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## Wasted Positive Intentions: The Role of Affection and Abundance on Household Food Waste

Gustavo Porpino<sup>a</sup>, Brian Wansink<sup>b</sup>, and Juracy Parente<sup>c</sup>

<sup>a</sup>Communications Secretariat, Brazilian Agriculture Research Corporation, Embrapa, Brazil; <sup>b</sup>Charles H. Dyson School of Applied Economics and Management, Cornell University, Ithaca, New York, USA; <sup>c</sup>Marketing Department, Getúlio Vargas Foundation (FGV-EAESP), São Paulo, Brazil

### ABSTRACT

This qualitative study, grounded theory oriented, identifies familial affection and preference for abundance as major drivers of wasted food in lower-middle income American families. These positive intentions provide an improved understanding of household food waste, a problem with high environmental impact and moral implications. Based on empirical data collected with twenty caregivers via in-depth interviews, observations, and analysis of photos, this study provides novel explanations, such as on how stockpiling comfort foods in abundance – a form of both boosting positive self-emotions and showing affection for kids – can promote more wasted food. Other antecedents identified include multiplicity of choices, convenience, procrastination and unplanned routines. In sum, this research identifies a negative outcome of affection and food abundance in the family context, while providing a theoretically relevant general framework to help understand the food waste phenomenon. Authors suggest increasing the awareness of nutritional gatekeepers through behavioral economics principles.

### KEYWORDS

Food waste; affection; abundance; low-income; food consumption

## Introduction

Food and caring have been known to be intrinsically related (Kaplan, 2000; Neely, Walton, & Stefens, 2014). Unfortunately, this does not always result in wellness, as demonstrated by showing caring through feeding children socially valued snacks (Namie, 2011) or serving snacks to reward a positive behavior (Fisher et al., 2015). In such instances, affection promotes obesity. In the context of household food waste, the same logic of positive intentions generating a negative outcome might apply.

We seek to identify and describe which factors promote wasted food, and to investigate the role that affection and abundance play on household food waste. Consumer food waste signifies a larger environmental problem since resources needed for food production, such as land, energy, water, and

**CONTACT** Gustavo Porpino ✉ [gustavo.porpino@embrapa.br](mailto:gustavo.porpino@embrapa.br) 📍 Brazilian Agricultural Research Corporation (Embrapa), Parque Estação Biológica, Av. W3 Norte, 70770-901, Brasília, DF, Brazil.

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nutrients, are limited and should, therefore, be applied in an efficient and sustainable manner (Beretta, Stoessel, Baier, & Hellweg, 2013). Considering the ongoing existence of hunger and food scarcity in many areas of less developed countries, current attention on food waste is driven not only by environmental dimensions but also by moral implications.

The reason to focus on the lower middle class is twofold: (1) Food becomes an issue for households that do not receive food stamps, such as the Supplemental Nutrition Assistance Program (SNAP) benefits in the United States, or that receive less than the maximum benefit amount (Golan, Stewart, Kuchler, & Dong, 2008); (2) Most of the world is low-income, and relatively little is known about the determinants of food waste in this segment—thus research should focus on better understanding this phenomenon to provide solutions for behavioral change.

This qualitative study is based on in-depth interviews conducted in households ( $n = 20$ ), as well as observations and analysis of photos taken at American homes following another study conducted in Brazil with 20 lower-middle class families. We first provide an overview on food waste and describe affection and abundance, the core concepts for this study. Then our research method is explained, followed by the results and a general discussion. We conclude by presenting a framework with the main antecedents of food waste and the quantification of foods reported to be wasted in the week before the interview.

## Method

The interviews and observations in Brazilian households aimed to discover if wasted food was also an issue in the low-income segment, and to identify core practices related to food waste. The initial effort led to the development of an interview guide for the data collection in this subsequent study. While the first phase aimed at understanding household practices relating to the purchase, storage, preparation, and disposal of food in the Brazilian lower-middle income context, this second study advances the theoretical contributions via a grounded theory (GT)-oriented research with quasi-ethnographic methods.

The study was approved by the institutional review board; participants provided written consent, and confidentiality was assured. Data were collected in lower-middle-income households from four different suburbs in the Ithaca-Tompkins County, New York state. Semistructured interviews were conducted with 20 caregivers (Table 1) in their homes. The sample was ethnically diverse (45% African American, 35% Caucasian, 15% Latino, 5% Pacific Islander), 25% were grandmothers, the average age was 37, and 20% were unemployed. It was also identified that 20% are beneficiaries of the

**Table 1.** Profile of participants.

ID	Age	Ethnicity	Role	Education	Employment	SNAP*	Children	Household size
1	35	Pacific Islander	Mother	Some college	Self employed	NA	5	5
2	50	African American	Grandmo.	High school	Unemployed	Yes	3	5
3	54	Caucasian	Mother	Bachelor's	Unemployed	No	2	4
4	60	Caucasian	Grandmo.	Some college	Full time	No	2	6
5	72	African American	Grandmo.	High school	Home parenting	No	4	2
6	26	African American	Mother	Bachelor's	Part time	Yes	1	2
7	37	African American	Mother	High school	Home parenting	No	5	3
8	26	Latino	Mother	Some college	Home parenting	No	2	4
9	22	Latino	Mother	Some college	Part time	Yes	1	3
10	29	Caucasian	Mother	Some college	Home parenting	No	1	3
11	24	Latino	Mother	Some college	Part time	No	2	4
12	31	African American	Mother	Associate's	Full time	No	3	4
13	48	Caucasian	Mother	Associate's	Home parenting	No	3	5
14	26	Caucasian	Mother	High school	Full time	No	2	4
15	54	African American	Grandmo.	High school	Unemployed	NA	4	5
16	60	African American	Grandmo.	Some college	Full time	No	2	3
17	32	African American	Mother	Associate's	Unemployed	No	2	4
18	27	Caucasian	Mother	Bachelor's	Home parenting	No	2	4
19	30	Caucasian	Mother	some college	Part time	No	3	5
20	29	African American	Mother	Bachelor's	Part time	No	3	5

\*Informants were not asked directly if they receive food stamps.

Supplemental Nutrition Assistance Program (SNAP), and 50% are food pantry users.

The less structured interview's format went along with Gioia, Corley, and Hamilton's (2013) advice to preserve flexibility to adjust interview protocol based on informant responses. Each conversation took, on average, 50 minutes. Data gathering also included home tours and photographs of places used for food storage (pantries, cabinets, and refrigerator) and preparation (stove, kitchen environment). To compensate participants for their time, given that the researcher spent on average 1 hour, 10 minutes in each home, each participant received US\$50.

Families were recruited from community centers, and snowballing was used. Following the guidelines from Tong, Sainsbury, and Craig (2007), an experienced researcher in interviewing technique (first author) conducted the study. Field notes were taken during and after the recorded conversation. To identify insights and to observe data saturation, analysis was an ongoing process since the beginning of data collection.

Every family in the study reported annual income lower than \$45,000, which can be classified as lower-middle class considering a median U.S. household income of \$51,939 (DeNavas-Walt & Proctor, 2014). The lower-middle class spends 18% of their income on food (BLS, 2014), while the national average is 12.9%. We assumed that most of the participants had earnings of less than \$30,000/year given that 50% of them either relied on food pantries to complement their food supply or participated in the SNAP. In the county where the study was conducted, 13% of the population faced food insecurity.

Photos were used both to generate categories and as a source to identify inconsistencies in discourse. Interviews transcripts were analyzed in Atlas.ti software to facilitate the identification of themes. After undertaking open coding, codes generated were grouped in core categories following the assumptions of grounded theory coding (Corbin & Strauss, 2015). For each interview conducted, a conceptual map was formulated to better visualize the antecedents of household food waste (Appendix). The initial data analysis was presented to a group of four researchers for intercoder reliability.

For the purposes of this research, Corbin and Strauss's (2015) view of grounded theory is the main guideline adopted, which assumes a constructivist viewpoint and values pragmatism as a way to provide solutions to problems. We use a qualitative methodology more in line with contemporary thought that postulates that theoretical value of an analysis emerges from the researcher's interactions within the field and reflexivity (Charmaz, 2014; Corbin & Strauss, 2015).

### **Coding procedures**

No matter what school of thought guides the perspective, it is imperative to include constant comparisons, theoretical sampling, and coding procedures as Bowen (2008) mentioned. This research followed a three-step coding procedure: open coding (initial), selective coding (focused), and theoretical coding. Recommendations from Holton (2007) and Charmaz (2014) served as guidance. Initially, while working directly with the empirical material, data were fractured and analyzed through open coding. All the empirical material—interviews transcripts, field notes, and photos—were organized in Atlas.ti software.

While conducting initial (open) coding, Charmaz's (2014) advice to stick to the data was followed, which means that applying preexisting categories to the data was avoided. In the selective coding phase, decisions about which initial codes make the most analytic sense to categorize the data completely were made. While in this process, following Tarozzi (2014), initial relevant codes were maintained, grouped, and named accordingly. Moreover, while formulating these macrocategories, data redundancy was verified to saturate categories.

Considering that observing saturation is vital for a GT to be effective, special attention was given to identify data redundancy, which indicates the point of diminishing returns, when nothing new is being added (Bowen, 2008). By explaining the saturation process and what saturation means within the context of the study, it was intended to contribute to methodological rigor and adherence to trustworthiness, as Bowen (2008) emphasized.

Finally, the process of theoretical coding was conducted in conjunction with the making of constant comparisons. As constant comparisons progressed, the core category emerged. The core categories became the focus of further selective data collection and coding efforts as Holton (2007) recommended.

As a final note, the initial study in Brazil had demonstrated that contradictions have emerged from our observations when confronted with discourses gathered in interviews, so what participants state has to be interpreted taking into consideration our own views constructed from evidence. These aspects pointed our study to the helm of post-positivism with a more objectivist epistemology.

## Literature review

Household food waste relates to avoidable waste (Leal Filho & Kovaleva, 2015), and it might be unintentional or a habit marked by unconscious practices (Quested, Marsh, Stunell, & Parry, 2013). It happens as a result of social practices (Evans, 2011) even before the preparation of the meal (Porpino, Parente, & Wansink, 2015; Wansink, 2001). Even considering that the percentage of income spent on food for the lowest income U.S. households rose from 32% in 2006 to 36% in 2013 (BLS, 2014), food-related decisions involve unconscious influences (Wansink, 2014) that might be powerful enough to impact waste. We postulate that an understanding of the dimensions of affection and abundance is needed to better explain household food waste.

Consumer food waste signifies a larger environmental problem since it accumulates the impacts from each stage of the supply chain along the way (Baldwin, 2015). Additionally, the food thrown away in rich countries

sometimes had to travel around the world to reach the residence of the consumer (IMECHE, 2013). The concern about food waste has evolved from saving food to feed the army to an awareness of the negative outcomes for the environment and society at large. In the past, “conquering waste is winning the war” (Farmer & Huntington, 1918, p. 10) was a motto used to persuade American families to save food. In that period, given the negative impact of the war on food production and transportation, foodstuffs were seen as a valuable product. The scarcity of food in Europe contrasted with an estimated \$700 million of food waste per year in the U.S. households (Farmer & Huntington, 1918).

This lack of resources narrated by Farmer and Huntington (1918) has given place to food abundance in most of the world, and attention on food waste is now driven by environmental and moral dimensions. As noted by Refsgaard and Magnussen (2009), disposal methods such as incineration and landfills, which generate greenhouse gas emissions, are environmentally questionable. Food waste increases the cost of production, and it generates unnecessary additional costs to the environment, affecting biodiversity, climate, and nutrients (Grizzetti et al., 2013).

In highly developed nations the scale of food waste is higher in households (FAO, 2013). In Germany, for instance, 47% to 65% of edible food is thrown away by homes, while in Sweden it is around 35% (Leal Filho & Kovaleva, 2015). In the United States, about 31% (£133 billion) of the £430 billion of the available food supply at the retail and consumer levels goes uneaten (Buzby, Wells, & Hyman, 2014). Household wasted food accounts for 21% of this total, and an estimated 64% is considered avoidable (O’Donnell, 2014).

### **Affection**

Affection, a social need or a wanted behavior (Cohen, 1967), is a positive emotion with interpersonal reference (Storm & Storm, 1987) and an important aspect of intimacy (Waring, Tillman, Frelick, Russell, & Weisz, 1980). It has been known that affection impacts family decision-making, and it helps to explain the interpersonal dynamics of this process (Park, Tansuhaj, & Kolbe, 1991). In relation to food, specifically, “values of production, kinship, and status” show us that food is “never just nutrition” (Fajans, 2012, p. 4).

Family meals, for instance, are permeated by affection. As such, in families who value abundance on the table, this habit might translate into food waste. Additionally, the desire to be seen as a good provider (Graham-Howe, Jessop, & Sparks, 2014; Porpino et al., 2015) has been identified as an antecedent of food waste; nevertheless, relatively little is known about how affection might

contribute to generating more wasted food and how it relates to food abundance.

Food provisioning routines might involve affection in ways similar to gift giving. Both are interpersonal rituals permeated by the willingness to satisfy someone or a family. Cheal (1987, p. 153) defined gift giving as an “emotionally significant” means by which individuals communicate and show love to others.

The mother’s role in caring for children is linked to food provisioning routines. The notion of “good mother” is intrinsically related to this act of showing love to the family via preparation and serving food (Ristovski-Slijepcevic, Chapman, & Beagan, 2010). The good mother identity (Graham-Howe et al., 2014) relates to the need to transmit affection by serving diversified and nutritious meals to their families. In a study about childhood obesity, Kaufman and Kaparti (2007) showed that good parenting involves satisfying children’s wants and needs and allowing them to “eat right.” In this context, family affection might generate overserving snacks.

Family affection, even in a context without children, is evident in the relationship among the nutritional gatekeeper and other household members. Caregivers often seek to nurture family life, and the provision of wholesome family meals is a key process in this context (Southerton & Yates, 2015). When commenting about the wider cultural context of eating, Southerton and Yates (2015) mentioned that care plays a role in the overprovisioning of healthy or comfort foods, which might contribute to more food waste. Furthermore, even considering that “housewives” are an outdated concept, there is still a cooking hierarchy in most American families, in which men perform the outdoor cooking (e.g., grilling meat) and women are expected to do the daily cooking in the kitchen (Inness, 2001).

Consumers tend to shop and cook in the context of “eating properly” (Evans, 2012), which demands variety and cooking from scratch, aspects that might generate overpreparation, a core antecedent of household food waste. In the context of cooking proper food, mothers want to be perceived as good providers (Evans, 2014). Affection also permeates relationships in neighborhoods with high social connectedness. In such instance, as identified in low-income families in Brazil, hospitality promotes food waste. Families in this segment link food to wealth and do not want to be perceived as poor (Porpino et al., 2015).

### **Abundance**

Abundance is the opposite of scarcity, but they coexist in the food system (Murcott, 1999) and are intrinsically linked. Rather than considering abundance of resources less important than scarcity, Alatout (2009) suggested a reconceptualization of abundance. Drawing from Latour’s actor-network



theory, Alatout (2009) argued that the meaning of abundance is a product of a network of relations. Abundance is surrounded by distinct meanings. Having plenty of food at home, for instance, signifies status and affluence in some countries (Stuart, 2009) as well as the preference for supersized food (Dubois, Rucker, & Galinsky, 2012).

Cooking more than enough and presenting large servings on the table is a cultural norm in certain Latin countries (Fajans, 2012), and antecedents of food waste, such as overpreparation and overstock perceived as a security necessity, have been identified in the low-income context in Brazil (Porpino et al., 2015). In a developed world perspective, given the availability of food from multiple sources (e.g., food pantries), it might be the case that it is even easier to adopt a careless approach to food. Furthermore, large package sizes, common in the United States, are linked to overeating (Chandon, 2013; Rozin, Kabnick, Pete, Fischler, & Shields, 2003), and empirical evidence also identifies it as a driver of wasted food (Koivupuro et al., 2012; Williams, Wikström, Otterbring, Löfgren, & Gustafsson, 2012).

“Having surplus, even in excess of what is ever likely to be needed, can be reassuring” (Stuart, 2009, p. 78). The habit of buying food in bulk, usually without having planned the meals for the coming week, ends up generating a state in which food is consumed twice as fast as it normally would be (Chandon & Wansink, 2002), and the cost-saving effort for buying in bulk is likely to be nullified by food waste (Porpino et al., 2015). Overbuying has been identified as the most prominent reason for wasting food (Ganglbauer, Fitzpatrick, & Guldenpfennig, 2015).

A psychology of abundance, characterized by the inability to save or the lack of awareness that resources are finite, contributes to the emergence of scarcity. People often fail to save cash or even time when they experience a state of abundance, which turns into a lack of resources (Mullainathan & Shafir, 2013). Does this logic of the psychology of abundance also operate in relation to food? For instance, when families experience a pantry fully stocked or perceive that food pantries are easily accessible, do they mitigate their ability to save food?

If “early abundance encourages waste” (Mullainathan & Shafir, 2013, p. 223), it is expected that low-income families might waste more food when they opt to abundant stockpiling in the beginning of the month. The habit of relying on food pantries to complement the household food stock, identified in 50% of the sample ( $n = 10$ ) studied, helps beneficiaries to avoid food insecurity and decreases the anxiety experienced when stockpiling is perceived to be low. On the other hand, abundance as a result of easy availability of food might end up promoting more food waste. It is known that, among SNAP beneficiaries, a cyclical pattern of abundance early in the month—when food stamps are received—followed by food

shortages later in the month persists (Kaufman & Kaparti, 2007; Mullainathan & Shafir, 2013).

## Results and discussion

Affection and abundance are the two categories more prominent in the speeches analyzed. Table 2 presents a sample of quotations related to these core categories. For each of the six categories identified—(1) affection; (2) abundance; (3) multiplicity of choices; (4) convenience; (5) procrastination; and (6) unplanned routine—we present the main subcategories and the frequency they appear among the 20 mothers interviewed, as shown in Figure 3. Overpreparing food, for instance, is associated with excessive purchase and overstocking food, subcategories of abundance, as presented in Figure 3.

As shown in the following quotation, mothers tend to show affection to their families in ways that involve food preparation and serving. They tend to enjoy family meals characterized by food served on the table in large portions. This positive intention promotes food waste, a negative outcome.

**Table 2.** Sample of quotations related to affection and abundance.

Affection	Abundance
I try to make them happy. It's kind of funny because when I make a salad, one person does not like tomatoes, and the other person does not like cucumber, so usually I cut them up and put them in separate dishes, one likes vanilla, the other chocolate, and sometimes mum can't remember who likes what [laugh] and I might mess up. [Mother 3]	I like my cabinets filled, I have kids in my home. See, cookies, Aldi stuff, and here in the fridge frozen hamburgers, hotdogs... I just don't want my children to go without... I mean it doesn't have to be stuffed, look these cabinets, not that bad. [Mother 2]
I love to cook for the family, I just like to do like in my old ages (abundant and from scratch) [...] When it comes to my grandchildren they like different kinds of cereals, the Wheaties, the Corn Flakes, the bran, and these cereals are with sugar, we didn't grow up with, our parents didn't give us that kind of cereal, when we were children we had to eat oatmeal, Cream of Wheat... [Mother 5]	They [her parents] were in the mindset that nothing would be wasted rather than making too much and have it wasted. I think they made less, and everyone would have to deal with that, whereas my mindset is I just want to make sure that's enough for everyone, so I might make too much. I don't really worry about it. [Mother 3]
I don't like cook, I don't like having to feel responsible to make sure that all nutrients are given at the time of the meal. I like leftovers, but my son does not, even chicken, he loves chicken, but he will not eat it the next day. If it has not just being prepared on the oven or whatsoever, he will not have it. [Mother 6]	To have plenty of food is important, because is there, so you can cook, or someone might come unexpected, just come through, and then you can just reach and find something to cook. That's the old way. That's the first thing you do, when they come, you wanna feed them. [Mother 5]
I love to cook. My grandkids are spoiled; they don't like cereal that much because I cook breakfast all the time. Yeah, I cook every day, I get up and I do. It makes me happy. It feels good to know that my grandkids are eating well. [Mother 15]	My problem is that I make too much of it, instead of two cans of vegetables for three of us, I always end up putting three or four cans of vegetables in the pot, so I make too much food at one time. It's a habit. [Mother 7]

Source. Interviews conducted by the author.

I always make the plate of food, and I bring to them. I serve them, always, even when my older daughter is here with her fiancée. It's a complete plate, I put too much on the plate, they complain about that [laugh]. (Mother 7)

Another dimension of the problem related to affection is serving snacks as treats for children, which was frequent in 25% of the families studied. Interestingly, when the nutritional gatekeeper is a grandmother, this tendency to award children with snacks was more prevalent. This behavior was perceived to be linked to skipping meals or having more leftovers, which are drivers of wasted food.

The following speech exemplifies a caregiver acting as a “good mother.” While obesity might be one of the outcomes, the other is food waste given that children might skip meals, and the food prepared for them might be stored and forgotten in the fridge. Furthermore, it was also identified that parents also tend to skip breakfast and lunch when they opt for the consumption of snacks.

Cookies, marshmallow and rice crisps I buy to make treats for them [kids], because these are cheap snacks [...] And I love sweets too, but yes, I kind enjoy making it for them, and these are not the first things on my mind when I buy... [Laugh] I'm not gonna lie, I enjoy them with myself. (Mother 2)

Making sure that there is plenty of food, and not just enough, was a behavior identified among 13 out of the 20 mothers studied. This taste for abundance, identified in the following speech, is linked to the good mother behavior, a driver of food waste in the category of affection.

I just cook so much because (laughs) I have my daughter and I have her kids and I have an older son. These people wanna eat something. I don't know I just, I'm kind of getting better, I am, because I waste a lot of food, because no one really likes to eat leftovers, so that wastes a lot of food. (Mother 15)

As [Figure 1](#) illustrates, certain food products (e.g., Kool-Aid, peanut butter) are stocked to serve as easily available snacks. Caregivers report feeling anxiety if they do not have a wide assortment of snacks.

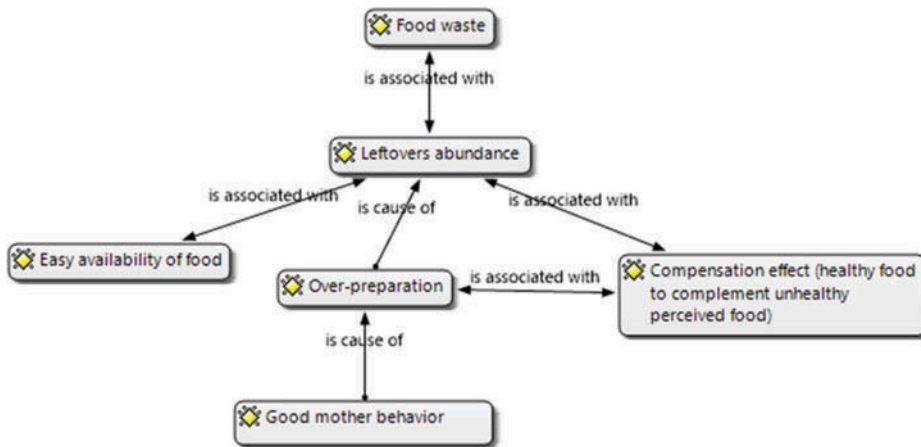
Interestingly, empirical evidences show also that mothers who experienced scarcity in the past tend to overstock food as a precaution, and as a consequence they are driven to prepare abundant servings. For these families, food is seen as wealth, and it also signals hope. The following quotation exemplifies this tendency.

Because I grow up almost without having food some days. It was empty, so if I don't have food, I have a nervous breakdown. I like to know that we have food in our cabinets, if we don't have food in our cabinets I worry about not eating, because we were poor, I grew up that way. (Mother 17)

To illustrate the possible interplay between affection and food abundance within the context of family, a conceptual network is provided



**Figure 1.** Affection: snacks as treats for kids or for the self.  
 Source. Photo taken during the study.



**Figure 2.** Conceptual network formulated in Atlas.ti (Informant 2).  
 Source. Content analysis from interview conducted.

(Figure 2). This illustration is based on the discourse of a grandmother, identified as the nutritional gatekeeper in a household with her daughter and three grandchildren. In this particular case, overpreparation of food is boosted both by the good provider identity and by what has been identified as a “compensation effect.” When the grandmother prepares a filling meal that is perceived as unhealthy (e.g., fried chicken with macaroni and cheese or hamburgers with French fries), she tends also to prepare greens or some vegetables to mitigate the feeling that just unhealthy food is being served.

In such circumstances, as illustrated in Figure 2, the result of the good mother behavior and the compensation effect might be abundant leftovers, a strong driver of wasted food when the nutritional gatekeeper is not

resourceful enough to repurpose the surplus food. Interestingly, this finding seems to be related to what Chandon and Wansink (2007) called the “health halo,” a biasing effect of restaurants’ healthy claims on calorie estimations.

While in a restaurant setting, health claims (e.g., a main course promoted as being “healthy”) lead consumers to choose side dishes containing more calories, this study presents evidence that the preparation of homemade meals can be driven by a similar bias, although apparently inversely. To mitigate the guilt associated with the perception that only “unhealthy” food is being served, caregivers tend to also prepare foods perceived as being healthier, which in turn contributes to overpreparation and a higher propensity toward having abundant leftovers. Therefore, while in a restaurant context, health claims lead to more calories being consumed, in a household the willingness to not serve only foods perceived as “unhealthy” was found to stimulate overpreparation.

In the families who receive food stamps (i.e., SNAP beneficiaries), mothers reported that the first 2 weeks after receiving the benefits are marked by abundance, while the week before getting it is permeated by scarcity of proteins and vegetables. Others ( $n = 9$ ) mentioned that given the easy availability of foods, such as bread in food pantries, these products tend to be overstocked at home and frequently wasted.

Overall, food abundance results in waste for different reasons. Some families reported that they faced difficult times, and it is comforting and important to them to make sure that they have a pantry or refrigerator with plenty of food. Others justify the habit of stocking a lot of food due to the severe winter. African American mothers, and also some immigrants interviewed, tend to consider cooking in abundance important to make sure that everybody is satisfied, a cultural norm identified previously in Brazilian mothers (Porpino et al., 2015).

On the other hand, a family of European origin mentioned that due to the scarcity they faced in the past, they avoid wasting food, even though this household had the highest amount of food stocked. Working mothers justify cooking in abundance to save time. Some families, mainly the ones who either get food stamps or get food from pantries, say that there is food easily available, then it is easier to waste food.

Caregivers reported feeling relaxed if they have plenty of food in the cabinets. Comfort foods were found to be stocked in abundance to serve as snacks between meals. While affection is displayed for others, comfort foods were found to be an emotional uplift for the self. This habit tends to increase the amount of leftovers generated, and it might generate food waste if the family is not willing to repurpose leftovers. Figure 3 shows a photo taken in a household in which just one person eats cereals. It illustrates how stockpiling certain foods is related to the need to have a comfort food easily available for snacking along the day. This finding goes



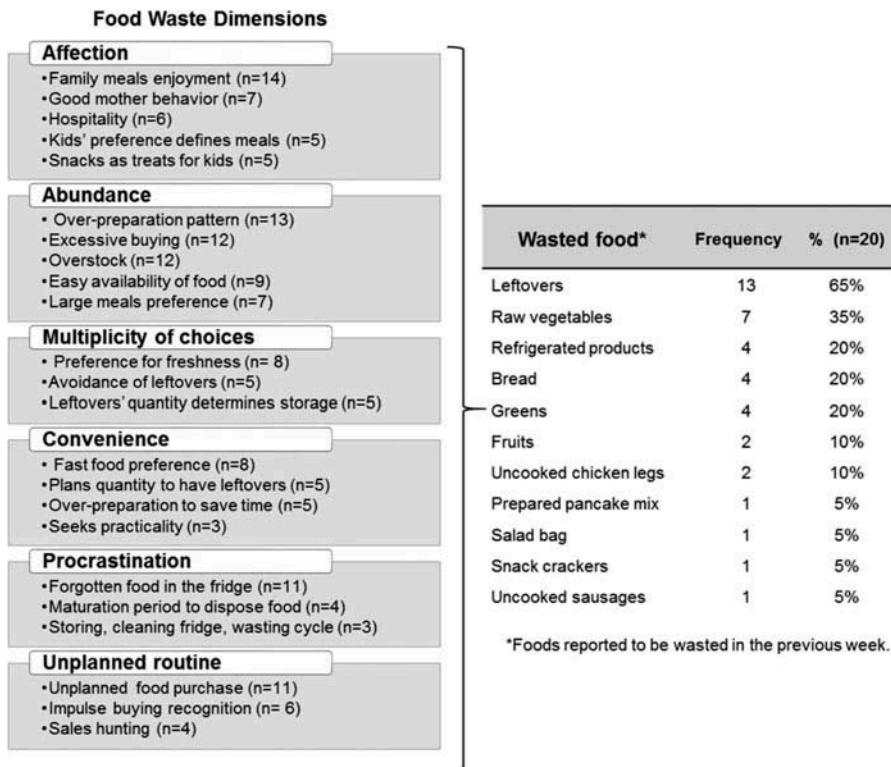
**Figure 3.** Abundance: 10 opened boxes of cereals.  
*Source.* Photo taken during the study.

along with Wansink, Cheney, and Chan (2003), for whom females preferred snack-related comfort foods.

Abundance was also mentioned as a source for waste for families who joined the community-supported agriculture (CSA farm share), in which a consumer buys a “share” of a farmer’s harvest at the beginning of the growing season, and then produce is bagged or boxed and usually delivered to the household. They explained that given the large amount of greens and vegetables received at once—some of them new items to their diets (e.g., asparagus, turnips)—they end up wasting part of it. The problem is not the program itself, which is useful to diversify diets with healthy foods, but the lack of knowledge about how to plan and prepare meals. The same rationale of large portions explains why some families waste food after buying it from warehouses.

As presented in Figure 4, “multiplicity of choices” relates to factors that result from having the option not to consume leftovers. “Preference for freshness,” mentioned by 40% of the mothers, is also cited by Neff, Spiker, and Truant (2015) as a top cause for wasting food. “Convenience,” as the name implies, aggregates subcategories linked mainly to time-saving efforts and practicality. Some families reported that they do not throw away leftovers right away, but it is common to forget food in the refrigerator. Interestingly, it was mentioned that even knowing that the food might not be consumed, it is important for them to store in the back of the refrigerator until it spoils. We name this behavior “procrastination.” Finally, “unplanned routine,” also mentioned by Stefan, van Herpen, Tudoran, and Lähteenmäki (2013), results from subcategories related mainly to grocery shopping behavior.

Wasted food, as a result of the six categories described, is characterized by the non-use of leftovers in 65% of the families. These 13 mothers reported having wasted leftovers in the week before the interview was conducted. Most



**Figure 4.** Main antecedents of food waste and food wasted recently.

Source. Empirical data collected. \*Foods reported to be wasted in the previous week.

families ( $n = 11$ ) tend to have a problematic relation with leftovers, which are often stored for too long in the refrigerator for reasons that go beyond not remembering that they had it in there. Three caregivers described a cycle of storing food in the refrigerator until the cleaning day, when the food stored for too long is finally thrown away. This habit, as the content analysis indicates, mitigates guilt.

Regarding food habits, there was found to be a high consumption of canned food (e.g., corn, spinach, beans), macaroni and cheese, cereals, snacks, and drinks such as sodas and Kool-Aid among the participants. Some families reported having someone with diabetes in the household, but they still consumed products rich in sugar. Eight mothers (40%) were clearly overweight.

## Conclusion and implications

The reasons for providing food abundance in the family context, and affection itself, are positive intentions that might have a negative outcome when analyzed by their impact on food wasting. These findings expand

the understanding on the household food waste phenomenon and present an opportunity for theorizing it in a novel manner. Our focus in the lower-middle-income segment initially may seem counterintuitive, but, given that most of the world can be classified in this segment, efforts to mitigate food waste demand an understanding of low-income consumers. Although the objective of this study was not to compare the U.S. results with the previous work in Brazil, there was a striking similarity in the findings. Despite major cultural differences between the two countries, abundance and affection were also identified as major drivers of food waste among lower-income Brazilian households. Despite the limited size of the sample size in both studies, the converging results offer some evidence that findings presented the criteria of data saturation. Further work could research higher-income households to investigate if further generalizations would also hold beyond the low-income segment.

Instead of simply blaming consumers for wasting food, our study shows that to decrease the potential negative consequences of “positive” intentions, behavioral economics principles could be used to change the way nutritional gatekeepers deal with food-related decisions. For instance, showing affection by overpreparing food might be replaced by other forms of affection if caregivers perceive that they are throwing away financial resources when food is wasted. Therefore, campaigns aimed at mitigating household food waste could frame messages toward the potential benefits of saving food for the family budget.

Additionally, given that the non-use of leftovers was the most frequent type of food waste identified, positive messages can also be applied to show that the consumption of foods prepared on previous days can actually be both tasty and safe if stored appropriately. Communication strategies, though, should not simply be persuasive messages aimed to increase awareness of food waste. They might be more effective if based on behavioral economics principles without blaming consumers. As our results indicate, intentions are positive. Therefore, caregivers have to be stimulated to reflect on their practices to change their behavior in relation to food.

Overall, dealing with the problem of food waste in the low-income context demands amplifying the role of nutritional educators in social programs (e.g., SNAP) and, even more importantly, to integrate food pantries in initiatives seeking to communicate with and train caregivers in regard to saving food. Users of food pantries and beneficiaries of hunger relief programs are less likely to be persuaded by the potential economic benefits of saving food, given that they can access food products free of charge, but they can be motivated to better plan meals, so their families can have a more diversified diet toward the end of the month.



Finally, for retailers, the findings presented are twofold: one might interpret that excessive buying—a driver of food waste identified in 60% of the families investigated—indicates that point-of-sale merchandising and promotions are driving consumers to buy more than they need, which might be true and which demands more investigation. On the other hand, sustainability initiatives are booming in the retail sector, such as the Zero Waste Movement from Carrefour in Brazil (Carrefour, 2015), the Walmart Sustainability Index, and the Whole Foods campaign to motivate consumers to share ideas on how to save food (Smith, 2015). We assume that retailers can leverage their brand images by not only communicating sustainability messages but also showing through relevant actions that they do care about their consumers' wellbeing.

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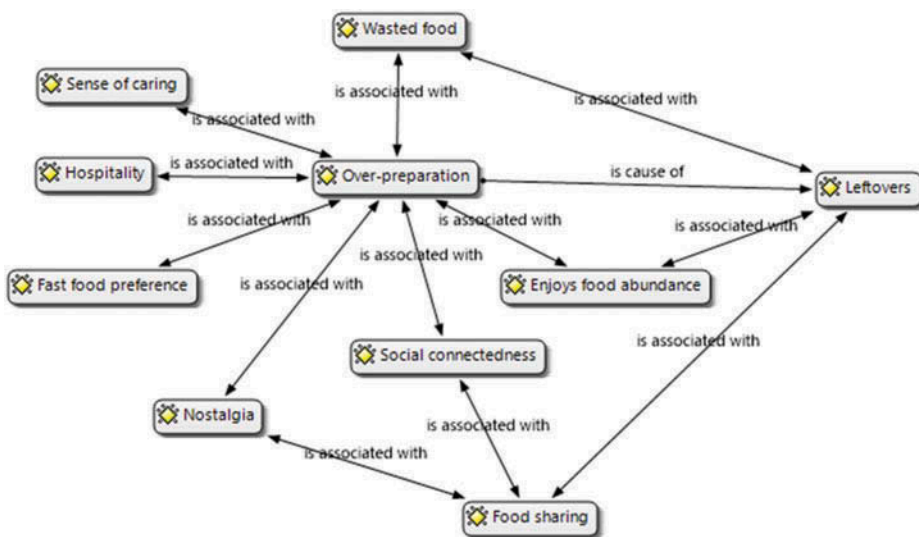
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**Appendix**



**Figure A1.** Sample of a conceptual network formulated in Atlas.ti (Informant 16)  
 Source. Interview and observation conducted by the author.