

Healthier food choices for children through menu pricing

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1. Introduction

Food choice can impact health and with the rapidly rising number of meals eaten at fast food restaurants by children there is concern regarding the effects of less healthy food choices (Anderson and Miroso, 2014). There is a general lack of data on 'how and why' parents make food choices for their children in a fast food restaurant environment, especially in terms of younger children (age < 6) (McGuffin *et al.*, 2015). There are even fewer studies that specifically examine pricing effects as a way of encouraging the selection of healthier fast food choices (Waterlander and Zenk, 2015).

Health-related taxes (e.g. fat and sugar taxes) that raise the price of food have been attempted as a policy instrument in a number of countries in an effort to encourage healthier food choices (Bødker *et al.*, 2016; Smed *et al.*, 2016)). Results to date have provided mixed outcomes. While there is some evidence that they encourage healthier eating, there is also evidence to suggest that the tax must be over 20 % (Mytton *et al.*, 2012) and that there can be unexpected and undesirable consequences of the tax such as increased consumption and unexpected substitution effects, which outweigh the beneficial effects on health outcomes (Bødker *et al.*, 2015; Hanks *et al.*, 2013; Maniadakis *et al.*, 2013; Wansink *et al.*, 2014). In addition, a 'fat tax' may well cost the poor more than the middle class (Muller *et al.*, 2016).

In a recent study of the Danish 'fast food' sector (Lassen *et al.*, 2016), looking at the aspect of adult healthier food choices and gender, results showed that irrespective of gender, the fast food customers indicated that they would like to see healthier menu items, however, only 7 % of those surveyed picked healthier choices for themselves. This has also been observed in other studies (Gram and Blichfeldt, 2014; Yilmaz and Arslan, 2016). This leads to the question of how can fast food restaurants encourage consumers to select healthier choices for themselves and their children, when it may be a "do as I say not what I do" situation.

Price is often mentioned as a barrier in healthy food choices in general and thus, not surprisingly, there is less uptake if the price is higher for the healthier food item (Basch *et al.*, 2013). When fast food restaurants offer healthier options at the same price, there is often a significant difference in the raw material cost for the healthier item and this can affect the restaurant's bottom line. Many fast food restaurants, such as McDonald's, Burger King, and Wendy's, offer healthier options as alternatives that can be substituted in a child's meal package at no price differential to the customer. However, despite this offer of a healthier option, at no additional price, the restaurants have frequently found that the uptake of these healthier choices for the child's meal package is minimal (Bleich *et al.*, 2016).

In another recent study of intended fast food purchases, and one of the first randomized trials incorporating a sub-population of parents with children (Yoong *et al.*, 2015), they found that just the provision of healthy items on a menu as an alternative was not enough to change parent purchasing behaviour as a strategy. They suggested that the price of the healthier item could be a potential reason for lack of selection.

The current pricing effect purchase intention study, using children's bundled fast food meals and healthier option substitutions, has been expanded upon to answer the following question: *Is there a difference in stated intent of what parents choose for their child's meal based on positive financial incentives to choose the healthier option versus a deterrent tax for choosing the unhealthy option?* The healthier food option examined was the substitution of apple slices for french fries in children's meals at a hypothetical large national fast food restaurant in Canada.

2. Methods

2.1 Study Design

The study was based on an online survey using Toluna Analytics, a commercial online survey platform, which provides access to a pool of participants who are representative of the Canadian population based on geography, household income, and education level. The survey was undertaken in three phases. Phase 1 ~~examined stated intent of side dishes~~~~established a baseline ordering and dessert orders for children's meals. pattern, and was used as a control group to establish if the tested pricing approaches shifted the percentage of what parents stated they would order for their child.~~ Phase 2 tested an incentive approach to shifting side dish orders. Phase 3 tested a deterrent approach to shifting side dish orders.

A total of 400 respondents participated in the study. Respondents were not eligible to complete more than one phase of the research. The inclusion criteria included the following: Canadian resident, age 18 or above, equal numbers of males and females, the parent of a child that must currently live in the household. The average age of the respondent was 37.6 years. Households ranged in size from one to six children, with the majority of respondents having one child (53%) or two children (34%). Of the respondents, 68% were the primary grocery shopper for their household, 27% described themselves as sharing the grocery shopping responsibility with someone else, and 5% were not the primary grocery shopper (Appendix A –Demographic Questions).

For phase 1, 100 respondents were provided with a hypothetical scenario in which they were asked to consider that as a parent, if they took their own child to a large national fast-food restaurant and ordered a child's meal for their child, if there was no difference in price, whether they would order french fries or apple slices as the side dish for their child. The order of the side dishes was randomized to account for order bias (Appendix B – Side Dish and Dessert~~Baseline~~ Questions).

To further explore whether selecting a perceived healthier side dish for the child's meal resulted in any subsequent changes in ordering, the parent, after selecting the side dish for their child, was told that the restaurant chain offered a choice of desserts with the child meals. They were asked to choose between a small ice cream cone and an organic low fat yogurt (the perceived healthier option) for their child's dessert. Dessert options were randomized to account for order bias.

For phase 2, to investigate whether the provision of a discount as an incentive would change the stated intent of what a parent would order for their own child, 100 respondents were asked to review a scenario in which they imagined themselves with their own child at a large national fast food restaurant. In the scenario, they were provided with a financial discount if they choose the apple slices over french fries as the side dish in the child's meal and asked if the various financial discounts would shift their purchase decision. The discount options (5, 10, 15, 20,- 25%) were described to the respondents both as a percentage of the price of the meal as well as a total dollar amount saved (Appendix C - Incentive Questions).

Example of Wording of One Scenario:

A large national fast food restaurant is interested in promoting healthy eating in children. Currently, they sell a child's meal for \$3.99. The typical child's meal contains a drink (milk or a small soft drink), an entrée (a cheeseburger, a hamburger or chicken nuggets) and a small side of french fries. While the restaurant currently offers apple slices as a substitute for french fries, they want to increase the number of parents that choose apple slices instead of french fries for their children.

If you took your child to eat a child's meal at a fast food restaurant, which of the following options would change the type of side dish that you normally order for your child from french fries to apple slices?

A 5% price discount would convince me to change my child's order to apple slices instead of french fries (The child's meal would cost \$3.79, instead of \$3.99, saving you \$0.20)

For phase 3, to investigate the up-charge (disincentive/ punitive) option, as before 100 respondents were asked to review the same restaurant scenario but were provided with a number of financial deterrents if they choose french fries over apple slices as the side dish in the child's meal. They were asked if various financial deterrents (5, 10, 15, 20, 25%) would shift their purchase decision. The deterrent options were described as both as a percentage of the price of the meal, as well as a total dollar premium added to the price of the meal (Appendix D - Deterrents).

Another 100 respondents were given a slightly different question. As french fries are only a small portion of the child's meal, a specific question of an amount easy to visualize was used (i.e. a \$0.25 up-charge). The single deterrent question was phrased as "If you took your child to eat a child's meal at this fast food restaurant, would the \$0.25 up-charge for the fries change what you ordered?" (Appendix E - Deterrent - Price Specific).

2.2 Statistical Analysis

Statistical analysis using chi squared testing and ANOVA (SPSS Statistics, Version 22, IBM) compared the incentive approach to the deterrent approach to determine which pricing approach would have a greater impact on the percentage of parents that choose apple slices over french fries. In addition the parameters of gender, age, educational level and number of children in the household were examined to determine if these particular demographic characteristics had an influence on purchase behaviour.

3. Results

3.1 Phase 1: ~~Sides Dishes and Baseline Child's Meal Orders and Subsequent Dessert Selection~~ in Children's Meals

In the Phase 1 study, with no financial penalty or incentive associated with the food side choice made for their child, 38% of parents stated they would order apple slices for their child and 62% stated they would order french fries.

A chi-squared test, with a statistically significant difference defined as $P < 0.05$, was performed to evaluate if the side dish item chosen by parents was influenced by the parental demographics. While most demographic subgroups demonstrated no difference in side selection for their child, (including gender ($p=0.248$), education level ($p=0.928$), ethnicity ($p=0.472$), ~~primary grocery shopper~~, household income ($p=0.438$) and number of total children ($p=0.089$)), parents under the age of 35 years were statistically more likely to select apple slices as a side dish for their child than parents over the age of 35 years ($p=0.034$), at $p < 0.05$ (Table 1).

<insert Table 1 here>

Table 1. Side dish selected by parental age.

Respondent Group	Apple Slices	French Fries
Parents 18-34 years old	51%	49%
Parents ≥ 35 years old	27%	73%

Total Respondents 38% 62%

When parents were asked to choose between a small ice cream cone and an organic low fat yogurt (the perceived healthier option) for their child’s dessert a chi-squared test indicated that the parents who chose french fries for the side dish for their child, chose the option of an ice cream cone more often than the low fat yogurt for their ~~were statistically more likely to choose the option of an ice cream cone for their~~ child’s dessert ($p=0.010<0.05$) (Table 2). Similarly, parents who choose apple slices as the side dish, chose ~~were more likely to also choose~~ the perceived healthier option of low fat yogurt as the dessert option more often than ice cream.

<insert Table 2 here >

Table 2. Chosen dessert item selected with apple or french fry side order.

% of Respondents	Chosen Side and Dessert Combinations
42%	French fries and ice cream cone
22%	Apple slices and organic low-fat yogurt
20%	French fries and organic low-fat yogurt
16%	Apple slices and ice cream cone

3.2 Phase 2: Incentive Approach

When asked whether the provision of a discount as an incentive would change the stated intent of what a parent would order for their own child, similar to the baseline-Phase 1 study, parents under the age of 35 were more likely to choose apple slices for their child, with 34% of parents <35 years of age responding that no financial incentive was required. They would already choose apple slices as a side dish for their child, while for parents over the age of 35 years, only 16% would choose apple slices as a side dish for their child with no financial incentive (Figure 1).

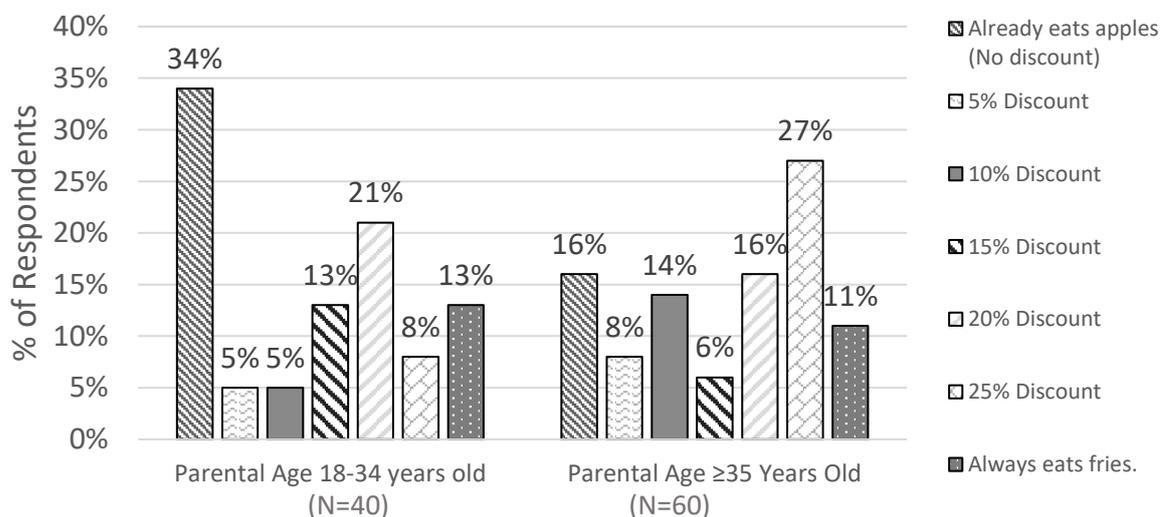


Figure 1. Incentive response to discount for healthier side option by age range, parental age 18-34 years and age ≥35 years.

When the other demographics were examined using a chi squared test and ANOVA, no statistically significant difference was detected when examining respondent subgroups based on gender

($p=0.307$), ethnicity ($p=0.335$), household income ($p=0.779$), education level ($p=0.610$), ~~profession~~, number of children in the household ($p=0.753$) or role as the primary grocery shopper ($p=0.746$).

A 15% discount was required in order to persuade 50% of the population to have apple slices as their stated intended side dish that they would purchase for their own child. Table 3 shows the cumulative percentage of respondents that would choose apple slices over french fries based on the proposed financial discount. For example, a 10% discount on the overall price of the meal would result in 18% of the total respondents indicating that they would have normally chosen french fries as a side dish but would change their side dish choice to apple slices.

<insert Table 3 here >

Table 3. Cumulative percentage of respondents that would choose apple slices over french fries based on the proposed financial discount.

Proposed discount required for respondent to change their order from french fries into apple slices	The % of respondents that would select apple slices at the stated discount level	Cumulative % of respondents that would select apple slices, based on the escalating discount level
0% Discount (Would order apple slices even if no discount was offered)	23%	23%
5% Discount	7%	30%
10% Discount	11%	41%
15% Discount	9%	50%
20% Discount	18%	68%
25% Discount	20%	88%
Respondents would always order french fries	12%	

A discount of $\geq 15\%$ on the overall meal price appears to be the financial incentive that would be required for half of the respondents to choose apple slices as the side dish for their child. On a \$3.99 child's meal, a 15% discount is a saving of \$0.60 (paying \$3.39 instead of \$3.99 for the meal).

3.3 Phase 3: Deterrent Approach

A graduated deterrent scale with 100 respondents showed that at a 5% up-charge (\$0.20), there was already a 15% shift in the number of respondents that would select apple slices as a result of the up-charge (Appendix D – Table S1). Based on these results, another 100 respondents were surveyed using an up-charge of \$0.25, a practical amount to visualize in the context of fries and apple slices. As shown in Table 4, 36% of the respondents would avoid paying the additional \$0.25 up-charge, by choosing apple slices for their child when faced with a deterrent financial menu approach.

<insert Table 4 here>

Table 4. Distribution of responses to the deterrent pricing approach.

Percent	Responses
14%	My child already eats apple slices instead of french fries as a part of their child's meal. The pricing change would not change what I would order.
36%	A \$0.25 up-charge for french fries would change what I order for my child. I would rather order the apple slices for my child than pay the \$0.25 up-charge for french fries.

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2
3 38% A \$0.25 up-charge for french fries **would NOT change** what I order for my child. I would
4 order the french fries for my child and I would pay the \$0.25 up-charge.
5
6 13% I would always order french fries instead of apple slices for my child, regardless of the
7 price.
8
9

10 An analysis of the demographic subgroups demonstrated no statistical differences in subgroup
11 behaviour, including responses from parents based on the two age groups (i.e. ≥ 35 years old and < 35
12 years old).
13

14 4. Discussion and Conclusions

15 In Phase 1 of the study (~~baseline~~), french fries were the preferred side item chosen by parents for
16 their child. Younger parents (< 35 years of age) were more likely to choose apple slices for their child
17 and when given dessert options, parents who choose french fries as the side dish for their child were
18 statistically more likely to choose ice cream as the dessert item. As younger parents were more likely
19 to choose the healthier options for their child, this may be indicative of a difference in parenting
20 styles of millennials. Millennial parents have demonstrated a difference in how concerned they are
21 about other parents judging the food their children eat, more so than older generations (Steinmetz,
22 2015).
23

24 In Phase 2, the results from the financial incentive approach to shifting food choices suggest that a
25 financial discount, rewarding healthier choices (apple slices instead of french fries), does have the
26 potential to shift what parents order for their child. However, in order to reach half of the
27 consumers intending to choose apple slices, a financial reward of at least a 15% discount on the
28 overall meal price was required. While the introduction of a discount shifted 'stated' consumer
29 behaviour, the 15% discount would likely be problematic to restaurants if the discount was applied
30 to current meal prices. According to Statistics Canada (2014), the average limited-service eating
31 place in Canada (comparable to the scenario described to respondents in the study), has less than a
32 6% operating profit margin, and full-service restaurants have an even smaller profit margin at less
33 than 4%. Implementing a financial discount as an incentive without raising the overall menu prices,
34 would likely have such a detrimental impact on a restaurant's profit margin that it would be an
35 unrealistic approach.
36

37 In Phase 3, the deterrent (punitive) pricing approach, while possibly a smaller percentage of the
38 total cost of the child's meal, its introduction had a stronger per dollar influence on the decisions
39 that the parents said that they would make. Regardless of the parent's age, the introduction of a
40 \$0.25 up-charge for the choice of fries had a statistical impact on the side options chosen for the
41 child, with half of the parents reporting that they would have their child eat apple slices rather than
42 pay this premium. The \$0.25 up-charge was the equivalent of a 6% price increase on the proposed
43 \$3.99 child's meal. This approach may be a more financially feasible option for a restaurant-
44 introduced incentive to support healthier food decisions.
45

46 The deterrent pricing approach has similarities to the concept of 'fat taxes' that have been tried in
47 other studies. In a study that examined sugared beverage purchase intentions for pre-school
48 children, Ford *et al.* (2015) examined how a potential deterrent tax on sugar sweetened beverages
49 (as well as high sugar milk and $> 1\%$ fat milk) might influence US consumers' beverage purchase
50 decisions. They concluded that price increases from 10 to 20% might be associated with favourable
51 effects in terms of reducing sugar purchases. Similar results on the potential use of deterrent pricing
52 beyond beverages have been shown in this study. However, further research around the consumer
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3 response and acceptance of this approach would be required before implementing this at the
4 restaurant level.
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7 A limitation to this study is the potential inconsistency between purchase intent and actual
8 behaviour. Examining 'stated' purchase intent only through the use of a questionnaire, and without
9 a consequence of the choice, may not reflect a consumer's real purchase behaviour. This is an
10 inherent limitation of using a communicative approach to collect data. Loureiro and Rahmani (2016)
11 recently examined stated preference and actual choices in fast food choices and the limits in the
12 stated predictions. In their study, which looked at the role that calorie information may have on fast
13 food choices, while posted calories impacted stated intent, in field posted calorie information had a
14 relatively low impact on actual behaviour. Henry and Borzekowski (2015) studied child fast food
15 meal bundling and mothers' positive attitudes to the option of healthier food defaults in bundled
16 meals. A future study should be conducted on pricing approaches in a restaurant setting, where the
17 parents then have the consequences of interacting with their child and the child's response to the
18 food decision made on their behalf.
19
20

21
22 The survey was also limited to a Canadian population and expanding the study to other countries
23 may yield different results, although the reaction to the amount of "fat tax" required to change
24 behaviour appears to be consistent over a number of countries where this implementation was
25 tracked (Muller *et al.*, 2016).
26

27
28 Despite the limitations, this study has produced some findings worthy of further investigation. The
29 study suggests that pricing could be a possible tool to influence the food choices that parents make
30 for their children. Attempts using a financial incentive approach were able to shift food choices
31 away from french fries and into fresh fruit as a side dish, however the monetary incentive required
32 ($\geq 15\%$ discount) would probably not be economically feasible from the perspective of the
33 restaurant. While the deterrent (punitive) pricing approach to discourage less healthy choices may
34 be more financially feasible from the perspective of the restaurant owner, the long term consumer
35 perception and response to deterrent measures associated with choosing less healthy options
36 requires further exploration.
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References

- Anderson, K. and Miroso, M. (2014), "Revealing barriers to healthier fast food consumption choices". *British Food Journal*, Vol. 116, No. 5, pp. 821-831.
- Basch, C. H., Ethan, D. and Rajan, S. (2013), Price, promotion, and availability of nutrition information: A descriptive study of a popular fast food chain in New York City". *Global Journal of Health Science*, Vol. 5, No. 6, pp. 73 -80.
- Bleich, S. N., Wolfson, J. A. and Jarlenski, M. P. (2016), "Calorie changes in large chain restaurants: Declines in new menu items but room for improvement". *American Journal of Preventive Medicine*, Vol. 50, No. 1, e1-e8.
- Bødker, M., Pisinger, C., Toft, U. and Jørgensen, T. (2015), "The Danish fat tax—Effects on consumption patterns and risk of ischaemic heart disease". *Preventive Medicine*, Vol. 77, pp. 200-203.
- Ford, C. N., Ng, S. W. and Popkin, B. M. (2015), "Targeted beverage taxes influence food and beverage purchases among households with preschool children". *The Journal of Nutrition*, Vol. 145, No. 8, pp. 1835-1843.
- Gram, M. and Blichfeldt, B. S. (2014), "When bad food happens to good intentions: Female students' food dilemmas". *Journal of Youth Studies*, Vol. 17, No.8, pp. 982-997.
- Hanks, A., Wansink, B., Just, D., Smith, L., Cawley, J., Kaiser, H., Sobal, J., Wethington, E. and Schulze, W. (2013), "From Coke to Coors: A field study of a fat tax and its unintended consequences". *Journal of Nutrition Education and Behavior*, Vol. 4, No. 45, S40.
- Henry, H. K. and Borzekowski, D. L. (2015), "Well, that's what came with it. A qualitative study of US mothers' perceptions of healthier default options for children's meals at fast-food restaurants". *Appetite*, Vol. 87, pp. 108-115.
- Lassen, A. D., Lehmann, C., Andersen, E. W., Werther, M. N., Thorsen, A. V., Trolle, E., Gross, G., and Tetens, I. (2016), "Gender differences in purchase intentions and reasons for meal selection among fast food customers—Opportunities for healthier and more sustainable fast food". *Food Quality and Preference*, Vol. 47, pp. 123-129.
- Loureiro, M. L. and Rahmani, D. (2016), "The incidence of calorie labeling on fast food choices: A comparison between stated preferences and actual choices". *Economics & Human Biology*, Vol. 22, pp. 82-93.
- Maniadakis, N., Kapaki, V., Damianidi, L. and Kourlaba, G. (2013), "A systematic review of the effectiveness of taxes on nonalcoholic beverages and high-in-fat foods as a means to prevent obesity trends". *ClinicoEconomics and Outcomes Research*, Vol. 5, pp. 519-543.
- McGuffin, L. E., Price, R. K., McCaffrey, T. A., Hall, G., Lobo, A., Wallace, J. M. and Livingstone, M. B. E. (2015), "Parent and child perspectives on family out-of-home eating: a qualitative analysis". *Public Health Nutrition*, Vol. 18, No. 1, pp. 100-111.
- Muller, L., Lacroix, A., Lusk, J. L. and Ruffieux, B. (2016), "Distributional impacts of fat taxes and thin subsidies". *The Economic Journal*, doi: 10.1111/eoj.12357

Mytton, O. T., Clarke, D. and Rayner, M. (2012), "Taxing unhealthy food and drinks to improve health". *BMJ*, Vol. 344, No. 7857, e2931.

Smed, S., Scarborough, P., Rayner, M. and Jensen, J. D. (2016), "The effects of the Danish saturated fat tax on food and nutrient intake and modelled health outcomes: an econometric and comparative risk assessment evaluation". *European Journal of Clinical Nutrition*. doi:10.1038/ejcn.2016.6

Statistics Canada (2014), "Food services and drinking places". available at: <http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/> (accessed 12 August 2016)

Steinmetz, K. (2015), "Help! My parents are millennials". *Time*, Vol. 186 No. 17, pp. 36-43.

Wansink, B., Hanks, A. S. and Just, D. R. (2014), "From Coke to Coors: a field study of a fat tax and its unintended consequences". available at: <http://conscienhealth.org/wp-content/uploads/2014/05/ssrn-id2079840.pdf> (accessed 12 August 2016)

Waterlander, W. E. and Zenk, S. N. (2015), "Food labelling, food retail availability and food pricing—moving from research to action?". *Public Health Nutrition*, Vol. 18, No. 1, pp. 2-7.

Yilmaz, A. and Arslan, Y. (2016), "A study to examine the health interest level of fast food consumers". *International Journal of Social Sciences and Education Research*, Vol. 2, No. 1, pp. 134-141.

Yoong, S. L., Dodds, P., Hure, A., Clinton-Mcharg, T., Skelton, E., Wiggers, J. and Wolfenden, L. (2015), "Healthier options do not reduce total energy of parent intended fast food purchases for their young children: a randomised controlled trial". *Nutrition & Dietetics*. DOI: 10.1111/1747-0080.12204

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4 *Appendix A: Demographic Questions Used In All Research Study Phases*
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- 7 1. Please select your country? (Extensive drop-down list of 253 countries provided)
8 a. Canada (English)
9 b. Country selected other than Canada (English) → survey discontinued.
10
11 2. Are you....?
12 a. Male
13 b. Female
14
15 3. Are you...?
16 a. Less than 18
17 b. 18-34
18 c. 35-54
19 d. 55%
20
21 4. Region:
22 a. Western & Northern Canada
23 b. Ontario
24 c. Quebec
25 d. Atlantic Canada
26
27 5. Origin
28
29 a. North American Aboriginal origins
30 b. Other North American origins
31 c. British Isles origins
32 d. French origins
33 e. Western European origins (except French origins)
34 f. Northern European origins (except British Isles origins)
35 g. Eastern European origins
36 h. Southern European origins
37 i. Other European origins
38 j. Caribbean origins
39 k. Latin, Central and South American origins
40 l. Central and West African origins
41 m. North African origins
42 n. Southern and East African origins
43 o. Other African origins
44 p. West Central Asian and Middle Eastern origins
45 q. South Asian origins
46 r. East and Southeast Asian origins
47 s. Other Asian origins
48 t. Oceania origins
49 u. Not sure/Prefer not to say
50
51 6. What is your education level?
52 a. Elementary school
53 b. Middle school/junior high
54 c. High school
55 d. Some college/university
56 e. Graduated 2-year college
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3 f. Graduated 4-year college/university
4 g. Graduate school
5 h. Postgraduate
6 i. Prefer not to say
7
8 7. What is your annual household income?
9
10 a. Under \$15,000
11 b. \$15,000-\$19,999
12 c. \$20,000-\$24,999
13 d. \$25,000-\$29,999
14 e. \$30,000-\$34,999
15 f. \$35,000-\$39,999
16 g. \$40,000-\$44,999
17 h. \$45,000-\$49,999
18 i. \$50,000-\$54,999
19 j. \$55,000-\$59,999
20 k. \$60,000-\$64,999
21 l. \$65,000-\$69,999
22 m. \$70,000-\$74,999
23 n. \$75,000-\$79,999
24 o. \$80,000-\$84,999
25 p. \$85,000-\$89,999
26 q. \$90,000-\$94,999
27 r. \$95,000-\$99,999
28 s. \$100,000-\$124,999
29 t. \$125,000-\$149,999
30 u. \$125,000-\$149,999
31 v. \$200,000+
32
33 8. Employment
34
35 a. High managerial, administrative or professional
36 b. Intermediate managerial, administrative or professional
37 c. Supervisor; clerical; junior managerial, administrative or professional
38 d. Intellectual profession, Executive, Freelance
39 e. Intermediate profession: Public sector (health, teaching...) companies
40 f. Intermediate Professional Liberal Profession
41 g. Farmer (farm owner)
42 h. Craftman, shop owner, managing director
43 i. Employee, public sector companies
44 j. Skilled manual worker
45 k. Semi-skilled or unskilled manual worker
46 l. Housewife / Homemaker
47 m. Retired
48 n. Student
49 o. Unemployed
50
51 9. Are you the primary grocery shopper for your household?
52
53 a. Yes
54 b. No
55 c. Share responsibility
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10. Number of children under 18 in your household:

- a. 0
- b. 1
- c. 2
- d. 3
- e. 4
- f. 5
- g. 6
- h. 7
- i. 8
- j. 9
- k. 10+

11. Number of people in your household including you:

- a. 1
- b. 2
- c. 3
- d. 4
- e. 5
- f. 6
- g. 7
- h. 8
- i. 9
- j. 10+

British Food Journal

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Appendix B: Baseline-Side Dish and Dessert Research Questions

A large national fast food restaurant is interested in promoting healthy eating in children. Currently, they sell a child's meal for \$3.99. The typical child's meal contains a drink (milk or a small soft drink), an entrée (a cheeseburger, a hamburger or chicken nuggets) and a side (apple slices or french fries). If you took your child to eat a child's meal at this large national fast food restaurant, which side would you most likely choose for your child?

- Apple Slices
- French Fries

The large national fast food restaurant mentioned in the previous question, is planning it expand the child's meal to include a dessert item. If you took your child to eat a child's meal at this national fast food restaurant, which dessert item would you most likely choose for your child?

- Organic Low Fat Yogurt
- Small Ice Cream Cone

Appendix C: Incentive Research Questions

A large national fast food restaurant is interested in promoting healthy eating in children. Currently, they sell a child's meal for \$3.99. The typical child's meal contains a drink (milk or a small soft drink), an entrée (a cheeseburger, a hamburger or chicken nuggets) and a small side of french fries. While the restaurant currently offers apple slices as a substitute for french fries, they want to increase the number of parents that choose apple slices instead of french fries for their children.

If you took your child to eat a child's meal at a fast food restaurant, which of the following options would change the type of side dish that you normally order for your child from french fries to apple slices?

- My child already eats apple slices instead of french fries, as a part of their child's meal.
- A 5% price discount would convince me to change my child's order to apple slices instead of french fries (The child's meal would cost \$3.79, instead of \$3.99, saving you \$0.20)
- A 10% price discount would convince me to change my child's order to apple slices instead of french fries (The child's meal would cost \$3.59, instead of \$3.99, saving you \$0.40)
- A 15% price discount would convince me to change my child's order to apple slices instead of french fries (The child's meal would cost \$3.39, instead of \$3.99, saving you \$0.60)
- A 20% price discount would convince me to change my child's order to apple slices instead of french fries (The child's meal would cost \$3.19, instead of \$3.99, saving you \$0.80)
- A 25% price discount would convince me to change my child's order to apple slices instead of french fries (The child's meal would cost \$2.99, instead of \$3.99, saving you \$1.00)
- I would always order french fries instead of apple slices for my child. No discount in the price of the meal would change my mind.

Appendix D: Deterrents (Deterrent Research Questions and Data)

A large national fast food restaurant is interested in promoting healthy eating in children.

Currently, they sell a child's meal for \$3.99. The typical child's meal contains a drink (milk or a small soft drink), an entrée (a cheeseburger, a hamburger or chicken nuggets) and a small side of french fries.

While the restaurant currently offers apple slices as a substitute for french fries, they want to increase the number of parents that choose apple slices instead of french fries for their children. To encourage parents to choose apple slices instead of french fries for their children, the restaurant is planning to add an up-charge if french fries are chosen as a part of the child's meal.

The new menu pricing will be:

\$3.99 for a child's meal with a drink, an entree and apple slices +an up-charge to substitute french fries instead of apple slices.

If you took your child to eat a child's meal at a fast food restaurant, which of the following options would change the type of side dish that you normally order for your child from French Fries to Apple Slices.

- My child already eats apple slices instead of french fries, as a part of their child's meal.
- A 5% up-charge would convince me to change my child's order to apple slices instead of French Fries (The child's meal would cost \$4.19, instead of \$3.99, charging you an additional \$0.20 for substituting french fries instead of apple slices)
- A 10% up-charge would convince me to change my child's order to apple slices instead of French Fries (The child's meal would cost \$4.39, instead of \$3.99, charging you an additional \$0.40 for substituting french fries instead of apple slices)
- A 15% up-charge would convince me to change my child's order to apple slices instead of French Fries (The child's meal would cost \$4.59, instead of \$3.99, charging you an additional \$0.60 for substituting french fries instead of apple slices)
- A 20% up-charge would convince me to change my child's order to apple slices instead of French Fries (The child's meal would cost \$4.79, instead of \$3.99, charging you an additional \$0.80 for substituting french fries instead of apple slices)
- A 25% up-charge would convince me to change my child's order to apple slices instead of French Fries (The child's meal would cost \$4.99, instead of \$3.99, charging you an additional \$1.00 for substituting french fries instead of apple slices)
- I would always order French fries instead of apple slices for my child, regardless of the price.

Table S1 - Cumulative percentage of respondents that would choose apple slices over french fries based on the proposed financial deterrent.

Proposed-up-charge for french fries required for respondents to change their order to apple slices	Percent of respondents that would select apple slices at the stated deterrent up-charge level for fries	Cumulative % of respondents that would order apple slices, based on the escalating deterrent up-charge level for fries
0% Deterrent (Would order apple slices even if there was no pricing deterrent)	18%	18%
5% Deterrent (\$0.20 up-charge)	15%	33%
10% Deterrent (\$0.40 up-charge)	11%	44%
15% Deterrent (\$0.50 up-charge)	14%	58%
20% Deterrent (\$0.80 up-charge)	16%	74%
25% Deterrent (\$1.00 up-charge)	13%	87%
Respondents would always order french fries	13%	

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Appendix E: Deterrent Question – Price Specific

A large national fast food restaurant is interested in promoting healthy eating in children. Currently, they sell a child's meal for \$3.99. The typical child's meal contains a drink (milk or a small soft drink), an entrée (a cheeseburger, a hamburger or chicken nuggets) and a small side of french fries. While the restaurant currently offers apple slices as a substitute for french fries, they want to increase the number of parents that choose apple slices instead of french fries for their children. To encourage parents to choose apple slices instead of french fries for their children, the restaurant is planning to charge an additional \$0.25 if french fries are chosen as a part of the child's meal. The new menu pricing will be: \$3.99 for a child's meal with a drink, an entree and apple slices +\$0.25 to substitute french fries instead of apple slices.

If you took your child to eat a child's meal at this fast food restaurant, would the \$0.25 up-charge for french fries change what you ordered for your child?

- My child already eats apple slices instead of french fries as a part of their child's meal. The pricing change would not change our order.
- A \$0.25 up-charge for french fries would change what I order for my child. I would rather order the apple slices for my child than pay the \$0.25 up-charge for french fries.
- A \$0.25 up-charge for french fries would NOT change what I order for my child. I would order the french fries for my child and I would pay the \$0.25 up-charge.
- I would always order french fries instead of apple slices for my child, regardless of the price.

Structured Abstract

Purpose - This study investigated the use of pricing (incentive and deterrent) to shift the purchase decision intent of parents when they order food for their child in a fast food restaurant.

Design/methodology/approach- A financial incentive and a deterrent pricing tactic was tested using an online, quantitative approach with a sample of 400 Canadian parents, representative of the Canadian population based on geography, household income, and education level.

Findings- The financial incentive tactic demonstrated that a strong and clearly articulated monetary discount can shift the stated purchase intent of parents into an increased number choosing a healthier side dish for a child's fast food meal. A deterrent pricing approach was shown to also shift stated purchase intent, and had a higher consumer impact on a per dollar basis. Younger parents (<35 years old) were more likely to select healthier side dishes for their child, however, parents of all ages could potentially be influenced through motivational pricing approaches.

Research limitations/implications This was an exploratory study using online surveys and stated purchase intent among Canadian respondents. Examining 'stated' purchase intent only through the use of a questionnaire, and without a consequence of the choice, may not reflect a consumer's real purchase behaviour. A future study should be conducted on pricing approaches in a restaurant setting, where the parents then have the consequences of interacting with the child and the response of the child to the food decision made on their behalf.

Practical implications The use of pricing to shift parental food purchase decisions into ordering healthier food items for their children is a promising option, which with further exploration may lead to easily implementable restaurant-level recommendations that achieve the desired results of children eating healthier.

Social implications As the frequency of fast food consumption continues to rise, encouraging healthier fast food choices for children could help to combat the troubling rise of obesity in young children.

Originality/value: While most historical research has focused on teen or adult consumers, this paper offers insights to academics, marketers and restaurant industry influencers into the previously unexplored area of using pricing to encourage parents to make healthier food choices for children in a fast food restaurant environment.

Keywords Children, Disincentive, Fast-food, Food-choice, Health, Incentive, Parents, Pricing, Restaurant.

Paper Type Research Paper

1. Introduction

Food choice can impact health and with the rapidly rising number of meals eaten at fast food restaurants by children there is concern regarding the effects of less healthy food choices (Anderson and Miroso, 2014). There is a general lack of data on 'how and why' parents make food choices for their children in a fast food restaurant environment, especially in terms of younger children (age < 6) (McGuffin *et al.*, 2015). There are even fewer studies that specifically examine pricing effects as a way of encouraging the selection of healthier fast food choices (Waterlander and Zenk, 2015).

Health-related taxes (e.g. fat and sugar taxes) that raise the price of food have been attempted as a policy instrument in a number of countries in an effort to encourage healthier food choices (Bødker *et al.*, 2016; Smed *et al.*, 2016)). Results to date have provided mixed outcomes. While there is some evidence that they encourage healthier eating, there is also evidence to suggest that the tax must be over 20 % (Mytton *et al.*, 2012) and that there can be unexpected and undesirable consequences of the tax such as increased consumption and unexpected substitution effects, which outweigh the beneficial effects on health outcomes (Bødker *et al.*, 2015; Hanks *et al.*, 2013; Maniadakis *et al.*, 2013; Wansink *et al.*, 2014). In addition, a 'fat tax' may well cost the poor more than the middle class (Muller *et al.*, 2016).

In a recent study of the Danish 'fast food' sector (Lassen *et al.*, 2016), looking at the aspect of adult healthier food choices and gender, results showed that irrespective of gender, the fast food customers indicated that they would like to see healthier menu items, however, only 7 % of those surveyed picked healthier choices for themselves. This has also been observed in other studies (Gram and Blichfeldt, 2014; Yilmaz and Arslan, 2016). This leads to the question of how can fast food restaurants encourage consumers to select healthier choices for themselves and their children, when it may be a "do as I say not what I do" situation.

Price is often mentioned as a barrier in healthy food choices in general and thus, not surprisingly, there is less uptake if the price is higher for the healthier food item (Basch *et al.*, 2013). When fast food restaurants offer healthier options at the same price, there is often a significant difference in the raw material cost for the healthier item and this can affect the restaurant's bottom line. Many fast food restaurants, such as McDonald's, Burger King, and Wendy's, offer healthier options as alternatives that can be substituted in a child's meal package at no price differential to the customer. However, despite this offer of a healthier option, at no additional price, the restaurants have frequently found that the uptake of these healthier choices for the child's meal package is minimal (Bleich *et al.*, 2016).

In another recent study of intended fast food purchases, and one of the first randomized trials incorporating a sub-population of parents with children (Yoong *et al.*, 2015), they found that just the provision of healthy items on a menu as an alternative was not enough to change parent purchasing behaviour as a strategy. They suggested that the price of the healthier item could be a potential reason for lack of selection.

The current pricing effect purchase intention study, using children's bundled fast food meals and healthier option substitutions, has been expanded upon to answer the following question: *Is there a difference in stated intent of what parents choose for their child's meal based on positive financial incentives to choose the healthier option versus a deterrent tax for choosing the unhealthy option?* The healthier food option examined was the substitution of apple slices for french fries in children's meals at a hypothetical large national fast food restaurant in Canada.

2. Methods

2.1 Study Design

The study was based on an online survey using Toluna Analytics, a commercial online survey platform, which provides access to a pool of participants who are representative of the Canadian population based on geography, household income, and education level. The survey was undertaken in three phases. Phase 1 examined stated intent of side dish ordering and dessert orders for children's meals. Phase 2 tested an incentive approach to shifting side dish orders. Phase 3 tested a deterrent approach to shifting side dish orders.

A total of 400 respondents participated in the study. Respondents were not eligible to complete more than one phase of the research. The inclusion criteria included the following: Canadian resident, age 18 or above, equal numbers of males and females, the parent of a child that must currently live in the household. The average age of the respondent was 37.6 years. Households ranged in size from one to six children, with the majority of respondents having one child (53%) or two children (34%). Of the respondents, 68% were the primary grocery shopper for their household, 27% described themselves as sharing the grocery shopping responsibility with someone else, and 5% were not the primary grocery shopper (Appendix A –Demographic Questions).

For phase 1, 100 respondents were provided with a hypothetical scenario in which they were asked to consider that as a parent, if they took their own child to a large national fast-food restaurant and ordered a child's meal for their child, if there was no difference in price, whether they would order french fries or apple slices as the side dish for their child. The order of the side dishes was randomized to account for order bias (Appendix B – Side Dish and Dessert Questions).

To further explore whether selecting a perceived healthier side dish for the child's meal resulted in any subsequent changes in ordering, the parent, after selecting the side dish for their child, was told that the restaurant chain offered a choice of desserts with the child meals. They were asked to choose between a small ice cream cone and an organic low fat yogurt (the perceived healthier option) for their child's dessert. Dessert options were randomized to account for order bias.

For phase 2, to investigate whether the provision of a discount as an incentive would change the stated intent of what a parent would order for their own child, 100 respondents were asked to review a scenario in which they imagined themselves with their own child at a large national fast food restaurant. In the scenario, they were provided with a financial discount if they choose the apple slices over french fries as the side dish in the child's meal and asked if the various financial discounts would shift their purchase decision. The discount options (5, 10, 15, 20, 25%) were described to the respondents both as a percentage of the price of the meal as well as a total dollar amount saved (Appendix C - Incentive Questions).

Example of Wording of One Scenario:

A large national fast food restaurant is interested in promoting healthy eating in children. Currently, they sell a child's meal for \$3.99. The typical child's meal contains a drink (milk or a small soft drink), an entrée (a cheeseburger, a hamburger or chicken nuggets) and a small side of french fries. While the restaurant currently offers apple slices as a substitute for french fries, they want to increase the number of parents that choose apple slices instead of french fries for their children.

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3 *If you took your child to eat a child's meal at a fast food restaurant, which of the following options*
4 *would change the type of side dish that you normally order for your child from french fries to apple*
5 *slices?*

6
7 *A 5% price discount would convince me to change my child's order to apple slices instead of french*
8 *fries (The child's meal would cost \$3.79, instead of \$3.99, saving you \$0.20)*

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10 For phase 3, to investigate the up-charge (disincentive/ punitive) option, as before 100
11 respondents were asked to review the same restaurant scenario but were provided with a number
12 of financial deterrents if they choose french fries over apple slices as the side dish in the child's
13 meal. They were asked if various financial deterrents (5, 10, 15, 20, 25%) would shift their purchase
14 decision. The deterrent options were described as both as a percentage of the price of the meal, as
15 well as a total dollar premium added to the price of the meal (Appendix D - Deterrents).

16
17 Another 100 respondents were given a slightly different question. As french fries are only a small
18 portion of the child's meal, a specific question of an amount easy to visualize was used (i.e. a \$0.25
19 up-charge). The single deterrent question was phrased as "If you took your child to eat a child's
20 meal at this fast food restaurant, would the \$0.25 up-charge for the fries change what you ordered?"
21 (Appendix E - Deterrent - Price Specific).
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27 **2.2 Statistical Analysis**

28 Statistical analysis using chi squared testing and ANOVA (SPSS Statistics, Version 22, IBM) compared
29 the incentive approach to the deterrent approach to determine which pricing approach would have
30 a greater impact on the percentage of parents that choose apple slices over french fries. In addition
31 the parameters of gender, age, educational level and number of children in the household were
32 examined to determine if these particular demographic characteristics had an influence on purchase
33 behaviour.
34

35 **3. Results**

36 **3.1 Phase 1: Sides Dishes and Subsequent Dessert Selection in Children's Meals**

37 In the Phase 1 study, with no financial penalty or incentive associated with the food side choice
38 made for their child, 38% of parents stated they would order apple slices for their child and 62%
39 stated they would order french fries.
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42 A chi-squared test, with a statistically significant difference defined as $P < 0.05$, was performed to
43 evaluate if the side dish item chosen by parents was influenced by the parental demographics. While
44 most demographic subgroups demonstrated no difference in side selection for their child, (including
45 gender ($p=0.248$), education level ($p=0.928$), ethnicity ($p=0.472$), household income ($p=0.438$) and
46 number of total children ($p=0.089$)), parents under the age of 35 years were statistically more likely
47 to select apple slices as a side dish for their child than parents over the age of 35 years ($p=0.034$), at
48 $p < 0.05$ (Table 1).
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51 When parents were asked to choose between a small ice cream cone and an organic low fat yogurt
52 (the perceived healthier option) for their child's dessert a chi-squared test indicated that the parents
53 who chose french fries for the side dish for their child, chose the option of an ice cream cone more
54 often than the low-fat yogurt for their child's dessert ($p=0.010$) (Table 2). Similarly, parents who
55 choose apple slices as the side dish, chose the perceived healthier option of low fat yogurt as the
56 dessert option more often than ice cream.
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3.2 Phase 2: Incentive Approach

When asked whether the provision of a discount as an incentive would change the stated intent of what a parent would order for their own child, similar to the Phase 1 study, parents under the age of 35 were more likely to choose apple slices for their child, with 34% of parents <35 years of age responding that no financial incentive was required. They would already choose apple slices as a side dish for their child, while for parents over the age of 35 years, only 16% would choose apple slices as a side dish for their child with no financial incentive (Figure 1).

When the other demographics were examined using a chi squared test and ANOVA, no statistically significant difference was detected when examining respondent subgroups based on gender ($p=0.307$), ethnicity ($p=0.335$), household income ($p=0.779$), education level ($p=0.610$), number of children in the household ($p=0.753$) or role as the primary grocery shopper ($p=0.746$).

A 15% discount was required in order to persuade 50% of the population to have apple slices as their stated intended side dish that they would purchase for their own child. Table 3 shows the cumulative percentage of respondents that would choose apple slices over french fries based on the proposed financial discount. For example, a 10% discount on the overall price of the meal would result in 18% of the total respondents indicating that they would have normally chosen french fries as a side dish but would change their side dish choice to apple slices.

A discount of $\geq 15\%$ on the overall meal price appears to be the financial incentive that would be required for half of the respondents to choose apple slices as the side dish for their child. On a \$3.99 child's meal, a 15% discount is a saving of \$0.60 (paying \$3.39 instead of \$3.99 for the meal).

3.3 Phase 3: Deterrent Approach

A graduated deterrent scale with 100 respondents showed that at a 5% up-charge (\$0.20), there was already a 15% shift in the number of respondents that would select apple slices as a result of the up-charge (Appendix D – Table S1). Based on these results, another 100 respondents were surveyed using an up-charge of \$0.25, a practical amount to visualize in the context of fries and apple slices. As shown in Table 4, 36% of the respondents would avoid paying the additional \$0.25 up-charge, by choosing apple slices for their child when faced with a deterrent financial menu approach.

An analysis of the demographic subgroups demonstrated no statistical differences in subgroup behaviour, including responses from parents based on the two age groups (i.e. ≥ 35 years old and <35 years old).

4. Discussion and Conclusions

In Phase 1 of the study, french fries were the preferred side item chosen by parents for their child. Younger parents (<35 years of age) were more likely to choose apple slices for their child and when given dessert options, parents who choose french fries as the side dish for their child were statistically more likely to choose ice cream as the dessert item. As younger parents were more likely to choose the healthier options for their child, this may be indicative of a difference in parenting styles of millennials. Millennial parents have demonstrated a difference in how concerned they are about other parents judging the food their children eat, more so than older generations (Steinmetz, 2015).

In Phase 2, the results from the financial incentive approach to shifting food choices suggest that a financial discount, rewarding healthier choices (apple slices instead of french fries), does have the potential to shift what parents order for their child. However, in order to reach half of the

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3 consumers intending to choose apple slices, a financial reward of at least a 15% discount on the
4 overall meal price was required. While the introduction of a discount shifted 'stated' consumer
5 behaviour, the 15% discount would likely be problematic to restaurants if the discount was applied
6 to current meal prices. According to Statistics Canada (2014), the average limited-service eating
7 place in Canada (comparable to the scenario described to respondents in the study), has less than a
8 6% operating profit margin, and full-service restaurants have an even smaller profit margin at less
9 than 4%. Implementing a financial discount as an incentive without raising the overall menu prices,
10 would likely have such a detrimental impact on a restaurant's profit margin that it would be an
11 unrealistic approach.
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14 In Phase 3, the deterrent (punitive) pricing approach, while possibly a smaller percentage of the
15 total cost of the child's meal, its introduction had a stronger per dollar influence on the decisions
16 that the parents said that they would make. Regardless of the parent's age, the introduction of a
17 \$0.25 up-charge for the choice of fries had a statistical impact on the side options chosen for the
18 child, with half of the parents reporting that they would have their child eat apple slices rather than
19 pay this premium. The \$0.25 up-charge was the equivalent of a 6% price increase on the proposed
20 \$3.99 child's meal. This approach may be a more financially feasible option for a restaurant-
21 introduced incentive to support healthier food decisions.
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24 The deterrent pricing approach has similarities to the concept of 'fat taxes' that have been tried in
25 other studies. In a study that examined sugared beverage purchase intentions for pre-school
26 children, Ford *et al.* (2015) examined how a potential deterrent tax on sugar sweetened beverages
27 (as well as high sugar milk and > 1 % fat milk) might influence US consumers' beverage purchase
28 decisions. They concluded that price increases from 10 to 20 % might be associated with favourable
29 effects in terms of reducing sugar purchases. Similar results on the potential use of deterrent pricing
30 beyond beverages have been shown in this study. However, further research around the consumer
31 response and acceptance of this approach would be required before implementing this at the
32 restaurant level.
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35 A limitation to this study is the potential inconsistency between purchase intent and actual
36 behaviour. Examining 'stated' purchase intent only through the use of a questionnaire, and without
37 a consequence of the choice, may not reflect a consumer's real purchase behaviour. This is an
38 inherent limitation of using a communicative approach to collect data. Loureiro and Rahmani (2016)
39 recently examined stated preference and actual choices in fast food choices and the limits in the
40 stated predictions. In their study, which looked at the role that calorie information may have on fast
41 food choices, while posted calories impacted stated intent, in field posted calorie information had a
42 relatively low impact on actual behaviour. Henry and Borzekowski (2015) studied child fast food
43 meal bundling and mothers' positive attitudes to the option of healthier food defaults in bundled
44 meals. A future study should be conducted on pricing approaches in a restaurant setting, where the
45 parents then have the consequences of interacting with their child and the child's response to the
46 food decision made on their behalf.
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49 The survey was also limited to a Canadian population and expanding the study to other countries
50 may yield different results, although the reaction to the amount of "fat tax" required to change
51 behaviour appears to be consistent over a number of countries where this implementation was
52 tracked (Muller *et al.*, 2016).
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55 Despite the limitations, this study has produced some findings worthy of further investigation. The
56 study suggests that pricing could be a possible tool to influence the food choices that parents make
57 for their children. Attempts using a financial incentive approach were able to shift food choices
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3 away from french fries and into fresh fruit as a side dish, however the monetary incentive required
4 ($\geq 15\%$ discount) would probably not be economically feasible from the perspective of the
5 restaurant. While the deterrent (punitive) pricing approach to discourage less healthy choices may
6 be more financially feasible from the perspective of the restaurant owner, the long term consumer
7 perception and response to deterrent measures associated with choosing less healthy options
8 requires further exploration.
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References

- Anderson, K. and Miroso, M. (2014), "Revealing barriers to healthier fast food consumption choices". *British Food Journal*, Vol. 116, No. 5, pp. 821-831.
- Basch, C. H., Ethan, D. and Rajan, S. (2013), Price, promotion, and availability of nutrition information: A descriptive study of a popular fast food chain in New York City". *Global Journal of Health Science*, Vol. 5, No. 6, pp. 73 -80.
- Bleich, S. N., Wolfson, J. A. and Jarlenski, M. P. (2016), "Calorie changes in large chain restaurants: Declines in new menu items but room for improvement". *American Journal of Preventive Medicine*, Vol. 50, No. 1, e1-e8.
- Bødker, M., Pisinger, C., Toft, U. and Jørgensen, T. (2015), "The Danish fat tax—Effects on consumption patterns and risk of ischaemic heart disease". *Preventive Medicine*, Vol. 77, pp. 200-203.
- Ford, C. N., Ng, S. W. and Popkin, B. M. (2015), "Targeted beverage taxes influence food and beverage purchases among households with preschool children". *The Journal of Nutrition*, Vol. 145, No. 8, pp. 1835-1843.
- Gram, M. and Blichfeldt, B. S. (2014), "When bad food happens to good intentions: Female students' food dilemmas". *Journal of Youth Studies*, Vol. 17, No.8, pp. 982-997.
- Hanks, A., Wansink, B., Just, D., Smith, L., Cawley, J., Kaiser, H., Sobal, J., Wethington, E. and Schulze, W. (2013), "From Coke to Coors: A field study of a fat tax and its unintended consequences". *Journal of Nutrition Education and Behavior*, Vol. 4, No. 45, S40.
- Henry, H. K. and Borzekowski, D. L. (2015), "Well, that's what came with it. A qualitative study of US mothers' perceptions of healthier default options for children's meals at fast-food restaurants". *Appetite*, Vol. 87, pp. 108-115.
- Lassen, A. D., Lehmann, C., Andersen, E. W., Werther, M. N., Thorsen, A. V., Trolle, E., Gross, G., and Tetens, I. (2016), "Gender differences in purchase intentions and reasons for meal selection among fast food customers—Opportunities for healthier and more sustainable fast food". *Food Quality and Preference*, Vol. 47, pp. 123-129.
- Loureiro, M. L. and Rahmani, D. (2016), "The incidence of calorie labeling on fast food choices: A comparison between stated preferences and actual choices". *Economics & Human Biology*, Vol. 22, pp. 82-93.
- Maniadakis, N., Kapaki, V., Damianidi, L. and Kourlaba, G. (2013), "A systematic review of the effectiveness of taxes on nonalcoholic beverages and high-in-fat foods as a means to prevent obesity trends". *ClinicoEconomics and Outcomes Research*, Vol. 5, pp. 519-543.
- McGuffin, L. E., Price, R. K., McCaffrey, T. A., Hall, G., Lobo, A., Wallace, J. M. and Livingstone, M. B. E. (2015), "Parent and child perspectives on family out-of-home eating: a qualitative analysis". *Public Health Nutrition*, Vol. 18, No. 1, pp. 100-111.
- Muller, L., Lacroix, A., Lusk, J. L. and Ruffieux, B. (2016), "Distributional impacts of fat taxes and thin subsidies". *The Economic Journal*, doi: 10.1111/eoj.12357

1
2
3 Mytton, O. T., Clarke, D. and Rayner, M. (2012), "Taxing unhealthy food and drinks to improve
4 health". *BMJ*, Vol. 344, No. 7857, e2931.

5
6 Smed, S., Scarborough, P., Rayner, M. and Jensen, J. D. (2016), "The effects of the Danish
7 saturated fat tax on food and nutrient intake and modelled health outcomes: an econometric
8 and comparative risk assessment evaluation". *European Journal of Clinical Nutrition*.
9 doi:10.1038/ejcn.2016.6

10
11 Statistics Canada (2014), "Food services and drinking places". available at:
12 <http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/> (accessed 12 August 2016)

13
14 Steinmetz, K. (2015), "Help! My parents are millennials". *Time*, Vol. 186 No. 17, pp. 36-43.

15
16 Wansink, B., Hanks, A. S. and Just, D. R. (2014), "From Coke to Coors: a field study of a fat tax
17 and its unintended consequences". available at: [http://conscienhealth.org/wp-](http://conscienhealth.org/wp-content/uploads/2014/05/ssrn-id2079840.pdf)
18 [content/uploads/2014/05/ssrn-id2079840.pdf](http://conscienhealth.org/wp-content/uploads/2014/05/ssrn-id2079840.pdf) (accessed 12 August 2016)

19
20 Waterlander, W. E. and Zenk, S. N. (2015), "Food labelling, food retail availability and food
21 pricing—moving from research to action?". *Public Health Nutrition*, Vol. 18, No. 1, pp. 2-7.

22
23 Yilmaz, A. and Arslan, Y. (2016), "A study to examine the health interest level of fast food
24 consumers". *International Journal of Social Sciences and Education Research*, Vol. 2, No. 1, pp.
25 134-141.

26
27
28 Yoong, S. L., Dodds, P., Hure, A., Clinton-Mcharg, T., Skelton, E., Wiggers, J. and Wolfenden, L.
29 (2015), "Healthier options do not reduce total energy of parent intended fast food purchases for
30 their young children: a randomised controlled trial". *Nutrition & Dietetics*. DOI: 10.1111/1747-
31 0080.12204
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Appendix

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3 *Appendix A: Demographic Questions Used In All Research Study Phases*
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- 6 1. Please select your country? (Extensive drop-down list of 253 countries provided)
7 a. Canada (English)
8 b. Country selected other than Canada (English) → survey discontinued.
9
10 2. Are you....?
11 a. Male
12 b. Female
13
14 3. Are you...?
15 a. Less than 18
16 b. 18-34
17 c. 35-54
18 d. 55%
19
20 4. Region:
21 a. Western & Northern Canada
22 b. Ontario
23 c. Quebec
24 d. Atlantic Canada
25
26 5. Origin
27 a. North American Aboriginal origins
28 b. Other North American origins
29 c. British Isles origins
30 d. French origins
31 e. Western European origins (except French origins)
32 f. Northern European origins (except British Isles origins)
33 g. Eastern European origins
34 h. Southern European origins
35 i. Other European origins
36 j. Caribbean origins
37 k. Latin, Central and South American origins
38 l. Central and West African origins
39 m. North African origins
40 n. Southern and East African origins
41 o. Other African origins
42 p. West Central Asian and Middle Eastern origins
43 q. South Asian origins
44 r. East and Southeast Asian origins
45 s. Other Asian origins
46 t. Oceania origins
47 u. Not sure/Prefer not to say
48
49 6. What is your education level?
50 a. Elementary school
51 b. Middle school/junior high
52 c. High school
53 d. Some college/university
54 e. Graduated 2-year college
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3 f. Graduated 4-year college/university
4 g. Graduate school
5 h. Postgraduate
6 i. Prefer not to say
7
8 7. What is your annual household income?
9 a. Under \$15,000
10 b. \$15,000-\$19,999
11 c. \$20,000-\$24,999
12 d. \$25,000-\$29,999
13 e. \$30,000-\$34,999
14 f. \$35,000-\$39,999
15 g. \$40,000-\$44,999
16 h. \$45,000-\$49,999
17 i. \$50,000-\$54,999
18 j. \$55,000-\$59,999
19 k. \$60,000-\$64,999
20 l. \$65,000-\$69,999
21 m. \$70,000-\$74,999
22 n. \$75,000-\$79,999
23 o. \$80,000-\$84,999
24 p. \$85,000-\$89,999
25 q. \$90,000-\$94,999
26 r. \$95,000-\$99,999
27 s. \$100,000-\$124,999
28 t. \$125,000-\$149,999
29 u. \$125,000-\$149,999
30 v. \$200,000+
31
32 8. Employment
33 a. High managerial, administrative or professional
34 b. Intermediate managerial, administrative or professional
35 c. Supervisor; clerical; junior managerial, administrative or professional
36 d. Intellectual profession, Executive, Freelance
37 e. Intermediate profession: Public sector (health, teaching...) companies
38 f. Intermediate Professional Liberal Profession
39 g. Farmer (farm owner)
40 h. Craftman, shop owner, managing director
41 i. Employee, public sector companies
42 j. Skilled manual worker
43 k. Semi-skilled or unskilled manual worker
44 l. Housewife / Homemaker
45 m. Retired
46 n. Student
47 o. Unemployed
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49 9. Are you the primary grocery shopper for your household?
50 a. Yes
51 b. No
52 c. Share responsibility
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3 10. Number of children under 18 in your household:

- 4 a. 0
5 b. 1
6 c. 2
7 d. 3
8 e. 4
9 f. 5
10 g. 6
11 h. 7
12 i. 8
13 j. 9
14 k. 10+

15
16
17 11. Number of people in your household including you:

- 18 a. 1
19 b. 2
20 c. 3
21 d. 4
22 e. 5
23 f. 6
24 g. 7
25 h. 8
26 i. 9
27 j. 10+
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3 *Appendix B: Side Dish and Dessert Research Questions*
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6 A large national fast food restaurant is interested in promoting healthy eating in children. Currently, they sell
7 a child's meal for \$3.99. The typical child's meal contains a drink (milk or a small soft drink), an entrée (a
8 cheeseburger, a hamburger or chicken nuggets) and a side (apple slices or french fries). If you took your child
9 to eat a child's meal at this large national fast food restaurant, which side would you most likely choose for
10 your child?
11

- 12 Apple Slices
13 French Fries
14

15
16 The large national fast food restaurant mentioned in the previous question, is planning it expand the child's
17 meal to include a dessert item. If you took your child to eat a child's meal at this national fast food restaurant,
18 which dessert item would you most likely choose for your child?
19

- 20 Organic Low Fat Yogurt
21 Small Ice Cream Cone
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Appendix C: Incentive Research Questions

A large national fast food restaurant is interested in promoting healthy eating in children. Currently, they sell a child's meal for \$3.99. The typical child's meal contains a drink (milk or a small soft drink), an entrée (a cheeseburger, a hamburger or chicken nuggets) and a small side of french fries. While the restaurant currently offers apple slices as a substitute for french fries, they want to increase the number of parents that choose apple slices instead of french fries for their children.

If you took your child to eat a child's meal at a fast food restaurant, which of the following options would change the type of side dish that you normally order for your child from french fries to apple slices?

- My child already eats apple slices instead of french fries, as a part of their child's meal.
- A 5% price discount would convince me to change my child's order to apple slices instead of french fries (The child's meal would cost \$3.79, instead of \$3.99, saving you \$0.20)
- A 10% price discount would convince me to change my child's order to apple slices instead of french fries (The child's meal would cost \$3.59, instead of \$3.99, saving you \$0.40)
- A 15% price discount would convince me to change my child's order to apple slices instead of french fries (The child's meal would cost \$3.39, instead of \$3.99, saving you \$0.60)
- A 20% price discount would convince me to change my child's order to apple slices instead of french fries (The child's meal would cost \$3.19, instead of \$3.99, saving you \$0.80)
- A 25% price discount would convince me to change my child's order to apple slices instead of french fries (The child's meal would cost \$2.99, instead of \$3.99, saving you \$1.00)
- I would always order french fries instead of apple slices for my child. No discount in the price of the meal would change my mind.

Appendix D: Deterrents (Deterrent Research Questions and Data)

A large national fast food restaurant is interested in promoting healthy eating in children.

Currently, they sell a child's meal for \$3.99. The typical child's meal contains a drink (milk or a small soft drink), an entrée (a cheeseburger, a hamburger or chicken nuggets) and a small side of french fries.

While the restaurant currently offers apple slices as a substitute for french fries, they want to increase the number of parents that choose apple slices instead of french fries for their children. To encourage parents to choose apple slices instead of french fries for their children, the restaurant is planning to add an up-charge if french fries are chosen as a part of the child's meal.

The new menu pricing will be:

\$3.99 for a child's meal with a drink, an entree and apple slices +an up-charge to substitute french fries instead of apple slices.

If you took your child to eat a child's meal at a fast food restaurant, which of the following options would change the type of side dish that you normally order for your child from French Fries to Apple Slices.

- My child already eats apple slices instead of french fries, as a part of their child's meal.
- A 5% up-charge would convince me to change my child's order to apple slices instead of French Fries (The child's meal would cost \$4.19, instead of \$3.99, charging you an additional \$0.20 for substituting french fries instead of apple slices)
- A 10% up-charge would convince me to change my child's order to apple slices instead of French Fries (The child's meal would cost \$4.39, instead of \$3.99, charging you an additional \$0.40 for substituting french fries instead of apple slices)
- A 15% up-charge would convince me to change my child's order to apple slices instead of French Fries (The child's meal would cost \$4.59, instead of \$3.99, charging you an additional \$0.60 for substituting french fries instead of apple slices)
- A 20% up-charge would convince me to change my child's order to apple slices instead of French Fries (The child's meal would cost \$4.79, instead of \$3.99, charging you an additional \$0.80 for substituting french fries instead of apple slices)
- A 25% up-charge would convince me to change my child's order to apple slices instead of French Fries (The child's meal would cost \$4.99, instead of \$3.99, charging you an additional \$1.00 for substituting french fries instead of apple slices)
- I would always order French fries instead of apple slices for my child, regardless of the price.

Table S1 - Cumulative percentage of respondents that would choose apple slices over french fries based on the proposed financial deterrent.

Proposed-up-charge for french fries required for respondents to change their order to apple slices	Percent of respondents that would select apple slices at the stated deterrent up-charge level for fries	Cumulative % of respondents that would order apple slices, based on the escalating deterrent up-charge level for fries
0% Deterrent (Would order apple slices even if there was no pricing deterrent)	18%	18%
5% Deterrent (\$0.20 up-charge)	15%	33%
10% Deterrent (\$0.40 up-charge)	11%	44%
15% Deterrent (\$0.50 up-charge)	14%	58%
20% Deterrent (\$0.80 up-charge)	16%	74%
25% Deterrent (\$1.00 up-charge)	13%	87%
Respondents would always order french fries	13%	

Appendix E: Deterrent Question – Price Specific

A large national fast food restaurant is interested in promoting healthy eating in children. Currently, they sell a child's meal for \$3.99. The typical child's meal contains a drink (milk or a small soft drink), an entrée (a cheeseburger, a hamburger or chicken nuggets) and a small side of french fries. While the restaurant currently offers apple slices as a substitute for french fries, they want to increase the number of parents that choose apple slices instead of french fries for their children. To encourage parents to choose apple slices instead of french fries for their children, the restaurant is planning to charge an additional \$0.25 if french fries are chosen as a part of the child's meal. The new menu pricing will be: \$3.99 for a child's meal with a drink, an entree and apple slices +\$0.25 to substitute french fries instead of apple slices.

If you took your child to eat a child's meal at this fast food restaurant, would the \$0.25 up-charge for french fries change what you ordered for your child?

- My child already eats apple slices instead of french fries as a part of their child's meal. The pricing change would not change our order.
- A \$0.25 up-charge for french fries would change what I order for my child. I would rather order the apple slices for my child than pay the \$0.25 up-charge for french fries.
- A \$0.25 up-charge for french fries would NOT change what I order for my child. I would order the french fries for my child and I would pay the \$0.25 up-charge.
- I would always order french fries instead of apple slices for my child, regardless of the price.

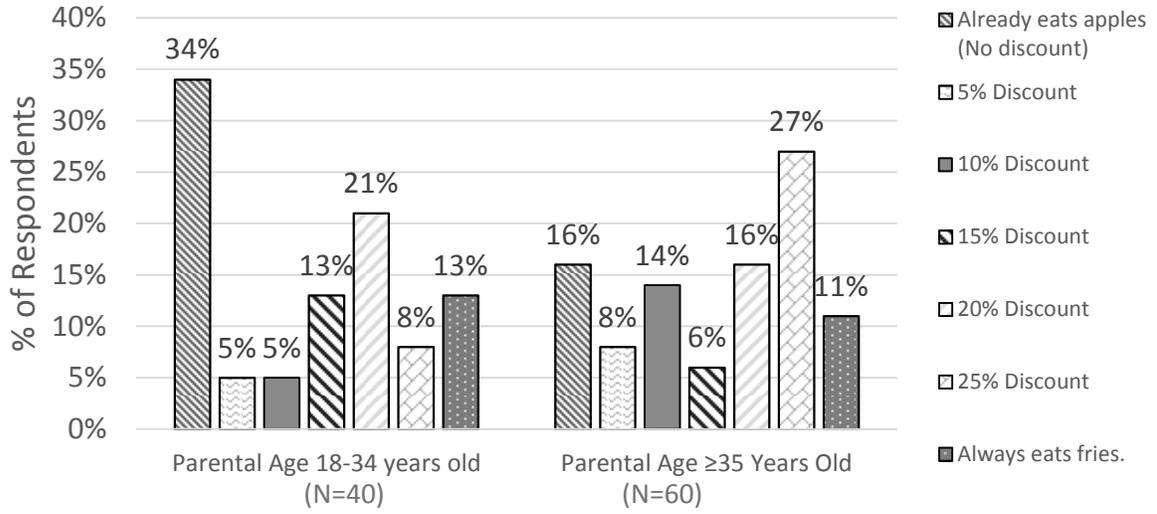


Figure 1. Incentive response to discount for healthier side option by age range, parental age 18-34 years and age ≥35 years.

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Table 1. Side dish selected by parental age.

Respondent Group	Apple Slices	French Fries
Parents 18-34 years old	51%	49%
Parents ≥35 years old	27%	73%
Total Respondents	38%	62%

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Table 2. Chosen dessert item selected with apple or french fry side order.

% of Respondents	Chosen Side and Dessert Combinations
42%	French fries and ice cream cone
22%	Apple slices and organic low-fat yogurt
20%	French fries and organic low-fat yogurt
16%	Apple slices and ice cream cone

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Table 3. Cumulative percentage of respondents that would choose apple slices over french fries based on the proposed financial discount.

Proposed discount required for respondent to change their order from french fries into apple slices	The % of respondents that would select apple slices at the stated discount level	Cumulative % of respondents that would select apple slices, based on the escalating discount level
0% Discount (Would order apple slices even if no discount was offered)	23%	23%
5% Discount	7%	30%
10% Discount	11%	41%
15% Discount	9%	50%
20% Discount	18%	68%
25% Discount	20%	88%
Respondents would always order french fries	12%	

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Table 4. Distribution of responses to the deterrent pricing approach.

Percent	Responses
14%	My child already eats apple slices instead of french fries as a part of their child's meal. The pricing change would not change what I would order.
36%	A \$0.25 up-charge for french fries would change what I order for my child. I would rather order the apple slices for my child than pay the \$0.25 up-charge for french fries.
38%	A \$0.25 up-charge for french fries would NOT change what I order for my child. I would order the french fries for my child and I would pay the \$0.25 up-charge.
13%	I would always order french fries instead of apple slices for my child, regardless of the price.

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