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# Utilization of Grocery Store Observations as a Method to Assess Impact of Child Food Requests on Purchasing

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# **Abstract**

Assessment of grocery shopping behavior and interactions can provide useful information in the promotion of healthy lifestyles. Various techniques have been used with different strengths and weaknesses. The objective of this feasibility study was to examine the use of grocery store observations in assessing child food requests based on food groups and the frequency of maternal compliance to these requests in a low-income, ethnically diverse population. Mother-child dyads (n = 20) were observed during a routine grocery shopping trip while child food requests and maternal compliance to those requests was recorded. Participants were aware of their participation, but blinded to the true objective of the study. Children were found to have substantial influence over the purchase of various food items, in which mothers complied with approximately 50 percent of child food requests. Grocery store observations were found to be an effective method for assessing mother-child interactions while grocery shopping.

# **Keywords**

child influence, grocery shopping, mother-child interaction

Utilization of grocery store observations as a method to assess child food requests

# Introduction

Research indicates the prevalence of obesity is higher in family environments with little restraint on their food intake (Flegal et al. 2004). Additionally, parenting styles that are perceived as being either "low in control" or "demanding," (i.e., indulgent, permissive, or uninvolved), have been associated with higher risks of overweight or obesity in children with various ethnic backgrounds

(Wake et al. 2007; Tovar et al. 2012). These parental feeding styles have also been found to be associated with higher child intake of low nutrient dense foods and lower intake of fruits and vegetables in low-income ethnically diverse families (Hennessy et al. 2012; Tovar et al. 2012). A variety of factors are thought to contribute to this relationship. Indulgent mothers may allow their children too many food choices and this parenting style may not provide children with enough guidance on how to self-regulate eating behaviors. Additionally, indulgent mothers may be more likely to cater to children's unhealthy food requests, both in- and outside the home, and they may provide less healthy food items (Olvera and Power 2010). It is believed that diets high in refined grains, added sugars, and high fat foods, as well low intake of fruits and vegetables can contribute to overweight and obesity (Hill and Trowbridge, 1998). This would indicate that parents who are more compliant with their child's food requests at the grocery store could be contributing to their child's weight gain, depending on the types of foods that are purchased.

Although much research has examined family eating behaviors, the majority of that research is based on self-reported data from a family member(s). Subjects often underreport energy consumption in self reports (Neuhouser et al. 2008), necessitating the examination of actual behavior. Grocery store observation has been used to examine food purchasing decisions. Specifically, children have been shown to have persuasive power in familial consumer decisions, primarily through child requests for items to be purchased (Borzekowski and Poussaint 1998; Jeffrey, McLellarn, and Fox 1982; Nadeau and Badley 2012). O'Dougherty, Story, and Stang (2006) used grocery store observations to collect information on food purchases by families with children 8 years old or younger. The researchers found that children initiated food requests in approximately 50 percent of the parent-child interactions observed, and parents collectively complied with their child's food requests almost half of the time. Limitations to grocery store observation methodologies, however, are that subjects are not always followed throughout the entire grocery store, and/or are often unaware of their participation and not contacted by the researchers. While this methodology allows for less participant bias, it lacks attainment of accurate demographic information about the participants or information about their entire grocery shopping experience.

To account for some of these limitations, Ebster, Wagner, and Neumuleer (2009) conducted a study that included grocery store observations complemented with brief interviews. The results indicated the observation data related to children's influence was broader than the information gained from the parent-report interview alone (Ebster, Wagner, and Neumueller 2009). Additionally, these researchers found that some of the dyads observed, thought to be a parent with their child, turned out to actually be a child with some other adult. The use of the subsequent interview allowed for the researchers to separate these dyads from the true parent-child dyads.

Learning more about consumer behaviors and interactions at the grocery store can provide useful information in the development of future health promotion endeavors. This is especially important for populations that experience higher rates of overweight/obesity and related chronic diseases compared to their counterparts. The objective of this feasibility study was to examine the utilization of grocery store observations in assessing child food requests based on food groups and the frequency of maternal compliance to these requests in a low-income, ethnically diverse population. The grocery store observation technique used in the current study differs from previous studies in that (1) the participants were aware of their participation, but masked to the specific purpose of the study; (2) participants were recruited prior to the observation to ensure eligibility criteria; and (3) participants were observed from point of entry at the store until exiting the store. A secondary objective was to describe the foods requested by children at the grocery store and the rate of maternal compliance to these food requests by food group.

#### Methods

Screening and recruitment. All study protocols were approved by the University IRB and all research assistants, including a bilingual community interviewer, were trained using the same protocols. Potential participants were recruited through various clinics and agencies serving primarily low-income, and immigrant and minority families in a southeastern area of the United States. A variety of recruitment techniques were used based on the agency's preference, such as talking to patients in the waiting rooms of clinics, speaking to potential participants at classes offered by the agency, posting and handing out recruitment fliers (made available in both English and Spanish), and contacting potential participants over the telephone.

Study participants included a sub-sample of participants from a larger cross-sectional study examining maternal compliance to child food requests in a variety of settings. In order to be eligible for the study, participants had to be a mother or other primary female caregiver of at least one 7-12 year old child and be fluent in English or Spanish. The 7-12 year old child also participated in the study. In households where there was more than one 7-12 year old child, the researcher chose which child participated in the study based on convenience, such as which child would be available at the time of the observation. If eligible potential participants were interested, an appointment to conduct the grocery store observation was made for a time and location that was reflective of the participants' normal grocery shopping habits.

Data collection. Mother-child dyads met a research assistant at a store of the participant's choosing at an agreed upon time. If the mother had additional children, they were also allowed to come on the shopping trip, but only information from the target child was recorded. A community interpreter was used if the participants spoke Spanish. Before food shopping began, informed consent, parental consent, and child assent forms were signed, which were available in

English or Spanish. To avoid potential behavior change, participants were provided a broader purpose of the study, which was to examine family dietary behaviors.

Once the forms were signed, participants were instructed to go about their shopping and act as if the research assistant was not present. The research assistant played the role of a non-participatory observer and was instructed to stay close enough to the participants in order to hear conversation, but far enough away so as not to disrupt their shopping. Research assistants recorded each time the target child verbally asked for a food or beverage item to be purchased or put a food item into the cart without being prompted by their mother, being as specific as possible and including the brand name. Requests for non-food or non-beverage items were not recorded. Also recorded was ethnicity (Hispanic or non-Hispanic). Research assistants followed participants for the duration of the grocery shopping trip through the end of the check-out process and indicated whether each food item the child had requested was purchased. After completing check-out, participants were provided their incentives, which consisted of a 21-piece kitchen utensil kit and child activity booklet related to healthy eating.

**Data analysis**. Child food requests were categorized into food groups based on the Nutrient Data System for Research (NDSR) software version 2011 developed by the Nutrition Coordinating Center, University of Minneapolis, MN, with the exception of the addition of a "combination" food group. This food group included foods that otherwise would have been categorized into multiple food groups. Descriptive analyses (i.e., frequencies, percentages) were conducted to describe the types of food requests made by children and maternal compliance to those food requests by food group.

### Results

A total of 20 grocery store observations were conducted from May 2012 to September 2013. Approximately half of the observations consisted of mother, target child, and at least one other child. Eight (40 percent) participants identified as Hispanic and 12 (60 percent) identified as non-Hispanic. On average per grocery store trip, children requested their mothers to purchase approximately 8.35 food items (range: 3-19 food requests per child) and mothers complied with approximately 52.4 percent of child food requests (range: 25-95 percent compliance by food group). The number of child food requests and average rate of maternal compliance by food group is depicted in Table 1. The majority of requested food items consisted of highly processed, high sugar and/or high fat foods, such as sugary cereals, cookies, pastries, potato/corn chips, ice cream, candy/gummies, soda/juice drinks, *Lunchables*, pizza, and cups of noodles.

Table 1. The average number of child food requests and maternal compliance rates at the grocery store by food group (n = 20)

Food groups	Child Food Requests (average per child)	Average Maternal Compliance (%)
Combination	1.10	44.0
Misc.	0.00	-
Beverages	0.70	66.6
Sweets	1.15	47.9
Fats	0.50	50.0
Meats	0.50	37.5
Dairy	1.15	48.8
Grains	2.15	57.3
Vegetables	0.20	25.0
Fruits	0.90	95.0
All Food Groups Combined	8.35	52.4

Participants' grocery carts commonly contained a high percentage of convenience-type foods and/or foods that children could easily make on their own, such as frozen microwaveable meals or pizzas, Hamburger Helper®, cups of noodles, hot dogs, cereal, and bread. Many food items represented store brands. Food labels were seldom read by either mother or child, but price comparison of food items was commonly practiced. A number of mothers gave their child(ren) tasks while shopping or would ask them to choose between certain food items (those encounters were not counted as a child request, as they were not initiated by the child). Additionally, researchers were able to hear reasons that the mother gave as to why a particular food item requested would not be purchased, if the mother provided that information to the child, with price of the item being most common.

Most grocery store observations lasted between 30-90 minutes, and the majority of participants had previously taken part in the at-home interview which was conducted as a part of the larger study. Wal-Mart was the most frequently visited store, with other stores consisting of Food Lion and Save-a-Lot. Many mothers shopped for their meats (both fresh and frozen) before going through the rest of the store. The majority of mothers used Supplemental Nutrition Assistance Program (SNAP) benefits to pay for at least part of their groceries.

Mothers generally seemed undisturbed throughout the grocery observation process and went about their shopping ignoring the research assistant. Children also generally seemed unbothered by the research assistant, but sometimes attempted to engage the researcher in conversation. Although, mothers did not seem preoccupied with the researcher's presence, some other shoppers in the store would occasionally stare or look confused about what was going on.

#### **Discussion**

This study aimed to examine the utilization of grocery store observations to assess child food requests and maternal compliance to those requests in a low-income, ethnically diverse population. Children requested more foods from the Grains, Dairy, Sweets, and Combination food groups compared to the Meats, Fats, and Vegetable food groups. Surprisingly, the rate of maternal compliance was high for the Fruit group, but considerably lower for the Vegetable group. The average overall maternal compliance rate to their child's food requests at the grocery store was 52.4 percent. These results are consistent with the findings of O'Dougherty, Story, and Stang (2006), who reported observing an approximate 50 percent parental compliance rate to child food requests at the grocery store.

Beyond child food requests and maternal compliance, other aspects of food shopping behavior were identified. The broad range of findings found in this study has also been supported by previous research. Ebster et al. (2009) also found that grocery store observations yielded more comprehensive results than a parent-report interview with the same participants. A variety of behaviors that could influence or be used in future nutrition interventions were identified. Mothers providing the child with tasks during grocery shopping, a lack of nutrition food label reading, common cost comparison of food items, and shopping for meat products at the beginning of the shopping trip are examples of those behaviors. The price of the food item, having the particular food item already at home, or the novelty of the food item to the child tended to be included in the rationales mothers used for not purchasing the requested food items. Similar parental refusal responses have also been documented by O'Dougherty et al. (2006), in which parents, when explanation was provided, tended to tell children that a particular food item was not needed or the child would not want it.

Unique aspects of this grocery store observation technique included that participants were recruited prior to the observation and followed through the check-out process. By recruiting participants prior to meeting at the grocery store, researchers were able to ensure that participants fit into the eligibility requirements and could then focus a target population. In previous grocery store observations, in which participants were not aware of being observed or were approached after being observed, demographic information was estimated (Nadeau and Badley 2012; O'Dougherty et al. 2006; Pettersson, Olsson, and Fjellström 2004). By following participants all the way through the check-out, researchers could examine which foods were actually purchased

(Ebster, Wagner, and Neumueller 2009). It was not uncommon for the mother to decide against certain food items during the check-out process and not actually purchase some items although they were previously in the cart. Sometimes this was due to the child putting items into the cart without the mother's approval and sometimes it was due to limited money or SNAP benefits to cover the entire cart of groceries.

The limited number of store trips made by the participants on a monthly basis and the somewhat limited food budget seemed to be beneficial to conducting the observations with limited participant bias. Even with a researcher following the participants throughout the grocery store trip, children did not seem shy about asking for foods and did not seem to be asking for foods based on gaining the attention of the researcher. Additionally, mothers also seemed to conduct normal shopping habits even though they knew they were being watched. Participants did not frequent the grocery store often, which meant drastically changing their food purchases based on social desirability was not likely. There was a strong need to get the foods that their families were going to need for the month. Based on participant comments and behaviors, it did not seem to be worth the risk of buying new or more expensive foods as an attempt to please the researcher because if those foods did not last until the next grocery store trip or budget allotment, their family might go hungry.

This study is not without challenges and limitations. It is important to note that this sample consisted of low-income participants and may not be generalizable to other income levels. Scheduling of the observations was the biggest challenge. Many potential participants in this low-income population did not have their own transportation and thus, relied on public transportation or other individuals for transportation to and from the store. This made it difficult to schedule an exact time to meet at the store and the timing often changed if the transportation was running early or late. Additionally, most participants had only 1-2 days per month available to go to food shopping, which usually correlated with the day their SNAP benefits arrived. If a research assistant was not available on that day, the observation had to wait until the next month. Rescheduling was also difficult, as participants' phone numbers often changed or participants would lose interest in the study. Additionally, there are limitations in the utilization of grocery store observation methodology. Nonverbal communication may be an important component in child influence, but can be difficult to report using observation techniques. Also, the nature of a grocery shopping trip can be very dynamic (Ebster, Wagner, and Neumueller 2009). Other influences, such as previous shopping trips, the timing of the food requests, the behavior of the child earlier in the day, the number of children participating in the trip, and other factors may change the influence and compliance relationship between mother and child. This is demonstrated by a grocery store observation study by Nadeau and Bradley (2012), which found that children's affective state had an effect on the influence strategy used by the child. The influence strategy used by the child then had an effect on the food purchasing decision by the parent. For example, children who were observed to have a more pleasant affective state were

more likely to use a positive interaction strategy (i.e., asks nicely) to persuade their parent to purchase a particular food item, which tended to be more effective than negative interaction strategies (i.e., cries or pouts).

# **Conclusions and implications**

Per shopping trip, children requested an average of 8 food items, with mothers complying with approximately 52 percent of those requests. The foods requested by children tended to consist of highly processed and/or low nutrient dense foods. Additionally, low cost convenience-type foods predominantly filled the carts of the participants. The foods requested by children and commonly purchased by mothers are likely contributing to the incidence of overweight in this population. This point, along with other identified areas of improvement could serve as potential targets for future nutrition interventions.

Grocery store observations can serve as an effective method for assessing mother-child food purchasing interactions in a low-income ethnically diverse population. In addition to the specific food purchasing behaviors recorded, this grocery store observation technique allowed for a wide range of other grocery shopping behaviors and mother-child interactions to be documented. This suggests that this methodology could be used to examine additional consumer behavior focused research questions, as well parent-child interactions in a public setting in general.

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