

Tracking the Use of Free Fruit and Vegetable Coupons Given to Families and Assessing the Impact on Children's Consumption

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Introduction

Background

Many American communities are lacking healthy options when it comes to children's nutrition. Poor nutrition in childhood can lead to obesity, which persists into adulthood and is linked to several chronic diseases including coronary heart disease, stroke, and diabetes (1).

Thus, increasing children’s fruit and vegetable consumption has become an important focus among practitioners, policymakers and researchers (2). There is a developing literature examining a variety of methods to increase children’s fruit and vegetable intake in school settings. These programs have generally shown modest short-term positive effects limited to fruit and vegetable consumption at school (3).

Prior research has also shown that the majority of children’s daily fruit and vegetable intake occurs during school lunch (4). This suggests that researchers and policymakers should work to develop strategies to impact children’s fruit and vegetable intake in the home setting.

Low fruit and vegetable intake is a primary concern among low-income families due to limited access and affordability of fruits and vegetables (5). Moreover, Wisconsin has the 14th highest obesity rate in the nation (6). And in Eau Claire County, the obesity rate has increased significantly in the past 6 years with 30% of adults currently obese (7).

This study is designed to increase Eau Claire County children’s consumption of fruits and vegetables at home by increasing access through free fruit and vegetable coupons provided to parents. We examined the rate at which families redeemed the free coupons and whether students whose families redeemed the coupons showed an increase in fruit and vegetable consumption at home compared to students whose families did not redeem the coupons.

COUPON METHOD

Participants

Two Eau Claire area elementary schools, both with at least 50% free/reduced enrollment participated in this study.

- Six 4th grade classes, three in each school
- Parents were notified with passive consent
- Two children opted out of the study
- Final sample includes 121 students

Participant Demographic Information

Mean age (years)	9.6
Gender (%)	
Male	41.3%
Female	58.7%
Race/ethnicity (%)	
Caucasian	64.5%
Asian American	20.7%
African American	6.7%
Hispanic/Latino(a)	5.8%
American Indian	2.5%

Coupons

The family of each participating student received four sets of coupons redeemable at any one of seven participating area grocery stores. These coupons could only be used to purchase fruits and vegetables.

- Four weeks of coupons, \$15 each week (\$60)
- Coupons valid for one week
- Instructions for coupon use
- Encouragement for coupon use
- Individual ID # on coupons

Coupon Redemption

Figure 1 and Table 1 illustrate how many coupons were redeemed across the entire sample in total and by week respectively.

- Overall redemption rate of 27.3%
- Weekly redemption rate between 25-30%

The average redemption rate does not convey the full story of how the coupons were redeemed across families.

- 67 families (55.4%) redeemed no coupons
- 10 families (8.3%) redeemed \$60 of coupons
- 8 families (6.6%) redeemed between \$51-\$59 of coupons

There could be several possible explanations for this result including:

- Coupons never received in mail
- Not all grocery stores agreed to participate
- Family shopping patterns do not match weekly coupons
- Stigma or barriers associated with coupon use

CONSUMPTION METHOD

Measuring Consumption

Students were surveyed regarding their eating behavior at three points in time.

- Pre-test survey before coupons were received
- Post-test 1 matched with week 2 of coupons
- Post-test 2 matched with week 4 of coupons

- Each survey consisted of three consecutive days
- All surveys conducted in the morning with paper and pencil
- Incidence of fruit and vegetable intake
- Average fruit and vegetable intake across the three days

Surveys were conducted on Tuesday, Wednesday and Thursday with students recalling what they ate on Monday, Tuesday and Wednesday. If families shopped on the weekend and used the coupons, we expected to see the students eating these fruits and vegetables early during the next week.

Consumption Analysis Sample

We compared fruit and vegetable consumption for dinner and evening snack between children in families that did or did not redeem the coupons respectively. Our sample of 121 students was restricted for the consumption analysis as follows:

- Present on all nine survey days (93 students)
- Redeemed all coupons in week 2 AND week 4 (14 students)
- Redeemed no coupons in week 2 AND week 4 (41 students)
- Final sample includes 55 students
- Redeemer = 14
- Non-Redeemer = 41

Low Baseline Fruit & Vegetable Consumption

Figure 2 presents the baseline average fruit and vegetable consumption at home for the entire sample (N=55), while Table 3 shows initial consumption at home for redeemers vs non-redeemers.

- 29 students ate 0 fruits and vegetables (52.7%)
- 4 students ate 1 or more fruits and vegetables (7.3%)
- 0 students ate 2 or more fruits and vegetables (0%)
- Redeemer: less likely to eat 0 fruits and vegetables
- Redeemer: less likely to eat 1 or more fruits and vegetables

Change in Consumption Analysis

Figures 3 and 4 compare consumption change for redeemer and non-redeemer students between the pre-test and post-test 1, while Figures 5 and 6 show the change between the pre-test and post-test 2.

Week 2

- Redeemer: Average consumption increased by 0.096 (33.6%)
- Non-redeemer: Average consumption decreased by 0.017 (6.0%)
- Neither change was statistically significant
- Redeemer: 42.9% increased consumption
- Non-Redeemer: 26.8% increased consumption

Week 4

- Redeemers: Average consumption increased by 0.167 (58.6%)
- Non-redeemer: Average consumption decreased by 0.114 (41.3%)
- Non-redeemer change is statistically significant
- Redeemer: 64.3% increased consumption
- Non-Redeemer: 17.1% increased consumption

Because baseline fruit and vegetable intake was so low, the increases found above are not trivial in percentage terms. However, these results are only suggestive of a positive impact on fruit and vegetable consumption for dinner and evening snack from the redemption of the free coupons.

Possible explanations for our inability to find statistically significant positive consumption effects are:

- Timing of coupons and dietary recall surveys
- Purchased fruits and vegetables not eaten by child
- Substitution effect
- Small sample size

COUPON RESULTS

Figure 1

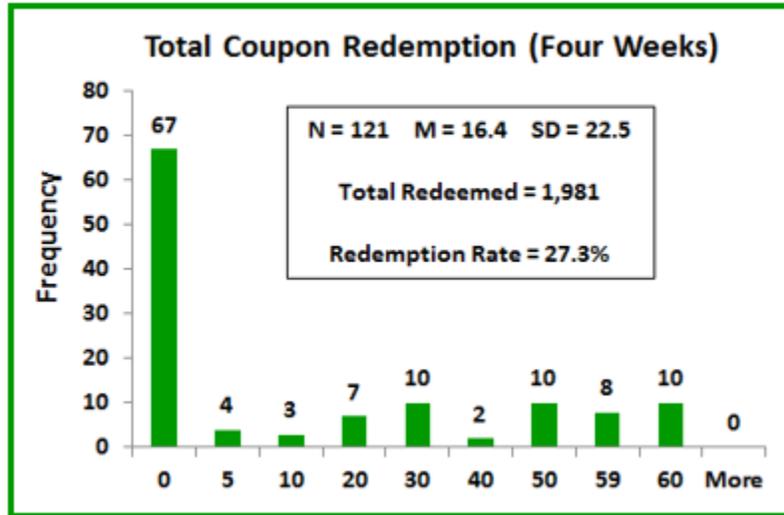


Table 2

Race/Ethnicity	N	Redemption Rate
African American	8	12.9%
Asian American	25	15.7%
American Indian	3	18.3%
Caucasian	78	31.8%
Hispanic	7	38.6%
Total	121	27.3%

Table 1

	Week 1	Week 2	Week 3	Week 4
Total	499	543	480	459
Rate	27.5%	29.9%	26.4%	25.3%
Mean	4.12	4.49	3.97	3.79
Std Dev	6.56	6.60	6.38	6.37

CONSUMPTION RESULTS

Figure 2

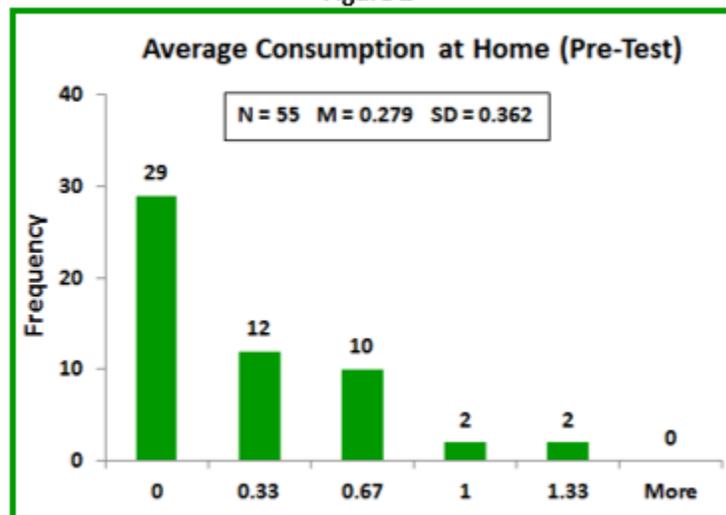


Table 3

Average Consumption at Home (Pre-Test)			
Intake	Redeemer	Non-Redeemer	Total
0.00	5 (35.7%)	24 (58.5%)	29 (52.7%)
0.33	6 (42.9%)	6 (14.6%)	12 (21.8%)
0.67	3 (21.4%)	7 (17.1%)	10 (18.2%)
1.00	0 (0.0%)	2 (4.9%)	2 (3.6%)
1.33	0 (0.0%)	2 (4.9%)	2 (3.6%)

Figure 3

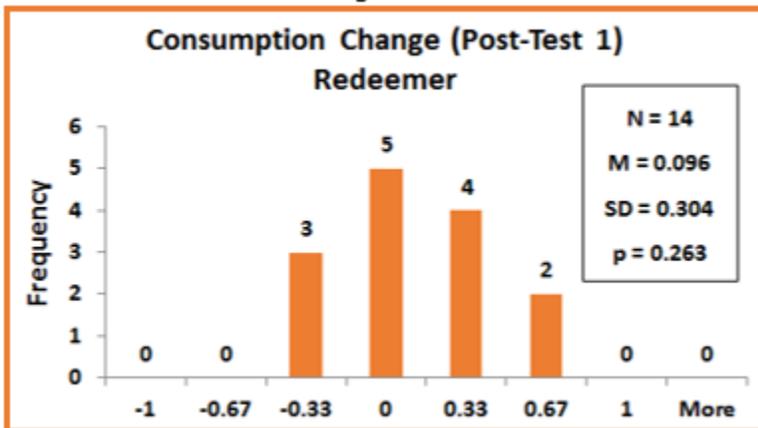


Figure 4

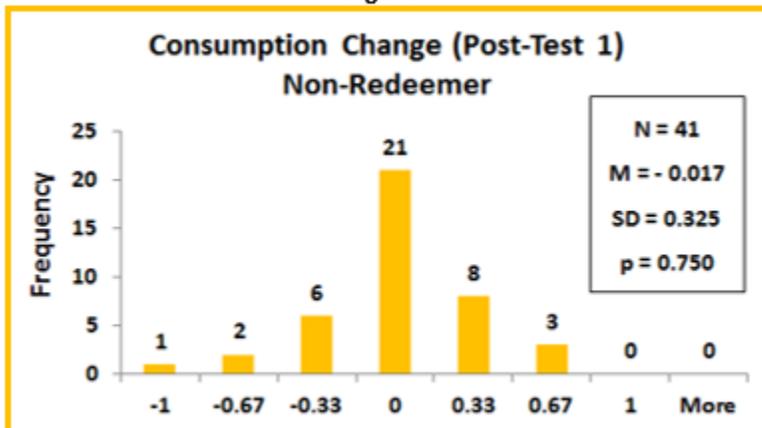


Figure 5

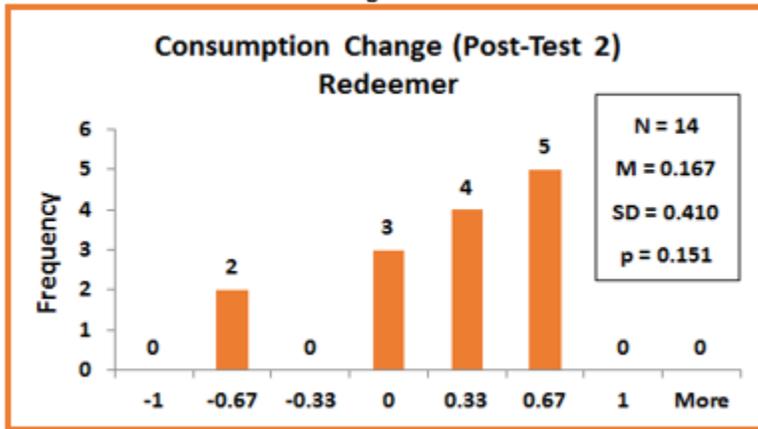
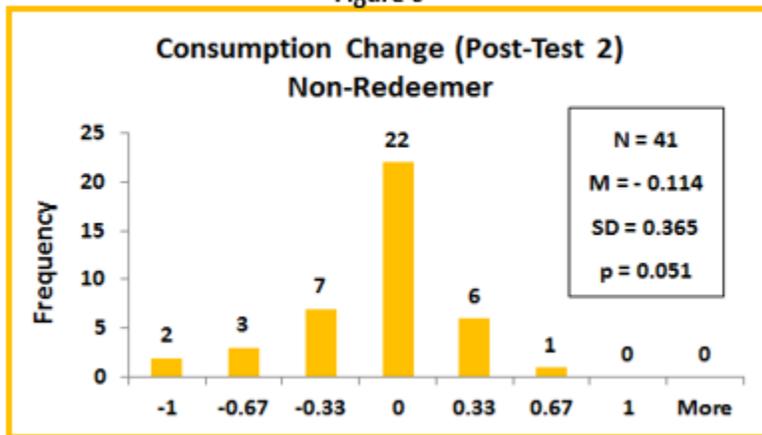


Figure 6



Conclusion & Discussion

This intervention was designed to influence children to eat more fruits and vegetables at home by increasing access through free fruit and vegetable coupons provided to parents. The overall rate at which families redeemed the free coupons was quite low at just over 27%. Some families redeemed all or nearly all of their coupons, while more than half of the families did not redeem any. Additionally, we found only suggestive evidence of increased fruit and vegetable intake among students whose families redeemed all of their coupons.

As listed in the “Coupon Redemption” section, there were several reasons the families may not have redeemed the coupons. To address these issues, future research could encourage the participation of all area grocery stores and work with these stores to develop an electronic coupon debit card that would be easier for both the stores and the families to use.

There are also several possible explanations why we were unable to find any statistically significant consumption effects from coupon redemption, mentioned in the “Change in Consumption Analysis” section. To address these issues, future research could use a more

intensive consumption measurement tool such as a daily dietary journal completed by parents and children together. Researchers could also provide additional information about the coupons including educating parents to increase their knowledge of nutrition and food budgeting.

Additional research is necessary to examine the role of free coupons as a means of increasing children's fruit and vegetable consumption. This is especially true when using research findings to influence policy related to both the Women, Infants and Children Program (WIC) and Supplemental Nutrition Assistance Program (SNAP) in an effort to improve the nutrition, health and wellness of low income families.

