

# Eating competent low-income parents model eating behaviors associated with reducing risk of child obesity

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## Abstract

Eating competence of low-income parents of 3rd, 4th or 5th graders was assessed with the Satter Eating Competence Inventory for Low-Income (ecSI/LI) audiences (n=309) and compared to parent self-efficacy in providing and preparing fruits and vegetables (FV), their household FV availability, and obesity risk reducing feeding behaviors (e.g. eating breakfast). Parents were mostly Hispanic (78%), female (89%) with some post-high school education (49.2%) and a mean age of 37.2 ± 7.7 y. As a group, 58.9% were eating competent (EC) (ecSI/LI score ≥ 32); mean ecSI/LI score of 33.6 ± 8.5 did not differ between male or female parents. Compared to those with low ecSI/LI scores, EC parents had more vegetable types available (6.4 ± 1.6 vs 5.9 ± 1.6, P=.016) and more frequently prepared meals and ate dinners with their child (all P<.032). Overall self-efficacy scores were significantly higher (P=.032) in EC parents; they felt more able than non-EC parents to include FV in snacks that their children would eat (all P<.03). Parent modeling of positive eating behaviors was significantly greater in EC than non-EC parents (P<.001). EC parents were more likely to eat breakfast, dinner and FV with their child (all P<.04). Findings contributed to EC construct validation and suggested school-age nutrition education outcome assessments include measures of parental eating competence. Funded by USDA-CSREES-NRI-2007-05062.

Parent booklet included demographic and culinographic items and four surveys related to eating and food behavior. Culinographic items<sup>1,2</sup> related to frequency of food preparation at home, food preparation with child/ren, and having dinner with child/ren (response option for all ranged from 0 (0 days/week) to 4 (7 days/week)).

Survey	Purpose/Description	Number of Items Response Options	Cronbach's alpha	Outcomes
ecSI/LI <sup>3</sup>	Measure of EC in low-income audience	16 items Never(0), Rarely(1), Sometimes(2), Often(3), Always(4)	.89	N=309 Mean: 33.6 ± 8.5 Median: 34 Range: 2-48 Non-significant gender differences Males: 31.9 ± 7.5 Females: 33.7 ± 3.6 Scores possible are 0-48.
Modeling <sup>4</sup>	Measure of parent behavior about meals, fruits and vegetables	11 items Never(0), Sometimes(1), Often(2), Always(3)	.84	N=268 Mean: 15.3 ± 4.8 Median: 15 Range: 5-33 Scores possible are 0-33.
Self-efficacy <sup>5,6</sup>	Assesses parents' perceived abilities related to meals, fruits and vegetables	12 items Strongly Disagree(1) to Strongly Agree(5)	.96	N=284 Mean: 52.6 ± 9.5 Median: 15 Range: 12-60 Scores possible are 12-60.
Fruit & Vegetable Availability <sup>4,7</sup>	Denotes availability of 9 vegetables and 11 fruits/juices in the home	20 items Not Available(0) Available(1)	Not applicable	N=309 Mean: 12.4 ± 3.1 Median: 13 Range: 1-20 Scores possible are 0-20.

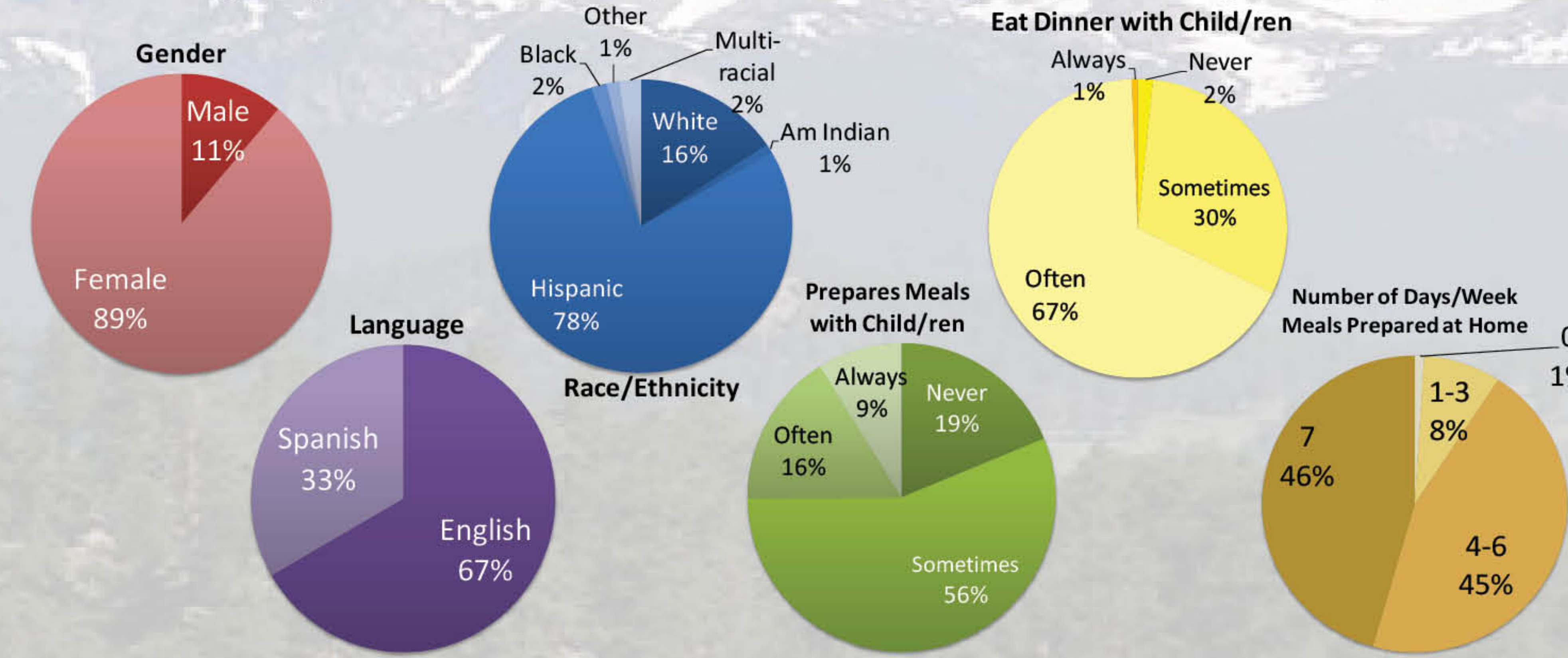
## Data Analysis

Of the 337 parents responding to the survey set, 309 completed the ecSI/LI. Results are from these 309 parents. Modeling and self-efficacy items were each summed to provide modeling and self-efficacy scores. Fruit and vegetable items available were counted to form Fruit, Vegetable, Juice and Total FV availability scores. ecSI/LI items were summed and partitioned into tertiles. ecSI/LI scores ≥ 32 indicated EC.

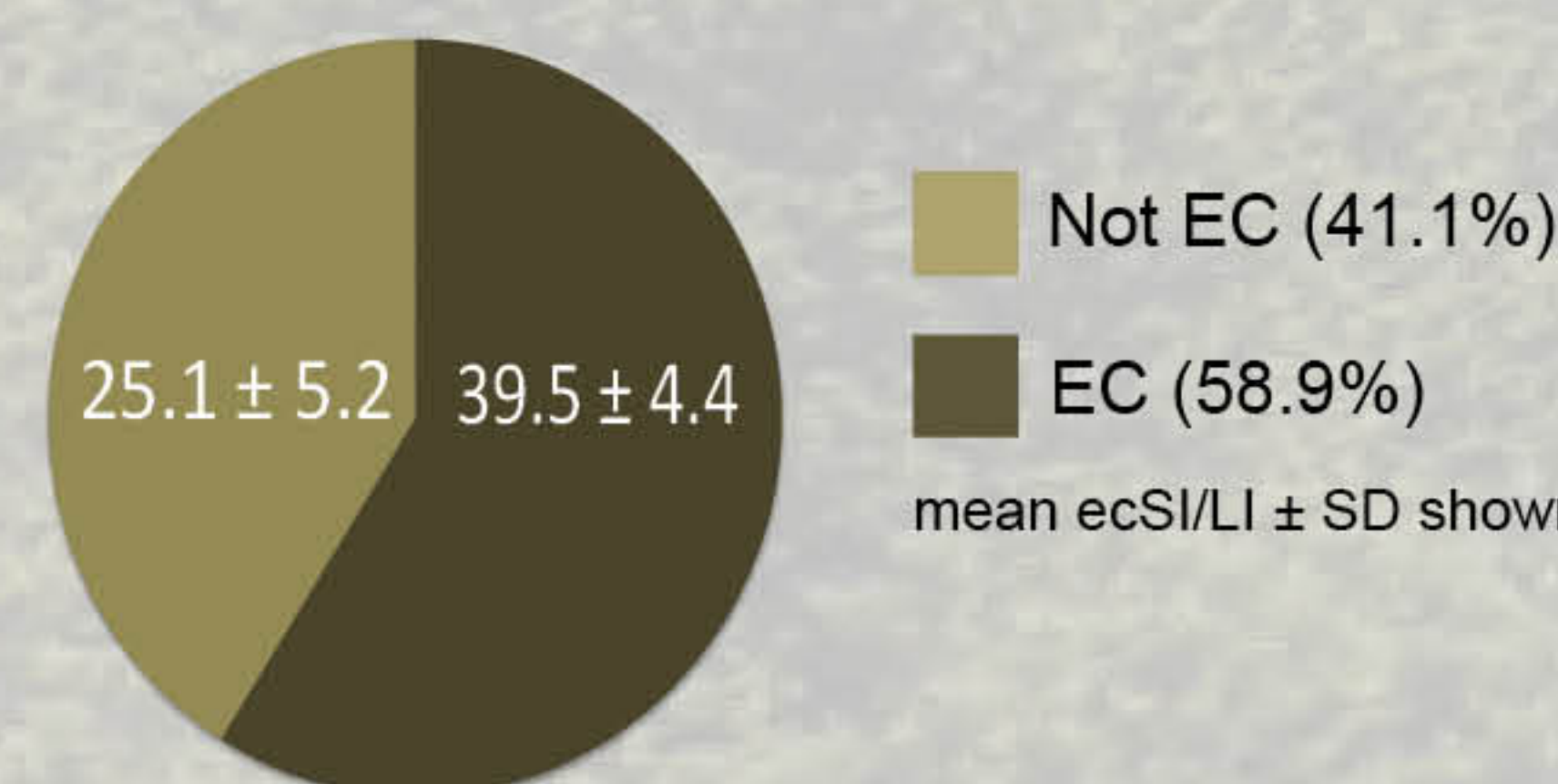
Data were analyzed with SPSS v 18.0 (Somers, NY) using Cronbach's alpha, ANOVA, independent t-tests, Pearson correlation coefficient, and Chi Square as appropriate.

## Results

**Description of Participants.** Respondents were mostly Hispanic females with some post-high school education. Age ranged from 22 to 73 years; mean was 37.2 ± 7.6 years; median 35 years



**Parent Eating Competence.** How many parents were EC?



ecSI/LI scores differed significantly by education level (F=4.28, P=.006). Post hoc Scheffe tests revealed significantly lower ecSI scores between high school/GED level parents and parents with 2-year college or some college experience (P=.009).

Education Level	n	ecSI/LI ± SD
< High School	62	32.82 ± 8.79
High School/GED	86	31.09 ± 8.67
Some College or 2 yr degree	95	35.40 ± 8.16
4 yr degree or Graduate School	56	34.39 ± 8.09

## Comparison of EC and Not EC Parents

Eating Competent	Statement <sup>1</sup>	Not Eating Competent
<b>How many days each week do you usually sit down with most of your family for dinner at home?</b>		
1 (33.3%)	Never (0 days)	2 (66.7%)
27 (48.2%)	Sometimes (1-3 days)	29 (51.8%)
72 (58.5%)	Often (4-6 days)	51 (41.5%)
79 (64.4%)	Always (7 days)	44 (35.6%)
<b>How many days each week do you usually prepare meals at home?</b>		
2 (66.7%)	Never (0 days)	1 (33.3%)
10 (35.5%)	Sometimes (1-3 days)	15 (64.5%)
79 (57.7%)	Often (4-6 days)	58 (41.5%)
88 (63.8%)	Always (7 days)	50 (36.2%)
<b>How many days each week do you usually prepare meals together with your child?</b>		
27 (47.4%)	Never (0 days)	30 (52.6%)
100 (58.8%)	Sometimes (1-3 days)	70 (41.2%)
31 (63.3%)	Often (4-6 days)	18 (36.7%)
20 (74.1%)	Always (7 days)	7 (25.9%)

<sup>1</sup> Although differences were not significant, EC parents more frequently noted eating and preparing meals together.

## Parent Self-Efficacy\*

Parent self-efficacy survey scores were significantly (t=2.16, P=.032) higher in EC parents (53.65 ± 10.12, n=166) than not EC parents (51.19 ± 8.49, N=118). Differences between EC and not EC parents were significant for many self-efficacy survey items.

Eating Competent <sup>1</sup>	Statement <sup>2</sup>	Not Eating Competent <sup>3</sup>
<b>I can prepare a recipe with my child.</b>		
4.43 ± 0.90, n = 176	t = 2.26, P = 0.03	4.19 ± 0.84, n = 124
<b>If I buy fruit, my child will eat it.</b>		
4.60 ± 0.92, n = 178	t = 2.44, P = 0.02	4.34 ± 0.94, n = 125
<b>If I give my child fruit for a snack, my child will eat the fruit.</b>		
4.56 ± 0.90, n = 178	t = 2.23, P = 0.03	4.33 ± 0.91, n = 125
<b>If I give my child vegetables for a snack, my child will eat the vegetables.</b>		
4.17 ± 1.04, n = 175	t = 2.46, P = 0.01	3.87 ± 1.03, n = 125
<b>If I include fruit as part of a meal, my child will eat the fruit.</b>		
4.60 ± 0.89, n = 178	t = 2.71, P = 0.01	4.33 ± 0.84, n = 123
<b>If I prepare a meal together with my child, my child will eat the meal.</b>		
4.58 ± 0.81, n = 178	t = 3.50, P = 0.001	4.24 ± 0.87, n = 124

<sup>1</sup> ecSI/LI score [ ] 32. Table entry is mean ± standard deviation, n  
<sup>2</sup> Table entry is survey item or summed score, as denoted; independent t-test, P  
<sup>3</sup> ecSI/LI score < 32. Table entry is n, mean ± standard deviation  
<sup>4</sup> Scores Possible: 12-60

Eating Competent <sup>1</sup>	Statement <sup>2</sup>	Not Eating Competent <sup>3</sup>
<b>Total Vegetable Availability<sup>4</sup></b>		
6.38 ± 1.59, n = 182	t = 2.62, P = 0.009	5.89 ± 1.66, n = 127
<b>Fruit and Vegetable Availability<sup>5</sup></b>		
12.72 ± 3.03, n = 182	t = 2.26, P = 0.02	11.91 ± 3.15, n = 127
<b>How many days each week do you usually prepare meals together with your child?<sup>6</sup></b>		
1.25 ± 0.85, n = 178	t = 2.45, P = 0.02	1.02 ± 0.78, n = 125
<b>How many days each week do you usually sit down with most of your family for dinner at home?<sup>6</sup></b>		
2.28 ± 0.74, n = 179	t = 2.17, P = 0.03	2.09 ± 0.80, n = 126

<sup>1</sup> ecSI/LI score [ ] 32. Table entry is mean ± standard deviation, n  
<sup>2</sup> Table entry is survey item or summed score, as denoted; independent t-test, P  
<sup>3</sup> ecSI/LI score < 32. Table entry is n, mean ± standard deviation  
<sup>4</sup> Possible Score: 0 – 9 vegetable items available in home  
<sup>5</sup> Possible Score: 0 – 20 items available in home  
<sup>6</sup> Response options: 0) 0 days, 1) 1 to 3 days 2) 4 to 6 days, 3) 7 days

## Parent Modeling\*

Parent modeling survey scores were significantly (t=3.99, P<.001) higher in EC parents (16.27 ± 4.98, N=151) than not EC parents (13.97 ± 4.25, N=117). Differences between EC and not EC parents were significant for each modeling survey item.

Eating Competent <sup>1</sup>	Statement <sup>2</sup>	Not Eating Competent <sup>3</sup>
<b>How often do you eat breakfast with your child?<sup>4</sup></b>		
1.39 ± 0.79, n = 171	t = 3.07, P = 0.002	1.14 ± 0.61, n = 125
<b>How often do you eat fruit at breakfast with your child? <sup>4</sup></b>		
1.08 ± 0.75, n = 177	t = 2.36, P = 0.02	0.89 ± 0.66, n = 126
<b>How often do you eat lunch with your child? <sup>4</sup></b>		
1.20 ± 0.61, n = 175	t = 2.98, P = 0.003	1.02 ± 0.41, n = 124
<b>How often do you eat vegetables at lunch with your child? <sup>4</sup></b>		
1.08 ± .68, n = 172	t = 2.12, P = 0.04	0.92 ± 0.55, n = 124
<b>How often do you eat fruit at lunch with your child? <sup>4</sup></b>		
1.14 ± 0.62, n = 175	t = 2.09, P = 0.04	0.99 ± 0.58, n = 125
<b>How often do you eat dinner with your child? <sup>4</sup></b>		
2.63 ± 0.59, n = 178	t = 3.70, P < 0.001	2.33 ± 0.80, n = 126
<b>How often do you eat vegetables at dinner with your child? <sup>4</sup></b>		
2.10 ± 0.76, n = 180	t = 3.17, P = 0.002	1.82 ± 0.79, n = 125
<b>How often do you eat fruit at dinner with your child? <sup>4</sup></b>		
1.57 ± 0.85, n = 178	t = 2.87, P = 0.004	1.30 ± 0.79, n = 125
<b>How often do you eat a snack with your child? <sup>4</sup></b>		
1.46 ± 0.82, n = 178	t = 2.45, P = 0.02	1.25 ± 0.67, n = 126
<b>How often do you eat vegetables as a snack with your child? <sup>4</sup></b>		
1.15 ± 0.71, n = 180	t = 2.29, P = 0.02	0.98 ± 0.60, n = 124
<b>How often do you eat fruit as a snack with your child? <sup>4</sup></b>		
1.46 ± 0.70, n = 180	t = 2.42, P = 0.02	1.27 ± 0.66, n = 126

<sup>1</sup> ecSI/LI score [ ] 32. Table entry is mean ± standard deviation, n  
<sup>2</sup> Table entry is survey item or summed score, as denoted; independent t-test, P  
<sup>3</sup> ecSI/LI score < 32. Table entry is n, mean ± standard deviation  
<sup>4</sup> Response options: 0) 0 days, 1) 1 to 3 days 2) 4 to 6 days, 3) 7 days  
<sup>5</sup> Scores possible: 0-33

## Conclusions/Implications

- Parent EC levels show need for improvement.
- EC parents more frequently modeled healthful eating behaviors for their children.
- EC parents felt more able to use a recipe and to prepare a meal with their child.
- Preparing meals together at home and sitting down to meals occur more frequently with EC parents.

**Examination of parent EC may provide a novel approach to understanding school-age nutrition education outcomes. Development of competent eaters is a laudible education goal.**

## References

1. Fulkerson JA, Story M, Neumark-Sztainer D, et al. Family meals: perceptions of benefits and challenges among parents of 8- to 10-year-old children. *J Am Diet Assoc*. 2008; 108:706-9.  
2. Johnson DB, Birkett D, Evens C, et al. Promoting family meals in WIC: lessons learned from a statewide initiative. *J Nutr Educ Behav*. 2006;38(3):177-182.  
3. Krall JS, Lohse B. Validation of a measure of the Satter eating competence model with low-income females. Submitted to *International Journal of Behavioral Nutrition and Physical Activity*, 2010.  
4. Cullen KW, Baranowski T, Rittenberry L, Cosart C, Hebert D, de Moor C. Child-reported family and peer influences on fruit, juice and vegetable consumption: reliability and validity of measures. *Health Educ Res*. 2011;16(2):187-200.  
5. Cullen KW, Baranowski T, Rittenberry L, Cosart C, Owens E, Hebert D, de Moor C. Socioenvironmental influences on children's fruit, juice and vegetable consumption as reported by parents: reliability and validity of measures. *Public Health Nutr*. 2003; 6:345-356.  
6. Cullen KW, Watson KB, Zakeri J, Baranowski T, Baranowski JH. Achieving fruit, juice, and vegetable recipe preparation goals influences consumption by 4th grade students. *Int J Behav Nutr Phys Act*. 2007; 4:28.  
7. Marsh T, Cullen KW, Baranowski T. Validation of a fruit, juice, and vegetable availability questionnaire. *J Nutr Educ Behav*. 2003; 35:93-7.