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Commentary: Why Do We Waste So Much Food? A Research Agenda

JENNY VAN DOORN

See “Household Food Waste Behavior: Avenues for Future Research” by Porpino, in this issue

Food waste is an important societal problem with negative consequences for food security, the environment, and consumer well-being. Every year, one-third of all edible food products for human consumption are wasted or lost in the supply chain, while at the same time around 1 billion people around the globe are malnourished. In industrialized countries, per capita food waste amounts to 95–115 kilograms per year; the food wasted at the consumer level in industrial countries almost equals the total food production in sub-Saharan Africa (Gustavsson et al. 2011; Naylor 2011). Avoidable food waste also has an adverse environmental impact; the global carbon footprint of food waste ranks third, after the United States and China (FAO 2013).

Food waste occurs throughout the whole food supply chain, yet reducing it at the consumer or household level is seen as a priority for several reasons. First, in industrialized countries, the largest share of food waste occurs at the consumer level (Gustavsson et al. 2011). Second, once the food has been transported to the consumer and possibly prepared in-home, use of resources and environmental impact is at its maximum. Third, while a large part of food lost earlier in the supply chain is at least used, for instance, to feed animals, household food waste for the most part ends up in the trash, causing additional costs and environmental impact (Gustavsson et al. 2011; Soethoudt and Timmermans 2013).

Despite the dimension and urgency of the problem, academic literature researching food waste from a consumer behavior perspective is scarce. In particular, literature uncovering the theoretical mechanisms leading to food waste is lacking. The goal of this article is to shortly summarize what we know about why food waste occurs, and to develop promising avenues for future research to tackle this important problem.

WHAT DO WE KNOW ABOUT FOOD WASTE?

Food waste can be seen as a mismatch between what consumers purchase and what they actually consume. Therefore, two decision-making processes are key to food waste:

1. Consumers’ decision making at the point of purchase, such as the supermarket.
2. Consumers’ consumption and disposal decisions at home (see also Porpino, Parente, and Wansink 2015).

These decisions are related because what is purchased in the supermarket affects a consumer’s consumption options at home, and how much is disposed influences how much the consumer buys during the next supermarket visit.

Studies focusing on purchase behavior as a determinant of food waste find that poor preshop planning and impulse buying lead to food waste. Use of a shopping list reduces food waste. Results regarding shopping frequency are mixed: more frequent shopping implies better day-to-day management of supplies, but also the risk of impulsive buying (Lyndhurst 2007; Parfitt, Barthel, and Macnoughton 2010).

Concerning consumers’ consumption and disposal decisions, the two main reasons why avoidable food waste occurs at consumers’ homes are that food is not used in time, that is, has passed a date label or is judged as not usable anymore, and that higher quantities are cooked, prepared, or served than actually needed. The most important household behaviors leading to food waste are, in particular, poor home economics skills relating to the use of leftovers and the failure to plan meals (WRAP 2009; Parfitt et al. 2010; Porpino et al. 2015). In a restaurant self-service context, Wansink and van Ittersum (2013) find that consumers waste more food if they use a bigger plate.

Also, household demographics relate to food waste. Single-person households, in particular single women, waste more per capita than larger households; households with children and those with higher income waste more (Parfitt et al. 2010; Koivupuro et al. 2012). A rather obvious answer to the question of why so much food is wasted may be that people can easily afford it (Gustavsson et al. 2011). Yet, even low-income households waste food (Porpino et al. 2015), and consumers feel guilty or even ashamed when they trash food, regardless of their income (Evans 2011).

WHAT WE NEED TO KNOW ABOUT FOOD WASTE

Why Do Consumers Overpurchase Food?

Given that consumer food waste comes at a price, not only for the environment but also for the consumer who pays for the purchase, transportation, preparation, and disposal of the food (s)he does not eat, the question of why consumers routinely overpurchase food is intriguing. A large literature stream on overconsumption points out that vice goods or hedonic goods tempt people to purchase more than they need (e.g., Wertenbroch 1998); therefore, consumers should likely overpurchase vice food. Yet, surprisingly, the top categories of food wasted are virtue categories, such as dairy, bread, fruits, and vegetables (Gustavsson et al. 2011). Hence, consumers seem to routinely overpurchase products that are not particularly appealing or tempting. Furthermore, food in these categories is perishable, which should induce consumers to plan even more carefully the purchase and provision of these goods.

One reason for this seeming contradiction may be that people shop for groceries for several days or more in advance. Research on intertemporal choice shows that people are more likely to make virtue choices for behavior that occurs in the future (Milkman, Rogers, and Bazerman 2010), which may lead to an overprovisioning of virtue items. Also, supermarket assortment size may play a role. Since choosing from larger assortments is more difficult, consumers tend to make virtue choices in large supermarkets because that is easier to justify (Sela, Berger, and Liu 2009). Therefore, the common habit to go to a large supermarket to shop for a week in advance may contribute to the overpurchasing of virtue food and fuel food waste. Yet, given that empirical evidence on these mechanisms is so far lacking, this is a fruitful avenue for future research.

RQ1: Why do consumers overpurchase virtue food?
Which shopping habits increase food waste?

Consumers seem to not plan their shopping trip completely, but leave some “in-store slack” to make unplanned purchases, for example, to benefit from a promotion or to buy ingredients for a meal that they did not think of before (Stilley, Inman, and Wakefield 2010). This observation reinforces the role of price promotions and in-store stimuli when investigating the occurrence of food waste. Marketing literature finds that promotions lead consumers to purchase more in perishable categories (Nijs et al. 2001; Pauwels, Hanssens, and Siddarth 2002) but does not explicate

whether this is consumed or wasted. Studies provide anecdotal evidence that price promotions lead people to impulsively buy more than they need and to waste more and expect “buy one, get one free” promotions to fuel food waste (Lyndhurst 2007; Parfitt et al. 2010; WRAP 2011). However, large-scale studies investigating the extent to which in-store stimuli and (different types of) price promotions contribute to food waste are lacking.

RQ2: To what extent do in-store stimuli and promotions contribute to food waste? Does the effect differ between different types of promotions?

Given the obesity epidemic, public policy makers have begun to heavily promote a healthy lifestyle. Yet, anecdotal evidence suggests that consumers’ good intentions to eat healthy may have a dark side, as consumers start wasting more food as they adopt healthier eating patterns (Lyndhurst 2007). Evans (2011) observes that public policy interventions promoting a healthy lifestyle increase the pressure on consumers to prepare “proper meals,” leading them to routinely overstock their fridge with fresh and healthy ingredients.

Besides health motivation, there are other consumer traits that could affect food waste. Impulsive consumers may also tend to overpurchase food, yet impulsive buying does typically occur in hedonic or vice categories, and to a lesser extent in virtue categories (Rook 1987). Furthermore, consumers with low cooking skills may be less well equipped to judge the right quantities needed for preparing their meals and therefore purchase more than they need.

RQ3: What is the role of consumer traits, such as health motivation, impulsiveness, and cooking skills, in driving food waste?

Why Do Consumers Not Eat What They Purchased?

One of the biggest developments in the food market of the last decades has been the increase in demand for convenience products (Brunner et al. 2010). Convenience foods are easier to prepare since they are often already cut, cleaned, or marinated and consumers need to spend less time and effort to prepare a meal (Candel 2001). Therefore, convenient food is more likely to be actually consumed (Chandon and Wansink 2012), and convenient offerings in particular virtue categories (i.e., precut vegetables) may therefore be a worthwhile strategy to decrease food waste.

When consumers do not have to spend much time and effort to prepare a meal, they have less of an excuse to have, for example, a takeaway meal instead of cooking themselves (Evans 2011). Also, convenience food may help consumers to use the right quantities.

However, virtue convenience foods are more perishable than their less convenient counterparts, and consumers rely more on expiration dates (Gisslen 2010; Williams et al. 2012), which may contribute to food waste. In the long term, convenience food may contribute to decreasing cooking skills, also affecting the ability of consumers to combine the food they have at home into a new meal (Evans 2011).

RQ4: Does the convenience (virtue) food contribute to or mitigate food waste?

Food quality (e.g., taste, healthfulness) and safety are central concepts to explain consumers' choice of food at the point of purchase (Grunert 2005) and therefore should be also relevant in explaining whether consumers do or do not consume already purchased food. While Grunert (2005) posits that food safety is only important when it is at stake, for instance, during food scandals (e.g., the Chinese baby milk scandal; Branigan 2008), anecdotal evidence suggests that food safety may be of particular importance in the decision whether food is eaten or disposed (Evans 2011).

From a theoretical perspective there are several explanations why food safety considerations may drive food waste. The notion of loss aversion (Tversky and Kahneman 1991) predicts that people may be sensitive to the risks associated with the consumption of potentially unsafe foods, such as the risk of food poisoning. Food safety considerations may also be a rationalization to justify disposing of food, even when the main reason is taste or health-related (i.e., loss of vitamins).

In judging the quality and safety of food, consumers employ intrinsic quality cues (physical properties of the products, such as inferring that red apples are juicier) and extrinsic quality cues, such as brands or product labels (Grunert 2005). Extrinsic cues such as expiration dates and date of opening or preparation seem to be very important in the disposal decision (Parfitt et al. 2010). Yet, we need more research on what precisely triggers the decision to dispose of something instead of eating it. Also, consumer traits could again play an important role; that is, a health-motivated consumer may trash food easier because (s)he fears the loss of vitamins. Trashing food for health reasons may also reduce the feelings of guilt associated with disposing of it, re-

sulting in a sort of moral self-licensing of wasting food (Khan and Dhar 2006).

RQ5: What extrinsic and intrinsic cues trigger food waste? What is the role of consumer traits (e.g., health motivation) in this process?

Research should also study how consumers can be persuaded to eat the food they purchased instead of disposing of it. Next to more obvious implications, such as educating consumers on the meaning of expiration and "best before" dates, the question of which messages are most effective to dissuade people to waste food is an important one. According to a recent survey, strong motives to avoid food waste are environmental impact, feelings of guilt, being an example for one's children, saving money, and global food shortages (Bos-Brouwers et al. 2013). Yet, the effectiveness of these motives in promoting food waste reduction has so far not been tested.

Particular attention should be paid to leftovers, where the negative environmental impact of food waste is at its maximum because consumers have added energy. As household skills vanish, consumers are losing their ability to recombine leftovers into a new meal and instead waste them (Cappellini and Parsons 2012); therefore, promoting the consumption of leftovers is important.

RQ6: What messages are most effective to persuade consumers to eat the food they purchased? How can consumers be persuaded to eat their leftovers?

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REFERENCES

- Baumeister, R. F., E. Bratslavsky, M. Muraven, and D. M. Tice (1998), "Ego Depletion: Is the Active Self a Limited Resource?" *Journal of Personality and Social Psychology*, 74 (5), 1252–65.
- Bos-Brouwers, H., F. P. Scheer, M. Nijenhuis, F. Kleijn, and M. Westerhoff (2013), "Foodbattle: Reductie Milieudruk Voedselverspilling Op Het Snijvlak Van Supermarkt En Consument," research report, Food and Biobased Research, Wageningen University and Research Center.
- Branigan, T. (2008), "Chinese Figures Show Fivefold Rise in Babies Sick from Contaminated Milk," *Guardian*, December 2.
- Brunner, T. A., K. Van der Horst, and M. Siegrist (2010), "Convenience Food Products: Drivers for Consumption," *Appetite*, 55 (3), 498–506.
- Candel, M. J. J. M. (2001), "Consumers' Convenience Orientation towards Meal Preparation: Conceptualization and Measurement," *Appetite*, 36 (1), 15–28.

- Cappellini, B., and E. Parsons (2012), "Practising Thrift at Dinnertime: Mealtime Leftovers, Sacrifice and Family Membership," *Sociological Review*, 60 (S2), 121–34.
- Chandon, P., and B. Wansink (2012), "Does Food Marketing Need to Make Us Fat? A Review and Solutions," *Nutrition Reviews*, 70 (10), 571–93.
- Evans, D. (2011), "Blaming the Consumer—Once Again: The Social and Material Contexts of Everyday Food Waste Practices in Some English Households," *Critical Public Health*, 21 (4), 429–40.
- FAO (2013), *Food Wastage Footprint: Impacts on Natural Resources*, Rome: FAO.
- Gisslen, W. (2010), *Professional Cooking*, College Version, Hoboken, NJ: Wiley.
- Grunert, K. G. (2005), "Food Quality and Safety: Consumer Perception and Demand," *European Review of Agricultural Economics*, 32 (3), 369–91.
- Gustavsson, J., C. Cederberg, U. Sonesson, R. Van Otterdijk, and A. Meybeck (2011), *Global Food Losses and Food Waste: Extent, Causes and Prevention*, Rome: FAO.
- Khan, U., and R. Dhar (2006), "Licensing Effect in Consumer Choice," *Journal of Marketing Research*, 43 (2), 259–66.
- Koivupuro, H., H. Hartikainen, K. Silvennoinen, J. Katajajuuri, N. Heilintalo, A. Reinikainen, and L. Jalkanen (2012), "Influence of Socio-Demographical, Behaviour and Attitudinal Factors on the Amount of Avoidable Food Waste Generated in Finnish Households," *International Journal of Consumer Studies*, 36, 183–91.
- Lyndhurst, B. (2007), "Food Behaviour Consumer Research: Quantitative Phase," WRAP Research Report, Banbury, UK.
- Milkman, K. L., T. Rogers, and M. H. Bazerman (2010), "'I'll Have the Ice Cream Soon and the Vegetables Later': A Study of Online Grocery Purchases and Order Lead Time," *Marketing Letters*, 21 (1), 17–35.
- Naylor, R. (2011), "Expanding the Boundaries of Agricultural Development," *Food Security*, 3 (2), 233–51.
- Nijs, V. R., M. G. Dekimpe, J. B. E. Steenkamp, and D. M. Hanssens (2001), "The Category-Demand Effects of Price Promotions," *Marketing Science*, 20 (1), 1–22.
- Parfitt, J., M. Barthel, and S. Macnaughton (2010), "Food Waste within Food Supply Chains: Quantification and Potential for Change to 2050," *Philosophical Transactions of the Royal Society B: Biological Sciences*, 365 (1554), 3065–81.
- Pauwels, K., D. M. Hanssens, and S. Siddarth (2002), "The Long-Term Effects of Price Promotions on Category Incidence, Brand Choice, and Purchase Quantity," *Journal of Marketing Research*, 39 (4), 421–39.
- Porpino, G., J. Parente, and B. Wansink (2015), "Food Waste Paradox: Antecedents of Food Disposal in Low Income Households," *International Journal of Consumer Studies*, 39 (6), 619–29.
- Rook, D. W. (1987), "The Buying Impulse," *Journal of Consumer Research*, 14 (2), 189–99.
- Sela, A., J. Berger, J., and W. Liu (2009), "Variety, Vice, and Virtue: How Assortment Size Influences Option Choice," *Journal of Consumer Research*, 35 (6), 941–51.
- Soethoudt, H., and T. Timmermans (2013), "Monitor Voedselverspilling," Food and Biobased Research Report No. 1372, Wageningen University and Research Center.
- Stilley, K. M., J. J. Inman, and K. L. Wakefield (2010), "Spending on the Fly: Mental Budgets, Promotions, and Spending Behavior," *Journal of Marketing*, 74 (3), 34–47.
- Tversky, A., and D. Kahneman (1991), "Loss Aversion in Riskless Choice: A Reference-Dependent Model," *Quarterly Journal of Economics*, 106 (4), 1039–61.
- Wansink, B., and K. van Ittersum (2013), "Portion Size Me: Plate-Size Induced Consumption Norms and Win-Win Solutions for Reducing Food Intake and Waste," *Journal of Experimental Psychology: Applied*, 19 (4), 320–32.
- Wertenbroch, K. (1998), "Consumption Self-Control by Rationing Purchase Quantities of Virtue and Vice," *Marketing Science*, 17 (4), 317–37.
- Williams, H., F. Wikström, T. Otterbring, M. Löfgren, and A. Gustafsson (2012), "Reasons for Household Food Waste with Special Attention to Packaging," *Journal of Cleaner Production*, 24, 141–48.
- WRAP (2009), *Household Food and Drink Waste in the UK*, <http://www.wrap.org.uk/sites/files/wrap/Household%20food%20and%20drink%20waste%20in%20the%20UK%20-%20report.pdf>.
- (2011), *Investigation into the Possible Impact of Promotions on Food Waste*, <http://www.wrap.org.uk/sites/files/wrap/WRAP%20promotions%20report%20FINAL%20241111.pdf>.