consumers' food practices. This makes this paper the first to have applied the consumer socialisation theory in the suboptimal food waste context.

Theoretically, this research contributes to the food waste literature by exploring consumer acceptance and rejection of suboptimal produce from a sociological lens. On the contrary, it also contributes to the consumer socialisation literature by showing how consumers' acceptance and rejection of food is a product of the food practices consumers engage in. In other words, we show that consumers valuation of food is learnt, and can be re-socialised by normalising food practices that teach consumers to value food. Understanding these socialisations is useful in fitting and recommending public policy that could be worked around these socialisations.

The results show that suboptimal produce acceptance results from repeated exposure and familiarity with seeing, using, and consuming suboptimal produce. Both growing produce at home and repurposing suboptimal produce are family practices that expose and familiarise children to suboptimal fruits and vegetables and its various uses. It is therefore essential for families to encourage such behaviours that teach children to value suboptimal produce. This would require family members to involve children (through participation) in growing, using and repurposing suboptimal produce. However, creating value in repurposing and using suboptimal produce in households would require that such activities are socially accepted and popularized, an area in which public policy can play a crucial role. For urban households that have no gardens/backyards, policy makers could design community-run and/or school-based gardening projects to get children and families involved in growing produce. Likewise, setting up community kitchens, enlisting local chefs, and getting consumers to feel, cook, taste, and eat suboptimal produce will be significant steps in normalising suboptimal appearance in fresh produce, and popularizing their use in various dishes. Further, accessible farmer markets and co-ops could also be useful in bringing

varieties of suboptimal produce in larger quantities into urban dwellings. We believe that such public policy interventions take a step further than just familiarising suboptimal produce as these policy recommendations are meant to socialise consumers to value produce irrespective of the appearance.

We also find that knowledge about the food waste issue and the agency to make choices for oneself, empowered children to choose suboptimal produce in-store, showing that knowledge may potentially lead to action, provided that the opportunity to do so is also available. Here we recognize that there is a dearth of public policies and campaigns that specifically target younger audiences, informing them about the food waste problem and guiding them about how they can contribute towards the fight against food waste. We believe that as children are getting more involved in consumer activism and expressing high concerns for the environment, it is recommended that public policy campaigns now target younger audiences. The impact of these campaigns can be heightened by leveraging children's social and environmental concerns, by specifically highlighting the social and environmental effects of food waste. Young consumers, who by their agency and positive pester power could get their families and communities to value food more and waste food less. Here we suggest future research to test the design and effectiveness of such campaign strategies for translating it into actionable public policy.

The current retailing strategies for selling suboptimal produce are about visibility enhancement administered through creating self-space for suboptimal produce. Arguably, these strategies devalue suboptimal produce through either the store layout (keeping suboptimal and optimal produce separate) or pricing strategies (discounting suboptimal produce). While we still recommend that visibility enhancement is important and should be continued, we also propose that policy strategies should now also focus on normalising using and consuming suboptimal produce. We posit that this move will be more effective in

changing consumer perceptions about suboptimal produce in the long-run. All socialising factors that lead consumers to accept suboptimal produce debunk the "good appearance = good quality" equation. Children who have grown and eaten suboptimal produce and are familiar with the practice of repurposing suboptimal produce confirmed this from their personal experiences. These socialisations may potentially reconfigure how edibility is perceived, and may even develop into new strategies for evaluating edibility that is not based on appearance alone. Learning about food waste and particularly suboptimal produce waste evoked concern and consequentially lead some of the older children to choose suboptimal produce for themselves from supermarkets. This also shows how children can act as agents of change because they are not only learning about sustainability, but are also applying sustainability ideologies and practices in different social environments (e.g., O'Neill and Buckley, 2019). This underlines the importance of educating and reminding young consumers about sustainability issues (such as food waste), which may hopefully lead to more mindful future behaviours. However, we also recognise that these socialising factors oppose the more dominant norm of devaluing suboptimal produce, which are imparted through observations of parental behaviours and instructions on how produce should be chosen, prepared, and consumed. The suboptimal rejecting socialisations could be why some of the other children did not mention about voluntarily choosing suboptimal produce in-store, despite knowing about suboptimal produce waste. But we also believe that these socialisations can be overcome by setting forth normalisation policies that serve to repeatedly remind consumers about suboptimal produce waste, increase their visibility in various store formats, and familiarise and popularize recipes using suboptimal produce.

There are methodological limitations of the study. Given that the data was collected from a single school, generalizability of the results is limited. The sampling procedure used led to an unequal number of group members limiting direct comparisons by age and gender.

Social desirability bias is also a possibility when children are a part of focus groups with peers of the same grade as they may repeat answers and comply with peers. Another potential limitation is that the data comes from group discussions with children raising questions about its reliability. However, we recognize that children give candid and honest answers, helping researchers unwire complex human behaviors. Given that perceptions of suboptimal produce are changing, future research should explore how the new perceptions are sustained, challenged and socialised. It would also be interesting to see how families function around these perceptions towards suboptimal produce and how this effects food consumption at home. Personal interviews with parent-child dyads and triads could also be useful to get a thorough understanding of family practices around using suboptimal produce. Lastly, future research could explore how older children (adolescents) perceive suboptimal foods as they carry forward these perceptions into adulthood.

In conclusion, this paper shows how appearance preferences for fresh fruits and vegetables are socialised. This research advances past research that prescribes studying the sociological origins of food waste to better inform policy interventions that seek to solve the food waste problem (Block et al., 2016) and achieve higher FWB (Block et al., 2011). Understanding these socialisations shows that to change perceptions about suboptimal produce, policy makers and communities (including children) need to work together to encourage trial and consumption of suboptimal produce. Raising concern through public campaigns targeting children about the social and environmental causes of food waste, and familiarisation through repeated exposure and use is essential to normalise atypical appearance and drive change at the community level. Children can also help transfer knowledge about suboptimal produce use to households through school- and community-led programmes. Further, growing and consuming home-grown produce, shopping for

suboptimal produce, and raising awareness about the need for reducing suboptimal food waste may in the long-run make suboptimal produce more acceptable to consume.

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