Eating Behaviors 19 (2015) 110–114

Contents lists available at ScienceDirect

Eating Behaviors

# Executive function and mealtime behavior among preschool-aged children born very preterm

Sarah E. Anderson [a,*], Kelly McNamara [b], Rebecca Andridge [c], Sarah A. Keim [a,b,d]

[a] Division of Epidemiology, The Ohio State University College of Public Health, 1841 Neil Ave., Columbus, OH 43210, USA
[b] Center for Biobehavioral Health, The Research Institute at Nationwide Children's Hospital, 700 Children's Drive, Columbus, OH 43205, USA
[c] Division of Biostatistics, The Ohio State University College of Public Health, 1841 Neil Ave., Columbus, OH 43210, USA
[d] Department of Pediatrics, The Ohio State University College of Medicine, 700 Children's Drive, Columbus, OH 43205, USA

ARTICLE INFO

*Article history:*
Received 12 March 2015
Received in revised form 26 June 2015
Accepted 29 July 2015
Available online 4 August 2015

*Keywords:*
Self-regulation
Premature birth
Behavior Rating Inventory of Executive Function
Family meals
Low birth weight

ABSTRACT

*Objective:* To determine whether executive function in preschool-aged children born very preterm was associated with problematic mealtime behavior.
*Study design:* Executive function of 41 preschool-aged children (mean age = 47 months) born at <30 weeks' gestation was assessed using a standardized protocol (gift bag) and by parent-report (Behavior Rating Inventory of Executive Function–Preschool). The gift bag assessment was video-recorded and good executive function defined as the child not touching the gift bag and remaining seated for >2 min. Parent-reported frequency and severity of child mealtime behavior problems was assessed with a 20-item index (Meals in Our Household, $\alpha = 0.94$). Multivariable regression was used to model associations between executive function and mealtime behavior problems.
*Results:* BRIEF-P global executive composite *t*-scores [mean (standard deviation [SD]) = 53.5 (15.7)] and mealtime behavior problems scores [mean (SD) = 18.5 (13.6)] were correlated ($r = 0.57$, $P < 0.0001$). Adjusted for child sex, age, birth weight, weeks' gestation, parent education, and neonatal intensive care unit length of stay, a 10-unit difference in BRIEF-P *t*-score was associated with a 7.2-unit difference in mealtime behavior problems score ($P < 0.0001$). Ten children (24%) demonstrated good executive function during the gift bag assessment. Parents reported these children displayed better executive function on the BRIEF-P and had fewer mealtime behavior problems (mean 11.2 vs. 20.8, $P = 0.02$). Adjusted for covariates, good performance on the gift bag task was associated with 14.1 unit lower mealtime behavior problems score ($P = 0.03$).
*Conclusion:* Among preschool-aged children born very preterm, difficulties with executive function may manifest as mealtime behavior problems. Larger studies are needed to help parents anticipate and manage these behaviors.

© 2015 Elsevier Ltd. All rights reserved.

## 1. Introduction

Early childhood is a period when eating behaviors and mealtime routines are established (Birch & Doub, 2014; Schwartz et al., 2011). Mealtimes are an important setting for fostering family relationships and encouraging children's cognitive and social–emotional development (Fiese et al., 2006). Parents of children born very preterm (<32 weeks' completed gestation) may face greater challenges establishing healthful, emotionally positive mealtimes because these children frequently have had early difficulties with growth and feeding (Ross & Browne, 2013), but empirical studies are limited (Cerro et al., 2002; Migraine et al., 2013). How preterm birth impacts family functioning is an area of active research (Treyvaud, 2014; Treyvaud et al., 2014) with implications for the design of interventions to support families (Spencer-Smith et al., 2012).

With advances in medical care, outcomes for children born preterm have improved (Moster et al., 2008; Ruegger et al., 2012), but impairments in executive function/self-regulation are common (Mulder et al., 2009; Sun & Buys, 2012) and persistent (Anderson et al., 2004; Burnett et al., 2013; Larroque et al., 2008). Among preschool-aged children born preterm, executive function is influenced by degree of prematurity, birth weight, and neonatal morbidity (Duvall et al., 2015). How difficulties with executive function manifest at mealtimes for these children is unknown.

Our objective was to assess how executive function in preschool-aged children born very preterm was associated with parent-report of problematic behavior at mealtime. We hypothesized that children

*Abbreviations:* BMI, body mass index; BRIEF-P, Behavior Rating Inventory of Executive Functioning–Preschool Version; IQR, interquartile range; NICU, neonatal intensive care unit; SD, standard deviation.

* Corresponding author at: Cunz Hall 336, 1841 Neil Ave., Columbus, Ohio 43210, USA. Tel.: +1 614 688 3600; fax: +1 614 688 3533.
*E-mail address:* sanderson@cph.osu.edu (S.E. Anderson).

http://dx.doi.org/10.1016/j.eatbeh.2015.07.006
1471-0153/© 2015 Elsevier Ltd. All rights reserved.

with executive function difficulties would have more mealtime behavior problems.

## 2. Methods

### 2.1. Study design

The PreK Picnic study was conducted between July 2013 and April 2014 at Nationwide Children's Hospital (NCH) in Ohio. Preschool-aged children born at <30 weeks' gestation and a parent were recruited from those who were neonatal intensive care unit (NICU) patients as singleton neonates. Eligible parents spoke English and indicated that they "participated in the child's mealtime activities;" eligible children were able to engage in and communicate during play and eat snacks. Children who were blind, deaf, or tube-fed were ineligible. The study was approved by the NCH institutional review board, and parents provided written informed consent. The study involved one 3-h visit during which children participated in standardized developmental assessments and parents completed questionnaires. Visits were conducted in a research center with capability for monitoring and digital recording.

### 2.2. Measures

#### 2.2.1. Mealtime behavior problems

Mealtime behavior problems were assessed using the problematic mealtime behaviors domain of the Meals in Our Household questionnaire (Anderson et al., 2012), which measures the frequency and intensity of 10 problematic mealtime behaviors (e.g., "refuses to eat what is served"). For each statement, parents indicate "how often the statement describes your child's behavior during the past 3 months," with response options of never (0), rarely (1), sometimes (2), often (3), or very often (4), and indicate how much of a problem the behavior is: not a problem (0), small problem (1), medium problem (2), and large problem (3). Responses to these 20 items are summed to generate a problematic mealtime behavior score (possible range 0-70); internal consistency in this sample was very good (Cronbach's alpha = 0.94).

#### 2.2.2. Executive function

The Behavior Rating Inventory of Executive Functioning–Preschool Version (BRIEF-P) (Gioia et al., 2002; Isquith et al., 2004) measures children's parent-reported overall level of executive function. It consists of 63 statements (e.g., "gets easily sidetracked during activities") and has demonstrated reliability and validity (Isquith et al., 2005). For each statement, parents indicate if the behavior was never, sometimes, or often a problem for their child during the past 6 months. We calculated the global executive composite *t*-score (mean = 50, SD = 10), which is age- and sex-standardized and includes the subscales of inhibit, shift, emotional control, working memory, and plan/organize. It had excellent internal consistency in our sample (Cronbach's alpha = 0.97). Higher scores indicate more difficulties with executive functioning.

We used a gift bag delay procedure (Carlson, 2005; Kochanska et al., 2000) to directly assess children's performance in a situation requiring effortful control. With the child seated in a small room, a researcher entered with a bag containing a gift for the child. The researcher indicated that she "forgot the bow" and requested that the child wait and not touch the gift bag until she returned. After 3 min, the researcher came back with the bow and the child was given the gift. The procedure was recorded and scored for whether the child could refrain from touching the gift bag and the number of seconds that elapsed until the child got out of his/her seat. Videos were coded by two trained research assistants who demonstrated reliability in coding (intra-class correlation coefficients >0.90). "Good executive function" was defined if both raters indicated the child waited in his/her seat for at least 2 min and did not touch the gift bag. Children not meeting this threshold served as the comparison.

### 2.3. Statistical analysis

Independent-sample *t*-tests (unequal variances assumed), Fisher's exact tests, and Pearson correlation coefficients were used to describe associations and compare groups. Linear regression models estimated differences in mealtime behavior problems score relative to performance on the gift bag task (binary, 1 = good executive function) and the BRIEF-P global executive composite *t*-score (comparing a difference of 10 units). We present unadjusted models and models adjusted for child sex, age, birth weight, weeks' gestation, parental education, and length of stay in the NICU (a measure of neonatal morbidity). All analyses were conducted using SAS version 9.3 [SAS Institute, Inc., Cary, NC] with alpha = 0.05.

## 3. Results

### 3.1. Sample description

Descriptive characteristics of children and parents are presented in Table 1. Scores on the mealtime behavior problems scale ranged from 0 to 46 (mean [SD] = 18.5 [13.6]; median [interquartile range] = 15

**Table 1**
Descriptive characteristics of participants ($n$ = 41 children and a parent/guardian) in the PreK Picnic Study, Ohio, 2013-2014.

| *Child characteristics* | *n (%) unless specified* |
|---|---|
| Child's sex | |
| Male | 25 (61%) |
| Female | 16 (39%) |
| Child's age[a] | |
| Mean (SD) | 46.8 (3.1) months |
| Gestational age[b,c] | |
| Mean (SD) | 27.3 (1.4) weeks |
| Extremely preterm (<28 weeks) | 20 (49%) |
| Birth weight[c] | |
| Mean (SD) | 1033 (306) g |
| Range | 430–1609 g |
| <1000 g | 22 (54%) |
| Length of stay in NICU[c,d] | |
| Mean (SD) | 87 (44) days |
| Median, range | 75, 39–254 days |
| Race/ethnicity | |
| Hispanic, any race | 2 (5%) |
| Non-Hispanic white | 23 (56%) |
| Non-Hispanic black | 14 (34%) |
| Other race, non-Hispanic | 2 (5%) |
| *Parent/family characteristics* | |
| Respondent relationship to child | |
| Biological mother | 38 (93%) |
| Biological father | 2 (5%) |
| Adoptive mother | 1 (2%) |
| Age of respondent | |
| Mean (SD) | 33.3 (6.1) years |
| Range | 21–45 years |
| Marital status | |
| Married or living with partner | 30 (73%) |
| Education level of respondent | |
| High school | 6 (15%) |
| Some college | 19 (46%) |
| Bachelor's degree | 8 (20%) |
| Post graduate degree | 8 (20%) |
| Annual household income | |
| <$20,000 | 6 (15%) |
| $20,000–<$35,000 | 16 (39%) |
| $35,000–$45,500 | 5 (12%) |
| >$45,500 | 14 (34%) |

Percentages may not total 100% due to rounding.
[a] Children's chronologic age at study visit was calculated based on birth date[c] and date of visit.
[b] All children were born very preterm (range = 24–29 completed weeks' gestation).
[c] Information abstracted from neonatal medical record. All other information reported by the parent.
[d] Information on length of stay in NICU unavailable for 3 children.

Download English Version:

https://daneshyari.com/en/article/906298

Download Persian Version:

https://daneshyari.com/article/906298

Daneshyari.com