

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

Target population	Mean <i>Increase</i> in average fruit and vegetable intake (servings/day)
Adults	1.06 servings/day
Children	0.65 servings/day
Low income	0.15 servings/day
Minorities (African American)	0.90 servings/day
Worksite	0.54 servings/day

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, 2006; 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 9% of high income (Blisard, 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, USDA/ARS, 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

Baranowski, 2008 Mushi-Brunt, 2007; Devine, 2005; de Castro, 1994 and 1991

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 (2020)
- Go, Slow, Whoa
- Go for 2& 5 (Australia)

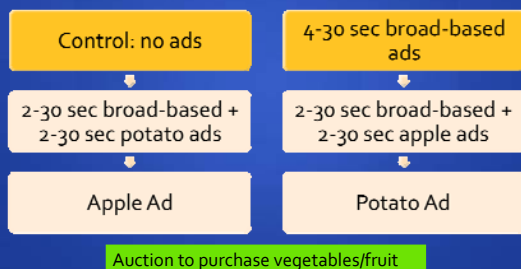
Snyder LB, J Nutr Educ Beh, 2007, xxxx

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), 100 x advertising for fruits and vegetables

Liaukonyte J, 2011

Comparing Advertising Effectiveness



Auction to purchase vegetables/fruit

Results

- 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

Liaukonyte J, 2011

Nutrition Messaging

- Test efficacy based on pre-assessed health-related motives
- Must be tailored to subgroups
 - Energetic Experimenters: transformational /self-directed
 - Harmonious Enjoyers: transformational / other-directed
 - Normative Carers: informational, other-directed
 - Conscious Experts/Rationalists: informational, self-directed
- But...health is only ONE motivator of fruit and vegetable intake decision-making
- Unclear if individuals respond more to positive or negative consequences of dietary change (van Assema P, 2001)

Geerons N, Food Quality and preference, 2008

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

In-Supermarket Marketing

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

Kristal A, 1997; Applehaus, ASPO, 2011

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 Commun, 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



Kahn BE, J Consumer Res, 2004

Household, Cultural Factors

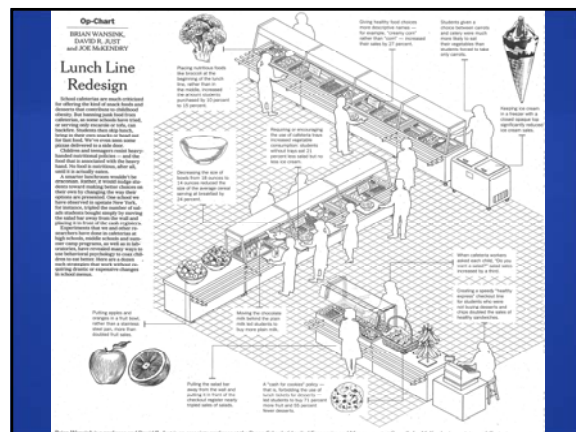
- Larger households purchase more variety, > 6 members variety declines
- A family with higher education selects greater variety
- Asian and Hispanic families purchase greater variety
- Presence of children in the household reduced variety
 - Argument for targeting Gen X, Gen Y moms

Guthrie JF (USDA), Amber Waves, 2005

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

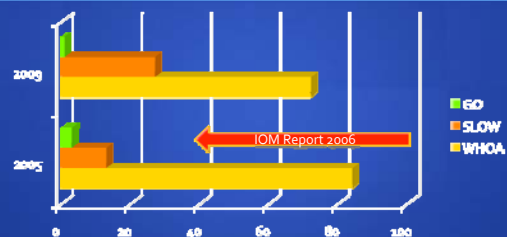
Seymour JD, Preventive Med, 2004

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, Mancino and Wansink, Economic Research Unit, USDA, 2007

TV Food Advertising to Children



What would happen if we advertised F/V during children’s programming?

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

McCormack LA, JADA, 2010

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



Discussion