

Complex Cheese Pairings

*Assessing kid-friendly pairings for
grilled cheese sandwiches*



Group Project:

*Robert Stork
Sandy McCulloch
Alex Couch
Ted Thaler*

**Course: Complex Cheese Pairings
Course code: HOSF 9347
Instructor: Julia Rogers
June 19, 2011**

Theme

Find nutritional, affordable, and “kid-friendly” cheese pairings that can be:

- served in a grilled cheese sandwich;
- used to help broaden a child’s exposure to different cheeses; and
- used to get parents comfortable with the idea of pairing different cheeses with other dishes (e.g., using shredded Pecorino in a salad instead of factory-powdered parmesan).

What is a grilled cheese sandwich?

According to Wikipedia, a cheese sandwich is “a basic sandwich made generally with one or more slices of any kind of cheese on any sort of bread.” The sandwich itself can be uncooked or it can be heated such that the bread is toasted and/or the cheese is melted. The cooked version of the sandwich is typically referred to as a “grilled cheese sandwich”, but also goes by the name grilled cheese, toasted cheese, and cheese toastie.

The methods of heating the cheese sandwich can vary depending on the region, the preference of the cook, and the availability of different cooking appliances. For example, the sandwich can be grilled, griddled, pan fried, broiled, heated in a toaster oven, or heated in a sandwich toaster. Modern-day microwavable versions of the grilled cheese sandwich can be found in the frozen food section of the grocery store.

When it comes to grilled cheese sandwiches, virtually any style of bread will do. And, like other sandwiches, the grilled cheese can be adorned with one or more secondary ingredients. Common additions include: ham, bacon, tomatoes, and pickles. Condiments – such as ketchup, mustard, and mayonnaise – are also popular companions for grilled cheese sandwiches.

Various methods can be used to prepare a grilled cheese. For example, you can:

- coat each slice of bread (the side facing out) with butter, oil or mayonnaise – or not,
- coat the cooking surface with oil or butter,
- cook the sandwich on one side and then flip it to cook the other side, or
- cook both sides of the sandwich separately and then combine them together.

Tasting goals

We had four primary goals for our tasting exercise:

1. Determine if kids are open to trying different grilled cheese sandwiches.
2. Have kids taste different grilled cheese sandwiches with different cheese/condiment combinations and provide feedback about which ones worked or didn't work...and why.
3. Give kids an opportunity to identify the primary tastes (sweet, salty, sour, bitter) in the different pairings and determine if they work together.
4. Assess whether a cheese-pairing tasting is a fun activity for kids.
5. Assess the willingness of parents to try different cheeses and condiments in grilled cheese sandwiches.

It tastes good, but is it healthy?

Kids love 'em. Adults eat 'em. But do grilled cheese sandwiches constitute a healthy, balanced meal? It all depends on what you use to make them.

If you are simply slapping three slices of process cheese (i.e., Kraft slices) on two slices of buttered white bread, you're probably looking at close to 422 calories, 14 grams of saturated fat, and 25 grams of total fat.¹ That's more calories and fat than a Wendy's Junior Burger (240 calories, 6 grams of saturated fat, 13 grams of total fat)²... and with the burger, you at least get the nutritional benefits of the tomato and pickle.

That said, by using a quality cheese, some whole grain bread, and a nutritional pairing ingredient (such as sliced apple), you can bump up the nutritional value of the grilled cheese sandwich by a notch or two.

¹ www.caloriecount.about.com; Nutrition Facts for white Wonder bread, salted butter, and Kraft sliced American cheese.

² www.caloriecount.about.com; Nutrition Facts for Wendy's Junior Cheeseburger.

Historical context

According to food historians, cooked bread and cheese is an ancient food combination.³ People across cultures and continents have, over the centuries, enjoyed bread with cheese, meat, and various other foods. The ancient Jewish sage Hillel the Elder, for example, is said to have placed meat and bitter herbs between two pieces of unleavened bread during Passover.⁴

During the Middle Ages, thick slabs of coarse – and usually stale – bread, called "trenchers", were used as plates. When the meal was over, the food-soaked trencher was often eaten by the diner – making the trencher an early prototype for today's open-face sandwich.⁵

The sandwich is said to have taken its name from John Montague, 4th Earl of Sandwich. Legend has it that the Earl was an enthusiastic gambler who would get his valet to make him a meal he could enjoy without interrupting his gambling. His fellow gamblers caught on to the idea and followed suit by ordering "the same as Sandwich."⁶

The sandwich gained popularity in 19th century Spain and England "when the rise of an industrial society and the working classes made fast, portable, and inexpensive meals essential."⁷

Kids and cheese

Kids and cheese have a history together. According to The Cheese Book, "the Greeks were so fond of cheese that they rewarded their children with it as we give ours candy – and 'little cheese' was a special term of endearment."⁸

³ http://en.wikipedia.org/wiki/Cheese_sandwich

⁴ <http://en.wikipedia.org/wiki/Sandwich>

⁵ <http://en.wikipedia.org/wiki/Sandwich>

⁶ <http://en.wikipedia.org/wiki/Sandwich>

⁷ <http://en.wikipedia.org/wiki/Sandwich>

⁸ Vivienne Marquis and Patricia Haskell, *The Cheese Book*, Simon and Shuster 1964 (p. 19)

Contemporary context

The “inventor” of the modern-day grilled cheese sandwich is not known.

The Croque Monsieur (a ham and gruyere grilled sandwich – with or without a coating of Mornay or béchamel sauce) first appeared menus of Paris cafés around 1910.⁹

The grilled Reuben (rye, Swiss cheese, sauerkraut and Russian dressing) is said to have been created in 1914 for Charlie Chaplain’s leading lady, Annette Seelos.¹⁰ However, according to the website foodtimeline.org, the grilled cheese sandwich gained popularity during the 1920s when the availability of inexpensive sliced bread and American cheese made it an affordable mealtime option.¹¹

During the Great Depression of the 1930s, an open-faced version of the grilled cheese sandwich (knick-named the Cheese Dream) was regular fare at the Sunday dinner table. And during World War II, it was used to provide U.S. sailors with affordable and nutritious meals.¹² During the years following the war, the grilled cheese sandwich continued to enjoy popularity – still open-faced, but often made with pre-packaged grated cheese and served with tomato soup on the side (to create a nutritionally balanced meal). During the 1960s, the grilled cheese sandwich gained a second slice of bread – to become a closed-face sandwich.¹³

*According to both Woman's Day
and the Los Angeles Times, April
is "Grilled Cheese Sandwich
Month."*

Today, the cheese toastie is still a popular choice for kids and adults alike. There are entire cookbooks devoted to the sandwich (*Great Grilled Cheese; Grilled Cheese, Please!; and Grilled Cheese: 50 Recipes to Make You Melt*). And, you can find a ready-made version of the sandwich in the frozen food section of your local grocery store (Smucker’s Uncrustables Grilled Cheese Sandwiches). A number of restaurants, some of them chains, now focus their entire menu around the sandwich (The Melt, Chedd’s Gourmet Grilled Cheese, The Grilled Cheese, Grilled Cheese & Co.).

In short, the grilled cheese sandwich has become an ingrained part of the North American culture and cuisine.

Breaking the rules

According to the rules of nutritional science, the closed-face sandwich should not have occurred because it breaks a fundamental rule of gastronomy.¹⁴

A single slice of bread with melted cheese (or anything else) on it teases the senses. You can see the cheese... and you can smell it. Slap a second piece of bread on top of it, and those sensory cues largely disappear. You have to guess what’s inside the sandwich.

⁹ <http://frenchfood.about.com/od/toprecipes/a/croquelist.htm>

¹⁰ <http://whatscookingamerica.net/History/Sandwiches/ReubenSandwich.htm>

¹¹ <http://www.foodtimeline.org/foodsandwiches.html#grilledcheese>

¹² Rocky Mountain News, Old Faithful Grilled Cheese, A depression-era standby, has returned. Published on January 3, 1999. Marty Meitus, News Food Editor.

¹³ <http://www.foodtimeline.org/foodsandwiches.html#grilledcheese>

¹⁴ *The Origin of Food Habits*, H.D. Renner [Faber and Faber:London] 1944 (p. 223-4)

However, it seems that the practicalities of convenience trump the rules of gastronomy. The fact that the closed-faced sandwich is easier to carry in your lunch bag, hold in your hand, and eat without getting cheese all over you, means that it has prevailed over its open-faced kin.

From a kid's perspective, however, the element of surprise offered by a closed-faced sandwich may actually be a draw. Kids tend to like surprises, especially if they have reason to believe it's a happy one. It's a notion that hasn't escaped notice by the food industry – hence “goodies” such as Kinder Surprises and Buried Treasure Ice Cream.

With a grilled cheese sandwich, there is also the “tease effect” – were the melted cheese oozes out the sides providing a visual and aromatic hint of the gastronomic pleasures ahead.

Tasting methodology

In our taste testing, three cheeses were paired with three condiments for a total of nine sandwich variations.

	Cheese type 1	Cheese type 2	Cheese type 3
Condiment 1	Sandwich variation 1	Sandwich variation 4	Sandwich variation 7
Condiment 2	Sandwich variation 2	Sandwich variation 5	Sandwich variation 8
Condiment 3	Sandwich variation 3	Sandwich variation 6	Sandwich variation 9

To the extent possible, all other variables (ingredients and sandwich preparation) were held constant for all nine variations.

To rate the sandwiches, “taste tests” were held with two separate groups of children. The first group (Group 1) had five children ranging in age from nine to 16. The second group (Group 2) had six children – all them around 10 years of age. In the case of the second group:

- the tasting was an activity at the birthday party of a 10-year-old child;
- all six tasters had a history of eating grilled cheese sandwiches made with cheddar cheese (one had also eaten grilled cheese with Burrata and Kaseri cheese); and
- all six typically dipped their grilled cheese sandwich in either ketchup or French’s mustard.

The adult perspective

Because making and eating grilled cheese sandwiches can be a family activity, we also asked six parents to participate in the taste testing. This allowed us to gauge the willingness of parents to try different cheeses and condiments in their sandwiches. Most of the adults who participated in the taste testing had, historically, not ventured beyond the traditional grilled cheese and the regular condiments – or even considered exploring other alternatives.

Keeping it consistent

To enhance the validity of the results, steps were taken to ensure both the preparation process and ingredients (other than the cheese and pairing item) were consistent for all nine sandwich variations.

Only four ingredients were used in each sandwich:

1. Whole wheat bread (the same style and brand)
2. Unsalted butter
3. Cheese
4. A condiment

The three cheeses were:

1. Emmenthal
2. São Jorge
3. Pecorino Crotonese

The three condiments used were:

1. Salsa
2. Pesto

3. Blueberry spread

To make the sandwiches, we:

- Allowed the butter to soften to room temperature.
- Used two slices of bread for each sandwich (closed-faced sandwiches).
- Buttered one side of each slice (the side facing out) with 1 tsp. of butter.
- Placed one 30 g serving of cheese and a serving of condiment in each sandwich (for Group 1, the cheeses were sliced; for Group 2, the cheeses were grated)
- Grilled the sandwich in a pan over medium heat until golden brown.

The nine sandwich variations were made just prior to each testing session, placed on a large pan and kept warm in the oven until the actual taste test. They were pulled from the oven and served in a pre-determined order.

The sandwiches were tasted in the following order:

	Group 1	Group 2
1	Emmental and Salsa	Emmental and Salsa
2	São Jorge and Salsa	Emmental and Pesto
3	Pecorino Crotonese and Salsa	Emmental and Blueberry Spread
4	Emmental and Pesto	São Jorge and Salsa
5	São Jorge and Pesto	São Jorge and Pesto
6	Pecorino Crotonese and Pesto	São Jorge and Blueberry Spread
7	Emmental and Blueberry Spread	Pecorino Crotonese and Salsa
8	São Jorge and Blueberry Spread	Pecorino Crotonese and Pesto
9	Pecorino Crotonese and Blueberry Spread	Pecorino Crotonese and Blueberry Spread

Group 2 asked that they be allowed to taste the same cheese with different condiments at one time. That said, while the order of the cheeses varied, the order of the condiments was kept the same (salsa, pesto, spread). The order of the condiments was kept the same because we felt:

- the salsa provided a familiar opener,
- the pesto was something a little different, and
- the blueberry spread provided a desert-like finish.

Tasting evaluations

The actual tasting “process” varied slightly from Group 1 to Group 2.

The kids in Group 2 were asked to complete a worksheet stating if the grilled cheese sandwich was sweet, sour, salty or bitter. To help kids recognize these different tastes and use the work sheet, a brief discussion was held immediately prior to the actual tasting during which the kids were asked to give examples of foods that reflected the various tastes. The kids cited the following examples:

Sweet	ice cream, honey, chocolate bars, sugar, candy
Salty	potato chips, salt
Sour	grapefruit, vinegar
Bitter	mom’s coffee, dad’s burnt hamburgers on the barbeque

Each child in both Groups 1 and 2 was asked to taste and rate all nine variations of the sandwich and each was asked to rate each sandwich using the following simple scale.

Yuck		So so		Wow!
-2	-1	0	1	2

Finally, those conducting the tests solicited and recorded anecdotal feedback on each of the sandwiches. In the case of Group 1, the tasters were asked to write their comments on a sheet of paper. In the case of Group 2, the comments were written down by the facilitator.

For a sample of the worksheet used by Group 2, refer to Appendix A.

Tasting portions

For the actual taste test, the tasting portions varied slightly for each of the two groups:

- *Group 1* – Each taster was given an eighth of a sandwich to taste. The sandwich was cut radically so that each taster had a bit of crust and a bit of the inside.
- *Group 2* – Each taster was given a quarter of a sandwich to taste. Again, each taster had a bit of crust and a bit of the inside.

In both cases, the tasters were not expected to finish the portions provided.

Selection of products

In selecting our sandwich ingredients we had several key criteria:

- 1) *Nutritional value* – We wanted to create a sandwich and pairing with nutritional value. In other words, a sandwich where there is some nutritional contrast between the cheese and the other ingredients.
- 2) *Accessibility* – To encourage parents to serve grilled cheese sandwiches with non-traditional pairings, we wanted to use ingredients that could be readily obtained at your typical grocery store.
- 3) *Affordability* – We wanted the ingredients to be affordable to the average family.
- 4) *Kid friendly* – Because the grilled cheese sandwich is often a child’s gateway into the world of cheese, we wanted to create a sandwich that would:
 - result in a positive “cheese experience” for the child, and
 - broaden their exposure to different cheeses (beyond Kraft slices).

Bread

For the bread, we selected Country Harvest Twelve Grain (100 % Whole Grain). This bread is easy to find and provides a good source of fibre, vitamins, minerals, and fibre.

Nutritional facts:

(2 slices; 90 g)

Calories	240
Total Fat	5 g
Sat.	1 g
Omega 9	1.8 g
Omega 3	1.2 g
Sodium	320 mg
Total Carbohydrates	40 g
Fibre	6 g
Protein	10 g

% daily

Calcium	4
Iron	12
Vit. E	8
Thiamine	20
Riboflavin	4
Niacin	20
B 6	8
Folate	16
B 12	8
Phosphorus	16
Magnesium	30
Zinc	30

Butter

We chose Gay Lea unsalted butter for spreading on the bread prior to grilling. Unsalted butter is low in salt (in contrast to cheese) and readily available.

Nutritional facts

(2 tsp.)

Calories	70
Total fat	8 g
Vitamin A	8% of daily value

Cheese

In selecting the cheeses, several factors were considered:

- *Taste and texture* – We wanted to select cheeses we thought kids might like (nothing too over-the-top in terms of taste).
- *Milk type* – We wanted, if possible, to select cheeses from a cross section of milk types (cow, goat, sheep).
- *Availability* – We want cheeses that did not require a trip to a specialty shop. In other words cheeses you might be able to find at the local grocery store.
- *Affordability* – We wanted cheeses that could be purchased for less than \$50/kg.
- *Compatibility* – We wanted cheeses that would match well with various pairing ingredients – on a sensory, nutritional, intellectual and emotional level.
- *Meltability* – We wanted cheeses that would melt in a grilled cheese sandwich.
- *Story-telling potential* – We wanted cheeses that might pique the interest of children on multiple levels. With this in mind, we tried to select cheeses with a story (i.e., “This cheese comes from a group of islands in the Atlantic – called the Azores – that is part of Portugal. Sheep were let loose on the islands before people even settled there.”)

Using these criteria as guidelines, and after preliminary tests with a range of cheeses, the project team settled on the following three cheeses.

1. **Swiss** (Emmenthal-type cheese)

- Brand: Le Superbe
- Imported from Switzerland by Agropur, Longueuil, Quebec
- Made from pasteurized cow’s milk
- Cost: approximately \$48/kg (comes in a 110 g package that contains five slices)

Nutrition facts

(per slice; 18 g)

(per 30g serving)

Calories:	70	117
Fat:	6 g	10 g
Cholesterol:	15 mg	25 mg
Sodium:	30 mg	50 mg
Protein:	5 g	8.3 g
Vitamin A:	4 % of daily value	6.7 % of daily value
Calcium:	169 mg (15% of daily value)	281 mg (25% of daily value)

Why we selected it:

- We felt the smooth, slightly rubbery texture and sweet, fruity flavour might strike a chord with kids.
- Is readily available and affordable.
- Has a classic, stringy melt effect that kids enjoy.
- Has “holes”... a classic concept that kids can relate to thanks to stories about cheese and mice.
- It was made in Switzerland and offers up story-telling potential (e.g., mountains, alpine meadows, etc.).

2. São Jorge

- Brand: Lourais Cheese
- Imported from Portugal by Borges Foods Ltd., Mississauga, Ontario
- Made from non-pasteurized cow's milk
- Cost: \$43.19/kg

Nutrition facts

(per 30 g serving)

Calories:	110
Fat:	8 g
Cholesterol:	35 mg
Sodium:	150 mg
Protein:	8 g
Vitamin A:	6 %
Calcium:	225 mg, (20 % daily value)

Why we selected it:

- Because the savoury, tangy flavour closely resembles cheddar (the traditional cheese for grilled cheese sandwiches), we felt it might appeal to kids on a sensory, emotional and intellectual level.
- Available and affordable.
- Melts well.
- Although its appearance is similar to cheddar and it offers a similar tangy zip, it has some “barny” characteristics that differentiate it.
- We thought it would provides an appetizing introduction to less known cheeses.

3. Pecorino Crotonese

- Brand: Emma
- Imported from Italy by J.K. Overweel, Woodbridge, Ontario
- Made from pasteurized sheep's milk
- Cost: \$32.90/kg

Nutrition facts

(per 30 g serving)

Calories:	130
Fat:	11 g
Cholesterol:	35 mg
Sodium:	420 mg
Protein:	9 g
Vitamins A:	20 %

Calcium: 169 mg (15 % of daily value)

Why we selected it:

- The sharp nutty tang would add zip to a sandwich.
- Available and affordable.
- It is a classic Italian cheese.
- It is a sheep's milk cheese, so it:
 - provides a tasty introduction to non-cow milk cheeses, and
 - is a good alternative for kid's and parents who have aversions, sensitivities or intolerances to cow's milk

Condiments

In selecting the condiments, several factors were considered:

- *Nutritional value* – We wanted to select condiments with some nutritional value.
- *Taste and texture* – We wanted to select condiments we thought kids might like.
- *Compatibility* – We wanted condiments that would match well with the selected cheeses – on a sensory, nutritional, intellectual and emotional level.
- *Availability* – We wanted condiments that are easily accessible and can be found at the local grocery store (or better yet, in the fridge).
- *Affordability* – We wanted condiments that would not cost more than a few dollars.

After considerable experimentation and debate, the team settled on a salsa, a pesto and a blueberry spread. We felt these three condiments provided us with a range of styles that would pair well and not be offensive to our target audience.

1. Salsa

- Brand: Tostitos
- Type: mild
- Made in Ontario

Ingredients: tomato puree, diced tomatoes in tomato juice, calcium chloride, citric acid, jalapeno peppers, onions, vinegar, salt, garlic powder, natural flavour

Nutritional facts:

(per 2 tbsp; 30 ml)

Calories:	10
Fat:	0 g
Sodium:	260 mg
Carbohydrates:	2 g
Protein:	0 g

Why we selected it:

- We thought this would be an acid pairing – with some sugar and spice (in reality, it fell short of expectations).
- The tomato red colour and taste are suggestive of foods most kids like and are familiar with – ketchup and tomato sauce (plus most kids are familiar with salsa and chips).
- The vegetables in the salsa provide some nutritional balance (albeit marginal) for the high-fat, high-protein make-up of the cheese.

In selecting a salsa, we opted for something not too spicy (so it would be kid-friendly and not overpower the cheese) and something chunky (so we could drain off the excess liquid before adding it to the sandwich).

2. Pesto

- Brand: Paesemio,
- Type: Italian Basil Sauce
- Imported from Italy

Ingredients: 34% basil, extra virgin olive oil, sunflower oil, Grana Padano cheese, cashew nuts, potatoes, salt, pecorino cheese, sugar, garlic.

Nutritional facts

(per 1 tsp)

Calories:	13
Fat:	3 g
Cholesterol	0.4 mg
Sodium:	6.7 mg
Carbohydrates:	0.3 g
Protein:	0.3 g

Why we selected it:

- The pesto is an “earthy” choice that we felt would:
 - match well with the Pecorino,
 - provide some contrast to the semi-sweet nature of the simplistic Emmental-style cheese, and
 - complement the simplistic earthiness of the São Jorge.
- Lots of different tastes come into play – basil, nuts, olive oil, garlic.
- This was intended to be our savoury pairing, with some spice.

3. Wild Blueberry Spread

- Brand: St. Dalfour.
- Imported from France

Ingredients: blueberries, concentrated grape juice, natural pectin.

Nutritional facts

(per 1 tbsp; 15 ml)

Calories	40
Fat	0
Sodium	2.5 mg
Carbohydrates	10 g
Sugar	9 g
Protein	0

Why we selected it:

- This was intended to be our sweet pairing.
- Intellectually, the sweetness of the spread should match the sweet, fruity flavours of the Emmental cheese and the savoury flavours of the Pecorino.
- Blueberries are typically a popular item for kids.

Fresh pairing alternatives

In addition to the three “mass-produced” condiments, one member of the project team experimented with “fresh” alternatives: a home-made salsa, a home-made pesto, and a home-made blueberry spread. The ingredients used for each were as follows:

- *Salsa*: chopped hot-house tomatoes, celery, onions, cilantro and garlic.
- *Pesto*: basil, parmesan cheese, olive oil, sun dried tomatoes and walnuts.
- *Blueberry spread*: Frozen Ontario blueberries, pecans, lemon juice and sugar (blended in a food processor).

Freshly made condiments – made with fresh produce – provide a way to turn grilled cheese sandwiches into a more nutritionally balanced meal.

The grilled cheese sandwiches made with fresh ingredients were taste-tested by two kids and two adults. The kids who tasted the “fresh” alternatives also tasted the sandwiches made with the mass-produced condiments.

Pairing ingredients that didn't make the cut

The team pre-tested a number of different pairing options before settling on the final three. Those tested and rejected included:

- D'Anjou pear – lacked flavour; overpowered by cheese.
- Granny Smith apple – crunchy texture seemed at odds with sandwich.
- Honey – too sweet and too runny.
- Raspberry preserve – okay from nutritional and taste perspective, but selected blueberry spread instead.
- Milk chocolate – lacking in nutritional value; overpowered cheese.
- Marshmallow – lacking in nutritional value and taste mismatch.

Measuring up

So how does a grilled cheese sandwich measure up when benchmarked against the Canada Food Guide. The food guide provides broad guidelines for food intake based on our daily need for vitamins, minerals and other nutritional requirements. According to the guide, the amount and type of food required by an individual varies depending on our age, sex and activity level.

For kids, the food guide recommends the following servings per day:

Food group	Age		
	4 to 8 years	9 to 13 years	14-18 years
Vegetables & fruit	5 servings	6 servings	7-8 servings
Grain products	4 servings	6 servings	6-7 servings
Milk and alternatives	2 servings	3-4 servings	3-4 servings
Meat and alternatives	1 servings	1-2 servings	2-3 servings

So here's how the grilled cheese sandwich stacks up:

	Based on the Canada Food Guide, one serving is equal to...	One grilled cheese sandwich contains...
Vegetables and fruit	125 ml of fruits or vegetables	Approx. 15 ml (if it contains salsa or blueberry spread)
Grain products	35 g of bread	90 g of bread
Milk and alternatives	50 g of cheese	30 g
Meat and alternatives	60 ml of nuts	Minor amounts of nuts
Oils & fats (unsaturated, daily)	30 to 45 ml	Approx. 5 ml

Based on these figures, we can see that one grilled cheese sandwich provides about 2.5 servings of grain product, just under one serving of milk (or milk alternatives), and modest amounts of oil, protein (from nuts), and other nutrients (from the condiment).

Although there are no categorized items from Meat and Alternatives (protein), cheese does fit into this group – offering 8-10 g of protein per sandwich. For a four-year-old, this is close to half of the recommended daily intake of protein. A 19-year-old, on the other hand, would need to eat five sandwiches to get the daily amount.

When all is said and done, one can make a case that the grilled cheese sandwich represents a nutritional meal – containing grain products, milk alternatives, and a significant hit of protein. When served with the appropriate condiment, the grilled cheese sandwich can even contribute to our vegetable and fruit intake.

Taste test “scores” and observations

Sample #1: Emmental and Salsa						
Kids						
Group 1	Taster	Age	Score		Additional comments	
			Factory salsa	Fresh salsa	Factory salsa	Fresh salsa
Group 1	Jade	9	0	–		
	Avery	11	1	–	Funky	
	Nicolas	13	2	–		
	Hayden	13	1	–		
	Emily	16	1	–	Ney, too dull	
	Average score subtotal			1	n/a	
Group 2	Morgan.	10	1	1	I like tomatoes	Good tomato and cheese
	Maxine	10	1	0	Sweet and sour, like sweet tarts	Like crunch, not much taste
	Sarah	10	0	–	Boring, just taste the pickles	
	Gena	10	-2	1	Too mushy	Less mushy. Like celery with cheese
	Nadia	10	0	–	Weird. I taste olives and butterscotch	
	Alex	10	-1	–	It needs more sugar	
Average score subtotal			-0.16	.66		
Total average score			0.36	.66		
Adults						
Combined	Taster	Score		Additional comments		
		Factory salsa	Fresh salsa	Factory salsa	Fresh salsa	
Combined	Steve	.75	–	Sweetness		
	Rob	-1	–	Too sweet		
	Wendy	1	–	Wow! Pretty good, needs a little more spice		
	Angela	0	1	Salsa overpowers cheese	Salty. Astringent with celery	
	Gillian	0	–	Very dull, mellow and a bit runny		
	Sylvi	-1	0	Very flat together. Needs bacon or smoked something with weight	Fresher. Bland pairing.	
	Total average score			-0.04	.5	

Observations

- Mixed reviews.
- Some children and adults liked the salt and “brine” with the cheese.
- Overall they felt the cheese was overpowered.

Sample #2: São Jorge and Salsa						
Kids						
Group 1	Taster	Age	Score		Additional comments	
			Factory salsa	Fresh salsa	Factory salsa	Fresh salsa
	Jade	9	-2	-		
	Avery	11	-2	-		
	Nicolas	13	0	-		
	Hayden	13	.75	-		
	Emily	16	2	-	Bite-y, too much salsa	
Average score subtotal			-0.25	-		
Group 2	Morgan.	10	2	2	Good, salty. I like tomatoes	Not as salty, crunchy tasting
	Maxine	10	1	1	Spicy, olives	Clean like spring, not runny
	Sarah	10	-1	-	Cheese tastes like soap	
	Gena	10	1	1	Yum. Pizza, but heavy	Good tomatoes, not heavy. Like my mother`s garden
	Nadia	10	0	-	Too salty and runny	
	Alex	10	-1	-	Too sour. Is their vinegar?	
Average score subtotal			0.33	1.33		
Total average score			-0.07	1.33		
Adults						
Combined	Taster	Score		Additional comments		
		Factory salsa	Fresh salsa	Factory salsa	Fresh salsa	
	Steve	1	-	Nice balance		
	Rob	0.5	-	Melted Jorge is less barny; reduced sweet of salsa		
	Wendy	-2	-	Yuk!		
	Angela	1	1	Nice olive and tangy taste	Less briny, tang, fresh, bit bitter	
	Gillian	0	-	Cheese oily, salsa acidic, runny		
	Sylvi	2	1	Back in Spain; spicy, sweet, briny	Needs more punch. Cheese is more tonic, bitter	
Total average score			0.42	1		

Observations

- Fairly positive reviews.
- Both children and adults liked the mix of tastes – the salt and sweet or spice plus fruity tang.

Sample #3: Pecorino Crotonese and Salsa						
Kids						
Group 1	Taster	Age	Score		Additional comments	
			Factory salsa	Fresh salsa	Factory salsa	Fresh salsa
	Jade	9	0	-		
	Avery	11	-2	-		
	Nicolas	13	1	-		
	Hayden	13	1	-		
	Emily	16	1.5	-	Yum, bitter	
Average score subtotal			0.3	-		
Group 2	Morgan.	10	1	1	Nice cheese, not salty like the first	Nice mix. Tastes good
	Maxine	10	1	1	I like spicy and salt	Fruity, not salty
	Sarah	10	1	-	Yum. Filling.	
	Gena	10	1	-	Spicy tomatoes good with cheese	
	Nadia	10	0	-	Cheese too lumpy	
	Alex	10	-1	-	Salty, crunchy. Not enough sugar.	
Average score subtotal			0.5	1		
Total average score			.32	1		
Adults						
Combined	Taster	Score		Additional comments		
		Factory salsa	Fresh salsa	Factory salsa	Fresh salsa	
	Steve	1	-			
	Rob	1.5	-	Sweet-salty works		
	Wendy	1	-			
	Angela	1	1	Nice combination of sweet, salt, sour	Fresh sweet and salt	
	Gillian	1	-	Enhances savoury taste in cheese		
	Sylvi	1	1	Flavours stay. A touch of Italy	Italian pasta	
Total average score			1.08	1		

Observations

- Adequate reviews.
- Kids and adults liked the salty, spicy, acidic tastes.

Sample #4: Emmental and Pesto						
Kids						
Group 1	Taster	Age	Score		Additional comments	
			Factory salsa	Fresh salsa	Factory salsa	Fresh salsa
	Jade	9	2	–	Escargot-like	
	Avery	11	1	–	Pepper	
	Nicolas	13	1	–		
	Hayden	13	2	–		
	Emily	16	2	–		
Average score subtotal			1.6	–		
Group 2	Morgan.	10	1	0	I taste cashews. I like them	Rich, salty
	Maxine	10	1	1	Yum, escargots	Yum, escargots
	Sarah	10	0	–	Basil pizza, but oily	
	Gena	10	-1	-1	Too oily	Yecch
	Nadia	10	0	–	Bland and slimy	
	Alex	10	1	–	More sweet	
Average score subtotal			0.33	0		
Total average score			0.91	0		
Adults						
Combined	Taster	Score		Additional comments		
		Factory salsa	Fresh salsa	Factory salsa	Fresh salsa	
	Steve	1	–			
	Rob	0.5	–			
	Wendy	2	–	I love pesto		
	Angela	-1	1	Cheese lost, too sweet	Stronger nut flavour, good but bitter	
	Gillian	-1	–	No flavour impact		
	Sylvi	1	0	Okay. Sweet basil, nuts and burnt sugar	Good pesto, boring cheese	
Total average score			0.41	0.5		

Observations

- Mixed reviews.
- Similar to comments for Emmental and salsa.
- A few kids liked the subtle sweetness.
- It was surprising that both child and adult identified nutty flavours.

Sample #5: São Jorge and Pesto						
Kids						
Group 1	Taster	Age	Score		Additional comments	
			Factory salsa	Fresh salsa	Factory salsa	Fresh salsa
	Jade	9	2	–		
	Avery	11	1	–		
	Nicolas	13	0	–		
	Hayden	13	1	–		
	Emily	16	2.25	–	Better than the last	
Average score subtotal			1.25	–		
Group 2	Morgan.	10	1	2	Sweet and salty	Yum, like sushi
	Maxine	10	1	1	Good, not as salty	Like more nuts
	Sarah	10	-1	–	Cheese tastes like soap	
	Gena	10	0	-1	Okay. Don't like colours	Too sour
	Nadia	10	1	–	Sweet and like? Peanuts	
	Alex	10	0	–	Better; it has more sugar	
Average score subtotal			0.33	0.66		
Total average score			0.75	0.66		
Adults						
Combined	Taster	Score		Additional comments		
		Factory salsa	Fresh salsa	Factory salsa	Fresh salsa	
	Steve	1	–	Nice length, brings out pesto		
	Rob	1	–	Long finish		
	Wendy	-1	–			
	Angela	1	1	Sweet works with salty cheese	More complex; savoury, but sour	
	Gillian	1	–	Pesto enhanced		
	Sylvi	1	0	Flavours have long finish. Both add an oily feel in mouth	Weighty and oily with sundried tomatoes	
Total average score			0.66	0.5		

Observations

- Basically a similar review as the salsa and São Jorge.
- Most of the kids liked the sweet-basil combination with the cheese.
- The adults agreed, but commented that the combination had a fair bit of oil.

Sample #6: Pecorino Crotonese and Pesto						
Kids						
Group 1	Taster	Age	Score		Additional comments	
			Factory salsa	Fresh salsa	Factory salsa	Fresh salsa
	Jade	9	0	-		
	Avery	11	-2	-	Funky	
	Nicolas	13	1.75	-		
	Hayden	13	0	-		
	Emily	16	0	-	Burst of bad flavour	
Average score subtotal			0.05	-		
Group 2	Morgan.	10	0	1	Tastes funny	Pasta sandwich
	Maxine	10	1	0	Good sandwich, nutty	Too salty and oily
	Sarah	10	-1	-	Tastes like rotten fruit	
	Gena	10	0	-	Pizza with basil leaves	
	Nadia	10	1	-	I taste nuts and cheese	
	Alex	10	-1	-	Not enough sugar	
Average score subtotal			0	0.5		
Total average score			-0.02	0.5		
Adults						
Combined	Taster	Score		Additional comments		
		Factory salsa	Fresh salsa	Factory salsa	Fresh salsa	
	Steve	1	-			
	Rob	1.5	-	Pesto enhanced		
	Wendy	2	-	Wow!		
	Angela	1	1	Pesto enhanced. Cheese less salty	Oily cheese, oily sundried tomatoes. Nice balance	
	Gillian	1	-	Sweet and salty. Pesto needs more pine nuts/walnuts		
	Sylvi	1	1	Great taste. A surprise	Works. Walnuts add depth	
Total average score			1.25	1		

Observations

- Mixed reviews.
- It was interesting that some of the kids could identify basil and nuts.

Sample #7: Emmental and Blueberry Spread						
Kids						
Group 1	Taster	Age	Score		Additional comments	
			Factory spread	Fresh spread	Factory spread	Fresh spread
	Jade	9	-2	-		
	Avery	11	1	-		
	Nicolas	13	0	-		
	Hayden	13	.75	-		
	Emily	16	1.25	-		
Average score subtotal			0.2			
Group 2	Morgan.	10	-2	0	Too sweet, needs sour	Okay, less sweet like lemon
	Maxine	10	-1	0	Yecch	Okay, another fruit
	Sarah	10	0	-	Blueberry bad with cheese	
	Gena	10	-2	-1	Too sweet, peaches better	Makes me pucker
	Nadia	10	1	-	It's like a jam sandwich	
	Alex	10	2	-	Too sweet, needs sour	
Average score subtotal			-0.33	-0.33		
Total average score			-0.09	-0.33		
Adults						
Combined	Taster		Score		Additional comments	
			Factory spread	Fresh spread	Factory spread	Fresh spread
	Steve		-1	-	Sweetness does not work with sharpness	
	Rob		-1	-	Slightly bitter	
	Wendy		1.5	-	Wow!	
	Angela		-2	0	Very sweet. Fights cheese	More tart spread, no match
	Gillian		-1	-	Cheese has no taste	
	Sylvi		-2	0	Very sweet. Overpowers. Blueberries a difficult flavour	Do not compliment
Total average score			-0.92	0		

Observations

- Generally negative reviews. The sandwich was too sweet. Blueberries had no impact and did not pair well.

Sample #8: São Jorge and Blueberry Spread						
Kids						
Group 1	Taster	Age	Score		Additional comments	
			Factory spread	Fresh spread	Factory spread	Fresh spread
	Jade	9	--	–		
	Avery	11	-2	–		
	Nicolas	13	-1	–		
	Hayden	13	-0.25	–		
	Emily	16	2	–	Wow	
Average score subtotal			-0.25	–		
Group 2	Morgan.	10	0	1	Too sweet. How about peaches?	Less sweet? Peaches
	Maxine	10	0	0	So, so	Lemon makes it sour
	Sarah	10	-1	–	Cheese tastes like soap	
	Gena	10	1	0	Sweet, good. Cherries would be better	Prefer it sweeter, like real blueberries.
	Nadia	10	-1	–	Too sickly sweet	
	Alex	10	2	–	Good and sweet. Yeah!	
Average score subtotal			0.17	0.33		
Total average score			-0.02	0.33		
Adults						
Combined	Taster		Score		Additional comments	
			Factory spread	Fresh spread	Factory spread	Fresh spread
	Steve		.75	–	Works better	
	Rob		1	–	Cheese highlighted	
	Wendy		1.5	–		
	Angela		1	1	Pleasant surprise, but better fruits?	Lemon helps sweetness
	Gillian		1	–	Sweet balances salt	
	Sylvi		1	0	Cheese more pronounced; fruity. Blueberries are a bit boring	Fresher, but more acidic combo. Blueberries not working
Total average score			1.04	0.5		

Observations

- Several kids liked the added sweet taste with the cheese.
- The adults were pleasantly surprised that the flavours balanced.
- One adult picked up that the cheese was more flamboyant.
- Both children and adults were not that enthusiastic about blueberries, thinking them flat.

Sample #9: Pecorino Crotonese and Blueberry Spread						
Kids						
	Taster	Age	Score		Additional comments	
			Factory spread	Fresh spread	Factory spread	Fresh spread
Group 1	Jade	9	0	-		
	Avery	11	-1	-		
	Nicolas	13	0	-		
	Hayden	13	0.75	-		
	Emily	16	-1	-	Weird mix	
	Average score subtotal			0.25	-	
Group 2	Morgan.	10	0	0	Cheese and bad jam!!	Blueberries are bad
	Maxine	10	1	1	Fruity cheese tastes good	Nice, sort of sour taste
	Sarah	10	0	-	Okay with raspberries. Cherries would be better	
	Gena	10	0	-	Sweet syrup. Cheese lumpy	
	Nadia	10	-1	-	Lumpy feel in my mouth	
	Alex	10	2	-	Yes, sweet. Fruity cheese	
Average score subtotal			0.33	0.5		
Total average score			0.07	0.5		
Adults						
	Taster		Score		Additional comments	
			Factory spread	Fresh spread	Factory spread	Fresh spread
Combined	Steve		1	-		
	Rob		-1	-		
	Wendy		2	-	Wow!	
	Angela		1	1	Works like first cheese (Emmental). Tart	Best blueberry match so far. Sweet, sour, salty, acidic
	Gillian		0	-	Combination okay. Sweet sour cream	
	Sylvi		-1	1	Sweet and salt balance. But a bit fruity acid	Agree. Lemon a bit acidic
	Total average score			0.33	1	

Observations

- The pairing match did not surprise the adults after blueberry and São Jorge pairing.
- The foods did complement each other.
- The kids had mixed reviews depending on their palates for sweets.
- Texture of the melted cheese was an issue for a few.

General observations

- Overall, the pairings that were provided were perceived as being a bit bland.
- The kids seemed to like the salsa/Pecorino and salsa/São Jorge pairings the best. It is worth noting that the salsa seemed to be more sweet than acidic, which may explain the favourable results among kids.
- The blueberry spread was, on the whole, underwhelming. It was perceived as being overly sweet and tended to overpower the cheese.
- The more fresh and 'complex' condiments were appealing to the adults and some of the kids.
- While tired and full of cheese by the time they got to the Pecorino, the two kids who tried the Pecorino with fresh pairings seemed (for the most part) to like the pairings.
- The two mothers who tasted all of the "homemade" condiments felt they were fresher than the mass-produced condiments and complimented the Pecorino in particular. They also thought the robust, salty and slightly peppery notes of the Pecorino made it a good match for the salsa.
- The adults noticed a slight clash between the sour nature of the "fresh" condiments and the acidic nature of the São Jorge cheese. The salsa was the preferred "fresh" condiment when matched with the São Jorge.
- Some of the moms thought that the São Jorge and Pecorino had too many similarities in taste (i.e., saltiness, denseness). They would have preferred three different styles of cheese. The kids did not comment.
- Some of the adults felt that the Emmental cheese needed a weightier, briny, or savoury condiment to make the cheese interesting (e.g. ham, bacon, grainy mustard, asparagus).

Aligning goals with the results

Overall, the study met its five primary goals:

1. Determine if the kids are open to trying different grilled cheese sandwiches.

All 11 of the child tasters were willing to taste different cheeses and food pairings. While individual tasters did not necessarily like all three cheeses/condiments, they did not balk at trying them.

2. Have kids taste different grilled cheese sandwiches with different cheese/condiment combinations and provide feedback about which ones worked or didn't work...and why.

The kids had no problem using the tools provided to evaluate and rate the different cheese/condiment combinations and were happy to share their opinions about what worked and what didn't work.

The table below provides a simplified assessment of the pairing combinations based on the overall ratings provided by the kids. Before using this assessment as a guideline for future pairings, there are two notes of caution:

- Only two kids tried all four of the fresh condiments – making for a small sample size.
- The assessment below is based on the average rating for all 11 kids (a “happy face” represents an average rating of 0.5 or better; while a “straight face” represents a rating of less than 0.5 but greater than -0.5). On an individual basis, there was a wide variation of opinion for some of the pairings.

	Mass-produced condiment	Fresh condiment
Emmental and salsa	☹️	😊
Emmental and pesto	😊	☹️
Emmental and blueberry spread	☹️	☹️
Sao Jorge and salsa	☹️	😊
Sao Jorge and pesto	😊	😊
Sao Jorge and blueberry spread	☹️	☹️
Pecorino Cortonese and salsa	☹️	😊
Pecorino Cortonese and pesto	☹️	😊
Pecorino Cortonese and blueberry spread	☹️	😊

3. Give kids an opportunity to identify the primary tastes (sweet, salty, sour, bitter) in the different pairings and determine if they work together.

The kids were able to identify some primary tastes and say why they liked or disliked certain flavours and flavour combinations. Some were more precise than others and some offered other suggestions for pairings

4. Assess whether a cheese pairing tasting is a fun activity for kids.

The kids seemed to enjoy the taste test experience. By the end of the process, it was clear that they were thinking of other foods they liked that might pair well with grilled cheese.

5. Assess the willingness of parents to try different cheeses and condiments in grilled cheese sandwiches.

The adults enjoyed the tasting, too, and clearly thought about the flavours of the various pairings. There is no doubt that the tasting encouraged them to think outside the box and to explore “different” grilled cheese pairings going forward.

Study limitations

While a concerted effort was made to employ a methodology that would result in quality information and valid results, we recognize that our study had certain limitations.

- Due to work, school and other commitments, the four project team members were unable to meet together to do the control tastings and determine trial pairings. Two team members were able to get together; other control tastings were done on an individual basis and the results shared.
- As noted earlier, the taste testing methodology and evaluation tools used for the two tasting groups were similar, but not exactly the same.
- The ages of the kids used for the taste-testings were different. Using children of the same age may have resulted in more consistent results.
- The number kids who participated in the taste-testing of pairings with the fresh condiments was too small to provide any meaningful guidance for future pairings.
- Limiting ourselves to cheese types/brands that are readily available in a grocery store (and therefore accessible to the average shopper) limited our choice of cheese options. We had originally hoped to use a cheese from each of the three main milk types – cow, sheep, and goat. However, when it came to goat cheese, our options were limited to feta (which was overpowering unless matched with a milder cheese) and chevre (which did not melt properly).
- For the sake of simplicity, we stuck to one type of cheese per sandwich. In retrospect, we may have gotten different results had we mixed cheeses (one member of the project team experimented with mixed cheeses during individual control tastings).

Looking forward

It's worth considering how the results of this experiment can be used as a launch pad for further investigations or future cheese-related efforts.

In terms of future investigations...

- If we were to repeat this tasting exercise, we would consider using Ontario-made cheeses – even if they are not available in local grocery stores – to support local producers and enhance awareness of their products.
- This exercise has shown that the grilled cheese sandwich can be made with varying levels of complexity – so it can be enjoyed by both children and adults alike. In the future, it would be worth exploring:
 - A broader range of cheeses and condiments suitable for a more sophisticated adult palate. (“Adult” variations – as explored by the spouse of one member of the project team – could include: Roquefort, pears, almonds, anise on brioche; cheddar and Comte with Vidalia onion on whole grain; limburger, spinach and fig jam on ciabatta; feta, arugula, mustard, honey and balsamic on pumpernickel.)
 - Variations of the salsa, pesto and fruit options. (Pestos are easily made and offer an endless range of opportunities to spruce up a lacklustre sandwich. Salsas are another easily created product and can be adapted to reflect stylistic and cultural differences. Jams, fresh fruits, compotes and chutneys all allow for variations in texture and flavor.)

In terms of future efforts...

- Given the limited variety of cheeses available in the typical grocery store, we believe it is important to support Loblaws and Sobey's in their effort to provide a broader range of cheeses at a reasonable cost. That said, they need to do more.
- We should encourage parents and children to explore their local farmers' markets for new and different cheeses, as well as fresh produce that can be paired with cheese – particularly during the summer months.
- Pubs in Canada and Europe are often enjoyed by the entire family. It would be nice to see these pubs offer a larger selection of grilled cheese sandwiches, which could be paired (for the adults) with different beers.

Appendix A: Tasting grid for sweet, salty, sour bitter

What are the Big Tastes we can think about? Sour, Sweet, Salt, Bitter, Umami

Sour	Sweet
Salt	Bitter

Taste # 1

Tuk -2 -1 So So 0 1 Wow 2

The kids were asked to place a point in each of the four squares indicating how dominant the flavours are – the center point indicating a weak/balanced flavour, the corners (where the words are) indicating a stronger/off balance flavour. Each child was also asked to taste and rate each sandwich using a simple five point (-2 to +2) scale.