



# What parenting practices do US and Canadian parents use to encourage or discourage healthy eating among their 5–12 year-old children?

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## ABSTRACT

This study explored the parenting practices that parents of 5–12 year-old children report using to encourage or discourage children's healthy eating and examined sex differences in parent's responses. A stratified sample of 135 parents in the US and Canada completed a semi-qualitative online survey (Jan-Feb 2014) (stratified by parents' sex, income, and ethnicity of each country). Parents provided short answers to questions regarding the strategies they or other parents used to encourage or discourage their children's healthy eating (5–12 year-old). The 2389 parent responses were coded by two coders with discrepancies triangulated. Data was qualitatively reviewed and log-linear analysis assessed whether responses varied by types of encouragement (encourage, discourage), sex of parent (male, female), and six dimensions of parenting practices (autonomy promotion, structure of the food environment, behavioral and educational, control, responsiveness, and consistency of the food environment). Parenting practices that were controlling or promoted structure were predominantly mentioned as a way to regulate children's eating behavior. Strategies that support children's self-regulatory processes, such as autonomy promotion and responsiveness, were infrequently mentioned. Sex differences in parenting practices emerged. Mothers mentioned autonomy promoting practices more often than fathers did. Fathers mentioned controlling practices more often than mothers did as a practice that discouraged healthy eating among children. The findings highlighted that parents need to gain a greater understanding of the practices that nurture healthy eating in children, such as autonomy supportive and responsive parenting practices, to better support children as they grow.

## 1. Introduction

General parenting styles and food-specific parenting practices (i.e. behaviors and strategies employed by parents to influence their children's eating behaviors and dietary intake) (Hughes et al., 2013; Yee et al., 2017) have been linked with healthier diets and weight-related outcomes in children (Sleddens et al., 2011), yet it is unclear what food-related parenting practices or combinations of practices are most important for influencing the dietary habits of children. Evidence from observational and experimental studies suggest that controlling practices such as restricting certain foods and beverages, highly directive practices including pressuring children to eat, and less structured meal

environments such as infrequent family meals lead to poor self-regulatory eating behaviors (Savage et al., 2007; Attorp et al., 2014; Leech et al., 2014; Sisson et al., 2014; Woodruff et al., 2010; Rollins et al., 2014; Baranowski et al., 2013; O'Connor et al., 2017; Edlefsen et al., 2008; Haines et al., 2018; Ventura and Birch, 2008; Willis, 2005). For example, findings from longitudinal studies show that parents that restrict food intake have children who are more likely to eat in the absence of hunger and to gain weight; (Fisher and Birch, 2002; Davison and Birch, 2001; Patrick and Nicklas, 2005; Savage et al., 2007; Larson et al., 2007; Attorp et al., 2014; Leech et al., 2014; Sisson et al., 2014; Woodruff et al., 2010; Rollins et al., 2014) while parents who encourage regular family meals have children with healthier diets (Leech et al.,

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2014; Woodruff et al., 2010). In general, correlations have been small and dependent on the outcomes examined. There are also concerns that current measures used to assess parenting practices are poorly understood by parents and/or measures are not capturing the full range of practices currently used by parents as few studies have involved parents in the development of these measures (Baranowski et al., 2013; O'Connor et al., 2017). These challenges have made it difficult for researchers and practitioners to identify what practices to target in interventions.

To date, few studies have examined the strategies used to encourage intake of healthy foods. One exception is a study that found high calcium food intake was associated with modeling of intake, making high-calcium food available, and giving age-appropriate encouragement (Edlefsen et al., 2008). Asking parents about the strategies they use to encourage or discourage healthy eating may help determine if current measures are adequately capturing the range of practices currently employed by parents. In addition, this can help determine how parents view certain parenting practices whether the ones they see as encouraging healthy eating aligns with food parenting practice recommendations, which aim to nurture healthy development instead of getting the child to eat a particular diet (Haines et al., 2018). In addition, the context in which food-related parenting practices occur may also be important to capture. Ventura and Birch (Ventura and Birch, 2008) noted in their review of the parenting literature that food-related parenting practices can differ across children within the same family depending on child age, gender, eating behavior, and weight status. Exploring the parenting strategies used to encourage or discourage healthy eating by a diverse group of parents will provide more insights as to how parents interact with their child to influence their dietary behaviors and provide insights to development better measurement tools and interventions.

To address the current gaps in the literature, this study explored what US and Canadian parents of 5-12-year-old children report to encourage or discourage healthy eating behaviors and compared whether responses differed by mothers and fathers. It was expected that hearing from parents directly would help elucidate the mechanisms by which parenting practices may impact children's dietary intakes. This study will help to advance the measurement of parenting practices so that we can better understand and intervene upon parenting practices aimed at improving the eating behaviors, dietary intake, and health of children.

## 2. Methods

Semi-qualitative data (from January –February 2014) among 135 parents of 5 to 12-year-old children in the US and Canada ascertained the strategies parents used to encourage healthy eating or discourage less healthful food choices. The data was primarily collected as part of a study aimed at developing an item bank that measures food parenting practices and this study conducted a secondary data analyses of this data to address the aims of the paper. This research protocol was approved by the Research Ethics Board at the University of British Columbia (H12-00246) and the Institutional Review Board at Baylor College of Medicine (H-30901).

### 2.1. Participants

Participants were recruited from an international research polling firm (YouGovPolimetric, US) using their web-based panel members. Eligibility included being a parent or primary guardian of a 5 to 12-year-old child, fluent in English, and being a resident of the US or Canada. In addition, parents were excluded if their child had any health conditions that severely limited the type of food their child was able to consume or if their child had a learning disability. Panel members were selected to ensure representation of parents with younger (5 to 8-year-old) versus older (9 to 12-year-old) children, low versus high income earners, and to

reflect the largest ethnic groups in these two countries (White, Hispanic, Black, and other in the US and White, East/Southeast Asian, South/West Asian, and other in Canada) based on the 2012 US and 2011 Canadian census data. In addition, the sampling scheme ensured representation of both mothers and fathers in the sample. Parents received a nominal incentive to participate in this study – 2000 points within the YouGovPolimetric system, valued at about \$5 USD/Cdn.

### 2.2. Semi-qualitative data collection

To assess the strategies parents used to influence their children's eating behaviors, parents completed a 15-minute online survey. To ensure enough representation of parents by characteristics of the child and parents, parents were asked to respond to the online survey with one child in mind. Following eligibility assessment, parents responded to two questions aimed at assessing strategies that encourage their child to eat healthy: 1) What sorts of things do you do to encourage your child to eat healthy? 2) What rules or guidelines do you have that may encourage your child to eat healthy? Two questions probed for strategies that may discourage their child to eat healthy: 1) What sorts of things might you do that may unintentionally affect your child from eating healthy? 2) Thinking about other parents with children the same age as your child, what things do they do that may discourage their children from eating healthy? We asked parents to report on their behaviours and behaviours of other parents as a way to address social desirability while trying to ascertain their belief system –their perceptions of what parenting behaviors may encourage or discourage a child to eat healthy. The questions were initially cognitively tested using the think aloud protocol (Willis, 2005) among 25 Canadian parents. Initial testing served to ensure the questions were understood by the parents and that they elicited appropriate responses. For each question, the parents could provide up to 10 answers that were 160 characters long. Parents who provided short answers (<50 characters) were prompted to further elaborate on their answers. Given the open-ended nature of the questions, parents were blocked from completing the survey on mobile devices and were asked to use a computer to complete the survey.

### 2.3. Coding the semi-structured interviews

Parent responses to the open ended questions were qualitatively coded using the coding scheme our team developed to code 1392 items from 79 published measures of food parenting practices (described elsewhere (O'Connor et al., 2017). Briefly, using a rigorous systematic winnowing process, our coding scheme included 231 unique food parenting practice concepts that mapped onto 19 sub-dimensions of food parenting practice codes (for details see (O'Connor et al., 2017). The coding scheme was conceptually informed by current conceptual frameworks of nutrition parenting practices (Vaughn et al., 2016). For this study, the 19-sub-dimensions were further collapsed into seven broad dimensions; however, the emotional regulation broad dimension was excluded from this paper as it was never mentioned in the context of these questions. The six broad dimensions included 1 to 7 sub-dimensions for a total of 14 sub-dimensions.

The broad dimensions (sub-dimensions in parenthesis) were: 1) autonomy promotion (autonomy support, child self-regulation, child engagement); 2) structure of the food environment (food accessibility/availability); 3) behavioral and educational (modeling and teaching/reasoning); 4) control (permissiveness, covert control, parental control, pressure to eat, restriction, rewards/discipline, expressing negative emotions/reactions); 5) responsiveness (expressing positive emotions/reactions, encouragement); and 6) consistency of feeding environment (feeding/meal environment, monitoring).

Parent responses (N = 2389) were uploaded in REDCap and each response or separate parenting practices was coded using the coding scheme outlined above. The parent responses of the first five participants were independently and iteratively coded by two research

members (AWW & TP) who were involved in the development of the original coding scheme. Parent responses were iteratively reviewed with two members of the research team (LCM & TMO) who discussed the coding with the research staff and discussed any discrepancies in the coding. Once the protocol for coding the parent responses was established, the two research members (AWW & TP) independently coded the parent responses but their coding was reviewed by the other research member. Two members of the research team (LCM & TMO) also reviewed all the coding from the staff to ensure consistency. Any discrepancies identified were discussed among all four members involved in the coding process until consensus was reached. Parent responses were coded and discussed in batches and at the end of the coding process two members of the research team (AWW & TP) reviewed the entire coding to ensure consistency in the coding (further details (O'Connor et al., 2017)).

#### 2.4. Analysis

Descriptive statistics were used to summarize whether the responses to the encouraging and discouraging questions addressed specific dimensions of parenting practices. In addition, we conducted log-linear analyses to test associations among the categorical variables. The log-linear analysis determined whether the responses to the encouraging and discouraging questions emphasized different dimensions of parenting practices. The log-linear analysis included types of encouragement (encourage, discourage), sex of parent (male, female), and dimensions of parenting practices (6 broad dimensions – autonomy promotion, structure of the food environment, behavioral and educational, control, responsiveness, and consistency of the feeding environment). Parental responses to the encourage and discourage questions were not significantly different by socio-demographic characteristics of the child (age or sex) and parent (income, ethnicity, or country) – hence why these characteristics were not accounted for in the log-linear analyses [Data not shown].

The log-linear analyses were used to test for mutual, joint, and conditional independences as well as homogenous associations among the parent responses using the iterative proportional fitting (IPF) command in STATA (version 13.1). Essentially, these analyses tested whether all or some of the main effects were significant (mutual independence model), some two-way interactions were significant (joint or conditional independence models), all two-way interactions were significant (homogenous associations model), or whether a three-way interaction explained the model (fully saturated model). Model fit was examined with the  $G^2$  Likelihood Ratio statistics with statistical significance set at an  $\alpha < 0.05$ . In all cases, we aimed to explain the results with the most parsimonious model - meaning finding the simplest model where the residuals were no longer significant ( $p > .05$ ).

### 3. Results

In total, 135 parents of 5 to 12 year children participated in this study and the characteristics of the parents are shown in Table 1.

#### 3.1. Overview of encouraging parenting practices mentioned by parents

As shown in Table 2, controlling parental practices were most often mentioned by parents as strategies that promote healthy eating (43.8%) and included (in order of importance): 1) restricting or limiting the type of food and beverages consumed by their child; 2) parental control approaches, such as making sure their child eats specific food items every day or deciding when and what their child eats or drinks; and 3) rewarding or disciplinary strategies, including providing treats and bribing their child (see Table 3 for quotes). After controlling strategies, structure of the food environment (20.3%) and behavioral and teaching practices (15.4%) were the strategies that were most emphasized by parents as a way to promote healthy eating (Table 2). With regards to

**Table 1**  
Demographics of US and Canadian parents from data collected in January – February 2014.

	US N = 74	Canada N = 61
Sex of Parent	n (%)	n (%)
• Male	30 (40.54%)	23 (37.70%)
• Female	44 (59.46%)	38 (62.30%)
Income at or below median of country		
• Low	38 (54.29%)	35 (57.38%)
• High	32 (45.71%)	26 (42.62%)
Age group		
• 5–8 years	34 (45.95%)	32 (52.46%)
• 9–12 years	40 (54.05%)	29 (47.54%)
Marital Status		
• Married	53 (71.62%)	42 (68.85%)
• Widowed	1 (1.35%)	0 (0.00%)
• Divorced	10 (13.51%)	3 (4.92%)
• Separated	2 (2.70%)	5 (8.20%)
• Never Married	6 (8.11%)	3 (4.92%)
• Living common-law	2 (2.70%)	8 (13.11%)
Number of children in household		
• 1	20 (27.03%)	26 (42.62%)
• 2	31 (41.89%)	23 (37.70%)
• 3	14 (18.92%)	8 (13.11%)
• 4	4 (5.41%)	4 (6.56%)
• 5	5 (6.76%)	0 (0.00%)
Ethnicity -US		
• White	34 (47.22%)	
• Black	12 (16.67%)	
• Hispanic/Latino	13 (18.06%)	
• Other/Asian	13 (18.06%)	
Ethnicity – Canada		
• White		30 (49.18%)
• East/Southeast Asian		12 (19.67%)
• South Asian/West Asian		13 (21.31%)
• Other		6 (9.84%)

structure of the food environment, parents highlighted availability/accessibility and exposure to a variety of foods to promote healthy eating. For behavioral and teaching practices, parents reported emphasizing to their child the importance of healthy eating or the impact unhealthy eating could have on their child's health or body (see Table 3). Finally, autonomy promotion (10.1%) and responsiveness (6.2%) were mentioned the least by parents as strategies they used to encourage their child to eat healthy (see Tables 2 and 3).

#### 3.2. Overview of discouraging parenting practices mentioned by parents

The structure of the food environment (38.7%) was mentioned most often by parents as what they or others do to discourage healthy eating in children (Tables 2 and 3). Specifically, parents reported that availability/accessibility of unhealthy food or beverages at home contributed to unhealthy snacking at home and resulted in the inclusion of these items into children's school lunches. Controlling practices was the second most common dimension mentioned (26.3%), where lack of control was perceived to contribute to unhealthy eating (Tables 2 and 3). Finally, the third dimension parents emphasized was consistency of the feeding environment (17.7%) and how taking their child to fast food places or purchasing meals from such establishments discouraged healthy eating (Tables 2 and 3).

#### 3.3. Dimensions of parenting practices emphasized by sex of parents and types of encouragement

Results from the Log-Linear analyses examined whether parental responses differed with respect to sex of parent, broad dimension of parenting practices, and types of encouragement (encourage / discourage). Findings are summarized in Table 4. The mutual independence model (model including only the main effects for sex of parent,

**Table 2**

Parental perspective of practices that encourage or discourage healthy eating among 5 to 12 year-old Canadian and US children (data collected from January-February 2014).

		Food parenting practices that encourage healthy eating			Food parenting practices that discourage healthy eating		
		All N = 1014	Fathers N = 348	Mothers N = 666	All N = 486	Fathers N = 157	Mothers N = 329
Autonomy promotion	% 10.1	% 6.6	% 11.9	% 4.5	% 4.5	% 4.6	
	Autonomy support	5.9	3.5	7.2	2.5	3.8	1.8
	Child self-regulation	1.2	1.1	1.2	1.9	0.6	2.4
	Child engagement	3.0	2.0	3.5	0.2	0	0.3
Structure of food environment	20.3	19.8	20.6	38.7	28.7	43.5	
	Food accessibility/availability	13.9	13.8	14.0	20.2	14.0	23.1
	Food preparation	6.4	6.0	6.6	18.5	14.7	20.4
Behavioral and educational	15.4	17.5	14.3	11.7	11.5	11.9	
	Modeling	3.0	2.3	3.3	9.1	10.2	8.5
	Teach/reason	12.4	15.2	11.0	2.7	1.3	3.3
Control	43.8	44.3	43.5	26.3	35.0	22.2	
	Child control-permissiveness	2.6	3.4	2.3	16.0	22.3	13.1
	Covert control	0.8	1.2	0.6	0.2	0.6	0
	Parental control	10.7	9.8	11.1	3.5	1.9	4.3
	Pressure to eat	2.7	4.6	1.7	1.0	0.6	1.2
	Restriction	17.0	13.5	18.8	3.3	3.2	3.3
	Rewards/discipline	10.0	11.8	9.0	1.4	4.5	0
	Expressing negative emotions/reactions	0	0	0	0.8	1.9	0.3
Responsiveness	6.2	6.9	5.9	1.0	0	1.5	
	Expressing positive emotions/reactions	0.7	0.6	0.8	0.2	0	0.3
	Encouragement	5.5	6.3	5.1	0.8	0	1.2
Consistency of feeding environment	4.2	4.9	3.9	17.7	20.4	16.4	
	Feeding/meal environment	4.1	4.9	3.8	16.1	19.1	14.6
	Monitoring	0.1	0	0.2	1.7	1.3	1.8

dimension of parenting practices, and types of encouragement), all joint and conditional independence models (models that included one two-way interaction or included up to two two-way interactions, respectively), and the homogeneous model (model that includes all three two-way interactions) were all significant ( $p < .05$ ) (Table 4). This suggests that a three-way interaction significantly explained the responses provided by the parents. The data provided in Table 2 highlights these differences.

Differences between mothers and fathers emerged but differences were larger when parents mentioned discouraging practices versus when they mentioned encouraging practices. Discrepancies between mothers and fathers were at most 5.3% for encouraging strategies (i.e., autonomy promotion) and as high as 14.8% for discouraging strategies (structure of the food environment) (Table 2). For encouraging practices, mothers mentioned autonomy supportive practice more often than fathers as a way to promote healthy eating (11.9% vs 6.6% respectively). For discouraging practices, mothers mentioned the structure of the food environment more often than fathers (43.5% vs 28.7%, respectively). The opposite was observed for controlling practices, as fathers perceived controlling practices more so than mothers as a strategy that discouraged healthy eating (35.0% vs 22.2%, respectively).

Finally, the dimensions were emphasized differently depending on whether the parents responded to strategies that encouraged or discouraged healthy eating. Parents mentioned the following dimensions more often in the context of encouraging healthy eating than discouraging healthy eating: autonomy promotion (10.1% vs 4.5%, respectively), control (43.8% vs 26.3%, respectively), and responsiveness (6.2% vs 1.0%, respectively). In contrast, parents mentioned these dimensions more often in the context of discouraging healthy eating than encouraging healthy eating: structure of the food environment (38.7% vs 20.3%, respectively) and consistency of the feeding environment (17.7% vs 4.2%).

#### 4. Discussion

This study queried mothers and fathers about the strategies they perceived as encouraging and discouraging healthy eating in children. Controlling parenting practices and those that promote greater structure were predominantly mentioned as ways to regulate children's eating behaviors. Controlling practices were mentioned more often in the context of encouraging healthy eating whereas structuring the food environment was discussed more often in the context of promoting unhealthy eating, in the context of making less healthy options available and accessible in the home. Strategies that support children's self-regulatory processes, such as autonomy promotion and responsive strategies, were infrequently mentioned. Parental sex differences in parenting practices by mothers and fathers emerged. Mothers mentioned autonomy promoting practices as a way to support healthy eating more often than fathers. Fathers mentioned that controlling practices discouraged healthy eating more often than mothers. This is one of the few studies that aim to gain insights about the parenting practices that parents use to regulate their children's eating behaviors at home and compares practices of mothers and fathers. The findings highlight the importance of understanding what parents do to promote healthy eating and to use this information in the development of health interventions. Specifically, the findings stress the need to educate parents on the impact of various parenting practices to help children adopt healthy eating strategies as they grow and ensure parents use more autonomy supportive and responsive parenting practices as these strategies align with current recommendations (Haines et al., 2018).

In this study, both controlling parenting practices and those that promote structure were emphasized in the context of regulating children's eating behaviors. Parents mentioned using control practices as a way to encourage healthy eating more often than they did in the context of discouraging healthy eating. This may be of concern since controlling practices have been associated with poor self-regulatory eating behaviors in children (Yee et al., 2017; Haines et al., 2018). Controlling

**Table 3**

List of parenting strategies mothers (M) and fathers (F) identified as encouraging or discouraging 5–12 yr. Canadian and US children to eat healthy by the six broad dimensions of parenting practices (data collected from January–February 2014).

Practices	Strategies	Quotes
<b>Autonomy promotion</b>		
Encouraging	<ul style="list-style-type: none"> <li>Let child choose the “food type” that s/he wants to eat from what is offered at meals or snacks</li> </ul>	“We have him make his own lunch so he can choose the food groups and know what is good and what is junk” F, 5–8 yr. child
<ul style="list-style-type: none"> <li>Autonomy support</li> </ul>	<ul style="list-style-type: none"> <li>Offer healthy alternative when child asks for junk food</li> </ul>	“Popcorn instead of chips”, F, 9–12 yr. child
<b>Structure of food environment</b>		
Encouraging	<ul style="list-style-type: none"> <li>Avoiding having “unhealthy food” available at home</li> </ul>	“I very rarely buy junk food or sweets at the grocery (just don’t keep it in the house)” F, 9–12 yr. child
<ul style="list-style-type: none"> <li>Food accessibility / availability</li> </ul>	<ul style="list-style-type: none"> <li>Include healthy “food type” in child’s lunches, snacks or meals</li> <li>Making sure to have healthy foods in the house</li> <li>Exposing child to a variety of food, fruits, and vegetables</li> </ul>	“Provide health choices at all meals”, F, 5–8 yr. child “Stock the house with healthy foods” M, 5–8 yr. child “I make him try different fruit or vegetables and all kind of good food” M, 5–8 yr. child
Discouraging	<ul style="list-style-type: none"> <li>Having “unhealthy food” or beverages available at home</li> </ul>	“Having too many sweets around - we all like them, so it’s hard to keep them out of the house”, F, 5–8 yr. child
<ul style="list-style-type: none"> <li>Food accessibility / availability</li> </ul>	<ul style="list-style-type: none"> <li>Including unhealthy “food type” in child’s lunches, snacks or meals</li> </ul>	“Prepare unhealthy lunches for school (we know one 7th grader who has had ‘Lunchables’ every day since elementary school”, F, 9–12 yr. child
Discouraging	<ul style="list-style-type: none"> <li>Using pre-packaged, convenience food for meals (e.g., frozen dinners, microwave meals)</li> </ul>	“working late and having to pre-heat frozen meals rather than cooking with fresh ingredients”, F, 9–12 yr. child 191,419,508
<ul style="list-style-type: none"> <li>Food preparation</li> </ul>	<ul style="list-style-type: none"> <li>Not preparing snacks, meals, or lunches from scratch</li> </ul>	“Always being on the go and not actually making your own food”, F, 5–8 yr. child
<b>Behavioral and educational</b>		
Encouraging	<ul style="list-style-type: none"> <li>Explaining the importance of healthy eating</li> </ul>	“We explain why certain foods are healthier than others” M, 5–8 yr. child
<ul style="list-style-type: none"> <li>Teach / reason</li> </ul>	<ul style="list-style-type: none"> <li>Telling child that eating certain food will make him/her big, strong, healthy, smart, and/or attractive</li> <li>Telling child that certain food or beverages are not good for him/her</li> <li>Telling child that certain food are good for him/her</li> </ul>	“Tell her that if she wants to live a long & healthy life she needs to eat her fruits & veggies”, F, 9–12 yr. child “Talk about which foods aren’t healthy & why”, F, 5–8 yr. child “I let her know the benefits of eating healthy and tell her how good certain foods are for her” F, 5–8 yr. child
Discouraging	<ul style="list-style-type: none"> <li>Eating or drinking unhealthy food or beverages in front of child</li> </ul>	“Eat junk food in front of them”, M, 5–8 yr. child
<ul style="list-style-type: none"> <li>Modeling</li> </ul>		
<b>Control</b>		

**Table 3 (continued)**

Practices	Strategies	Quotes
Encouraging	<ul style="list-style-type: none"> <li>Limiting consumption of certain food or beverages</li> <li>Not allowing child to eat or drink certain food items or beverages</li> <li>Allowing certain food items only on special occasions</li> </ul>	“I limit junk food and candies” M, 5–8 yr. child “I do not let her drink soda at all - only fruit juices and milk” M, 5–8 yr. child “no drinking pop unless it is a special treat at a party” M, 9–12 yr. child
<ul style="list-style-type: none"> <li>Restriction</li> </ul>	<ul style="list-style-type: none"> <li>Making sure child eats or drinks a specific food item or beverage every day</li> <li>Deciding when the child eats</li> </ul>	“Eat two veggies per meal” F, 9–12 yr. child “You can have 1 snack between meals in the afternoon, such as a cookie, an apple or banana” M, 5–8 yr. child “Eat cereal and fruits for breakfast” F, 5–8 yr. child “No dessert unless she eats a full supper” M, 5–8 yr. child
Encouraging	<ul style="list-style-type: none"> <li>Rewards and disciplines</li> </ul>	“I will make a deal with her for example, if she eats her vegetables then she can have a snack later” M 5–8 yr. child   “Bribe them. I say things like, if you want to play video games you have to eat the healthy stuff too” M, 9–12 yr. child
Discouraging	<ul style="list-style-type: none"> <li>Permissiveness</li> </ul>	“Letting the kids dictate what they eat and not the parents”, F, 5–8 yr. child “Allow them to grab snacks without asking parents permission”, F, 9–12 yr. child
<ul style="list-style-type: none"> <li>Permissiveness</li> </ul>	<ul style="list-style-type: none"> <li>Letting child eat whatever s/he wants for meals, breakfast, lunch, dinner, and/or snacks</li> <li>Letting child eat unhealthy food (snack food, sweet or salty treats, sweets, candy, chips) or consume soft drinks whenever they want</li> </ul>	
<b>Responsiveness</b>		
Encouraging	<ul style="list-style-type: none"> <li>Encouragement</li> </ul>	“Encouraging to take a healthy snack at school”, F, 5–8 yr. child
<ul style="list-style-type: none"> <li>Encouragement</li> </ul>	<ul style="list-style-type: none"> <li>Encourage child to eat or drink specific food or beverages without forcing</li> </ul>	
<b>Consistency of feeding environment</b>		
Encouraging	<ul style="list-style-type: none"> <li>Feeding / meal environment</li> </ul>	“Don’t take the children to fast food restaurants if I can help it”, F, 9–12 yr. child
<ul style="list-style-type: none"> <li>Feeding / meal environment</li> </ul>	<ul style="list-style-type: none"> <li>Avoid taking child out at fast food places or avoid purchasing take-out meals</li> </ul>	
Discouraging	<ul style="list-style-type: none"> <li>Feeding / meal environment</li> </ul>	“Letting them eat at fast food places all the time”, F, 9–12 yr. child “...on the go a lot and too tired to fix dinner so I will stop and get them fast food on the way home”, F, 9–12 yr. child
<ul style="list-style-type: none"> <li>Feeding / meal environment</li> </ul>	<ul style="list-style-type: none"> <li>Taking child out to fast food places or purchasing take-out meals</li> </ul>	

practices may lead children to consume more healthy foods (e.g., fruits and vegetables) when they are with their parents, this approach has been shown to decrease children’s enjoyment and commitment to consume fruits and vegetables, especially when not with their parent (Loth et al., 2016). In contrast parenting practices that promote structure of the eating environment, which were also emphasized, have been shown to influence children dietary behaviors. Specifically, availability and accessibility of foods have been associated with increased consumption of both healthy and unhealthy foods (Yee et al., 2017). While parents emphasized the importance of structuring the child’s food environment (e.g., availability and access to healthy and unhealthy

**Table 4**

Goodness-of-fit results for the Log-Linear models explaining parental responses with sex of parent (Sex), broad dimensions of parenting practices (Parenting), and types of encouragement (Encouragement) (Data collected in January – February 2014).

Model <sup>a</sup>		G <sup>2</sup>	df	p-value
Mutual independence	Sex + Parenting + Encouragement	200.0	16	0.000
Joint independence	Sex × Parenting + Encouragement	186.4	11	0.000
	Sex × Encouragement + Parenting	199.5	15	0.000
	Encouragement × Parenting + Sex	27.4	11	0.004
Conditional Independence	Sex × Parenting + Encouragement × Parenting	13.8	6	0.032
	Sex × Encouragement + Parenting × Encouragement	26.8	10	0.003
	Parenting × Sex + Gender × Encouragement	185.8	10	0.000
Homogenous association	Sex × Parenting + Encouragement × Parenting + Encouragement × Sex	13.4	5	0.020
	Sex × Parenting × Encouragement	0	0	–

+ denotes that a term was added in a model; x denotes an interaction between variables were included in the model and that all main effects associated with that interaction was added to the model or lower interactions were included in the model

<sup>a</sup> Model tested whether all the main effects were significant (mutual independence model), whether some two-way interactions were significant (joint independence model included only 1 two interaction and the conditional independence included two), whether all two-way interactions were significant (homogenous associations model), or whether a three-way interaction explained the model (fully saturated model). When  $p > .05$ , it indicates that the model explain the parental responses.

food), it is likely combined with controlling parenting practices as controlling practices were frequently mentioned and autonomy promoting practices were rarely mentioned. It is well established that controlling approaches are not nurturing of healthy eating in children; (Yee et al., 2017; Haines et al., 2018) therefore, this finding highlights the need to educate and support parents in using more autonomy supportive and responsive parenting practices. Autonomy promoting (e.g. Guided choices) or responsive (e.g. praise for selecting fruit for snack) are considered important for fostering self-regulatory processes in children (Haines et al., 2018; Girelli et al., 2016). Developmentally, as children mature, it becomes easier to reason with them. As a result, when assessing parents of 5 to 12-year old children, we would expect parents to emphasize more autonomy promotion and responsive parenting practices. However, this was not observed in this study. From an intervention stand point, parents may need to understand the importance of using these parenting practices and gain the skills in using autonomy promotion and responsive practices given the evidence that these approaches help support the development of healthy eating habits in children (Haines et al., 2018; Girelli et al., 2016).

For some parenting practices, sex differences between mothers and fathers emerged. This may be expected as mothers remain the parent who is primarily involved in food purchasing and preparation, although fathers' involvement has increased over time (Berge et al., 2016). Therefore, it may not be surprising that mothers emphasized more than fathers, that the structure of the food environment has a discouraging effect on healthy eating. However, surprisingly mothers mentioned less often than fathers how controlling parenting practices may have a negative effect on their child's dietary behaviors. While some may expect mothers to be more attune than fathers as to what encourages or discourages their child to eat a healthful diet, it may not always be true given the sex differences found in this study.

The findings of this study must be interpreted in light of some limitations. First, the parents were recruited from a web-based marketing firm and as volunteers, the parents may not be representative of the US

and Canadian population of parents. In addition, the sample included predominantly married or common-law parents and findings may generalize more to this group of parents. To increase the generalizability of the findings, this study used a quota sampling approach to match the distribution of each country by income and ethnicity. Second, as parent responses were collected by age group of the child, it may explain why parenting practices did not differ by age of the child. It is likely that differences in parenting practices by age group did not emerge because there is a lot of developmental variability and overlap within each age group (5–8 and 9–12). Third, this study did not collect child data and as such the responses provided by parents represent their perceptions as to how their practices influence their child's dietary intake. Fourth, it is possible that the questions we used elicited more responses about certain parenting practices and as such should be accounted for in the interpretation of the results. Fifth, as parents were asked to discuss the strategies they used with one child in the family, this study did not examine whether parents used different strategies with different children and whether they perceived certain strategies to encourage or discourage healthy eating based on the characteristics of the child.

## 5. Conclusion

This study provided insights about the parenting practices that US and Canadian parents of 5–12 year-old perceived as encouraging or discouraging their children's healthy eating. While some of the strategies parents mentioned as encouraging healthy eating may be effective in getting their child to eat more vegetables in the moment, not all of these practices support the development of healthy eating habits nor do they support children's self-regulatory skills. Gaining a greater understanding of which parenting practices parents use to achieve specific dietary outcomes is important to develop interventions that better target parental beliefs and attitudes, support parents in creating a nurturing home environment for healthy eating, and ensure parents use more autonomy supportive and responsive practices to support children's healthy eating. Differences in the practices emphasized by mothers and fathers highlights the need for tailoring intervention messages about the utility of various parenting practices by the sex of the parents.

## 6. Declarations

**Availability of data and materials:** Please contact corresponding author for data requests.

**Ethics Approval:** The protocol was approved by the Institutional Review Boards at the University of British Columbia and Baylor College of Medicine.

**Consent for Publication:** Not applicable.

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**Authors' Contributions:** LCM, TMO, SOH designed the study. LCM oversaw the data collection. TMO, LCM, AWT, AW were involved in the coding of responses. AWT performed the statistical analyses. LCM drafted the manuscript. All authors provided input to the manuscript and approved the final draft.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence

the work reported in this paper.

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.pmedr.2020.101234>.

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