**SAES-422 Multistate Research Terminations Report**

**Project No. and Title:** W3003 Parental practices supporting positive eating behaviors during independent eating occasions among early adolescent children

**Period covered:** 10-2014 to 9-2019

**Date of Report:** 09/30/2019

1. **Participating Members during 5-year Project Period:**

Banna, Jinan (jcbanna@hawaii.edu), University of Hawaii

Gunther, Carolyn (Gunther.22@osu.edu), Ohio State University

Reicks, Marla (mreicks@umn.edu), University of Minnesota

Richards, Rickelle (Rickelle\_richards@byu.edu), Brigham Young University

Wong, Siew Sun (Siewsun.wong@oregonstate.edu), Oregon State University

Infante, Vanessa (vdasilva@email.arizona.edu), Arizona State University

Topham, Glade (gtopham@k-state.edu), Kansas State University

Jones, Blake (blakejones@byu.edu), Brigham Young University

Anderson, Alex (fianko@uga.edu), University of Georgia

Monroe-Lord, Lillie (lmonroelord@udc.edu), University of the District of Columbia

Lora, Karina (klora@gwu.edu), The George Washington University

1. **Accomplishments**

**Objective 1: Explore and identify key parental practices (role modeling, making healthy foods available, and setting rules/expectations and other practices) that may impact eating behaviors and food choices during independent eating occasions and weight among low-income, multi-ethnic early adolescents**

Information is limited regarding the frequency of independent eating occasions among early adolescents, how food choices made during these occasions affect overall diet quality and weight status, and how food-related parenting practices influence early adolescent food choices during independent eating occasions. To address this gap, the W3003 group first conducted a pre-pilot study to test and finalize research protocols to explore key parental practices that may impact 10-to-13-year-old children eating behaviors and food choices during independent eating occasions. Once protocols were developed, researchers collected data from 51 parent/early adolescent dyads through interviews. The interviews were conducted after children took photos of all foods and beverages consumed over a 24-hour period. Scripted interview questions asked children to describe each eating occasion based on the photos to provide information about the type and source of food and beverages consumed and eating context (location, time, who the child was with). Children were asked open-ended questions regarding parenting practices that influenced intake during these occasions. Parents completed surveys to assess 1) whether parents considered themselves succeeders or strivers regarding helping their child eat healthy foods when they were not present, 2) frequency of parenting practices such as role modeling, making foods available, restriction and monitoring, and 3) general parenting measures. Quantitative analyses were used to determine if succeeder versus striver parents differed in the reports of practices used to get their child to make healthy choices when they were not present. Parents also answered open-ended interview questions regarding what they “say and do to get their child to eat healthy” during independent eating occasions. Qualitative analysis procedures were used to identify parenting practices that influenced child dietary intake during these occasions.

Parent survey results showed that parents who perceived being successful at getting their child to make healthy food choices when they were not around used strategies of monitoring children’s intake of sweets, high-fat-foods, and healthy calcium-rich foods (Richards et al., 2018). Succeeders reported having less availability of sweet and savory convenience foods at home, and that their children frequently limited sugary drinks when they were not around. Mean ± SD child BMI z-score was significantly lower for children of parent succeeders than strivers. Based on the individual interviews, parents reported that the most common practices they used to influence intake during early adolescent independent eating occasions were setting expectations for intake of healthy foods, making healthy foods available and accessible, and teaching children about healthy foods (Gunther et al., 2019). Other less common practices were role modeling, pressure to eat, and monitoring intake. Based on the child interviews, children reported that parents controlled what was available and had rules regarding what they could eat during independent eating occasions.

**Objective 2: Examine the association between key parental practices and positive eating behaviors during independent eating occasions among low-income, multi-ethnic early adolescents**

The W-3003 team used the FLASHE Study data to examine relationships between frequency of adolescents’ eating alone (dependent variable) and dietary behavior, weight status and perceived parental support (independent variables). The FLASHE Study collected data from a US nationwide sample of parent-adolescent (12 - 17 years) dyads via web-based surveys in 2014 to report demographic characteristics, weight, family meal characteristics, dietary behavior, home food availability, and perceptions of parenting practices. Findings indicated that ~20% of adolescents reported often experiencing independent eating occasions. Non-Hispanic black, overweight or obese adolescents often ate alone. Adolescents who reported that fruits and vegetables were often/always available in the home, perceived that parents had expectations about fruit and vegetable intake, and agreed with parental authority to make rules about intake of junk food/sugary drinks were less likely to eat alone.

As part of objective 2 the W3003 group developed and pilot tested the parent and adolescent questionnaires that assessed how caregivers and youth approached independent eating occasions. Questionnaires were developed based on qualitative interview data collected as part of objective 1. Cognitive interviews to assess comprehension and clarity of the items were conducted with ethnically diverse caregiver-teen dyads to discern where items were unclear and/or youth or parents understood them differently than intended (n=10). The questionnaires were further pilot tested with 206 parent/adolescent dyads recruited from a Qualtrics Panelist Database. Principal component analyses were completed to identify 6 parallel factors for parents and youth with acceptable internal consistency and test-retest reliability. The factors included parenting practices that could positively influence food choices during adolescents’ independent eating occasions based on teaching, modeling, making foods/beverages available, monitoring and setting expectations for intake as well as a practice thought to negatively influence the quality of food and beverage consumption based on indulgent or permissive attitudes and less structure.

Objective 2 from W-3003 (Examine the association between key parental practices and early adolescent eating behaviors during independent eating occasions) will continue to be addressed by work that will be completed as the first objective of W-4003, which is a continuation project from W-3003. From the pilot test results, we will make any necessary revisions and then use the survey to collect data from a larger sample of parent/early adolescent dyads via a Qualtrics parent panel database. These data will be used to complete objective 2 from W-3003 as the first objective of W-4003. Survey components for parents will include: 1) parenting practices items with 5 – point agree/disagree and never/always response option scales (developed and tested as part of W-3003), 2) the USDA six-item food security module, 3) self-reported weight and height, and 4) demographic questions regarding age, sex, ethnicity, education, employment, income, household composition, and food assistance. Survey components for early adolescents will include: 1) frequency of independent eating occasions, 2) parenting practice items (developed and tested as part of W-3003), 3) self-reported weight and height, 4) the FLASHE Study 27-item food frequency questionnaire, and 5) demographic questions regarding age, sex, and ethnicity. We will conduct multiple regression analysis to predict early adolescents’ food group intake from relevant parenting practice scales and frequency of independent eating occasions.

**Objective 3: Examine the association between key parental practices and early adolescents’ weight**

This objective from W-3003 will also be completed using the survey data collected from the larger sample of parent/early adolescent dyads as the first objective of W-4003. We will conduct multiple regression analysis to predict early adolescents’ BMI z-score and BMI percentile for sex and age (based on self-reported height, weight, sex and age variables) from relevant parenting practice scales and frequency of independent eating occasions.

**Objective 4: Develop communications for parents and nutrition professionals.**

We will use the findings from objectives 2 and 3 from W-3003 to inform the development of digital communications for parents, early adolescents and nutrition professionals. This work will be completed to address objective 2 of W-4003, the continuation project for W-3003.

**Impacts**

The W-3003 group gained a better understanding ofkey parenting practices (role modeling, making healthy foods available, and setting rules/expectations and other practices) that may impact eating behaviors and food choices during independent eating occasions and weight among low-income, multi-ethnic early adolescents.

Based on qualitative interviews with parents and children the W-3003 group found that the most common strategies that parents reported to promote positive eating behaviors in their adolescents when they were not around were setting rules and expectations regarding eating behaviors and managing availability and accessibility of foods. Other parenting practices included teaching positive behaviors, pressuring to eat, monitoring (texting or calling), and modeling healthy behaviors when in the presence of the adolescent.

Using an existing data set (FLASHE) the team found that 20% of adolescents surveyed indicated that they often ate alone. Results indicated that adolescents who often ate alone were less likely to have fruits and vegetables available in the home and were less likely to report parent expectations that they eat fruits and vegetables. In addition, they ate junk food and sugary drinks more frequently and were more likely to be overweight or obese.

The identification of key parenting practices associated with eating behavior of early adolescents during independent eating occasions will allow us to develop communications to increase frequency of supportive parenting practices regarding positive eating behaviors among early adolescents during independent eating occasions. These supportive parenting practices are expected to improve eating behaviors overall and during independent eating occasions among early adolescents including reductions in intake of junk food, convenience/fast food, sugar-sweetened beverages, sugary foods, fatty meats and increases in intake of fruits and vegetables and beneficial foods.

1. **Publications**
2. Banna J, Richards R, Jones B, Anderson A, Cluskey M, Gunther C, Hongu N, Lora K, Misner S, Monroe-Lord L, Reicks M, Topham G, Wong S, Lim E. Describing independent eating occasions among low-income adolescents ages 10-13 in the US: a multi-state study. (In preparation)
3. Reicks M, Banna J, Anderson A, Gunther C, Hongu N, Jones B, Lora K, Monroe-Lord L, Richards R, Topham G, Wong S. Development and testing of a questionnaire to assess frequency of food parenting practices to influence adolescent intake during independent eating occasions. J Nutr Educ Behav. Submitted 7-17-19, comments returned 8-20-19 (Under review)
4. Gunther C, Reicks M, Banna JC, Suzuki A, Topham G, Richards R, Jones BL, Lora K, Anderson AK, de Silva V, Penicka C, Hopkins LC, Cluskey M, Hongu N, Monroe-Lord L, Wong SS. Food parenting practices that influence early adolescents’ food choices during independent eating occasions: a qualitative study. J Nutr Educ Behav. 2019; Jun 18. pii: S1499-4046(19)30828-0. doi: 10.1016/j.jneb.2019.05.597. [Epub ahead of print]
5. Reicks M, Davey C, Anderson AK, Banna J, Cluskey M, Gunther C, Jones B, Richards R, Topham G, Wong SS. Frequency of eating alone is associated with adolescent dietary intake, perceived food-related parenting practices and weight status: Cross-sectional FLASHE Study Results. Public Health Nutr. 2019;22(9):1555-1566.
6. Reicks M, Banna J, Cluskey M, Gunther C, Hongu N, Richards R, Topham G, Wong SS. Influence of parenting practices on eating behaviors of early adolescents during independent eating occasions: implications for obesity prevention. Nutrients, 2015;7(10):8783-8801.

**From previous W-2003 Project published between 2014-2019**

1. Banna J, Driscoll J, Boushey C, Auld G, Olson B, Cluskey M, Ballejos Edlefsen M, Bruhn C, Misner S, Reicks M, Wong SS, Zaghhoul S. Parent and household influences on calcium intake among early adolescents. BMC Public Health. 2018;18:1390.
2. Martinez Y, Bellajos M, Bruhn C, Cluskey M, Gunther C, Johnston P, Misner S, Reicks M, Richards R, Wong SS, Banna JC. Evaluation of messages to promote intake of calcium-rich foods in adolescents. J Commun Engagement Scholarship. 2016;9(2):109-119.
3. Banna JC, Reicks M, Gunther C, Richards R, Bruhn C, Cluskey M, Hongu N, Johnston NP, Misner S, Wong SS. Perceived effects of emotion-based messages on motivation of Hispanic and Asian parents of early adolescents to engage in calcium-rich food and beverage parenting practices. Nutr Res Pract. 2016;10(4):456-463.
4. Vyduna JL, Boushey CJ, Auld GW, Bruhn CM, Cluskey M, Edlefsen M, Misner S, Olson B, Reicks M, Schram J, Wang C, Zaghloul S. Field testing a questionnaire to identify parental psychosocial factors related to consumption of calcium-rich foods of their early adolescent children. Ecol Food Nutr. 2016;55(1):1-15.
5. Gunther CW, Rose AM, Bruhn C, Cluskey M, Reicks M, Richards R, Wong SS, Boushey CJ, Misner S, Olson B. Parents' calcium knowledge is associated with parental practices to promote calcium intake among parents of early adolescent children. J Extension. 2015;53(4):4FEA5.
6. Cluskey M, Wong SS, Ballejos M, Reicks M, Richards R, Auld G, Boushey C, Bruhn C, Misner S, Olson B, Zaghoul, S. Dietary sources of calcium among parents and their early adolescent children in the United States by parent race/ethnicity and place of birth. J Immigr Minor Health. 2015;17(2):432-440.
7. Richards R, Reicks M, Wong SS, Gunther C, Ballejos M, Bruhn C, Cluskey M, Misner S, Watters C. Perceptions of how parents of early adolescents will personally benefit from calcium-rich food and beverage parenting practices. J Nutr Educ Behav. 2014;46(6):595-601.
8. **Abstracts**
9. Suzuki A, Anderson A, Choi YC, Cluskey M, Gunther C, Hongu N, Jones B, Lora K, Misner S, Monroe-Lord, L, Penicka C, Reicks M, Richards R, Topham G, Wong SS, Banna J. Characterizing eating behaviors of adolescents ages 10-13 in Hawaii while eating alone. University of Hawaii at Manoa, College of Tropical Agriculture and Human Resources and College of Engineering Student Research Symposium Program, 2018, Honolulu
10. Suzuki A, Anderson A, Cluskey M, Ganganna P, Gunther C, Hongu N, Jones B, Litchfield R, Lora K, Misner S, Monroe-Lord L, Penicka C, Reicks M, Richards R, Topham G, Wong SS, Banna JC. Characterizing eating behavior during independent eating occasions among early adolescents in Hawaii. East-West Center International Graduate Student Conference. Honolulu, Hawai‘i, 2018
11. Richards R, Jones B, Anderson A, Banna J, Cluskey M, Gunther C, Hongu N, Lora K, Misner S, Monroe-Lord L, Reicks M, Topham G, Wong SS. Parental practices and its impact on 10-13 year-old children. J Acad Nutr Diet. 2018;118(9):A76.
12. Banna J, Richards R, Jones B, Anderson A, Cluskey M, Gunther C, Hongu N, Lora K, Misner S, Monroe-Lord L, Reicks M, Topham G, Wong SS, Lim E. Describing independent eating occasions among low-income adolescents ages 10-13 in the US: a multi-state study. Curr Dev Nutr. 2018;2(11), nzy048,https://doi.org/10.1093/cdn/nzy048
13. Suzuki A, Anderson A, Choi SY, Cluskey M, Gunther C, Hongu N, Jones B, Lora K, Misner S, Monroe-Lord L, Penicka C, Reicks M, Richards R, Topham G, Wong SS, Banna J. Characterizing eating behaviors of early adolescent in Hawaii while eating alone. Curr Dev Nutr. 2018;2(11), nzy048,https://doi.org/10.1093/cdn/nzy048
14. Reicks M, Davey C, Anderson AK, Banna J, Cluskey M, Gunther C, Jones B, Richards R, Topham G, Wong SS. Frequency of eating alone among adolescents, perceptions of parenting practices, and dietary intake: results from the FLASHE Study. J Nutr Educ Behav. 2018;50(7S):S19.
15. Anderson AK, Richards R, Jones B, Banna J, Gunther C, Hongu N, Lora K, Misner S, Monroe-Lord L, Reicks M, Topham G, Wong SS. Challenges in collecting pictorial data and identifying foods in dietary assessment of early adolescents. Dietary Intake 2018: Workshop on Innovative Technologies for Dietary Intake Measurements. September 17, Imperial College, United Kingdom.

**From previous W-2003 Project published between 2014-2019**

1. Reicks M, Banna J, Gunther C, Richards R, Hongu N, Misner S, Cluskey M, Wong S, Bruhn C. Motivating Hispanic and Asian parents to engage in practices promoting intake of calcium-rich foods and beverages by early adolescents. FASEB J. 2015;29:732.5.
2. Martinez, Y., Bellajos, M., Cluskey, M., Johnston, P., Reicks, M., Richards, R., Wong, S.S., Bruhn, C., Gunther, C., Misner, S., & Banna, J. Evaluation of messages to motivate parents to promote intake of calcium-rich foods in early adolescents. FASEB J 2014;28:LB377.

**Theses**

1. Ohio State University, Department of Human Sciences, MS Nutrition – Christine Penicka, 2015-2017. Thesis: Parental Practices Supporting Positive Eating Behaviors During Independent Eating Occasions Among Early Adolescent Children. First post-graduate position – Dietetic Intern, Brigham and Women’s Hospital.
2. Gunther C, Banna J, Bruhn C, Cluskey M, Wong S, Richards R, Reicks M. Development and testing of fact- and emotion-based messages to motivate parents to engage in practices that promote intake of calcium among 10-13 year-old children. FASEB J 2014;28:807.2.