Behavioral Economics: and related strategies to promote fruit and vegetable intake in Americans

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How Can We Achieve Greater Intake of Fruit and Vegetables?

- Target behavior related to change in *intake* for individuals or groups
- Target behavior related to *purchasing* decisions

Systematic Review: Change in Intake

- Behavior-based interventions to promote fruit and vegetable intake
- PUBMED and PSYCInfo
- Key words: behavior intervention, fruit, vegetable
- Total of 68 peer-reviewed manuscript reviewed
- Planned submission to Journal of the American Dietetic Association

Key Findings: Intervention Effects

<table>
<thead>
<tr>
<th>Target population</th>
<th>Mean <em>Increase</em> in average fruit and vegetable intake (servings/day)</th>
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</thead>
<tbody>
<tr>
<td>Adults</td>
<td>1.06 servings/day</td>
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<tr>
<td>Children</td>
<td>0.65 servings/day</td>
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<tr>
<td>Low income</td>
<td>0.15 servings/day</td>
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<tr>
<td>Minorities (African American)</td>
<td>0.90 servings/day</td>
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<tr>
<td>Worksite</td>
<td>0.54 servings/day</td>
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</tbody>
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Conclusions

- Expected change in individual behavior will be modest
- While statistically effective in relation to overall change in intake these approaches will NOT achieve intake levels at or above current public health recommendations
- Current approaches use commonly employed behavioral theories and constructs – lack unique insight re: food/eating behavior
- Combination of behavior-based interventions with policy-related interventions have not been evaluated
- New, novel approaches that integrate diverse expertise to promote greater intake and evaluate these new approaches are necessary

Behavioral Economics Defined

- Study of social, cognitive and emotional factors to understand and influence economic decisions or *purchasing behaviors* of individuals or groups
### Behavioral Economics and Fruit and Vegetable Consumption

- **Target is to change purchasing behaviors**
  - Attitudes, knowledge
  - Quality: Taste, texture, appearance
  - Food preferences
  - Perceptions: the naming of product
  - Price
  - Social support
  - Social marketing
  - Systems-based modifications

### Attitudes

- **Attitudes influence purchasing habits**
  - "dietary supplements substitute for fruits and vegetables" (older, low-income women)
  - Concern regarding "waste" (adults esp > age 65 yr)
  - Understanding of health benefits (adolescents and adults)
  - Competitive foods (adolescents)
  - Family rules/influence (adolescence)
  - Taste (or perceived taste) remains a major driver (adults and children)

Dye CJ, 2005; Zabinski MF, 2008; Baranowski T, 1999

### Quality: Texture, Taste, Appearance

- **Important factors in purchasing decision**
  - Generally restricted to visual cues
  - More opportunities to evaluate texture and taste
  - Income differential: 20% of low income households buy NO fruit/vegetables in a given week vs 5% of high income (Bisard, 2004) and possibility of waste due to poor quality is one driver of the purchasing decision (Webber CB, 2010)

### Case of Organic Produce

- Preferred among highest fruit and vegetable consumers
- 3% of total food sales in 2007 (all organic); 6.9 billion-fruit and vegetables
- Will pay higher price
- Will forfeit "organic" if quality (presence of blemishes) not acceptable

Frozen Food Digest, 2009

### Food Preferences

- **Learned behavior with modest genetic influence**
  - Taste
  - Exposure
  - Engrained early in life; difficult to change with advancing age
  - Role of parents, guardians
  - Gen X, Gen Y
  - May or may not reflect knowledge

### Role of Access and Experiential Opportunities

- **Partnership of EFNEP and Southeast Produce Council**
  - Nutrition education program delivered thru EFNEP
  - SEPC providing "incentives" for greater focus on fruit and vegetable food group
- **Program**
  - Recipe development, preparation and delivery
  - Fruit and vegetable coupon provided to family
- **Results**
  - Intake increased, on average, by 0.5 svg/day
  - New fruits: mango, kiwi; new vegetables: eggplant, mushrooms, asparagus and squash

Cason KL, J of Extension, 2005
**The Name Game**

- "Happy Meal"
- Demonstrated to increase food selection, intake and reported satisfaction
- Basic naming themes: Geographic, Nostalgic, sensory and Brand-labeled
- Examples: "southern" fresh succotash, "Iowa grown" corn, "fresh oriental" edamame, "Grandma's favorite recipe" tomato sauce, "Old World" vegetable medley, "spring fresh", "succulent", "crunchy, crispy"; "Ore-Ida" sweet potato fries,
- Comparatively less use in produce sales
- Thinking something is better makes us experience it as better

Wansink B. Food Quality and Preference, 2005

**The Role of Price**

- Price is a driver of purchasing behavior
- Waste
  - inedible portions
  - "keep" time
- Competitive foods (High fat, high sodium snack or fast foods)
- Lower F/V pricing resulted in greater F/V intake in young children (Beydoun MA, 2011)
- "added value"
  - Nutrition (lycopene-rich tomato, purple anthocyanin-rich potatoes, etc)
- Food prices and income affect nutrients consumed:
  - Higher price of F/V, lower income: less "access" to vitamin A, C, folate and fiber

Huang K. OCEANS, 2007

**Role of Social Support: Decision to Purchase F/V**

- Role of influential individuals or groups in behavioral decisions
- Values of the person are reflected in the groups they align with including: Family, friends, school, work, political groups, "diet" groups (vegan, vegetarian)
- Changes over life course: early: moms, other family members, adolescence and early adulthood: peers, later adulthood: spouse, social groups, healthcare providers
- Changing F/V intake is effective when targeting an individual or their influential social support source


**Social Marketing**

- A systematic application of marketing to achieve specific behavioral goals for a social good
- Used to promote health behaviors:
  - Quit (Tobacco)
  - Slip, Slop, Slap (sun safety)
  - Go Green (environmental protection)
  - More Matters (fruit and vegetables)
- Yes-no behaviors versus how much, when and what behaviors

National Social Marketing Center

**Campaigns to Promote Fruit and Vegetable Intake**

- 5-a-day / Take Five
- More Matters
- Healthy People 2010 (2010)
- Go, Slow, Whoa
- Go for 2 & 5 (Australia)

Snyder LB. J Nutr Educ Beh, 2007; xxxx

**Food Advertising**

- Known to be effective in changing food choices:
  - Starbucks and lattes
  - McDonalds and the hamburger
  - Pom-Wonderful and pomegranate product line (Health)
- Commodity-specific
- Broad-based
- Disproportional spending: food, beverage, candy and restaurant advertising 11.3 B (2004), 200 x advertising for fruits and vegetables

Liaukonyte J. 2011
Recent Intervention:

- Broad-based advertising consistently increased purchasing (willingness to pay WTP) above control condition.
- Commodity-specific advertising showed no increase in WTP for any produce above control and this did not differ by commodity exposure (apple vs potato).
- Commodity-specific advertising did result in greater variance in WTP (more elastic), but this did not translate to greater increase in average, overall intake.
- Efforts to develop broad-based F/V advertising would be expected to result in increased sales.

**Results**

Liaukonyte J. 2011

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**Social Marketing: Combining Outlets of Delivery**

- California 5-a-day: Power Play!
  - Campaign involved school-specific efforts combined with community-based marketing efforts.
  - Results support combined approach: 14% increase in F/V with combination; 75% with school alone.
  - Impact variables: help with food prep, avail as snack, family interest/support, support of friends, support of cafeteria workers.
  - Non-impact variables: good health, specific meal, finding F/V (access), teacher support, principal support, "cool" behavior.

Foerster SB, Family & Community Health, 1998

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**In-Supermarket Marketing**

- Intervention: flyer of F/V sale items, recipes, menu ideas, 50 cent coupon, store signage, food demonstration.
- 36% used coupon; 18% used a recipe.
- Total F/V purchasing on that day did not differ between intervention and control stores.
- Recent AZ Basha store intervention that included education and signage resulted in significant increase in F/V purchasing (receipt review) and improved dietary quality score of shopping cart contents (photo with nutrient analysis).

Kristal A, 1997; Appelbaum, ASPO, 2011

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**In-Store PSAs**

- 70% food purchases decided in supermarket.
- 374 regular shoppers reviewed two 1-hour audiotapes re: health benefits of F/V over 4 week period; in-store PSAs re: health benefits of F/V played every 30 minutes.
- 378 controls: separate store; provided stress-reduction audiotape.
- Results: both groups reported an increase in F/V intake (seasonal?); intervention participants had significantly greater increase than controls.
- Limited research in this area: PSAs, video play in produce area, etc.

Connell D, J Health Communic, 2001
**Product Packaging**
- Use of characters
- Single serving
- Convenience packaging
- Vending convenience
- Labeling: use of key words

**Food Label**
- Available on packaged, but not fresh F/V
- Studies indicate food label is associated with healthier food choices (especially lower fat, higher fiber)
- Approx 28% of US consumers use food labels on a "regular" basis when making food purchases
- Food labeling does not promote greater F/V intake (Neuhouser ML, JADA, 1999)
- Should industry push for greater labeling of fruits and vegetables? Limited research

**Variety**
- Actual and perceived variety increase purchasing
- Organization and symmetry enhance perception of variety

**Household, Cultural Factors**
- Larger households purchase more variety, > 6 members variety declines
- A family with higher education selects greater variety
- Asian and Hispanic families purchase greater variety
- Presence of children in the household reduced variety
  - Argument for targeting Gen X, Gen Y moms

**Food Systems: Lunchrooms**
- Enhance lighting of fruits and vegetables
- Creative packaging, displays (bowls, color, with sandwich options, grab-and-go, etc)
- Eye-level display
- Use trays
- Make fruit and vegetables the default side dish
- Place F/V on debit card sales, but force cash payment for less healthy choices
- Sales staff encourage healthier choices

Just and Wansink, AAEA, 2009
**Food Systems: Fast Food**
- Appealing visual displays – posters, fresh F/V, salad bars, etc
- F/V as default side dish
- Creative packaging, convenience, grab-and-go, "coolers"
- Early exposure: "Happy Meal" featured fruit
- Freshness: salads as an example
- Target "healthier" fast food restaurants for partnerships
- Little research

**Role of New Product Development**
- Taste: new, health appeal, intrigue, identifiable (previous taste exposure)
- Convenience
- Health-promotion qualities
- Visual appeal inside vs out: star fruit, kiwi, melons, etc
- Price

**The Retail Environment**
- Product placement
- Visual appeal
- Access (product and storage bags)
- Sampling
- Variety
- Store staff and social relations (Webber, 2010)

**Marketing Approaches**
- Posters, audio, video, flyers
- Product "flags"
- Store placement (end vs central)
- Eye-level
- "watering"
- Coupons
- Health education

Seymour JD, Preventive Med, 2004

**Could BE help improve diet quality of Nutrition Assistance Program participants?**
- People have problems of self-control when choosing food; need to enhance people’s desire for fruits and vegetables
- People place weight on default options; pay less for items they are willing to part with; need to convince them not to part with F/V
- People categorize income; if food stamps were designated for specific food groups fruit and vegetable intake would increase
- External cues can have a major effect on food purchasing

Just, Manino and Wansink, Economic Research Unit, USDA, 2007

**TV Food Advertising to Children**

Kunkle D, UA, NSC Seminar, February, 2011
**Alternate Venues**
- Farmer’s markets
- Community gardens
- Vending machines
- Entertainment, sports events, community events
- “Bake” sales (schools, churches, Little League, Scouts, etc)
- Transportation (airports, bus stations, train and ferry food bars, etc)
- Limited efforts and a need to evaluate

**Policy**
- Food Advertising / Food labeling
- Commodity foods
- Food Stamp, Supplemental Feeding programs
- Built environment
  Concern: increased governmental control over individual food choices

**Future Directions**
- Build beyond the health messaging
- Creative thinking
  - Idea: “free sample” for children
  - Cell-phone apps for point-of-purchase sale
- New partnerships with Behavioral Economists
- Training programs in food marketing targeting F/V
- Research funding

*McCormack LA. JADA, 2010*