

Maternal Mobile Device Use During a Structured Parent–Child Interaction Task



Jenny Radesky, MD; Alison L. Miller, PhD; Katherine L. Rosenblum, PhD; Danielle Appugliese, MPH; Niko Kaciroti, PhD; Julie C. Lumeng, MD

From the Division of Developmental Behavioral Pediatrics, Department of Pediatrics, Boston University Medical Center, Boston, Mass (Dr Radesky); Center for Human Growth and Development (Dr Miller, Dr Rosenblum, Dr Kaciroti, Dr Lumeng), Department of Health Behavior and Health Education, School of Public Health (Dr Miller), Department of Psychiatry (Dr Rosenblum), University of Michigan, Ann Arbor, Mich; Appugliese Professional Advisors LLC, North Easton, Mass (Ms Appugliese); Department of Biostatistics, School of Public Health (Dr Kaciroti), Division of Child Behavioral Health, Department of Pediatrics (Dr Lumeng), and Human Nutrition Program, Department of Environmental Health Sciences, School of Public Health (Dr Lumeng), University of Michigan, Ann Arbor, Mich

The authors declare that they have no conflict of interest.

Address correspondence to Jenny Radesky, MD, Boston Medical Center, 88 E Newton St, Vose 4, Boston, MA 02118 (e-mail: jenny.radesky@bmc.org).

Received for publication May 21, 2014; accepted October 1, 2014.

ABSTRACT

OBJECTIVE: To examine associations of maternal mobile device use with the frequency of mother–child interactions during a structured laboratory task.

METHODS: Participants included 225 low-income mother–child pairs. When children were ~6 years old, dyads were videotaped during a standardized protocol in order to characterize how mothers and children interacted when asked to try familiar and unfamiliar foods. From videotapes, we dichotomized mothers on the basis of whether or not they spontaneously used a mobile device, and we counted maternal verbal and nonverbal prompts toward the child. We used multivariate Poisson regression to study associations of device use with eating prompt frequency for different foods.

RESULTS: Mothers were an average of 31.3 (SD 7.1) years old, and 28.0% were of Hispanic/nonwhite race/ethnicity. During the protocol, 23.1% of mothers spontaneously used a mobile device. Device use was not associated with any maternal characteristics, including age, race/ethnicity, education, depressive

symptoms, or parenting style. Mothers with device use initiated fewer verbal (relative rate 0.80; 95% confidence interval 0.63, 1.03) and nonverbal (0.61; 0.39, 0.96) interactions with their children than mothers who did not use a device, when averaged across all foods. This association was strongest during introduction of halva, the most unfamiliar food (0.67; 0.48, 0.93 for verbal and 0.42; 0.20, 0.89 for nonverbal interactions).

CONCLUSIONS: Mobile device use was common and associated with fewer interactions with children during a structured interaction task, particularly nonverbal interactions and during introduction of an unfamiliar food. More research is needed to understand how device use affects parent–child engagement in naturalistic contexts.

KEYWORDS: mobile device; mobile phone; parent–child interaction; parenting

ACADEMIC PEDIATRICS 2015;15:238–244

WHAT'S NEW

When parents spontaneously used a mobile device during a parent–child interaction task, they showed fewer verbal and nonverbal interactions with their children regarding eating, particularly during more unfamiliar segments of the protocol.

THE IMPORTANCE OF responsive face-to-face parent–child interactions in the development of language, cognitive, and self-regulation abilities during early childhood is undisputed.^{1–5} These crucial daily interactions can be disrupted through family use of media. For example, adults utter fewer words,⁶ respond to fewer bids for attention,⁷ and have lower-quality interactions⁸ with the children in their care when a television is on in the room with them. As screens become more portable and instantly accessible through the widespread use of mobile devices (eg, smartphones and tablet computers),^{9–11} the potential

for interruption of family interactions by media is heightened.

Parent–child interactions during eating in particular show a protective effect on child health outcomes such as obesity,¹² asthma,¹³ and adolescent risk behaviors.¹⁴ These findings have been attributed to the positive family communication and emotional connection that mealtime routines allow.^{13,15} However, media use during meals mitigates these benefits.¹⁶

Despite increasing ubiquity of mobile technology, use of these devices has received little study.¹⁷ Only 1 study has addressed the issue of parent mobile device use and its potential associations with interactions with young children.¹⁸ In an anonymous observational study of caregivers sitting with young children during meals in fast food restaurants, Radesky and colleagues observed that when caregivers directed a high degree of engagement or attention to mobile devices rather than to the children accompanying them, there appeared to be less mealtime conversation and more occurrences of caregiver–child conflict. This

study used qualitative methods and thus was unable to test associations between caregiver device use and the quality or quantity of parent–child interactions.

The purpose of the present study was to test this association empirically through analysis of previously collected videotapes of a structured parent–child eating interaction protocol, which were recorded as part of an ongoing longitudinal cohort study. Because many mothers in this sample were noted to spontaneously use their mobile device during the protocol, we found this to be a unique opportunity to contribute to the knowledge base regarding parent mobile device use and parent–child interactions. Eating interactions have frequently been used as a window into the parent–child dynamic because it is a common routine that families engage in regularly.¹⁹ We hypothesized that mothers exhibiting mobile device use would show fewer verbal and nonverbal interactions with their children during the task, especially during presentation of unfamiliar foods, as this represents a situation in which children need more modeling or support from caregivers.²⁰

METHODS

STUDY DESIGN AND PARTICIPANTS

We performed a secondary analysis of videotapes that were previously recorded as part of an ongoing longitudinal cohort study examining the contributions of maternal feeding interactions, child eating behaviors, and biobehavioral stress to child obesity risk.^{21,22} For the parent study, 380 children were recruited at age 3 or 4 years from Head Start, a free, federally funded preschool program for low-income children, in southeastern Michigan between 2009 and 2011. Eligibility criteria included that the child was born at term without significant perinatal complications and had no significant current medical or developmental problems, that mother and child spoke English, that mother did not hold a 4-year college degree or more, and that the child was not in foster care.

All study participants were invited to take part in an additional wave of data collection when children were approximately 6 years old (June 2011 to May 2013), and 301 (79.2%) agreed to participate. Compared to mothers who did not choose to participate in this data collection wave, included mothers were older (mean age 31.2 [SD 7.1] years vs 29.1 [7.0] years, $P = .0004$) and more likely to be a single parent (42.7% vs 35.4%, $P = .07$). This data collection protocol included a structured mother–child eating interaction in 228 mother–child dyads (75.7% of the study cohort) after exclusions for a history of food allergies or adverse food reactions in mother or child ($n = 49$), mother did not attend the structured protocol visit ($n = 8$), protocol violations ($n = 8$), or videotape problems ($n = 8$). The present analysis included 225 mother–child dyads who completed the videotaped protocol and had complete data for all covariates. Of the 301 children in this data collection wave, included participants were less likely to be of nonwhite or Hispanic race/ethnicity (28.0%) compared to excluded participants (46.1%, $P = .004$).

This study was approved by the University of Michigan institutional review board and was deemed exempt from review by the Boston University Medical Center institutional review board. At study enrollment and at the follow-up data collection wave, participating mothers gave written informed consent.

MOTHER–CHILD EATING INTERACTION PROTOCOL

The purpose of the structured eating task was to quantify mother–child interactions in a controlled setting (usually a quiet room at a community center, Head Start location, or other building that was familiar to the family) without distractions (ie, compared to meals at home), which would allow reliable assessment of differences in parent and child eating-related behaviors. It was not a goal of this protocol to assess mobile device use, which occurred spontaneously.

During the protocol, mother and child were seated alone at a table while 4 foods were presented individually and sequentially in random order. The 4 foods differed in sweetness and presumed familiarity: green beans (familiar vegetable), artichoke hearts (unfamiliar vegetable), cupcakes (familiar dessert), and halva (unfamiliar dessert). Table 1 shows the actual number of mothers and children reported to be familiar with each food. These foods were specifically chosen to provide a “press” for mother–child interaction in different contexts. For each food, a standardized script was used: “Once you and [your child] are comfortable, I will bring 2 servings of a food into the room. You can either choose to try it or not. [Your child] can either choose to try it or not. We will do this with 4 different foods. You are welcome to give them a try and tell me what you think of them. If you really don’t want to try them, though, you don’t have to. Okay?” The mother and child were given individual servings, a research assistant identified the food for them (eg, “These are artichokes. It is a kind of vegetable”), asked mother if she or the child had ever tried the food before, and said to both: “Give it a try if you’d like, and tell me what you think of it when I come back in a couple of minutes.”

Mother and child were then left alone for 4 minutes while being videotaped, after which the food was removed and the next food presented. After each food, a research assistant briefly interviewed the mother and child about their opinions of the food. Mothers were aware that they were being videotaped; no prompts were given regarding whether a mobile device could or could not be used; and

Table 1. Familiarity of Foods Presented in Structured Eating Protocol

Food	Children Who Had Eaten It Before, n (%)	Mothers Who Had Eaten It Before, n (%)
Vegetable		
Green beans	216 (98.2%)	218 (99.1%)
Artichokes	28 (13.0%)	87 (39.9%)
Dessert		
Cupcake	210 (95.0%)	217 (97.8%)
Halva	1 (0.5%)	13 (5.8%)

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