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Research report

Method of assessing parent–child grocery store purchasing interactions using a micro-camcorder ☆

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ABSTRACT

The purpose of this study was to assess the validity of using participant worn micro-camcorders (PWMC) to collect data on parent–child food and beverage purchasing interactions in the grocery store. Parent–child dyads (n = 32) were met at their usual grocery store and shopping time. Parents were mostly Caucasian (n = 27, 84.4%), mothers (n = 30, 93.8%). Children were 2–6 years old with 15 girls and 17 boys. A micro-camcorder was affixed to a baseball style hat worn by the child. The dyad proceeded to shop while being shadowed by an in-person observer. Video/audio data were coded for behavioral and environmental variables. The PWMC method was compared to in-person observation to assess sensitivity and relative validity for measuring parent–child interactions, and compared to receipt data to assess criterion validity for evaluating purchasing decisions. Inter-rater reliability for coding video/audio data collected using the PWMC method was also assessed. The PWMC method proved to be more sensitive than in-person observation revealing on average 1.4 ($p < 0.01$) more parent–child food and beverage purchasing interactions per shopping trip. Inter-rater reliability for coding PWMC data showed moderate to almost perfect agreement (Cohen's kappa = 0.461–0.937). The PWMC method was significantly correlated with in-person observation for measuring occurrences of parent–child food purchasing interactions (rho = 0.911, $p < 0.01$) and characteristics of those interactions (rho = 0.345–0.850, $p < 0.01$). Additionally, there was substantial agreement between the PWMC method and receipt data for measuring purchasing decisions (Cohen's kappa = 0.787). The PWMC method proved to be well suited to assess parent–child food and beverage purchasing interactions in the grocery store.

Introduction

Young children frequently accompany their parents to the grocery store (Patrick, Mahon, Zansky, Hurd, & Scallan, 2010; Schor, 2004), where parents consult their children on food choices by making food offers and children making food purchasing requests (Atkin, 1978; O'Dougherty, Story, & Stang, 2006). Parent–child interactions in the grocery store are estimated to contribute to one-third to one-half of family food purchasing decisions (Morales, 2000; O'Dougherty et al., 2006).

Perhaps because of the costs and constraints of in-person observation, investigation of factors that affect parent–child in-store food (includes beverages) purchasing interactions has mainly been from a marketing perspective. The four Ps of marketing (i.e., placement, product, promotion, and price) represent major strategies used to influence food purchasing (Glanz, Bader, & Iyer, 2012). For example, placement of products at eye level more easily attracts parent and child attention and may stimulate offers and requests (Ebster, Wagnera, & Neumueller, 2009; Sigurdsson, Saevarsson, & Foxall, 2009). Food product characteristics (e.g., food type) can affect purchasing interactions as research with older children has shown that child influence may vary depending on the type of food product requested (Belch, Belch, & Ceresino, 1985; Norgaard, Bruns, Christensen, & Mikkelsen, 2007). Promotion such as child-focused

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marketing on packaging (e.g., cartoon characters, TV tie-ins, colorful shapes, images of other young children, etc.) is meant to attract child attention and largely promotes unhealthy foods in the grocery store (Batada & Wootan, 2007; Elliott, 2012; John, 1999; Story & French, 2004). Price can be a limiting factor for food purchasing and may influence parental response to child requests (Webber, Sobal, & Dollahite, 2010; Wiig & Smith, 2009). In addition to the four Ps of marketing, other environmental and personal factors influence parent and child shopping behaviors. The linguistic type of child request (appeal vs. demand) has been shown to affect parental response (Ebster et al., 2009), and child physical position during shopping trips (i.e., in the cart, walking, or being held) was associated with the amount of total child requests (Ebster et al., 2009). Tools used to measure parent–child food purchasing behaviors (e.g., requests, offers, responses, etc.) need to have the capability to measure these factors.

Research of parent–child food purchasing interactions has relied heavily on in-person observational techniques. Atkin (1978) studied parent–child interactions when shopping for cereal using a spot sampling technique. Five graduate students were stationed in the breakfast cereal aisle disguised as clerks to record parent–child cereal purchasing behaviors. The narrow observational scope of this approach prohibits assessment of behaviors related to different product types across the store and yields limited datasets. In a more recent study, Ebster et al. (2009) covertly observed parent–child dyads throughout their entire grocery shopping trip. Observing shopping for the whole trip allows comparison of multiple product types; however, practical constraints and the burden of coding multiple simultaneous variables in the field can lead to a risk of observer bias and inaccuracy, limited ability to assess inter-rater reliability, and a labor intensive data collection process. There is a need for an efficient, accurate, and reliable method for collecting in-store data on parent–child food purchasing behaviors and environmental factors. A possible solution is using a participant worn micro-camcorder (PWMC) method to collect in-store observational data.

The purpose of this study was to establish the PWMC method's validity for assessing three primary elements of parent–child interactions, assess the relative sensitivity of the PWMC method for measuring occurrences, and investigate inter-rater reliability for coding PWMC data. Variables of interest are behavioral characteristics of parent–child in-store food purchasing interactions and environmental factors that have been shown to be important for understanding these behaviors. Variables include food description (to match observed purchases with receipt data), food type, presence of child focused marketing, price, product placement, child position during shopping, occurrence of parent–child food purchasing interaction, initiation of interaction (child vs. parent), type of child request, parental response, child response, and purchase decision (Atkin, 1978; Ebster et al., 2009; Elliott, 2012; Glanz et al., 2012; Isler, Popper, & Ward, 1987; Norgaard et al., 2007). Qualitative/experiential findings such as strengths, limitations and implications for research are included in addition to assessment of **relative sensitivity** (for measuring *occurrences* of purchasing interactions) and **inter-rater reliability** (for coding PWMC data). Validity was established for assessing three elements of parent–child interactions: **relative convergent validity** for 1) measuring *occurrences* of purchasing interactions per trip and 2) measuring *characteristics* of purchasing interactions, and 3) **criterion validity** for measuring *purchase decisions*.

Materials and methods

Recruitment and enrollment

Recruitment of parent–child dyads was conducted at four preschools in Central Texas and via an email mailing list. Three of the recruitment sites were located in low-income zip codes with an average annual household income at or below 150% of the federal poverty line for a family of four people. An additional recruitment site was in a higher income zip code with an average annual household income approximately 270% of the federal poverty line for a family of four people. The email mailing list recruited from faculty, staff, students and alumni of the University of Texas at Austin. There was also inadvertent sampling when recruited parents posted study links on parenting related web-forums or mentioned the study to friends.

One parent–child dyad was recruited per family. Inclusion criteria were: 1) having a child aged 2–6 years; 2) being the primary food purchaser for the family (performs ≥ 50% of the food purchasing duties); 3) willingness to shop in a one-parent and one-child dyad; and 4) able to converse in English. Preschool-aged children were chosen because their dietary preferences are more modifiable (i.e., more suitable subjects for future nutrition intervention studies) and children in this age group make more purchasing requests than older children (Ebster et al., 2009; Isler et al., 1987). The primary food purchaser was included to ensure behaviors in the store reflect usual parent–child interactions as closely as possible. Parent–child dyads (i.e., one parent and one child configuration) were used because this is the most common shopping configuration when parents shop with children (O'Dougherty et al., 2006; Pettersson, Olsson, & Fjellstrom, 2004). Children were given colorful stickers and parents were given a $15 gift card for completing the study.

All parents provided consent prior to enrollment. This study was approved by the University of Texas at Austin's Institutional Review Board for Human Subjects.

Observation procedure

Dyads were observed at their usual grocery store and shopping time. One grocery shopping observation was scheduled per family during a "major" shopping trip. Because families have different grocery shopping patterns, the recruited parents determined if a trip constituted a "major" shopping trip for their family. Dyads were met outside the grocery store for instructions. The child put on a baseball style hat facing backwards and the micro-camcorder (Veho VCC-004-ATOM; 4 cm × 2 cm × 2 cm) was clipped to the strap so to face the same direction as the child's face (Fig. 1). To ease any apprehension the children were allowed to hold the camera and ask questions about it before beginning. They were also told in advance that they could bring and use their own hat if it had an acceptable strap to mount the camera. Micro-camcorders were not worn by parents due to privacy concerns expressed by a subset of parents regarding having their children's images in the video recordings. The micro-camcorder had a removable memory card slot, could capture color images, had a battery life of 60 minutes, and had a sensitive microphone. Before shopping, the parent answered questions including: "When was the last time you and your child ate a meal or snack?"; "Are you or your child feeling ill?"; "Does anyone you are shopping for have any food allergies?"; and "Is anyone you are shopping for on any special diet outside of his/her normal diet?" Dyads that were ill were rescheduled. The dyad then proceeded to shop while being overtly shadowed by an in-person observer. The observer followed behind the dyad as they shopped to record parent–child behaviors and environmental factors onto an observation form. The observer remained as unobtrusive as possible, maintained a distance of 2–5 m and did not interact with the dyad as they shopped. A similar overt shadowing method was used by Galst and White (1976). Only one in-person observer was used throughout the study. After the shopping trip was completed, the parent provided the observer with the grocery receipt.