FARM TO FAMILY: PROGRAM DEVELOPMENT AND IMPACT ON CHILDREN’S FRUIT AND VEGETABLE CONSUMPTION

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The Role of School Psychologists in Health Promotion

School psychologists are well positioned to contribute to health promotion interventions given their skills in:

- Conducting needs assessments
- Family-school collaboration
- Translating research findings into contextually appropriate interventions
- Serving as program champions for prevention and intervention programs
- Program planning, implementation, and evaluation

(Harrison et al., 2004; National Association of School Psychologists, 2006 & 2010)
Farm to ECE activities connect child care settings to local food and/or food producers with the objectives of serving locally-grown, healthy foods to young children, improving child nutrition, and providing related educational opportunities.

- Educational activities focused on local food
- Purchasing/serving local food in meals at school
- School gardening
- Increasing families’ access to local foods

(Hoffman, Schmidt, Wirth, Johnson, Sobell, Pellissier, & Harris, 2016)
Farm to Family:
Connecting food, preschool and family systems to make high quality vegetables accessible and affordable

F2F
Families with young children
Local Farms
Local Non-Profits
Head Start Programs
Development of the F2F Model

• Built in collaboration with families, Head Start programs, local farmers and academic partners
• Fall 2010, Head Start parents (N = 119; 34% participation rate) and staff (N = 20) surveyed in English and Spanish
  • 93% interested in receiving vegetables through Head Start
  • 67% interested if vegetables were offered at a reduced price
  • 59% interested if they could use SNAP
F2F Model Basics

- Subsidized Community Supported Agriculture (CSA) model
- Goal: increase access to fresh, affordable vegetables in households with young children
- Locally grown produce delivered weekly to community sites
F2F Model Basics

• Implemented 2011-2016
• 16 week program (July-October)
• F2F participants pay $7.50/week for $22.50/week of produce
  • Can pay with SNAP or cash
  • Subsidized portion comes from sister shares, sponsorship funds raised by program manager (suggested $80; tax exempt)
F2F Model Basics: Site Coordinators

• 1-2 staff members/site who champion the program
• Selected by the program director
• Roles include:
  • Recruiting participants
  • Receiving and distributing weekly shares
  • Making reminder and pick up phone calls
  • Handling payments
• Part of work duties
Families’ Motivation to Participate

Primary reason for participating in F2F:
- Low price (51%)
- Desire to eat more fresh or local food (37%)
- Have more F&V for their family (30%)
- Convenience of program (15%)

Source: 2012 F2F Year End Survey
N=86; some respondents selected multiple motivations.
Families’ Assessment of Produce

**Amount**
- Just right = 74%
- Not enough = 21%
- Too much = 5%

**Selection**
- Very happy = 46%
- Somewhat happy = 32%
- Neutral = 16%
- Somewhat unhappy = 6%
- Very unhappy = 0%

**Quality**
- Very happy = 54%
- Somewhat happy = 29%
- Neutral = 14%
- Somewhat unhappy = 4%
- Very unhappy = 0%

Source: 2012 F2F Year End Survey; N=86
<table>
<thead>
<tr>
<th>Challenge</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not all families can pick up at the same time of day</td>
<td>• Identify area in the building (ideally the kitchen) where boxes can be stored until families arrive</td>
</tr>
<tr>
<td>Families forgetting to pick up</td>
<td>• Send text message reminders regarding pick up</td>
</tr>
<tr>
<td>Families preferring not to participate for the whole growing season</td>
<td>• Keep a wait list and contact families as soon as a spot opens</td>
</tr>
<tr>
<td>Unfamiliar produce in the boxes</td>
<td>• Provide simple recipes to give families ideas of how to cook unfamiliar produce</td>
</tr>
<tr>
<td>Funding for subsidized shares</td>
<td>• Ensuring that advertisement of the CSA shares includes information about making donations to support shares for low income families</td>
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</table>
F2F Theory of Change

Increased availability of high quality F&V

Increased exposure & opportunities to taste F&V

Increased F&V liking

Increased F&V consumption

(Birch & Marlin, 1982; Birch, McPhee, Shoba, Pirok, & Steinberg, 1987; Rasmussen et al., 2006; Wardle et al., 2003)
Consumption of a New Fruit/Vegetable

**Adults**
- Yes: 67%
- No: 33%

**Children**
- Yes: 57%
- No: 26%
- N/A: 17%

Source: 2012 F2F Year End Survey
Notes: N=86; new foods included eggplant, squash, yellow watermelon.
Changes in Vegetable Consumption

Source: 2012 F2F Year End Survey (N=86)
2015 Pilot Study

Does F&V consumption among *children and their caregivers* increase as a result of participating in F2F?

(Schmidt, Hoffman & Shiyko, under review)
Study Participants & Study Design

- Pre-/post-test design with two groups, no random assignment
- Data collected from F2F participants (parents with a child enrolled in programming) and non-F2F participants from 2 sites in Boston, MA
- Data collected before and during F2F
- Participants compensated $15 @ each time point.
- Participants who provided complete data:
  - F2F $N = 10$
  - Comparison Group $N = 19$
Measures

• Demographic information
• Parent self-confidence about healthy eating and cooking with vegetables ($\alpha = .76$)
  • 7 items; “How confident are you that you could...eat healthy foods, like fruits or vegetables, when you are tired?
    (1 = not confident at all; 5 = very confident)
  • 3 items: “I feel confident about cooking vegetables; I like trying new ways of cooking vegetables; I like to cook”
    (1 = strongly disagree; 5 = strongly agree)
• Parent perception of adequate F&V consumption
  • e.g., Does your child eat as many fruits as you think s/he should?

(Schmidt, Hoffman & Shiyko, under review)
Measures

• Children’s Dietary Questionnaire F&V subscale modified (CDQ; Magarey et al., 2009)
  • Internal consistency (\( \alpha = .76 \))
  • Test-retest reliability (ICC = .75)
• Frequency & variety of F&V in past week & past 24 hours
• Parent self-report & parent report of child consumption

(Schmidt, Hoffman & Shiyko, under review)
Children’s Dietary Questionnaire

Children’s Dietary Questionnaire
Fruit and Vegetable Sub-Scale
Child Version

Please check all of the listed foods YOUR CHILD has eaten over the past 7 days (Today is ______.). Please check all foods your child has eaten between last _______ and today.

1. Fruit (fresh, canned, or stewed):
   - Fruit Salad
   - Peach
   - Banana
   - Apricot
   - Pear
   - Nectarine/
   - Grapes
   - Mandarin/Clementines
   - Plum
   - Berries
   - Strawberries
   - Blueberries
   - Raspberries
   - Blackberries
   - Other
   - Mango
   - Melon
   - Watermelon
   - Cantaloupe
   - Honeydew
   - Orange
   - Dried Fruit
   - Apple
   - Pineapple
   - Guava
   - Kiwi
   - Grapefruit
   - Papaya
   - Other: __________

2. Vegetables (cooked or raw)
   - Pumpkin
   - Cauliflower
   - Potato (not French fries)
   - Peas
   - Beans
   - Celery
   - Eggplant
   - Vegetables in mixed dishes (soups & stews)
   - Tomato
   - Zucchini
   - Mixed frozen vegetables
   - Corn
   - Greens
   - Lettuce
   - Chard
   - Collard greens
   - Kale
   - Spinach
   - Other
   - Carrot
   - Broccoli
   - Legumes
   - Chickpeas
   - Lentils
   - Kidney beans
   - Beets
   - Asparagus
   - Olives
   - Cabbage
   - Brussels Sprouts
   - Sweet Potato
   - Cucumber
   - Mushroom
   - Squash
   - Onions
     - Onion
     - Leek
     - Scallion
     - Other
   - Peppers
   - Okra
   - Turnips
   - Other: __________

Please circle how often YOUR CHILD has had each of the following in the past 24 hours.

3. Vegetables (raw or cooked) (salad in sandwich and vegetables at dinner = twice)
   - Never
   - Once
   - Twice
   - 3 times
   - 4 times
   - 5+ Times

4. Fruit (fresh, canned, stewed or dried) (banana at breakfast and apple at lunch = 2 times)
   - Never
   - Once
   - Twice
   - 3 times
   - 4 times
   - 5+ Times

5. How many different vegetables (raw or cooked)?
   - None
   - One
   - Two
   - Three
   - Four
   - Five+

6. How many different fruits (fresh, canned, stewed or dried)?
   - None
   - One
   - Two
   - Three
   - Four
   - Five+

Please circle the number of times YOUR CHILD had the following items in the past 7 days:

7. How many days in the last week did YOUR CHILD have some vegetables (raw or cooked)?
   - None
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - Every day

8. How many days in the last week did YOUR CHILD have some fruit (fresh, canned, stewed, or dried, excluding juice)?
   - None
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - Every day

**Composite score**: (Fruit variety 7 days/7) + (Veg variety 7 days/7) + Veg freq + Fruit freq+ Veg variety + Fruit variety + (7 days veg/7) + (7 day fruit/7)

**Possible range**: 0 – 31.56
## Participants

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Farm to Family (N = 10)</th>
<th>Control (N = 19)</th>
<th>p value*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td></td>
</tr>
<tr>
<td>Child gender</td>
<td></td>
<td></td>
<td>.45</td>
</tr>
<tr>
<td>Male</td>
<td>6(60)</td>
<td>8(42)</td>
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</tr>
<tr>
<td>Female</td>
<td>4(40)</td>
<td>11(58)</td>
<td></td>
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<tr>
<td>Child race</td>
<td></td>
<td></td>
<td>.65</td>
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<tr>
<td>White</td>
<td>2(20)</td>
<td>1(5)</td>
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<tr>
<td>Black/African American</td>
<td>7(70)</td>
<td>15(79)</td>
<td></td>
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<tr>
<td>Other</td>
<td>1(10)</td>
<td>3(16)</td>
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</tr>
<tr>
<td>Child ethnicity</td>
<td></td>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>Hispanic</td>
<td>2(20)</td>
<td>4(21)</td>
<td></td>
</tr>
<tr>
<td>Not Hispanic</td>
<td>6(60)</td>
<td>12(63)</td>
<td></td>
</tr>
<tr>
<td>Ethnicity not reported</td>
<td>2(20)</td>
<td>3(16)</td>
<td></td>
</tr>
<tr>
<td>Caregiver relation to child</td>
<td></td>
<td></td>
<td>.53</td>
</tr>
<tr>
<td>Mother</td>
<td>8(80)</td>
<td>18(95)</td>
<td></td>
</tr>
<tr>
<td>Father</td>
<td>2(20)</td>
<td>1(5)</td>
<td></td>
</tr>
<tr>
<td>Caregiver highest education</td>
<td></td>
<td></td>
<td>.23</td>
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<tr>
<td>High school or less</td>
<td>9(47)</td>
<td>2(20)</td>
<td></td>
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<tr>
<td>Greater than high school</td>
<td>10(53)</td>
<td>8(80)</td>
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<tr>
<td>Language spoken most at home</td>
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<td>.87</td>
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<tr>
<td>English</td>
<td>6(60)</td>
<td>12(63)</td>
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<tr>
<td>More than one language</td>
<td>1(10)</td>
<td>3(16)</td>
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<tr>
<td>Other</td>
<td>3(30)</td>
<td>4(21)</td>
<td></td>
</tr>
</tbody>
</table>

Note: p<0.05 (Schmidt, Hoffman & Shiyko, under review)
Adult F&V Consumption

ANOVA: main effect of time ($F(1, 25) = 4.83, p = .04, \eta_p^2 = .15$)

(Schmidt, Hoffman & Shiyko, under review)
Child F&V Consumption

![Graph showing Child F&V Consumption]

**ANCOVA:** interaction $F(1, 26) = .27, p = .27, \eta_p^2 = .05$) small effect size, low power (.22)

(Schmidt, Hoffman & Shiyko under review)
## Parent Perception of Adequate F&V Consumption

<table>
<thead>
<tr>
<th></th>
<th>Control (N = 19)</th>
<th>Farm to Family (N = 10)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parent vegetables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1, n(%)</td>
<td>8(47%)</td>
<td>7(70%)</td>
</tr>
<tr>
<td>Time 2, n(%)</td>
<td>8(47%)</td>
<td>4(40%)</td>
</tr>
<tr>
<td>(p) value*</td>
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<td>.250</td>
</tr>
<tr>
<td><strong>Parent fruit</strong></td>
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<td></td>
</tr>
<tr>
<td>Time 1, n(%)</td>
<td>13(72%)</td>
<td>7(70%)</td>
</tr>
<tr>
<td>Time 2, n(%)</td>
<td>12(67%)</td>
<td>5(50%)</td>
</tr>
<tr>
<td>(p) value*</td>
<td>1.0</td>
<td>.50</td>
</tr>
<tr>
<td><strong>Child vegetables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1, n(%)</td>
<td>13(68%)</td>
<td>5(50%)</td>
</tr>
<tr>
<td>Time 2, n(%)</td>
<td>12(63%)</td>
<td>2(20%)</td>
</tr>
<tr>
<td>(p) value*</td>
<td>1.0</td>
<td>.250</td>
</tr>
<tr>
<td><strong>Child fruit</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1, n(%)</td>
<td>15(83%)</td>
<td>7(70%)</td>
</tr>
<tr>
<td>Time 2, n(%)</td>
<td>14(78%)</td>
<td>6(60%)</td>
</tr>
<tr>
<td>(p) value*</td>
<td>1.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>

(Schmidt, Hoffman & Shikyo, under review)
Feedback From F2F Participants

- 9 of 10 F2F parents indicated F2F shares increased the amount of F&V in their home while one family indicated that it decreased the amount.
- 8 of 10 F2F parents reported that at least one of the F&V in the share was previously unknown to a member of the family.
- F2F expanded children’s exposure to produce.
  - Exposing children to F&V in early childhood is important because exposure is linked to preferences for foods (Birch & Marlin, 1982; Wardle et al., 2003), which is in turn linked to consumption (Rasmussen et al., 2006).
Limitations

• Use of parent-report of child consumption
  • Alternative of direct measurement (e.g., plate waste) would not have been feasible
  • There is evidence for reliability and validity of CDQ

• Small sample size
• No random assignment
• Only two time points of data on consumption
Summary

• F2F has been implemented for 6 years
  • Model is feasible within early childhood education settings
  • Model is acceptable to families

• Strengths
  • Low income families able to access fresh vegetables easily and affordably
  • Opportunities to link home and school food environments

• Challenges
  • Funding
  • Supporting site coordinators with their duties
Potential Future Directions

- Conducting a larger study
- Enhancing F2F to provide parents with strategies (preparing foods, encouraging child consumption)
- Pairing F2F w/ classroom curriculum (e.g., http://www.harvestforhealthykids.org/)
For more information:

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Ellyn Schmidt: schmidt.el@husky.neu.edu

Northeastern University
References


References
