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Is healthy eating too expensive?: How low-income parents evaluate the cost of food

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ABSTRACT

Debates about whether a healthy diet is affordable often overlook how low-income consumers themselves evaluate food cost. This question is relevant to explaining food choices and measuring food prices. Drawing on interviews with 49 low-income primary caregivers and grocery-shopping observations with 34 of these interviewees, I find that respondents judge food cost in two ways: 1) absolute judgments, or assessments of whether a food covers a family's needs with scarce resources and 2) relative judgments, or interpretations of price relative to another food that frames an item as affordable or pricey by contrast. Absolute judgments reflect actual expenditures, including not just the sticker price, but also four underappreciated monetary costs. These underappreciated costs stem from food waste; packages containing more than is needed; food that is consumed too quickly; and unsatiating foods. When monetary costs go unmeasured and when consumers interpret prices in relative terms, researchers' views of food cost diverge from the experiences of low-income people. Divergent views have two results: food-cost estimates overstate the affordability of a healthy diet and observers may misconstrue purchases as financially imprudent. These findings can inform policy, programming, and public discourse.

1. Introduction

Low-income groups face the greatest risk of developing several diet-related conditions, including diabetes and obesity. Some researchers attribute this inequality to the cost of healthy eating (Drewnowski, 2010), while others argue that nourishing food is affordable (Raynor et al., 2002; Stewart et al., 2011). This disagreement owes partly to how food prices are measured, as different metrics yield discrepant estimates of cost (Carlson and Frazão, 2012; Lipsky, 2009). Given these divergences, some researchers argue that price metrics should reflect the perceptions of consumers themselves (Frazão et al., 2011). Yet little scholarship addresses how low-income people evaluate food cost and how perceived cost relates to diet quality. This paper takes up these questions, showing that cost matters—but not always for the reasons we expect.

Using interviews with 49 low-income primary caregivers, plus grocery-shopping observations with 34 interviewees, I find that respondents judged food prices in two ways: *absolute judgments* and *relative judgments*. With absolute judgments, respondents assessed whether a food covered their family's needs given their limited resources. Absolute judgments reflected not only foods' sticker price, but also underappreciated monetary costs that arise when expenditures exceed need. These costs occur when: families generate food waste; packages contain more than needed; food is consumed too quickly; and food is unsatiating. Food-cost estimates that omit these costs overstate the affordability of healthy eating.

When making relative judgments, respondents assessed cost not in terms of concrete needs and resources, but in relation to the price of another food. Other foods create a reference point that frames the item in question as economical or pricey by contrast. Depending on the reference point, respondents found food affordable even when it cost more than cheaper options. Without appreciating the relative judgment

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of price, observers might deem their purchases financially imprudent.

This paper enhances our understanding of the economic determinants of food choice by showing that low-income people incur underappreciated monetary costs and interpret food prices in unexpected ways. These costs and their behavioral consequences can negatively affect diet quality. Additionally, I identify how low-income consumers' perception of food cost departs from experts' views, with implications for debates about whether healthy food is affordable and for the public's judgment of low-income consumers.

2. Background

2.1. Food cost and socioeconomic disparities in diet quality

In the United States, diet-related conditions including obesity and diabetes have become more prevalent across the socioeconomic spectrum, but rates are typically higher among low-income individuals (Kanjilal et al., 2006; Ogden et al., 2010). These disparities stem partly from differences in diet quality (Drewnowski, 2010). Although many Americans do not meet dietary guidelines (Wang et al., 2014), poverty is associated with lower diet quality (Hiza et al., 2013). American adults' diets improved modestly between 1999-2000 and 2009–2010, but low-income people saw no gains, and socioeconomic disparities grew (Wang et al., 2014).

Scholars attribute these dietary disparities to various sources, including food cost. According to recent calculations, a healthy diet averages $1.48 more per day than an imprudent one (Rao et al., 2013). Spending less without eating fewer calories requires switching to more calorific but less salubrious options (Drewnowski and Darmon, 2005). Many low-income people concur that healthy food costs too much (Tach and Amorim, 2015; Alkon et al., 2013). But disagreement abounds. According to several analyses, more prudent diets (Raynor et al., 2002; Stewart et al., 2011) and foods (Bernstein et al., 2010; Rao et al., 2013) are not more expensive. From this perspective, the belief that healthy food costs too much "is just plain wrong" (Bittman, 2011; also Stic, 2013).

In part, experts debate whether healthy food is affordable because they prefer different price metrics—such as price per calorie, per serving, and by weight—and different metrics yield different estimates of cost (Lipsky, 2009; Carlson and Frazão, 2012; Rao et al., 2013). For example, high-calorie snacks such as chips seem inexpensive per calorie because they contain so many calories (Lipsky, 2009). But per serving or by weight, many fruits and vegetables are no more expensive (Carlson and Frazão, 2012).

Different metrics also support divergent explanations of low-income people's food choices. When unhealthy foods cost less per calorie, scholars suggest that low-income people seek calorific foods to stretch their budgets (Drewnowski and Specter, 2004). This perspective traces dietary disparities to income inequality and the state-subsidized overproduction of cheap crops (Drewnowski, 2010). But when wholesome food costs no more according to other metrics, scholars conclude that low-income people eat unhealthily for reasons other than cost (Lipsky, 2009), such as inadequate information or personal preference (Frazão, 2009: 701; Carlson and Frazão, 2012: 29; Bittman, 2011). Thus, debate about measurement is political (Timmermans and Epstein, 2010; Drewnowski, 2010: 1187), reflecting broader beliefs about whether poor people's decisions stem from durable structural conditions or from individual-level factors under their control. By framing the poor either as victims or as architects of their circumstances, these attributions shape whether scholars advocate for redistributive nutrition policies or personal diet change (Gans, 1995).

To settle disagreements, some researchers have advocated for "realistic" (Frazão et al., 2011: 861) food-price metrics based on units that consumers find relevant (Lipsky, 2009; Carlson and Frazão, 2012). But in defending one measure over another, scholars muster hypothetical examples of how consumers perceive price (e.g., Frazão, 2009). Without observing everyday people's judgments, it remains unclear if the intuitions of researchers mirror the experiences of consumers. Advancing this debate requires examining how low-income people perceive food cost.

2.2. Subjective constructions of food cost

Marketing and economics research provides key insights into consumer price perception. Crucially, objective price—what is paid—differs conceptually and empirically from perceived price—what consumers "encode" (Zeithaml, 1988). In encoding, people interpret prices, converting them into a salient, memorable form. This form includes not only dollars and cents, but also categorical distinctions like "economical" or "costly" and ordinal rankings like more or less expensive. Often, consumers interpret prices by comparing them with a reference price they have in mind (Simonson and Drolet, 2004). Given this latitude for construal, perceived price can vary across individuals (Zeithaml, 1988) and contexts (Janiszewski and Lichtenstein, 1999). Importantly, perceived price—not objective price—influences consumers' willingness to pay (Zeithaml, 1988; Janiszewski and Lichtenstein, 1999).

Although one might assume that poor people have little latitude to interpret price, several studies suggest otherwise (Giskes et al., 2007): people in similar financial situations find different foods affordable (Mackereth and Milner, 2007); parents deem nominally affordable items costly when children waste food (Daniel, 2016); and food price is "multidimensional" (DiSantis et al., 2013: 520), or one consideration among many. Additionally, low-income peoples' perceptions of price can diverge from objectively measured price, and it is perceived price that predicts their willingness to pay (Giskes et al., 2007). However, existing studies do not advance an integrated view of how low-income people evaluate food cost or of how their views square with those of outside observers. Marketing research offers essential conceptual tools to pursue these questions, but does not address them explicitly.

More broadly, this paper extends recent inquiry into how people construe other objective conditions of food provisioning. For example, income-eligible households eschew food pantries partly because they interpret inconvenience according to subjective, social criteria (Fong et al., 2016). Similarly, mothers view time for cooking differently depending on their "dietary self-efficacy" (Jabs et al., 2007). Finally, perceived food access encompasses both physical distance and social distance from shop owners and other patrons (Cannuscio et al., 2010, 2014). Perceived access can deviate from objective, distance-based measures, and it predicts intake independently, leading some scholars to advocate for understanding how people understand their material conditions of food procurement (Caspi et al., 2012). This paper furthers this goal by outlining how low-income parents understand food cost.

3. Data and methods

This paper uses 60 in-depth interviews with 49 low-income primary caregivers and 37 grocery-shopping observations with 34 interviewees. I collected data in the Boston area between summer 2013 and summer 2016 for a larger study of families' food decisions. To qualify, respondents had to live with their children at least half time and do most of the household's food provisioning. To minimize variation due to race, ethnicity, and nationality, the study centered on non-Hispanic white and non-Hispanic Black primary caregivers who were born in the United States or who had lived there since at least early childhood. Biracial or multiracial caregivers with a white or Black parent also qualified. I targeted participants with children between four and eight years because children at this age rely on their families for food (Birch, 1999).

Participants were recruited through purposive and snowball sampling. First, I approached potential respondents at three organizations for economically disadvantaged people: a food pantry, a toy and clothing trade-in center, and a family homeless shelter. Additionally, 1000 flyers were sent to non-Hispanic white and Black families with children ages four to eight. Contact information came from InfoUSA. I

also hung flyers at businesses and libraries in high-income and mixed-income neighborhoods, and at an organization serving low-income women. Some people distributed flyers themselves. To observe how people form food-related ideas based on those around them—a feature of the broader study—I also interviewed respondents' friends and family. Referrals were capped at two. Additionally, I interviewed a non-residential grandmother and grandfather who provided additional information about a participating family. I re-interviewed eleven caregivers to ask questions that I added after our first meeting. The study included higher-income parents, but this analysis focuses on low-income families, those who make under 130% the US federal poverty line. Twenty-one participants were white, 25 were Black, and three were biracial. The sample includes four grandmothers and one grandfather. The rest are mothers.

Interviews included open-ended questions about respondents' food-provisioning activities; meal patterns; and food-related priorities, challenges, strategies, and ideals. To tap judgments of "good" and "bad" food, respondents also evaluated three hypothetical children's diets ranging in healthfulness. I revised the interview guide iteratively to probe the unexpected observation that subjective evaluations of cost had several dimensions. I recorded interviews and took notes on respondents' body language and demeanor. Most interviews took place in respondents' homes. Others occurred in fast-food outlets, cafes, and public spaces. Interviews ranged from 1.5 to 3.5 h, averaging 2.25 h, and were transcribed verbatim. This paper uses answers to questions in the sections "Food Shopping," "Priorities," "Food Selection and Routines," "Tastes and Variety," and "Diet Evaluation" of the interview guide (Appendix A), and spontaneous comments made throughout the interview. Interviewees received $40.

Previous researchers have used walking interviews to understand the shopping behaviors and experiences of low-income consumers (Chrisinger, 2016). Building on this method, I observed the grocery-shopping routine of a subset of previously interviewed caregivers and then interviewed them about their decisions. This observation component aimed to triangulate data from the initial interviews. I shadowed the first 23 interviewees. Thereafter, I chose parents with different orientations to healthy eating. I conducted 37 shop-alongs with 34 caregivers. On one occasion, two mothers shopped together. Four participants were observed twice.

Most observation participants narrated their thinking while shopping. During quiet moments, I sometimes asked, "What are you thinking?" to spur conversation. In-store observations took from 15 min to 3 h, averaging 1.25 h; post-shopping interviews ran one to 2 h. I also traveled with most participants to and from the supermarket, and helped them put away groceries at home. Observations and interviews were recorded and transcribed. I also took fieldnotes on participants' demeanor, decisions, and spontaneous reactions. This paper uses respondents' comments during shopping and their responses to questions in the sections "Shopping Experience and Purchases," "Budgeting," "Evaluation," and "Constraints Lifted" of the post-shopping interview guide (Appendix B). Observation participants received $100 after the post-shopping interviews. This amount reflects the observation component's comparatively long duration.

This study followed a research protocol approved by Harvard University, which included obtaining informed consent before the interview and shopping observation. Pseudonyms are used to protect participants' identity.

Data analysis followed an abductive approach. Aimed at constructing theory, abductive analysis turns surprising observations into a tentative emergent theory whose characteristics and conditions are then specified by analyzing variation in the data (Timmermans and Tavory, 2012). During fieldwork, I developed a sense that respondents' conceptions of food cost had multiple components and that some were absent from scholarly debates about diet cost. To pursue this hunch, I began analysis with focused coding (Charmaz, 2006: 57–60) of words commonly used by respondents, including "afford," "expens*," "cost," "price," "budget," "cheap," "econom*," "money," "buy," "worth," and "value." Passages included other cost-related words, such as "last," which I added to the search terms. After searching previously coded transcripts for these additional terms, a research assistant and I coded the remaining transcripts, scanning transcripts for any additional passages. I reviewed the assistant's coding for completeness. Quotes were searched for and compiled in a Microsoft Word document organized by respondent.

Concomitantly, I identified the components of subjective cost. Salient components included lastingness, package size, waste, duration of satiety, speed of consumption, and relative price. Through constant comparison (Charmaz, 2006: 54), I established two underlying characteristics: some judgments reflected absolute monetary costs that consumers incur; others stemmed from comparisons with reference prices. I organized a theoretical framework around absolute and relative judgments whose characteristics and categories I refined by iteratively comparing the framework and the data. Negative cases helped to specify the conditions of the components of subjective cost (Timmermans and Tavory, 2012: 180). Concurrently, I compared how respondents and nutrition experts view food cost, classifying the components of subjective cost as "expected" or "unexpected" given existing scholarship, and deducing how unexpected costs would affect conclusions about diet cost. Because I observed no differences by race, respondents' race is not reported.

4. Findings

Respondents judged food cost in two broad ways. First, *absolute judgments* concerned whether a food would meet families' needs. These evaluations comprised several monetary costs, including two subcategories of underappreciated costs, which arise when 1) the amount purchased exceeds the amount consumed and 2) consumption exceeds expectation. Second, *relative judgments* rested on comparisons with a reference food that frames an item as affordable or pricey by contrast. I trace where reference foods come from and how relative judgments of price may appear imprudent.

4.1. Absolute judgments: meeting needs with scarce resources

Absolute judgments of food cost stemmed from low-income families' ongoing challenge of meeting need with scarce resources. These judgments reflected actual dollars paid, and each purchase affected the balance between resources and need. When evaluating prices, respondents often referenced specific dollar amounts, but they also judged affordability according another, more experiential heuristic: how long food would last. Janice equated affordability and lastingness spontaneously when discussing the Supplemental Nutrition Assistance Program (SNAP):

> They don't give enough money to feed your family for a month. It's crazy 'cos if you want to buy fruits and vegetables and all this fresh stuff, […] *it's expensive. It doesn't last.* [my emphasis]

In theory, lastingness could mean several things, like how long a food keeps before spoiling or how much time will elapse before an item needs replenishing. For low-income caregivers, however, lastingness was not only an expression of time. It was, fundamentally, an economic concern, a projection of need and their ability to meet it until more funds came in. Respondents invoked lastingness unreflectingly, suggesting that it was deeply ingrained by repeatedly seeing food dwindle, anticipating the day more money would come, and striving to satisfy needs until then. Often, respondents conceptualized lastingness in terms of months, as SNAP benefits arrive monthly. When food failed to last, families either spent additional money, cut back, or went without. Food felt expensive as a result.

Often, low-income respondents viewed affordability more specifically, as having enough servings or meals until additional resources come in. Keith revealed this logic while describing his grocery-shopping

routine:

> I bag up two pieces [of chicken] in a bag. I cook it, eat one piece that night, one piece the next night. So if I make 12 bags of that, 12 bags of pork chops, 12 bags of sausage, 12 bags of anything else, [like] my ribs, that's what? 32 bags. Make me last all month.

Keith's computational error reveals just how much he conceptualized affordability as servings over time: 12 bags of four meats yields 48 bags, not 32. But 32 is just over the number of days in a month, the period that Keith's food must last. Because this purchase provided enough servings for the month, Keith deemed it affordable: "Get about 15–20 pork chops—can't beat that for $14."

This understanding of cost echoes the commonsense view that affordability means having enough funds for a given good. But absolute judgments also included several underappreciated costs. These costs arise when expenditures exceed need, either because 1) the quantity of food that must be purchased outstrips what is consumed or 2) consumption surpasses an intended level. By exceeding what is needed for consumption, these underappreciated costs absorb resources for other purchases. As a result, a food may feel expensive, even if it appears affordable on paper.

4.1.1. When purchases exceed consumption: package size influences total expenditures

Some respondents found foods unaffordable because they came in packages that contained more than necessary. Even simple preparations require multiple components, which, all summed, can cost more than a shoestring budget allows. When money runs low, Rebecca buys dollar-menu fast food for her three children:

> You could go to Wendy's and get a 99-cent cheeseburger or you could go to the store and get [ingredients for] burgers for five bucks. So what are you going to do? You're going to take your fast-food option. It's quicker, it's easier, it's cheaper.

It is not readily apparent why a dollar-menu burger for each child would be cheaper than ingredients for burgers made at home. Per serving, the ingredients for homemade cheeseburgers cost slightly less than the fast-food alternative. (At a low-end supermarket, buns cost $1.29, cheese slices cost $2.39, and a pound of ground beef cost $3.99. Totaling $7.67, these ingredients would make 7.4 dollar-menu sized burgers for 89 cents each.) But Rebecca deemed three dollar-menu burgers cheaper than $5 of ingredients because they cost less total. Rebecca could have used the extra burger ingredients later, but she only had money for immediate needs. With more financial slack, respondents did buy multiple ingredients in larger packages, often stocking up on sales. But when money ran low and packages exceeded families' needs, preparations containing the requisite elements proved cheaper, even when they cost more per unit.

Respondents' attention to total expenditures diverges from food-cost estimates use of prorated prices. Prorated prices break a larger unit, such as a package of eight cheese slices, into the quantity consumed, like three slices. Such estimates create a continuous measure of price that does not capture the discontinuous quantities foods are sold in or the discontinuous prices that people consequently pay.

4.1.2. When purchases exceed consumption: food waste influences total expenditures

When low-income respondents thought about affordability, they considered not only the cost of food consumed, but also the cost of food wasted. Respondents cited two sources of potential waste: 1) food that might go bad, especially fresh produce and 2) food they might not like, including unfamiliar ingredients; familiar ingredients from unfamiliar brands; and new recipes. For example, Terry prided herself on cooking square meals, but rarely experimented with new dishes. She explained, "It looks good on paper, but when you make it, it tastes like crap. So that's why I try to stay away from, you know, wasting." While shopping, Annette paid more for her usual parboiled rice despite showing interest in brown rice that was "just the right price." "I don't want it to come out sticky," she said. "I have to stick with what I know." If wasted, a well-priced but unfamiliar rice could turn expensive by depleting money for other needs.

Many respondents worried in particular that food might go unused if their children—and they—disliked it. Looking at a hypothetical snack of cottage cheese and banana, Chellise commented, chuckling:

> I just wouldn't do that at all. I feel like it would be a waste of money. Cottage cheese with banana, I just couldn't think about eating that myself, so I just feel like it would be a waste of money.

Like Chellise, many low-income parents saw wasted food as integral to their total expenditures because families pay for what their children refuse, not just for what they consume. Thus, foods that seem affordable on paper can become pricey in practice. To avoid costly waste, respondents fell back on what their household already liked, often energy-dense, nutrient-poor foods. Similarly, a higher-priced item that gets eaten can be more affordable than a nominally cheaper alternative no one likes. As Melissa said:

> I feel like you can taste the difference between the Kraft [brand] cheese and the other cheeses. And I feel like it's just going to go to waste, like they're not gonna eat it. So I pay the little difference; it's worth it.

Respondents' evaluations of food cost diverged from food-cost analyses—however price is measured—because these calculations reflect what is consumed, but omit waste.

4.1.3. Consumption exceeds expectation: satiating power affects lastingness

For some respondents, perceived cost also included how long a food provided satiety. Pauline struggled to buy healthy food on a fixed income, but noted that affordability involves more than the sticker price:

> It's easy to buy quick, fast shit to feed your kids, to say, "Oh, I can get three boxes of these for four bucks instead of paying four bucks for this one box." But that one box is gonna sustain your child more. Your kids are gonna eat them three boxes in one day because a half an hour later, it's gone through 'em. They go to the bathroom, and it's gone through 'em, honey.

As Pauline suggests, unsatiating foods leave family members wanting to eat more often. Households consequently risk consuming—and spending—more overall. This link between satiating power and affordability is a variation on the heuristic "lasting food is affordable." If satiety does not last in the short run, and families consequently consume more, food may last less than expected in the longer run. In this case, multiple servings of a cheaper, less satiating food may cost more overall than fewer servings of a pricier, more filling alternative.

Satiating does not always mean calorific. Caregivers found that low-cost calorie-dense snacks and sweets were not a cheap way to fill up because these foods did not "hold" their families. Instead, respondents identified starches like pasta, potatoes, rice, and grits as economical ways to get full. Additionally, insufficient calories are unfilling, regardless of a food's satiating power. Tracey ate primarily lean meats, legumes, nuts, and vegetables to manage pre-diabetes, but could afford only 1000 calories per day of these otherwise filling items. Tracey was often hungry. But when energy-dense foods provided little satiety, respondents did not equate cheap calories with cheap food.

4.1.4. Consumption exceeds expectation: speed of consumption affects lastingness

Low-income respondents also linked affordability to how fast food is consumed. Parents with scarce resources needed food to last as long as possible. Often, they had a sense of what that timespan should be. But household members sometimes ate food more quickly than respondents

intended. For example, Terry's children got snacks at the corner store. “But if they're in the house, and the snack's there, they have to eat the whole box. They don't know how to [pace themselves].”

As with the heuristic “lasting food is affordable,” quickly consumed food is pricey because it does not last. In this case, food fails to last not because it leaves needs unmet until more funds arrive, but because family members consume it more quickly than intended. If replenished, the food increases expenditures. If exhausted, the food may leave families' needs unmet. Quickly consumed foods feel expensive as a result.

Family members sometimes ate more than expected because they consumed as much as a package contained. In this situation, buying smaller units can reduce total expenditures even though they cost more per unit. Terry explained, “I'd rather spend 50 cents a day than maybe spend $3 on a box [that's] gone in a day.” For her, $4 a week for multiple single-serving snacks was more affordable than several larger boxes for $3 each. This decision may seem imprudent, as smaller packages typically cost more per unit than larger packages do. But if smaller packages reduce total intake, they can minimize spending overall.

Consuming food too quickly is not inevitable. Given the financial slack, respondents preferred buying staples in bulk precisely because they cost less per unit. This strategy proved effective if foods resisted overconsumption, like those requiring preparation. For example, buying and freezing a month's worth of raw meat works because, as Keith said, “I don't go in [the freezer] and eat chicken like a snack.” Additionally, parents could avoid overconsumption by monitoring their families' intake of highly palatable, ready-to-eat foods. This option requires an adult's presence and is easier with young children. Finally, some respondents bought sweets and treats but warned, “When it's gone, it's gone.” This approach works better with occasional “wants” than with ongoing needs. In general, then, when habitually purchased foods promote quick consumption, speed of consumption becomes part of perceived cost.

4.2. Relative judgments

Low-income respondents also evaluated affordability in *relative* terms. Whereas absolute judgments hinged on the balance between fairly fixed economic resources and needs, relative judgements stemmed from an unexpected layer of interpretation: respondents saw the price of one food in relation to that of another. By framing foods as cheap or expensive, reference prices created a general sense of an item's affordability. Reference points varied across individuals—and when people had different reference points in mind, they evaluated affordability in divergent ways. As a result, low-income consumers' judgments of cost might appear imprudent to outside observers.

4.2.1. Food categories structure reference points

The reference points undergirding relative judgments were not random, but rather came from the same category of food. While grocery shopping, Rose commented spontaneously on turkey bacon:

> It's reasonably priced! Turkey bacon is very cheap. And a pack of [pork] bacon, a good pack of bacon, Smithfield's, you're talking almost $4. Oscar Meyer, you're definitely talking $4, okay? Turkey bacon's $1.99, for Jennie-O.

Rose did not contrast turkey and pork bacon because she was choosing between these goods based on their respective prices, as one would in rational decision-making. In fact, Rose was not considering pork bacon at all; her daughter only ate the poultry version. But turkey bacon is not self-evidently economical. At $2.67 per pound, it cost slightly more than boneless, skinless chicken breast—which, at $2.50 per pound, struck respondents as pricey. But with costlier pork bacon as a reference point, turkey bacon felt “very cheap.” Thus, in relative judgments of price, foods seem affordable relative to a reference point. Furthermore, unlike estimates that apply food-cost metrics equally to any food, in relative judgments of price, foods are comparable because they belong to the same category.

4.2.2. Personal practice structures reference points

Food categories contain multiple potential reference points, but respondents drew on the items they found salient, particularly those that they purchased and consumed. Brittany discussed popcorn kernels: “The bag's like this [big], and it's like $1.99 or 0.99; it just depends on if you want a name brand or not. Microwave popcorn is so expensive.” Brittany bought whole kernels because she preferred their taste. Compared to a two-pound bag of kernels for $1.99 or less, a $1.99 package of microwave popcorn appeared not just expensive, but *so* expensive.

With different reference points in mind, respondents made divergent assessments of affordability. Like Brittany, Melissa deemed microwave popcorn's price noteworthy—but for the opposite reason: it seemed economical. After describing the kind she buys for her dairy-sensitive son, Melissa spontaneously highlighted its price: “There's one Stop & Shop [store brand] one that's $1.99. It's so cheap.” Because she did not pop her own kernels, Melissa lacked this reference point. Instead, she had in mind a different snack: the $3.99 bag of pre-popped popcorn that her daughter likes. In comparison, microwave popcorn seemed cheap.

In general, then, respondents' food practices defined the reference points against which they evaluated other foods' prices. When these reference points differed, respondents interpreted affordability differently, as well.

4.2.3. Relative judgments can appear imprudent

Items that low-income respondents deemed affordable in relative terms can appear imprudent if observers have a different reference point. This divergence is clearest in respondents' assessment of the price of bottled water. As is common in low-income households (Gorelick et al., 2011; Edin et al., 2013), many respondents bought this product. The majority did so for taste or convenience; a small minority mistrusted their tap.

Most respondents who bought bottled water found it affordable or very affordable. Pauline explained why she routinely purchased bottled water: “It's cheap, it's inexpensive, it's good for your body, it quenches your thirst.” Dana echoed this view. She brought several single-serving water bottles to the grocery-shopping observation. Mentioning that she needed to buy more, she noted its price spontaneously, “They have, like, a 36 pack for $3.99. So cheap.”

Not everyone agrees. Researchers (Edin et al., 2013; Hobson et al., 2007), journalists (Royte, 2011: 154), and food justice advocates (Stic, 2013) have called bottled water pricey. Some observers have suggested that, provided that tap water is safe, buying its bottled cousin on a tight budget is puzzling (Edin et al., 2013), if not unwise (Gorelick et al., 2011). These observers deem bottled water costly because they see it in relation to tap water (e.g., Edin et al., 2013: 41), a taken-for-granted default that anchors their judgments of price.

In contrast, respondents who found bottled water affordable evaluated its price in relation to a different default: the other bottled beverages they habitually consumed. Lauren discussed substituting sugar-sweetened beverages with citrus-infused bottled water:

> It's good. And it's cheaper. And it's more healthier. You know why it's cheaper? All you have to do is buy lemon and lime, and they're usually four for a dollar. And I bought the pitcher at Stop & Shop [supermarket]. It was $3.99, and it was cheaper. Do you know how much juice costs?

In saying “cheaper” three times, Lauren revealed that bottled water felt affordable because it costs less *than* another bottled beverage. Other caregivers reported similarly that they considered bottled water affordable because it costs less than the sodas, juices, and fruit-flavored drinks they routinely bought. Given their salience, these other

Table 1
Price of tap water, bottled water, and other bottled drinks.
Sources: Lauren's shopping receipt, July 2013 (bottled water, Pepsi, and orange juice); Boston Water and Sewer Commission, May 2017 http://www.bwsc.org/services/rates/rates.asp (tap water).

Beverage	Price per package	Price per 8 oz	Per 100 cal
Tap water (1 gallon)	$0.007	$0.00044	∞
Bottled water (24 count)	$2.49	$0.05	∞
Orange juice (1 gallon)	$3.49	$0.22	$0.2
Soda (2 liters)	$1.25	$0.16	$0.14

beverages anchored respondents' judgment of the price of bottle water.

Table 1 shows that bottled water appears economical compared to other bottled drinks, but pricey compared to tap water. Additionally, because bottled water contains zero calories, its calories are infinitely expensive. Evidently, respondents who found bottled water affordable did not view its cost on a price-per-calorie basis.

4.2.4. Relative evaluation within absolute constraints

Absolute resource constraints put limits on relative judgments of affordability. Viewed relationally, any food could seem affordable if something else cost more. But tight budgets cannot accommodate such expansive definitions of affordability. To appear affordable in relative terms, a food must not displace other items from the budget. Typically, these foods cost under $5. Additionally, when funds dwindled, respondents forewent even the foods they deemed affordable, as when they switched from bottled water to the tap. Finally, the poorest respondents considered absolute cost constantly, as scarcity imposed continual and immediate trade-offs. Rachelle lamented:

> I look at everything, like 'Damn, I just wasted my money on that.' I don't buy something unless I know I'm hungry. I'm not going to buy it just because it looks good. Like, it sucks. Sometimes I just want to go and buy myself an iced coffee and a croissant. Alright, that's like $6 spent, and my kids are going to come home, and what if I do need the [baby] wipes? Then I'm sitting there and thinking about the $6 that I spent on iced coffee that I could have made at home.

Acute economic strain overwhelmed the relational view of price.

5. Discussion and conclusion

Despite calls to measure food prices in ways that reflect consumers' perceptions and experiences (Frazão et al., 2011), little research has focused on how low-income people evaluate food cost. In this study, disadvantaged respondents assessed food cost in two ways: absolute judgments and relative judgments. With absolute judgements, parents considered whether their resources would cover their ongoing needs. Because many respondents received additional funds at regular intervals, typically the month, they often equated affordability with whether a food would last until more money came in.

As expected, some absolute judgments reflected high prices that would leave needs unmet, but other absolute judgments were less straightforward. These judgments reflected expenditures that exceeded what families needed or intended to consume: 1) food waste; 2) multiple packages of food, that contained more than needed; 3) food that is consumed quickly; and 4) foods that provide little satiety. These costs increased expenditures or depleted food stores, creating a gap between resources and needs. Respondents encoded them as expensive as a result.

Another key finding is that low-income respondents interpreted food prices in relative terms. Relative judgments rested not on the match between resources and need, but on viewing one price in relation to another. As documented in marketing research, reference prices frame items as cheap or expensive by comparison (Janiszewski and Lichtenstein, 1999). In this study, reference points came from other foods in the same category and from the particular items that respondents used. When respondents used different foods, they drew on different reference points and consequently arrived at divergent conclusions about whether the same good was affordable.

Relative judgments likely resulted from anchoring. In this cognitive bias, information directs people's focus toward a particular value, making that value an implicit basis for subsequent judgments (Tversky and Kahneman, 1974). Reference foods set an anchor that made another food's price seem high or low, creating a general sense of its attractiveness. This "affective impression" (Slovic et al., 2007) led respondents to encode the price as cheap or expensive. Relative judgments were more likely when respondents had some financial slack, as scarcity forces people to actively consider precise prices and immediate trade-offs (Shah et al., 2015).

Perceived prices shaped food purchases in several ways. As expected, study participants avoided pricey items that would leave other needs unsatisfied. Less expectedly, they also minimized several underappreciated monetary costs and were willing to pay for foods that felt affordable in relative terms. Understanding these aspects of perceived price can illuminate seemingly irrational decisions to spend more than "necessary," like buying pricier single-serving snacks and premade items containing multiple components, or eschewing cheaper but unfamiliar goods that might generate costly waste. Despite costing more per unit, these foods could cost less overall, and respondents bought them to economize. Additionally, relative judgments can enable apparently imprudent purchases by framing items as affordable even when they are not among the cheapest options.

Perceived food prices have implications for health. Food choices born of several absolute judgments of cost can reduce diet quality. High prices kept respondents from buying healthier foods, especially fresh produce, fresh seafood, leaner meats, and nuts. Two underappreciated monetary costs exacerbate this recognized economic constraint by pushing parents toward less wholesome alternatives. The prospect of food waste deterred respondents from trying new, healthier foods and recipes. Falling back on preferred but less healthy foods affects both present intake and opportunities to develop tastes that will guide future consumption (Daniel, 2016). Additionally, when families lacked funds for multiple ingredients, they often turned to ultra-processed convenience foods, which negatively impact health (Schnabel et al., 2019).

Other perceived costs—the cost of quickly consumed food, the cost of unsatiating food, and relative judgments that enable purchases costing more than "necessary"—affect diet quality indirectly. Rather than shunting parents toward less healthy alternatives, these costs absorbed resources, thus restricting subsequent food choices. These restricted options may be less wholesome than usual, as families often turn to cheap, nutrient-poor carbohydrates when funds dwindle (Edin et al., 2013). In contrast, parents' efforts to reduce the overconsumption of hyperpalatable "junk" have health benefits. But other parents mentioned moderating their children's quick consumption of fruit, suggesting that the health consequences of pacing intake depends on what the food in question is. Overall, however, underappreciated monetary costs and some relative judgments had negative implications for health.

Respondents' perceptions of food cost support arguments on each side of the debate about how to measure food prices. Echoing scholars who propose metrics based on "intuitive" units (Lipsky, 2009: 1401; Frazão et al., 2011), respondents emphasized servings—but not just because servings are familiar or easy to recognize. Crucially, for low-income respondents, servings stood as proxies for need. In emphasizing need and sufficiency, study participants echoed advocates of a calorie-based measure, who posit that poor people seek cheap dietary energy to stretch their budgets (Drewnowski, 2010). However, respondents did not always equate affordability with calories. They found that energy-dense but unsatiating foods were not cheap, and they deemed calorie-free bottled water economical.

But respondents' views also diverged from scholarly analyses, regardless of the metric used. Respondents experienced costs that many

estimates omit. This divergence occurs when people must purchase more than they need for consumption. For example, getting children to accept an unfamiliar food requires buying what they eat plus what they reject. Additionally, some preparations necessitate buying packages containing more than needed. This discrepancy between the amount *purchased* and the amount *consumed* arises from hard-to-avoid practicalities: the tendencies of eaters and characteristics of food. But many food-cost estimates equate purchasing with consumption: they measure the quantity of food eaten while bracketing what must be bought in order to eat it. Estimates can understate food and diet costs as a result. Calculations that accurately measure food waste; that reflect the quantities that foods must be purchased in; or that frame their estimates as a lower bound would address these issues.

Lay and expert views also diverged when respondents viewed food prices in relative terms. If low-income consumers and outside observers have different reference points in mind, they may render different judgments of affordability. Furthermore, if consumers' reference point has a higher price, their purchases may seem unnecessarily expensive, even if shoppers believe they are being mindful of cost. Such a discrepancy might occur when analysts and consumers have different eating norms that set different reference prices. For example, low-income communities' widespread consumption of sugar-sweetened beverages (Bleich et al., 2013) positions these drinks as a reference points for assessing the price of bottled water. In contrast, researchers (Edin et al., 2013; Gorelick et al., 2011) and food-justice advocates (Bittman, 2011; Stic, 2013) frame tap water as a default drink, making it their point of reference.

These findings extend recent scholarship on how people interpret their material conditions of food choice. This analysis suggests that these interpretations have three main components: 1) material conditions experienced directly, as one would expect 2) underappreciated and therefore unmeasured components of those material conditions, and 3) subjective interpretations of material conditions. This typology may provide a sensitizing framework for studying other influences on food choice, like access, time, and convenience. There, too, components two and three may lead consumers and observers to view the same material circumstances differently, while components one and two likely limit people's latitude to interpret their objective conditions.

This article's argument warrants several clarifications. First, low-income people interpret objective prices in subjective ways, but economic constraints are not mere ideation and therefore irrelevant. Second, this analysis centers on cost, but food choice is notoriously multicausal. Respondents bought foods for non-economic reasons, including convenience and enjoyment. Third, resolving food insecurity and subpar nutrition involves more than understanding how people experience food cost and how their views align with those of researchers. But until we address the fundamental causes of dietary inequalities, understanding these questions can strengthen policy and programming.

The expected and unexpected costs of healthy eating reinforce the importance of reducing poverty and strengthening nutrition assistance programs. Minimally, government-funded food-assistance should reflect the cost of children's food waste. Absent such changes, policy and programming can make strategic use of low-income people's perceptions of food cost. First are strategies to address unappreciated monetary costs. To reduce the cost of household food waste, organizations such as schools, houses of faith, community health centers, and supermarkets can offer opportunities to try new foods. Nutrition education programs, including SNAP-Ed for SNAP recipients, should let participants take samples home for their families to try new recipes risk free. Additionally, budget-friendly recipes should cite not only per-serving and per-recipe costs, but also the total cost of ingredients that must be purchased in order to use the amount called for. This calculation would more accurately reflect the out-of-pocket costs that low-income consumers find meaningful.

Other programming strategies can build on relative judgments of price. Interventions might resonate more if framed in terms of people's own understandings of affordability. For example, healthy, economical foods might seem more attractive if contrasted with familiar reference points that cost more. Another strategy would be to provide new reference points by changing eating habits and norms. Cooking education programs may provide new reference points—wholesome foods that families can prepare themselves—that make commercial versions seem unreasonably pricey.

Finally, these findings have relevance for the public's beliefs about the poor and its support for nutrition policy. Debates about the cost of healthy eating appear in the news, Internet, and airwaves. There, as in research, differing beliefs about whether healthy food is affordable enable competing causal attributions of food choice. Some point to economic constraint (Parker-Pope, 2008), while others blame lack of information (Stic, 2013) and personal choice (Bittman, 2011). Because structural explanations of decision-making frame the poor as deserving of support, whereas individual-level accounts suggest they should make changes themselves (Gans, 1995), discourse about the affordability of healthy food may influence public support for nutrition policy. This support has indirect but significant implications for low-income people's food security and dietary health. This article furthers public debates by highlighting underappreciated reasons that healthy eating proves financially burdensome.

Several limitations merit mention. First, I sampled primary caregivers from two ethnoracial groups in one urban area of the United States. Understandings of food cost may differ in other places and populations. Second, in seeking detailed qualitative information, I gained depth but not breadth. Consequently, I uncovered understudied judgments, but I cannot estimate their prevalence. Third, I cannot quantify the association between food-cost evaluations and purchasing decisions. Perceived affordability shaped respondents' willingness to pay, but respondents sometimes bought foods they found expensive. Conversely, they also bought cheap foods, not for their affordability but for their taste. Fourth, it is beyond the scope of this paper to elaborate on why reference prices vary across individuals and groups. They may stem from differing childhood food experiences; different levels of cooking skill; and from eating norms arising from class-segregated social networks and neighborhoods. These questions warrant future research.

The methods used here are not without limitation. Observation participants may have behaved differently due to my presence. As Chrisinger notes (2016), shopping observations may involve some favorability bias, but the nature of food shopping likely attenuates it. Buying additional, more socially desirable goods costs extra money; skipping habitual items requires a return trip, a burden for the numerous respondents who used public transit, taxis, and rides for transportation. Far from sanitizing their purchases, most participants bought unhealthy foods; three respondents stole, fully aware that I saw them.

Finally, this article is not a repudiation of using standard metrics to estimate food and diet cost. Standards necessarily simplify a complex world. While they flatten detail, they also coordinate important actions (Timmermans and Epstein, 2010), like enabling governments to provide means-tested nutrition assistance. Yet objective measures may diverge systematically from people's realities. Comparing perceived and objectively measured food prices can highlight these gaps so that estimates better reflect people's actual costs, and claims about the affordability of healthy food are adequately qualified.

As one of the few systematic examinations of how low-income consumers perceive food cost, this paper shows that perceived cost is multidimensional—respondents paid not just the sticker price but also unmeasured monetary costs—and multimodal—respondents viewed prices in both absolute and relative terms. This insight comes not by imagining how low-income people think about cost or from inferring their ideas from broad correlations between income and food prices, but by talking with consumers and observing their spontaneous

judgments. Without appreciating the full range of costs that people experience, researchers and food-justice advocates risk underestimating the actual cost of a healthy diet—and without understanding cost from the perspective of consumers, we overlook how choices that appear financially imprudent may make economic sense to people themselves. Debates about the cost of healthy eating and interventions to improve diet quality should consider costs from the perspective of everyday people.

Author contribution

Caitlin Daniel conducted all the elements of the study, including securing funding; conceptualizing and designing the study; collecting, managing, and analyzing the data; and writing, revising, and editing all drafts of the manuscript.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.socscimed.2020.112823.

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