

Development Of A Self-Administered Automated 24-hour Dietary Recall (24HR) For Use In Large-Scale Nutrition Research

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- **National Cancer Institute, Archimage, USDA Center for Nutrition Policy and Promotion, Westat, Animatrix, Baylor College of Medicine**

NCI's Vision for an Automated Self-Administered 24-Hour Recall (ASA-24)

- 24HRs that are automated **AND** self-administered:
 - Complete system for probing, coding, and analysis
 - Accessible on the web, publicly available
 - Easily updated
- Adaptable to multiple languages
- Modeled after dietary surveillance systems in NHANES (AMPM)
- Multiple 24HRs could be collected for minimal cost

Cognitive/Usability Testing

- Use AMPM as a guide to self-administration on the computer
 - What works visually?
 - Preferences?
 - Understandable?
- Quick List Pass
 - Finding foods by browsing or typing
- Detail Pass
 - Multiple follow-up questions

Initial Formative Research

- Two Quick List (QL) versions
 - Unstructured QL: free recall before sorting into meals (most like AMPM)
 - Meal-based QL: unstructured recall by meal
- Tested both versions to:
 - Assess general preferences
 - Assess influences on memory and recall
 - Identify early usability issues
 - Develop preliminary suggestions for further development and research

Findings – Preferences

- Meal-based version preferred
- Most participants reported features they liked about both versions
 - Both versions carried forward
- Chronological report common
- Subar et al. Formative Research of a Quick List for an Automated Self-Administered 24-Hour Dietary Recall. In press: J Am Dietetic Assn

Paper Prototype Cognitive Test **Methods**

- Small group testing
 - Qualitative focus
 - Led by cognitive psychologist
 - 2 - 5 participants per session
 - Screen shots (paper prototypes) projected on wall
 - System not functional/not graphically enhanced
 - Cognitive walk-through w/participant comments
 - Debriefing

Paper Prototype Round I

Objective: Assess QL Preferences

- Finding food to report: two options
 - *Browse* for food selections
 - Vertical tree (A)
 - Horizontal columns (B,C)
 - *Type and Search*
- When to report time of eating occasion
- Reaction to *agent* and food photography

Scheme A

Paper Prototypes Cognitive Testing: Round 1
Quick List



Select foods by typing or by browsing

FOODS

MY SELECTIONS

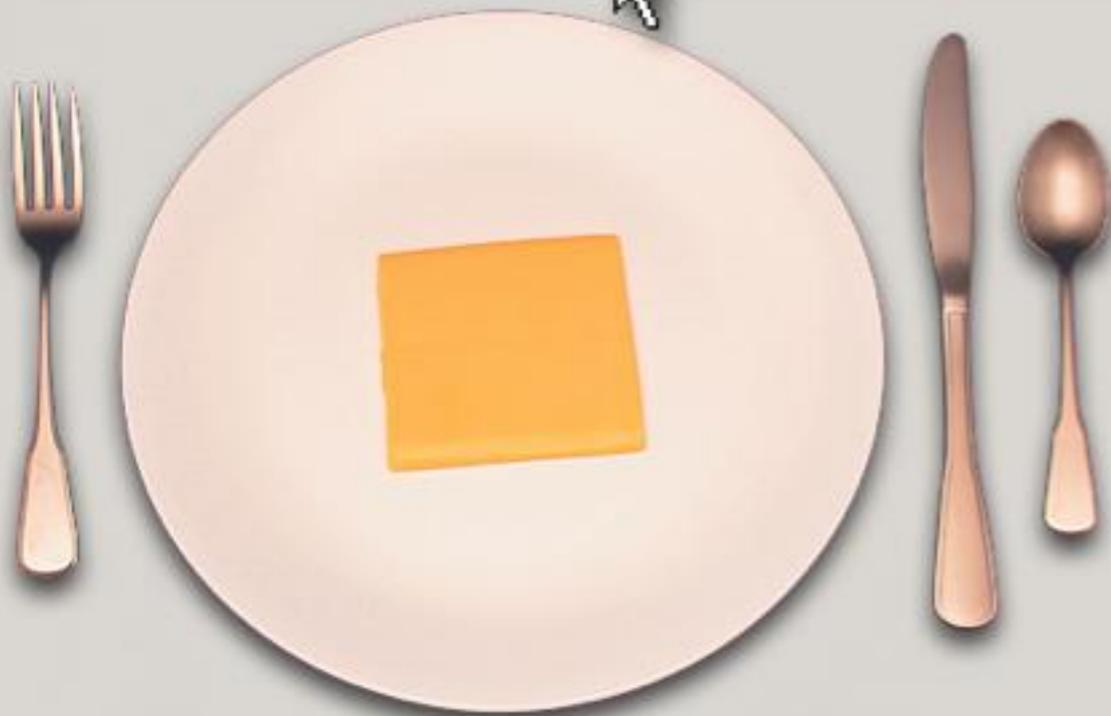
- ▶ Baked good
- ▶ Beans, peas, nuts, soy products
- ▶ Beverages
- ▶ Breads, rolls and tortillas
- ▶ Casseroles, mixtures, frozen foods
- ▶ Cereals and energy bars
- ▶ Condiments, Salsa, Sauces
- ▼ Dairy
 - ▼ Cheese
 - | Alpine Lace Cheese
 - | American cheese (low sodium)
 - | Asiago cheese
 - | Beer cheese
 - | Blue or Roquefort cheese
 - | Borden Lite Line cheese
 - | Brick cheese
 - | Brie cheese
 - | Chedarella cheese
 - | Cheddar cheese
 - | Cheese (unknown kind)

✓ OK



CHANGE

If this is the correct food, you can add it your selections list by clicking the "OK" button.





Select foods by typing or by browsing

FOODS

- ▶ Baked good
- ▶ Beans, peas, nuts, soy products
- ▶ Beverages
- ▶ Breads, rolls and tortillas
- ▶ Casseroles, mixtures, frozen foods
- ▶ Cereals and energy bars
- ▶ Condiments, Salsa, Sauces
- ▶ Dairy
- ▶ Eggs
- ▶ Fast Foods
- ▶ Fats, Oils, Dressings, Spreads
- ▶ Fish, shellfish
- ▶ Fruit and fruit juice
- ▶ Meat
- ▶ Pancakes, waffles, flapjacks, crepes
- ▶ Poultry
- ▶ Rice and other grains
- ▶ Salads
- ▶ Salty snacks
- ▶ Sandwiches

✓ OK

MY SELECTIONS

- | | | | |
|--|--|--|-------------------------------------|
| | | | Croissant |
| | | | Apple |
| | | | Mr. Goodbar chocolate bar |
| | | | Poland Spring bottled water |
| | | | Betty Crocker Hamburger Helper |
| | | | Tuna salad sandwich |
| | | | Healthy Choice Almond Crunch cereal |
| | | | Milk |

▼ Lunch : 12:30 PM : Someone else's home
 └ Cheddar cheese

CHANGE

Thank you.
 Now, please click on each of the gray icons in your selections list to organize what you ate and drank.





Select foods by typing or by browsing

FOODS

MY SELECTIONS

- ▶ Baked good
- ▶ Beans, peas, nuts, soy products
- ▶ Beverages
- ▶ Breads, rolls and tortillas
- ▶ Casseroles, mixtures, frozen foods
- ▶ Cereals and energy bars
- ▶ Condiments, Salsa, Sauces
- ▶ Dairy
- ▶ Eggs
- ▶ Fast Foods
- ▶ Fats, Oils, Dressings, Spreads
- ▶ Fish, shellfish
- ▶ Fruit and fruit juice
- ▶ Meat
- ▶ Pancakes, waffles, flapjacks, crepes
- ▶ Poultry
- ▶ Rice and other grains
- ▶ Salads
- ▶ Salty snacks
- ▶ Sandwiches

- ▼ Breakfast : 9:00 AM : Home
 - └ Healthy Choice Almond Crunch cereal
 - └ Milk
- ▼ Lunch : 12:30 PM : Someone else's home
 - └ Cheddar cheese
 - └ Croissant
 - └ Tuna salad sandwich
 - └ Apple
 - └ Poland Spring bottled water
- ▼ Snack : 3:00 PM : Vending machine
 - └ Mr. Goodbar chocolate bar
- ▼ Supper : 4:00 PM : Home
 - └ Betty Crocker Hamburger Helper

✓ OK

CHANGE



burger

Select foods by typing or by browsing

FOODS

MY SELECTIONS

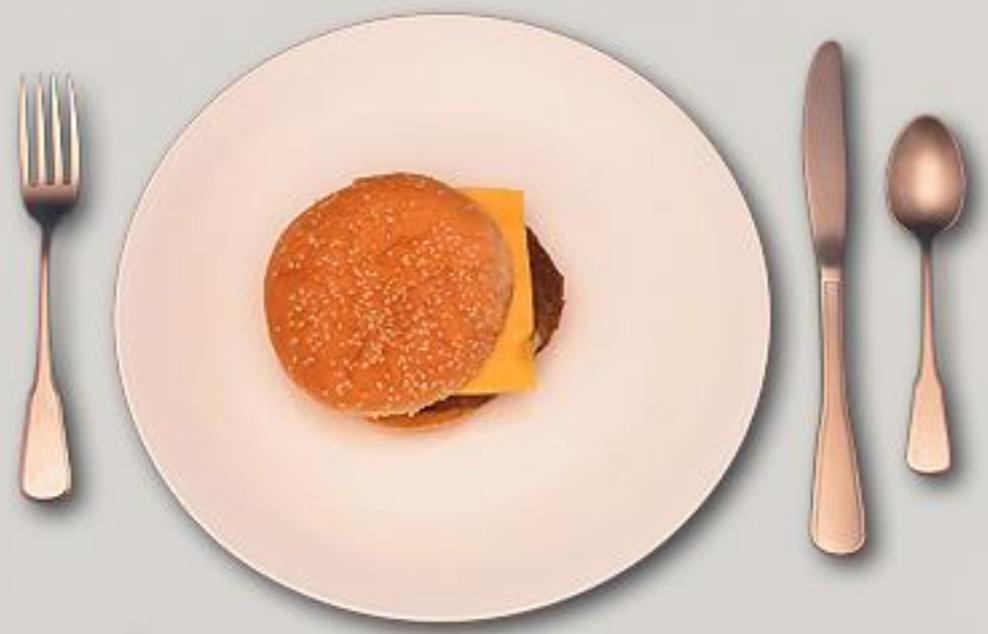
- Cheese, limburger
- Soup, sirloin burger with vegetables, ready-to-serve, single brand
- Pickle, relish, hamburger
- Rolls, hamburger or hot-dog
- Interstate Brands Corp., Wonder Hamburger Rolls
- Cheeseburger**
- Hamburger
- Totino's Pizza Rolls Pizza Snacks, Hamburger, frozen
- Betty Crocker Hamburger Helper cheeseburger macaroni, dry mix
- Worthington Foods, Morningstar Farms Better'n Burgers, frozen
- Worthington Foods, Natural Touch Vegan Burgers, frozen
- Green Giant, Harvest Burger, Original Flavor, All Vegetable Protein Patties...
- Worthington Foods, Morningstar Farms "Burger" Crumbles
- Worthington Foods, Morningstar Farms Spicy Black Bean Burger

- ▼ Breakfast : 9:00 AM : Home
 - └ Healthy Choice Almond Crunch cereal
 - └ Milk
- ▼ Lunch : 12:30 PM : Someone else's home
 - └ Cheddar cheese
 - └ Croissant
 - └ Tuna salad sandwich
 - └ Apple
 - └ Poland Spring bottled water
- ▼ **Snack : 3:00 PM : Vending machine**
 - └ Mr. Goodbar chocolate bar
- ▼ Supper : 4:00 PM : Home
 - └ Betty Crocker Hamburger Helper

OK

CHANGE

If this is the correct food, you can add it your selections list by clicking the "OK" button.



Click the STOP button when you have finished entering everything you ate or drank yesterday from midnight to midnight.



Scheme B

Paper Prototypes Cognitive Testing: Round I
Quick List

OCCASIONS

- ▶ Before breakfast
- ▶ Breakfast
- ▼ Lunch  
 - └ Snack after lunch
 - └ Just a drink after lunch
- ▶ Supper
- ▶ Dinner

FOOD GROUPS

- Baked goods
- Beans, peas, nuts, soy products
- Beverages
- Breads, rolls and tortillas
- Casseroles, mixtures, frozen foods
- Cereals and energy bars
- Condiments, Salsa, Sauces
- Dairy
- Eggs
- Fast Foods
- Fats, Oils, Dressings, Spreads
- Fish, shellfish
- Fruit and fruit juice
- Meat
- Pancakes, waffles, flapjacks, crepes
- Pasta, noodles, and spaghetti
- Poultry
- Rice and other grains

MY SELECTIONS

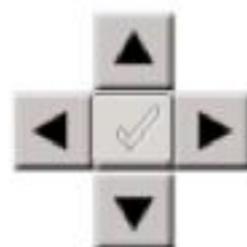
✓ OK

CHANGE

DELETE

Great!

Now, please select what you had to eat or drink.



OCCASIONS

- ▶ Before breakfast
- ▶ Breakfast
- ▼ Lunch  
 - └ Snack after lunch
 - └ Just a drink after lunch
- ▶ Supper
- ▶ Dinner

FOOD GROUPS

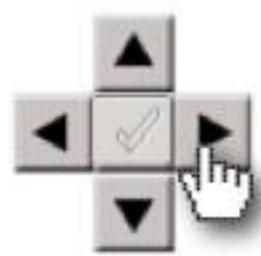
- Baked goods
- Beans, peas, nuts, soy products
- Beverages
- Breads, rolls and tortillas
- Casseroles, mixtures, frozen foods
- Cereals and energy bars
- Condiments, Salsa, Sauces
- Dairy**
- Eggs
- Fast Foods
- Fats, Oils, Dressings, Spreads
- Fish, shellfish
- Fruit and fruit juice
- Meat
- Pancakes, waffles, flapjacks, crepes
- Pasta, noodles, and spaghetti
- Poultry
- Rice and other grains

MY SELECTIONS

✓ OK

DELETE

You can scroll up and down through foods by using the ▲ and ▼ buttons.



OCCASIONS

- ▶ Before breakfast
- ▶ Breakfast
- ▼ Lunch
 - └ Snack after lunch
 - └ Just a drink after lunch
- ▶ Supper
- ▶ Dinner

FOOD GROUPS ▶ DAIRY

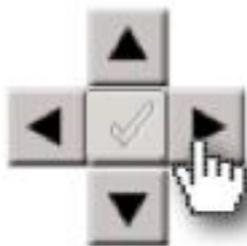
- Cheese
- Cream, creamers
- Dip
- Ice cream, frozen yogurt, sundaes
- Milk, all types
- Milk drinks
- Pudding, custard, flan, etc.
- Rice milk, rice drinks
- Soy milk, soy drinks
- Sour cream
- Whipped cream, whipped toppings
- Yogurt
- Other

MY SELECTIONS

OK

DELETE

Click the ◀ and ▶ buttons to scroll into and out of food sub groups.





OCCASIONS

- ▶ Before breakfast
- ▶ Breakfast
- ▶ Lunch
- ▶ Supper
- ▶ Dinner

FOOD GROUPS

- Baked goods
- Beans, peas, nuts, soy products
- Beverages
- Breads, rolls and tortillas
- Casseroles, mixtures, frozen foods
- Cereals and energy bars
- Condiments, Salsa, Sauces
- Dairy
- Eggs
- Fast Foods
- Fats, Oils, Dressings, Spreads
- Fish, shellfish
- Fruit and fruit juice
- Meat
- Pancakes, waffles, flapjacks, crepes
- Pasta, noodles, and spaghetti
- Poultry
- Rice and other grains

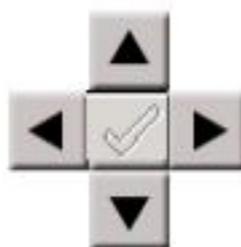
MY SELECTIONS

- ▼ Breakfast : 9:00 AM : Home
 - └ Healthy Choice Almond Crunch cereal
 - └ Milk
- ▼ Lunch : 12:30 PM : Someone else's home
 - └ Cheddar cheese
 - └ Croissant
 - └ Tuna salad sandwich
 - └ Apple
 - └ Poland Spring bottled water
- ▼ Snack : 3:00 PM : Vending machine
 - └ Mr. Goodbar chocolate bar
- ▼ Supper : 4:00 PM : Home
 - └ Betty Crocker Hamburger Helper

✓ OK

CHANGE

Type in a food or drink to search for. Click the  icon to start the search.



Scheme C

Paper Prototypes Cognitive Testing: Round 1
Quick List

Select foods by browsing or typing

1 OCCASIONS

- ▶ Before breakfast
- ▶ Breakfast
- ▶ **Lunch**
- ▶ Supper
- ▶ Dinner

2 FOOD GROUPS

- Baked good
- Beans, peas, nuts, soy products
- Beverages
- Breads, rolls and tortillas
- Casseroles, mixtures, frozen food
- Cereals and energy bars
- Condiments, Salsa, Sauces
- Dairy**
- Eggs
- Fast Foods
- Fats, Oils, Dressings, Spreads
- Fish, shellfish
- Fruit and fruit juice
- Meat
- Pancakes, waffles, flapjacks, crep...
- Poultry
- Rice and other grains
- Salads

3 FOOD SUB GROUPS

- Cheese**
- Cream, creamers
- Dip
- Ice cream, frozen yogurt, sundaes
- Milk, all types
- Milk drinks
- Pudding, custard, flan, etc.
- Rice milk, rice drinks
- Soy milk, soy drinks
- Sour cream
- Whipped cream, whipped toppings
- Yogurt
- Other

MY SELECTIONS

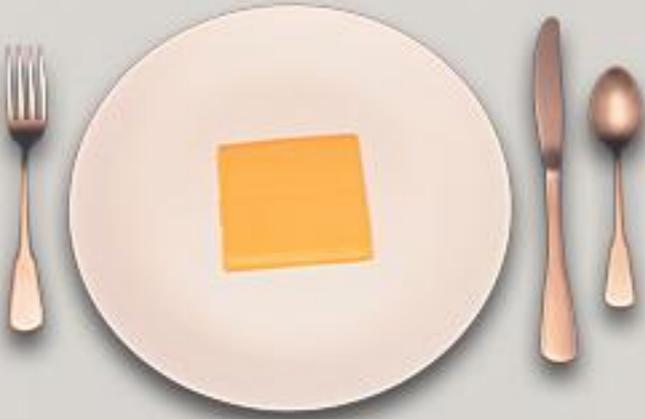
4 FOODS

- Alpine Lace Cheese
- American cheese
- Asiago cheese
- Beer cheese
- Blue or Roquefort cheese
- Borden Lite Line cheese
- Brick cheese
- Brie cheese
- Chedarella cheese
- Cheddar cheese**
- Cheese (unknown kind)
- Cheese spread

CHANGE

DELETE

If this is the correct food, you can add it your selections list by clicking the "OK" button.



OK

Select foods by browsing or typing

1 OCCASIONS

- ▶ Before breakfast
- ▶ Breakfast
- ▶ Lunch
- ▶ Supper
- ▶ Dinner

2 FOOD GROUPS

3 FOOD SUB GROUPS

MY SELECTIONS

▼ Lunch 12:30 PM Some else's home
└ Cheddar cheese

4 FOODS

CHANGE

DELETE

Good job!
What else did you eat or drink?

OK

Click the STOP button when you have finished entering everything you ate or drank yesterday from midnight to midnight.

Select foods by browsing or typing **burger**

1 OCCASIONS

- ▶ Before breakfast
- ▶ Breakfast
- ▶ Lunch
- ▶ Supper
- ▶ Dinner

2 FOOD GROUPS

3 FOOD SUB GROUPS

MY SELECTIONS

- ▼ Breakfast : 9:00 AM : Home
 - └ Healthy Choice Almond...
 - └ Milk
- ▼ Lunch : 12:30 PM : Someone ...
 - └ Cheddar cheese
 - └ Croissant
 - └ Tuna salad sandwich
 - └ Apple
 - └ Poland Spring bottled water
- ▼ **Snack : 3:00 PM : Vending machine**
 - └ Mr. Goodbar chocolate bar
- ▼ Supper : 4:00 PM : Home
 - └ Betty Crocker Hamburger ...

SEARCH RESULTS

- Cheese, limburger
- Soup, sirloin burger with vegetables, ready-to-serve, single brand
- Pickle, relish, hamburger
- Rolls, hamburger or hot-dog
- Interstate Brands Corp., Wonder Hamburger Rolls
- Cheeseburger**
- Hamburger
- Totino's Pizza Rolls Pizza Snacks, Hamburger, frozen
- Betty Crocker Hamburger Helper cheeseburger macaroni, dry mix
- Worthington Foods, Morningstar Farms Better'n Burgers, frozen
- Worthington Foods, Natural Touch Vegan Burgers, frozen
- Green Giant, Harvest Burger, Original Flavor, All Vegetable Protein Patties...
- Worthington Foods, Morningstar Farms "Burger" Crumbles

If this is the correct food, you can add it your selections list by clicking the "OK" button.

CHANGE

DELETE

✓ OK

Click the STOP button when you have finished entering everything you ate or drank yesterday from midnight to midnight. ➡

Paper Prototype Round I

Lessons Learned

- Vertical vs. horizontal browsing
 - No clear preference
 - Horizontal browsing
 - Second scheme (*iPod model*) mouse scroll buttons confusing
- Reporting times for eating occasion
 - Strong preference to report meals/times first and only once
 - Slight preference to report times before food selection

Paper Prototype Round I

Lessons Learned

- Opinions about *Agent* and food photography
 - *Agent* was generally accepted
 - Differences in acceptance of food photography
- *Search and type* box should be placed above location of food categories

Paper Prototype Round 2

Objectives: Assessing Revised Schemes

- Three *Browse* models
 - 1/2 screen *Foods* vertical tree (D1)
 - Full screen *Foods* vertical tree (D2)
 - Horizontal columns (*iTunes model*, E)
- Modified versions of (*Agent*, food photography)

Scheme D I

Paper Prototypes Cognitive Testing: Round 2
Quick List

MEALS

FOODS : DAIRY : CHEESE

MY SELECTIONS

- Breakfast
- Brunch
- Lunch
- Dinner
- Supper

- Snack
- Just a drink

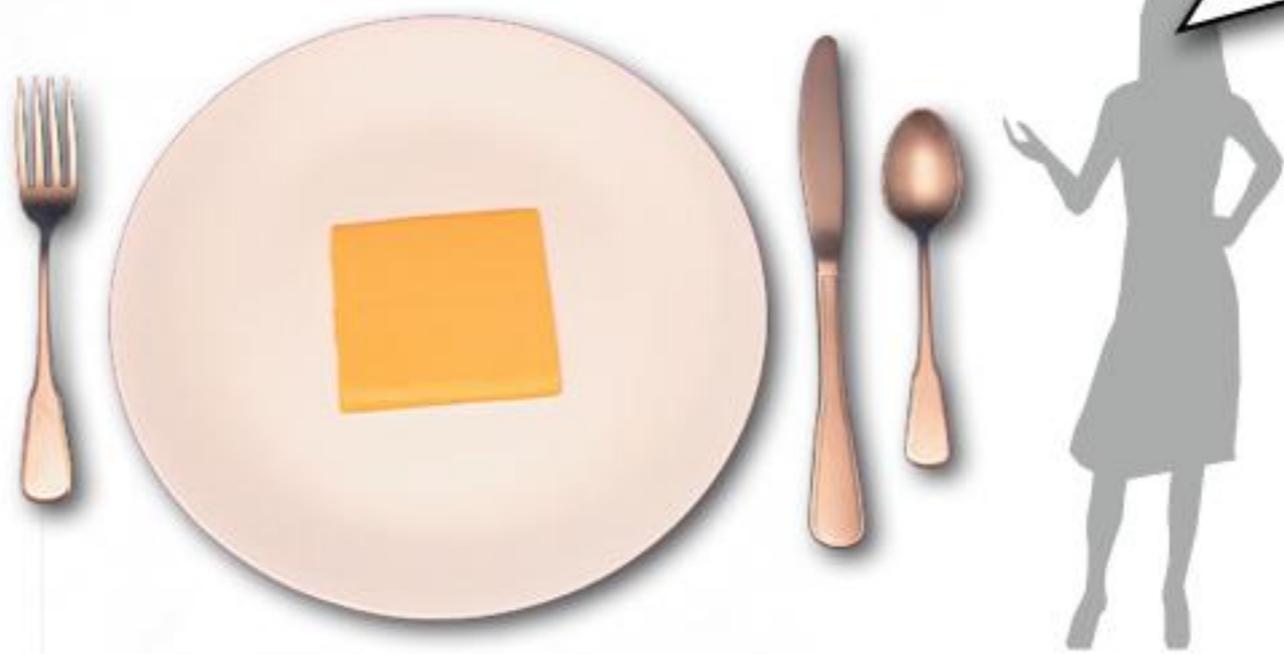
- ▶ Baked good
- ▶ Beans, peas, nuts, soy products
- ▶ Beverages
- ▶ Breads, rolls and tortillas
- ▶ Casseroles, mixtures, frozen foods
- ▶ Cereals and energy bars
- ▶ Condiments, Salsa, Sauces
- ▼ Dairy
 - ▼ Cheese
 - Alpine Lace Cheese
 - American cheese (low sodium)
 - Asiago cheese
 - Beer cheese
 - Blue or Roquefort cheese
 - Borden Lite Line cheese
 - Brick cheese
 - Brie cheese
 - Chedarella cheese
 - **Cheddar cheese**
 - Cheese (unknown kind)

▼ Lunch 12:30 PM

SELECT

CHANGE

"Cheddar cheese."
 This picture may not be an exact match, but that's okay.
 Click the **SELECT** button if you had cheddar cheese.



MEALS

SEARCH RESULTS

MY SELECTIONS

- Breakfast
- Brunch
- Lunch
- Dinner
- Supper
- Snack
- Just a drink

- Cheese, limburger
- Soup, sirloin burger with vegetables, ready-to-...
- Pickle, relish, hamburger
- Rolls, hamburger or hot-dog
- Interstate Brands Corp., Wonder Hamburger R...
- Cheeseburger**
- Hamburger
- Totino's Pizza Rolls Pizza Snacks, Hamburger,...
- Betty Crocker Hamburger Helper cheeseburge...
- Worthington Foods, Morningstar Farms Better'...
- Worthington Foods, Natural Touch Vegan Burg...
- Green Giant, Harvest Burger, Original Flavor, ...
- Worthington Foods, Morningstar Farms "Burge...
- Worthington Foods, Morningstar Farms Spicy ...

- ▼ Lunch 12:30 PM
- ↳ Cheddar cheese

"Cheeseburger."

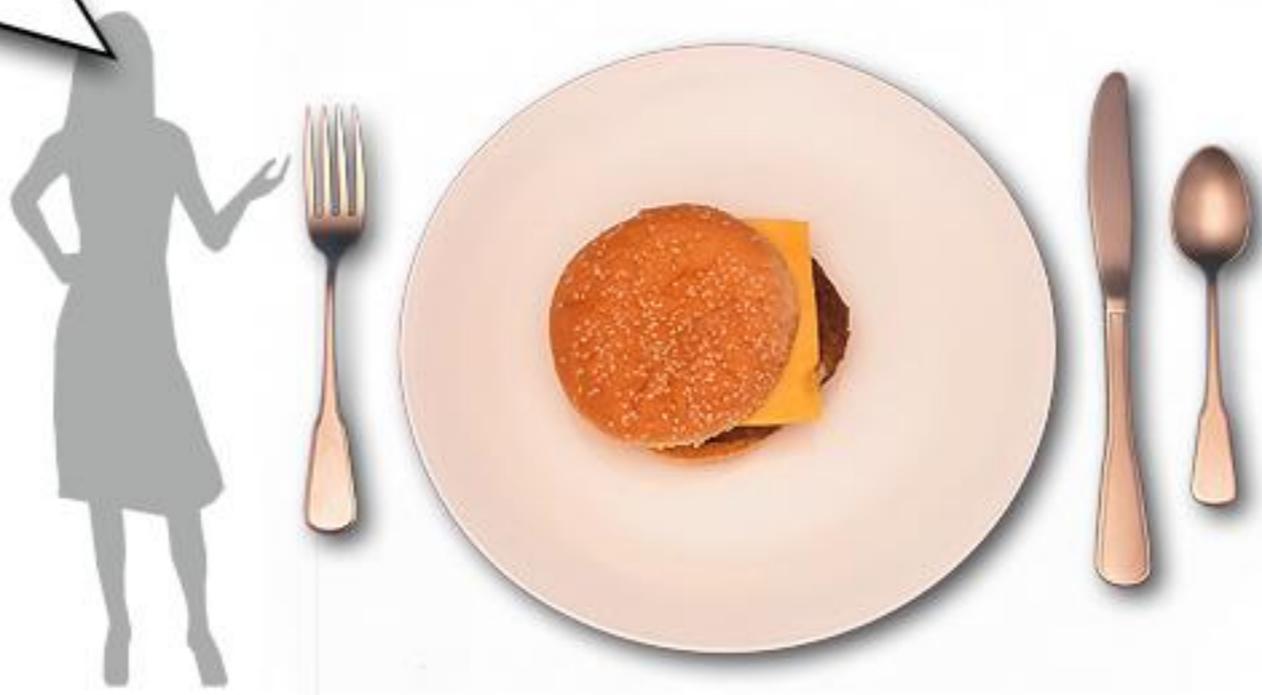
This picture may not be an exact match, but that's okay.

Click the **SELECT** button if you had cheeseburger.

SELECT

CHANGE

DELETE



Scheme D2

Paper Prototypes Cognitive Testing: Round 2
Quick List

MEALS

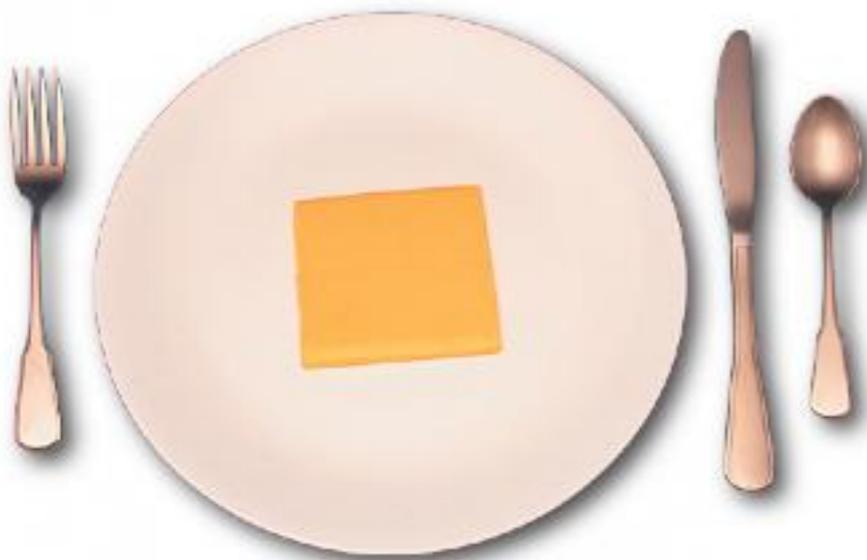
FOODS : DAIRY : CHEESE

MY SELECTIONS

- Breakfast
- Brunch
- Lunch
- Dinner
- Supper

- Snack
- Just a drink

- ▶ Baked good
- ▶ Beans, peas, nuts, soy products
- ▶ Beverages
- ▶ Breads, rolls and tortillas
- ▶ Casseroles, mixtures, frozen foods
- ▶ Cereals and energy bars
- ▶ Condiments, Salsa, Sauces
- ▼ Dairy
 - ▼ Cheese
 - ├ Alpine Lace Cheese
 - ├ American cheese (low sodium)
 - ├ Asiago cheese
 - ├ Beer cheese
 - ├ Blue or Roquefort cheese
 - ├ Borden Lite Line cheese
 - ├ Brick cheese
 - ├ Brie cheese
 - ├ Chedarella cheese
 - ├ **Cheddar cheese**
 - ├ Cheese (unknown kind)
 - ├ Cheese spread
 - ├ Cheese sticks
 - ├ Cheezes cheese
 - ├ Colby cheese
 - ├ Colby Jack cheese
 - ├ Coon cheese
 - ├ Country Crock Cheddar Cheese spread
 - ├ Feta cheese
 - ├ Fried cheese
 - ├ Goat cheese
 - ├ Gorgonzola cheese
 - ├ Gouda or edam cheese
 - ├ Gruyere cheese
 - ├ Handi-Snack cheese container
 - ├ Havarti cheese
 - ├ Hoop cheese
 - ├ Jarlsburg cheese



SELECT

▼ Lunch 12:30 PM

"Cheddar cheese."
 This picture may not be an exact match, but that's okay.
 Click the **SELECT** button if you had cheddar cheese.

DELETE



Scheme E

Paper Prototypes Cognitive Testing: Round 2
Quick List

Select foods by CLICKING here

or search by TYPING here

1 Meals and Snacks

2 Food Groups

3 Food Sub Groups

4 Foods

- Breakfast
- Brunch
- Lunch
- Dinner
- Supper
- Snack
- Just a drink

- Baked good
- Beans, peas, nuts, soy products
- Beverages
- Breads, rolls and tortillas
- Casseroles, mixtures, frozen food
- Cereals and energy bars
- Condiments, Salsa, Sauces
- Dairy**
- Eggs
- Fast Foods
- Fats, Oils, Dressings, Spreads
- Fish, shellfish
- Fruit and fruit juice
- Meat
- Pancakes, waffles, flapjacks, crep...
- Poultry
- Rice and other grains
- Salads
- Salty snacks
- Sandwiches

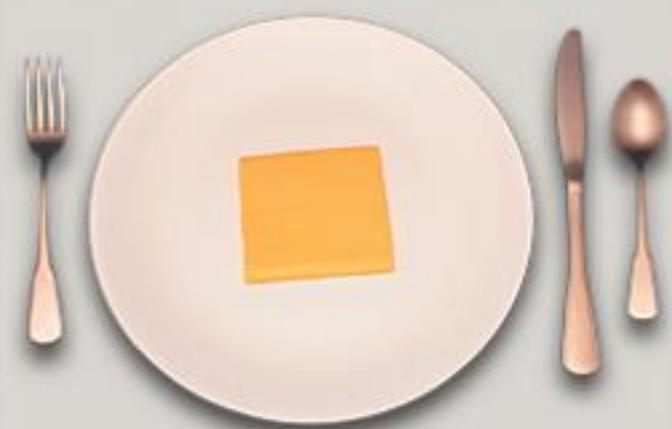
- Cheese
- Cream, creamers
- Dip
- Ice cream, frozen yogurt, sundaes
- Milk, all types
- Milk drinks
- Pudding, custard, flan, etc.
- Rice milk, rice drinks
- Soy milk, soy drinks
- Sour cream
- Whipped cream, whipped toppings
- Yogurt
- Other

- Alpine Lace Cheese
- American cheese
- Asiago cheese
- Beer cheese
- Blue or Roquefort cheese
- Borden Lite Line cheese
- Brick cheese
- Brie cheese
- Chedarella cheese
- Cheddar cheese**
- Cheese (unknown kind)
- Cheese spread
- Cheese sticks
- Cheez Kisses
- Cheez Whiz
- Cheezees cheese
- Colby cheese

MY SELECTIONS

SELECT

▼ Lunch : 12:30 PM



"Cheddar cheese."
This picture may not be an exact match, but that's okay.
Click the **SELECT** button if you had cheddar cheese.



CHANGE

DELETE

1 Meals and Snacks

2 Food Groups

3 Food Sub Groups

Search Results

- Breakfast
- Brunch
- Lunch
- Dinner
- Supper
- Snack
- Just a drink

- Cheese, limburger
- Soup, sirloin burger with vegetabl...
- Pickle, relish, hamburger
- Rolls, hamburger or hot-dog
- Interstate Brands Corp., WondeH...
- Cheeseburger**
- Hamburger
- Totino's Pizza Rolls Pizza Snacks...
- Betty Crocker Hamburger Helper ...
- Worthington Foods, Morningstar F...
- Worthington Foods, Natural Touch ...
- Green Giant, Harvest Burger, Origi ...
- Worthington Foods, Morningstar Fe...
- Worthington Foods, Morningstar Fa...

MY SELECTIONS

SELECT

▼ Lunch : 12:30 PM
 ↳ Cheddar cheese



"Cheeseburger."

This picture may not be an exact match, but that's okay.

Click the **SELECT** button if you had cheeseburger.

CHANGE

DELETE

Paper Prototype Round 2

Lessons Learned

- Vertical vs. horizontal browsing
 - No clear preference
- Vertical browsing
 - Preferred full column to 1/2
 - Preferred *My Selections* on right side of screen
- Food photography
 - Participants did not think images facilitated building *My Selections* for Quick List

Paper Prototype Round 3

Objectives: Assessing Revised Schemes and Probes (Detail Pass)

- First assessment of food probes
- Horizontal versus vertical navigation for probes
- Assess food photography

Scheme D2

Paper Prototypes Cognitive Testing: Round 3
Detail Pass

MY SELECTIONS

DETAILS

Here are the details of what you have selected.

If this is correct, **click the NEXT** button to continue.



- ▶ Breakfast : 9:00 AM
- ▼ Lunch : 12:30 PM
 - ▶ Coke (regular)
 - ▶ Cheeseburger
 - ▼ Green beans
 - ├ Preparation: **Cooked**
 - ├ Type: **Fresh**
 - ├ Sauce: **No sauce**
 - ├ Prepared with fat: **Butter**
 - ├ Other additions: **No**
 - └ Amount you ate: **1/2 cup**
- ▶ Snack : 3:00 PM

Don't know

▼ Prepared with fat?

- No fat or oil used
- Animal fat/drippings
- Butter**
- Margarine (including spreads)
- Oil (any kind)
- Shortening
- Other fat or oil
- Unknown fat or oil
- Don't know if fat or oil was used

▼ Other additions?

- Yes
- No**
- Don't know

▼ Amount you ate?

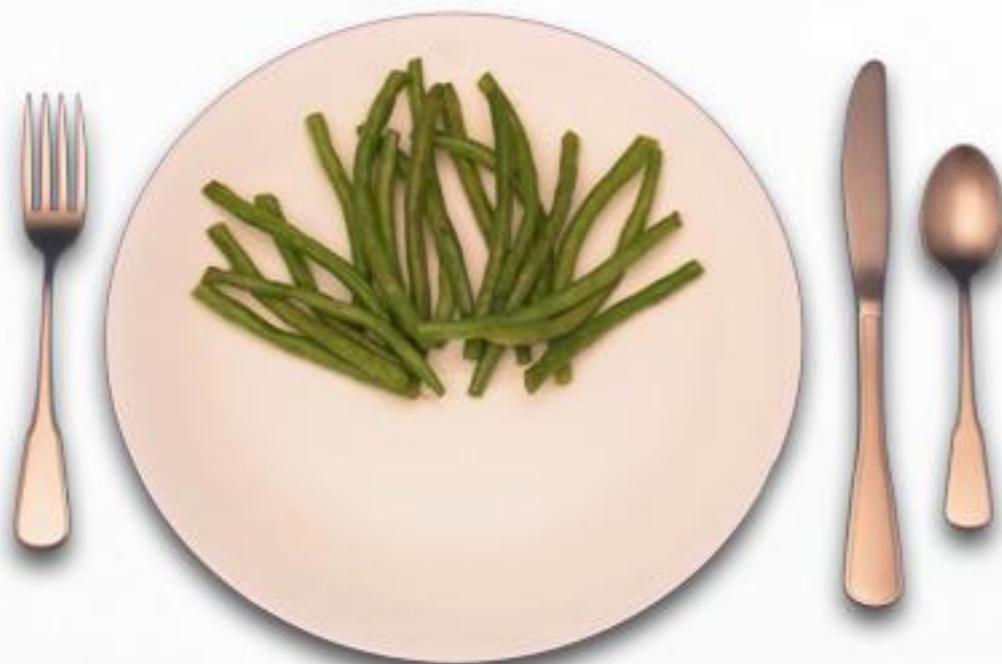
- 1/4 cup
- 1/2 cup**
- 3/4 cup
- 1-1/4 cups
- 1 cup
- 1-1/2 cups
- 1-3/4 cups
- 2 cups
- More than 2 cups
- Don't know

ADD

CHANGE

DELETE

NEXT



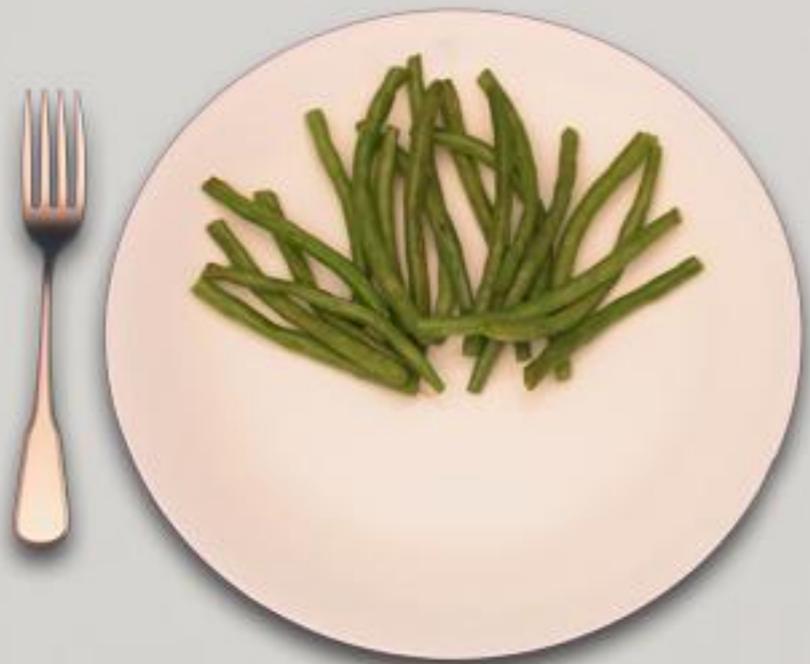
SELECT

Scheme E

Paper Prototypes Cognitive Testing: Round 3
Detail Pass

3 Sauce?	4 Prepared with fat?	5 Other Additions?	6 Amount you ate?
No sauce	No fat or oil used	Yes	1/4 cup
Cheese sauce	Animal fat/drippings	No	1/2 cup
Cream sauce	Butter	Don't know	3/4 cup
Mushroom sauce	Margarine (including spreads)		1-1/4 cups
Other sauce	Oil (any kind)		1 cup
Unknown sauce	Shortening		1-1/2 cups
Don't know	Other fat or oil		1-3/4 cups
	Unknown fat or oil		2 cups
	Don't know if fat or oil was used		More than 2 cups
			Don't know

Here are the details of what you have selected.
If this is correct, **click** the **NEXT** button to continue.



MY SELECTIONS

- ▶ Breakfast : 9:00 AM
- ▼ Lunch : 12:30 PM
 - ▶ Coke (regular)
 - ▶ Cheeseburger
 - ▼ Green beans
 - ┆ Preparation: **Cooked**
 - ┆ Type: **Fresh**
 - ┆ Sauce: **No sauce**
 - ┆ Prepared with fat: **Butter**
 - ┆ Other additions: **No**
 - ┆ Amount you ate: **1/2 cup**
- ▶ Snack : 3:00 PM

Paper Prototype Round 3

Lessons Learned

- 6 of 8 participants preferred vertical tree browsing to horizontal
- Most participants preferred
 - Fewer selections on screen
 - Shading vs. bolding for highlighting selections
- Most participants said they did not attend to food photography

Current Scheme

MEALS

MY SELECTIONS

FOODS

- Breakfast
- Brunch
- Lunch
- Dinner
- Supper

- Snack
- Just a drink

Please tell me what you had to eat or drink yesterday, Richard. Let's start with the kind of meal it was.

*Click on a **meal**, **Snack** or **Just a drink** from this list.*

CHANGE DELETE



SELECT

MEALS

MY SELECTIONS

FOODS

- Breakfast
- Brunch
- Lunch
- Dinner
- Supper
- Snack
- Just a drink

🕒 12:30 PM 

"Lunch."
 What time did you eat lunch?
 Select the **hours**, **minutes** and whether lunch was **AM** or **PM**.
 Click the  button when you are finished.



DELETE

SELECT

MEALS

MY SELECTIONS

FOODS

- Breakfast
- Brunch
- Lunch
- Dinner
- Supper

- Snack
- Just a drink

▼ Lunch 12:30 PM

- ▶ Beans, peas, nuts, soy products
- ▶ Beverages
- ▶ Breads, other baked goods
- ▶ Cereals and energy bars
- ▶ Chicken, turkey, poultry
- ▶ Condiments, Salsa, Sauces
- ▶ Dairy, dairy substitutes
- ▶ Desserts and sweets
- ▶ Eggs
- ▶ Ethnic Foods
- ▶ Fats, Oils, Dressings, Spreads
- ▶ Fish, shellfish
- ▶ Fruit
- ▶ Meat
- ▶ Pancakes, waffles, crepes
- ▶ Pasta, noodles, and spaghetti
- ▶ Rice and other grains
- ▶ Salads
- ▶ Salty snacks
- ▶ Sandwiches
- ▶ Soup
- ▶ Sugars and sweeteners
- ▶ Vegetables and vegetable juice

Okay... so, what did you have to eat or drink for lunch?

*You can tell me the food by clicking on a **FOODS** category in this list. Or, you can type the name of a food in the **search** box above.*

CHANGE DELETE



SELECT



MEALS

MY SELECTIONS

FOODS

- Breakfast
- Brunch
- Lunch
- Dinner
- Supper

- Snack
- Just a drink

▼ Lunch 12:30 PM



CHANGE DELETE

- ▶ Beans, peas, nuts, soy products
- ▼ Beverages
 - ▶ Beer, wine, cocktails, liquor
 - ▶ Coffee, specialty coffees
 - ▶ Juice, juice drinks
 - ▶ Milk, all types
 - ▶ Milk drinks
 - ▶ Rice milk, rice drinks
 - ▶ Smoothies
 - ▶ Soda, pop, soft drinks
 - ▶ Soy milk, soy drinks
 - ▶ Tea, hot & iced
 - Other
- ▶ Breads, other baked goods
- ▶ Cereals and energy bars
- ▶ Chicken, turkey, poultry
- ▶ Condiments, Salsa, Sauces
- ▶ Dairy, dairy substitutes
- ▶ Desserts and sweets
- ▶ Eggs
- ▶ Ethnic Foods
- ▶ Fats, Oils, Dressings, Spreads
- ▶ Fish, shellfish
- ▶ Fruit
- ▶ Meat
- ▶ Pancakes, waffles, crepes
- ▶ Pasta, noodles, and spaghetti
- ▶ Rice and other grains
- ▶ Salads
- ▶ Salty snacks
- ▶ Sandwiches
- ▶ Soup
- ▶ Sugars and sweeteners
- ▶ Vegetables and vegetable juice

SELECT



MEALS

MY SELECTIONS

FOODS

- Breakfast
- Brunch
- Lunch
- Dinner
- Supper

- Snack
- Just a drink

▼ Lunch 12:30 PM

CHANGE DELETE

- ▶ Beans, peas, nuts, soy products
- ▼ Beverages
 - ▶ Beer, wine, cocktails, liquor
 - ▶ Coffee, specialty coffees
 - ▶ Juice, juice drinks
 - ▶ Milk, all types
 - ▶ Milk drinks
 - ▶ Rice milk, rice drinks
 - ▶ Smoothies
- ▼ Soda, pop, soft drinks
 - Almond Smash (diet)
 - Almond Smash (regular)
 - Almond Smash (unknown if diet or regular)
 - Big Red (diet)
 - Big Red (regular)
 - Big Red (unknown if diet or regular)
 - Black Cherry soda (diet)
 - Black Cherry soda (regular)
 - Black Cherry soda (unknown if diet or regular)
 - Cherry Coke (diet)
 - Cherry Coke (regular)
 - Cherry Coke (unknown if diet or regular)
 - Cherry cola (diet)
 - Cherry cola (regular)
 - Cherry cola (unknown if diet or regular)
 - Cherry soda (diet)
 - Cherry soda (regular)
 - Cherry soda (unknown if diet or regular)
 - Clearly Canadian
 - Coca Cola (regular)
 - Coca Cola (diet)
 - Coca Cola (unknown if diet or regular)
 - Coke (regular)
 - Coke (diet)
 - Coke (unknown if diet or regular)
 - Cola (regular)
 - Cola (diet)
 - Cola (unknown if diet or regular)

"Soda, pop, soft drinks."

This list is longer. Use your mouse to drag the scroll bar and you will see the rest of the list.

Click on a **food** to see its picture.



SELECT



MEALS

MY SELECTIONS

FOODS

- Breakfast
- Brunch
- Lunch
- Dinner
- Supper

- Snack
- Just a drink

▼ Lunch 12:30 PM



"Coke (regular)."

This picture may not be an exact match,
but that's okay.

*Click the **SELECT** button at the bottom
if you had Coke (regular).*



- ▶ Beans, peas, nuts, soy products
- ▼ **Beverages**
 - ▶ Beer, wine, cocktails, liquor
 - ▶ Coffee, specialty coffees
 - ▶ Juice, juice drinks
 - ▶ Milk, all types
 - ▶ Milk drinks
 - ▶ Rice milk, rice drinks
 - ▶ Smoothies
 - ▼ **Soda, pop, soft drinks**
 - Almond Smash (diet)
 - Almond Smash (regular)
 - Almond Smash (unknown if diet or regular)
 - Big Red (diet)
 - Big Red (regular)
 - Big Red (unknown if diet or regular)
 - Black Cherry soda (diet)
 - Black Cherry soda (regular)
 - Black Cherry soda (unknown if diet or regular)
 - Cherry Coke (diet)
 - Cherry Coke (regular)
 - Cherry Coke (unknown if diet or regular)
 - Cherry cola (diet)
 - Cherry cola (regular)
 - Cherry cola (unknown if diet or regular)
 - Cherry soda (diet)
 - Cherry soda (regular)
 - Cherry soda (unknown if diet or regular)
 - Clearly Canadian
 - Coca Cola (regular)
 - Coca Cola (diet)
 - Coca Cola (unknown if diet or regular)
 - Coke (regular)
 - Coke (diet)
 - Coke (unknown if diet or regular)
 - Cola (regular)**
 - Cola (diet)
 - Cola (unknown if diet or regular)



MEALS

MY SELECTIONS

FOODS

- Breakfast
- Brunch
- Lunch
- Dinner
- Supper

- Snack
- Just a drink

▼ Lunch 12:30 PM

- ▶ Coke (regular)

You can add more foods and drinks to your lunch.

*You can tell me the food by clicking on a **FOODS** category in this list. Or, you can type the name of a food in the **search** box above.*

*You can also click on a different **meal**, **Snack** or **Just a drink**.*

- ▶ Beans, peas, nuts, soy products
- ▶ Beverages
- ▶ Breads, other baked goods
- ▶ Cereals and energy bars
- ▶ Chicken, turkey, poultry
- ▶ Condiments, Salsa, Sauces
- ▶ Dairy, dairy substitutes
- ▶ Desserts and sweets
- ▶ Eggs
- ▶ Ethnic Foods
- ▶ Fats, Oils, Dressings, Spreads
- ▶ Fish, shellfish
- ▶ Fruit
- ▶ Meat
- ▶ Pancakes, waffles, crepes
- ▶ Pasta, noodles, and spaghetti
- ▶ Rice and other grains
- ▶ Salads
- ▶ Salty snacks
- ▶ Sandwiches
- ▶ Soup
- ▶ Sugars and sweeteners
- ▶ Vegetables and vegetable juice



SELECT

MEALS

MY SELECTIONS

FOODS

- Breakfast
- Brunch
- Lunch
- Dinner
- Supper

- Snack
- Just a drink

- ▼ Breakfast : 9:00 AM
 - ▶ Healthy Choice Almond Crunch cereal
 - ▶ Croissant (plain)
 - ▶ 2% milk

- ▼ Lunch : 12:30 PM
 - ▶ Coke (regular)
 - ▶ Cheeseburger
 - ▶ Green beans

- ▼ Snack : 3:00 PM
 - ▶ Mr. Goodbar chocolate bar
 - ▶ Poland Spring bottled water

- ▼ Supper : 4:00 PM
 - ▶ Betty Crocker Hamburger Helper

- ▶ Beans, peas, nuts, soy products
- ▶ Beverages
- ▶ Breads, other baked goods
- ▶ Cereals and energy bars
- ▶ Chicken, turkey, poultry
- ▶ Condiments, Salsa, Sauces
- ▶ Dairy, dairy substitutes
- ▶ Desserts and sweets
- ▶ Eggs
- ▶ Ethnic Foods
- ▶ Fats, Oils, Dressings, Spreads
- ▶ Fish, shellfish
- ▶ Fruit
- ▶ Meat
- ▶ Pancakes, waffles, crepes
- ▶ Pasta, noodles, and spaghetti
- ▶ Rice and other grains
- ▶ Salads
- ▶ Salty snacks
- ▶ Sandwiches
- ▶ Soup
- ▶ Sugars and sweeteners
- ▶ Vegetables and vegetable juice

You can add more foods and drinks to your supper.

You can tell me the food by clicking on a **FOODS** category in this list. Or, you can type the name of a food in the **search** box above.

You can also click on a different **meal**, **Snack** or **Just a drink**.

CHANGE DELETE

SELECT



MEALS

MY SELECTIONS

FOODS

- Breakfast
- Brunch
- Lunch
- Dinner
- Supper
- Snack
- Just a drink

- ▼ Breakfast : 9:00 AM
 - ▶ Healthy Choice Almond Crunch cereal
 - ▶ Croissant (plain)
 - ▶ 2% milk
- ▶ Lunch : 12:30 PM

- ▶ Beans, peas, nuts, soy products
- ▶ Beverages
- ▶ Breads, other baked goods
- ▶ Cereals and energy bars
- ▶ Chicken, turkey, poultry
- ▶ Condiments, Salsa, Sauces
- ▶ Dairy, dairy substitutes
- ▶ Desserts and sweets
- ▶ Eggs
- ▶ Ethnic Foods
- ▶ Fats, Oils, Dressings, Spreads
- ▶ Fish, shellfish
- ▶ Fruit
- ▶ Meat
- ▶ Pancakes, waffles, crepes
- ▶ Pasta, noodles, and spaghetti
- ▶ Rice and other grains
- ▶ Salads
- ▶ Salty snacks
- ▶ Sandwiches
- ▶ Soup
- ▶ Sugars and sweeteners
- ▶ Vegetables and vegetable juice

You clicked the STOP button to indicate you have finished entering everything you ate or drank yesterday from midnight to midnight.

If this is correct, click the OK button. If not, click the CANCEL button.

Finished?

Are you sure you have finished entering everything you ate or drank yesterday from midnight to midnight?



SELECT

MY SELECTIONS

DETAILS

- ▶ Breakfast : 9:00 AM
- ▶ Lunch : 12:30 PM
- ▶ Snack : 3:00 PM
- ▶ Supper : 4:00 PM

Now we'll go through each of your food selections meal by meal to get more detailed information.

We've already completed Breakfast, so let's move on to Lunch.



ADD CHANGE DELETE NEXT

SELECT

MY SELECTIONS

DETAILS

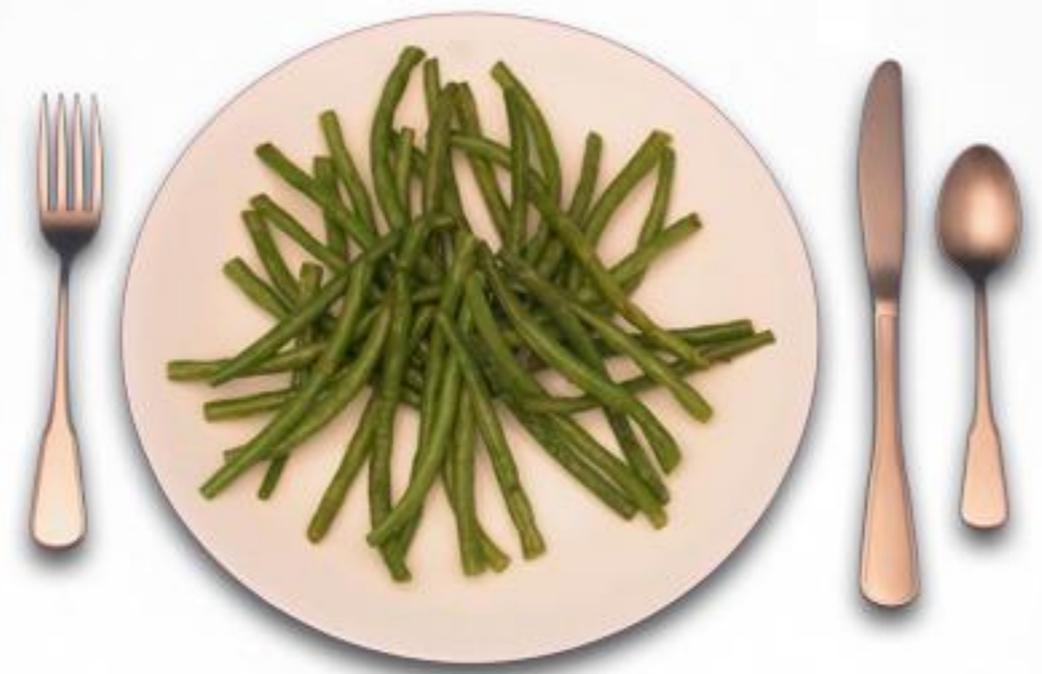
Your next food is "Green beans."
 How were the green beans **prepared**?
Please click an option.



- ▶ Breakfast : 9:00 AM
- ▼ Lunch : 12:30 PM
 - ▶ Coke (regular)
 - ▶ Cheeseburger
 - ▼ **Green beans**
- ▼ Snack : 3:00 PM
 - ▶ Mr. Goodbar chocolate bar
 - ▶ Poland Spring bottled water
- ▼ Supper : 4:00 PM
 - ▶ Betty Crocker Hamburger Helper

- ▼ Preparation?
- Cooked
 - Creamed
 - Pickled
 - Raw
 - Don't know

ADD CHANGE DELETE NEXT



SELECT

MY SELECTIONS

DETAILS

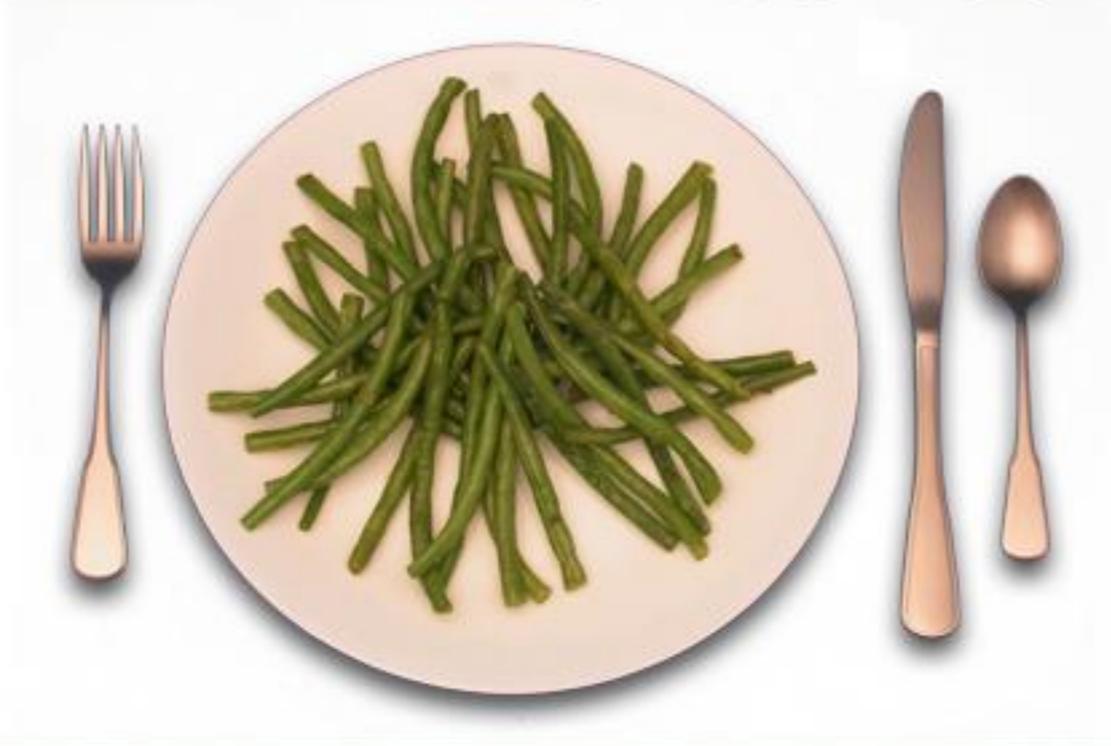


Was it **fresh, frozen, canned, or dry?**
Please click an option.

- ▶ Breakfast : 9:00 AM
- ▼ Lunch : 12:30 PM
 - ▶ Coke (regular)
 - ▶ Cheeseburger
 - ▼ **Green beans**
- ▼ Snack : 3:00 PM
 - ▶ Mr. Goodbar chocolate bar
 - ▶ Poland Spring bottled water
- ▼ Supper : 4:00 PM
 - ▶ Betty Crocker Hamburger Helper

- ▼ Preparation?
 - Cooked**
 - Creamed
 - Pickled
 - Raw
 - Don't know
- ▼ Type?
 - Canned
 - Fresh
 - Frozen
 - Other
 - Don't know

ADD CHANGE DELETE NEXT



SELECT

MY SELECTIONS

DETAILS

▶ Breakfast : 9:00 AM

▼ Lunch : 12:30 PM

▶ Coke (regular)

▶ Cheeseburger

▼ Green beans

▼ Snack : 3:00 PM

▶ Mr. Goodbar chocolate bar

▶ Poland Spring bottled water

▼ Supper : 4:00 PM

▶ Betty Crocker Hamburger Helper

▼ Preparation?

Cooked

Creamed

Pickled

Raw

Don't know

▼ Type?

Canned

Fresh

Frozen

Other

Don't know

▼ Sauce?

No sauce

Cheese sauce

Cream sauce

Mushroom sauce

Other sauce

Unknown sauce

Don't know

ADD

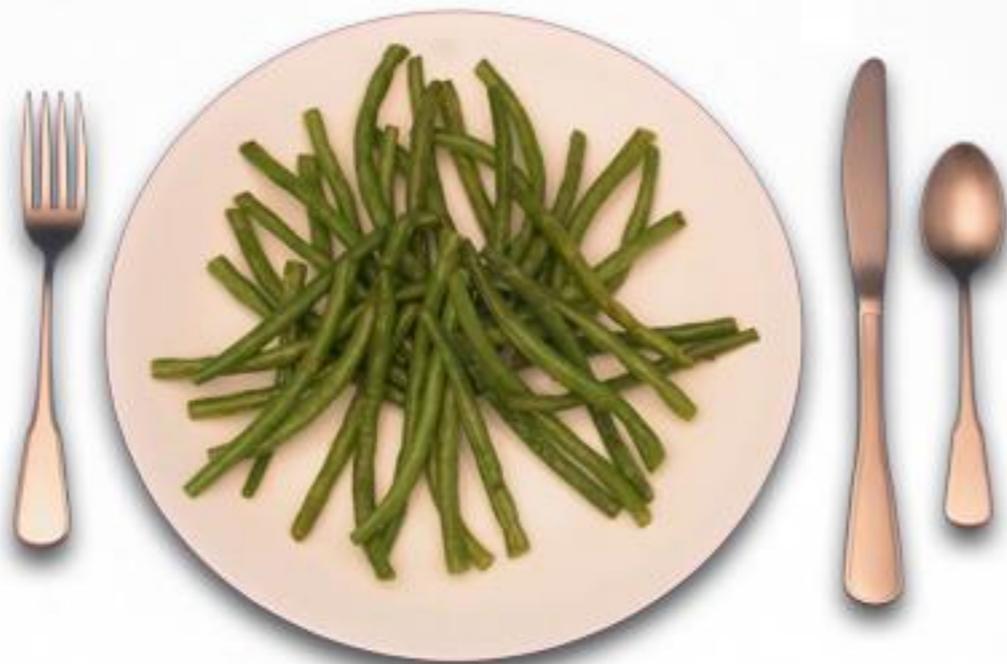
CHANGE

DELETE

NEXT

Was it cooked with a **sauce**?

Please click an option.



SELECT

MY SELECTIONS

DETAILS

Was any kind of **fat** or **oil** used in cooking or preparing the green beans?

Please click an option.



▶ Breakfast : 9:00 AM

▼ Lunch : 12:30 PM

▶ Coke (regular)

▶ Cheeseburger

▼ **Green beans**

▼ Snack : 3:00 PM

▶ Mr. Goodbar chocolate bar

▶ Poland Spring bottled water

▼ Supper : 4:00 PM

▶ Betty Crocker Hamburger Helper

- Raw
- Don't know

▼ Type?

- Canned
- Fresh**
- Frozen
- Other
- Don't know

▼ Sauce?

- No sauce**
- Cheese sauce
- Cream sauce
- Mushroom sauce
- Other sauce
- Unknown sauce
- Don't know

▼ Prepared with fat?

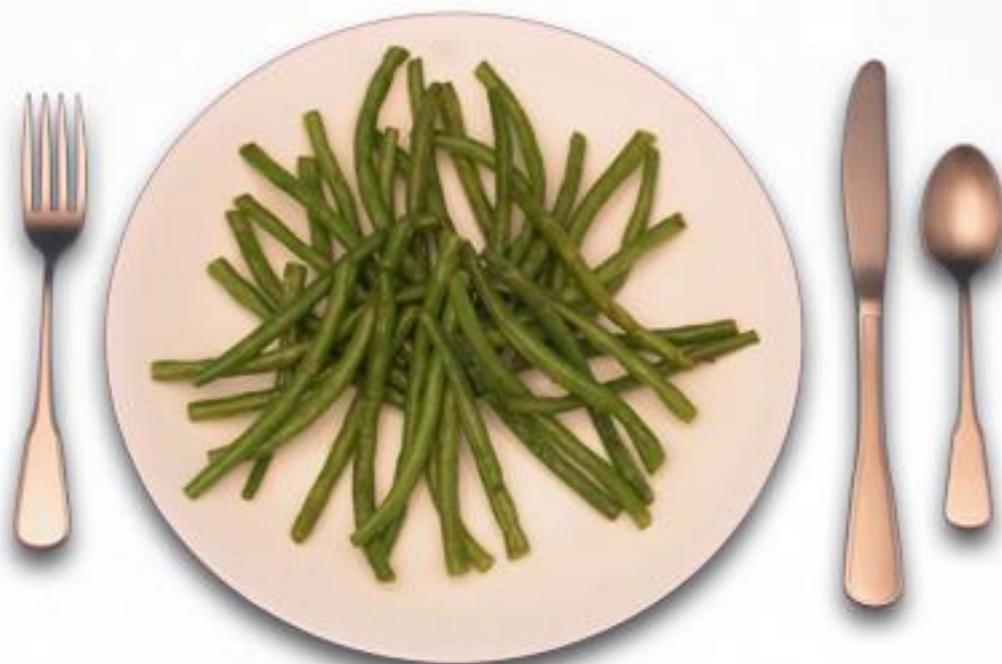
- No fat or oil used
- Animal fat/drippings
- Butter
- Margarine (including spreads)
- Oil (any kind)
- Shortening
- Other fat or oil
- Unknown fat or oil
- Don't know if fat or oil was used

ADD

CHANGE

DELETE

NEXT



SELECT

MY SELECTIONS

DETAILS

Did you **add** anything to the food?

Please click an option.



- ▶ Breakfast : 9:00 AM
- ▼ Lunch : 12:30 PM
 - ▶ Coke (regular)
 - ▶ Cheeseburger
 - ▼ **Green beans**
- ▼ Snack : 3:00 PM
 - ▶ Mr. Goodbar chocolate bar
 - ▶ Poland Spring bottled water
- ▼ Supper : 4:00 PM
 - ▶ Betty Crocker Hamburger Helper

- Fresh**
- Frozen
- Other
- Don't know

▼ Sauce?

- No sauce**
- Cheese sauce
- Cream sauce
- Mushroom sauce
- Other sauce
- Unknown sauce
- Don't know

▼ Prepared with fat?

- No fat or oil used
- Animal fat/drippings
- Butter**
- Margarine (including spreads)
- Oil (any kind)
- Shortening
- Other fat or oil
- Unknown fat or oil
- Don't know if fat or oil was used

▼ Other additions?

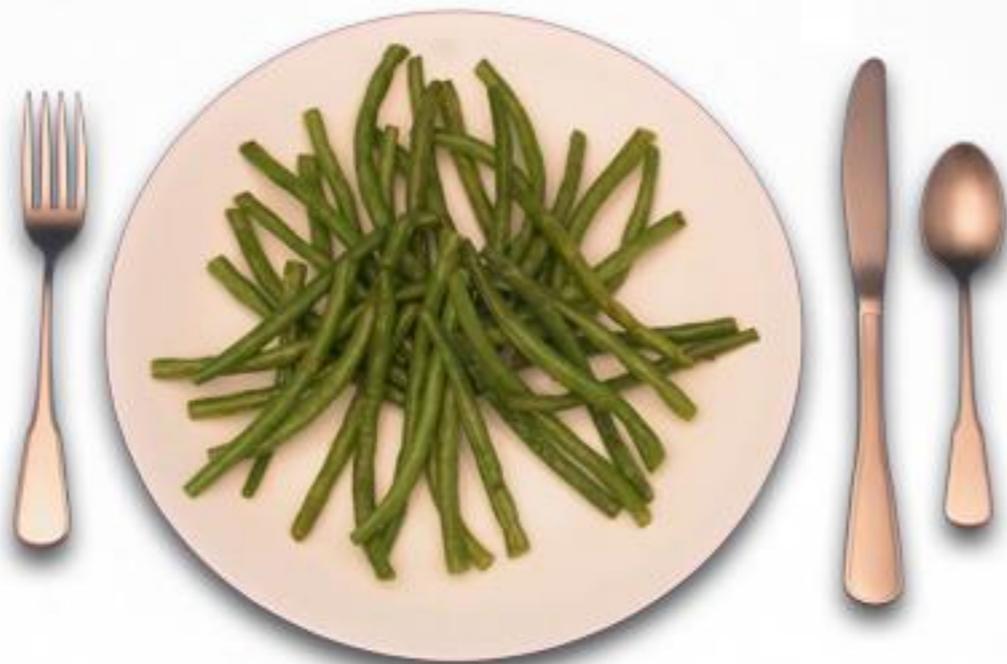
- Yes
- No
- Don't know

ADD

CHANGE

DELETE

NEXT



SELECT

MY SELECTIONS

DETAILS

How much of the green beans did you actually eat?

Please click an option.



- ▶ Breakfast : 9:00 AM
- ▼ Lunch : 12:30 PM
 - ▶ Coke (regular)
 - ▶ Cheeseburger
 - ▼ Green beans
- ▼ Snack : 3:00 PM
 - ▶ Mr. Goodbar chocolate bar
 - ▶ Poland Spring bottled water
- ▼ Supper : 4:00 PM
 - ▶ Betty Crocker Hamburger Helper

ADD CHANGE DELETE NEXT

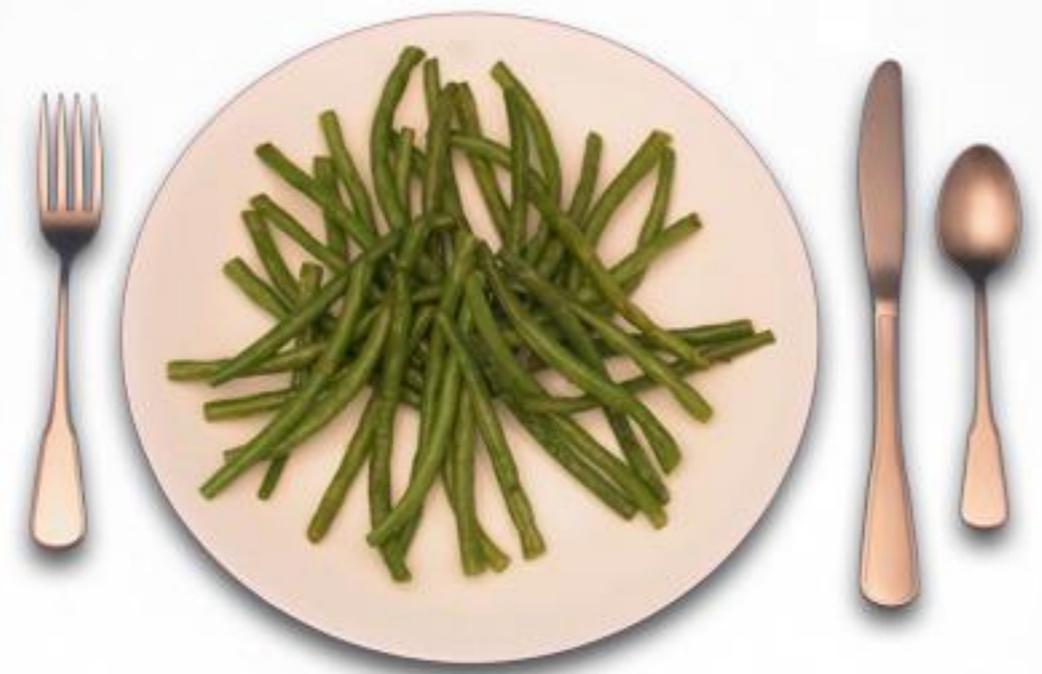
- Don't know
- ▼ Prepared with fat?
 - No fat or oil used
 - Animal fat/drippings
 - Butter
 - Margarine (including spreads)
 - Oil (any kind)
 - Shortening
 - Other fat or oil
 - Unknown fat or oil
 - Don't know if fat or oil was used

- ▼ Other additions?
 - Yes
 - No
 - Don't know

- ▼ Amount you ate?
 - 1/4 cup
 - 1/2 cup
 - 3/4 cup
 - 1-1/4 cups
 - 1 cup
 - 1-1/2 cups
 - 1-3/4 cups
 - 2 cups
 - More than 2 cups
 - Don't know

SELECT

1 cup



MY SELECTIONS

DETAILS

How much of the green beans did you actually eat?

Please click an option.



▶ Breakfast : 9:00 AM

▼ Lunch : 12:30 PM

▶ Coke (regular)

▶ Cheeseburger

▼ Green beans

▼ Snack : 3:00 PM

▶ Mr. Goodbar chocolate bar

▶ Poland Spring bottled water

▼ Supper : 4:00 PM

▶ Betty Crocker Hamburger Helper

ADD

CHANGE

DELETE

NEXT

Don't know

▼ Prepared with fat?

No fat or oil used

Animal fat/drippings

Butter

Margarine (including spreads)

Oil (any kind)

Shortening

Other fat or oil

Unknown fat or oil

Don't know if fat or oil was used

▼ Other additions?

Yes

No

Don't know

▼ Amount you ate?

1/4 cup

1/2 cup

3/4 cup

1-1/4 cups

1 cup

1-1/2 cups

1-3/4 cups

2 cups

More than 2 cups

Don't know

1/2 cup



SELECT

MY SELECTIONS

DETAILS

Here are the details of what you have selected.

If this is correct, **click the NEXT** button to continue.



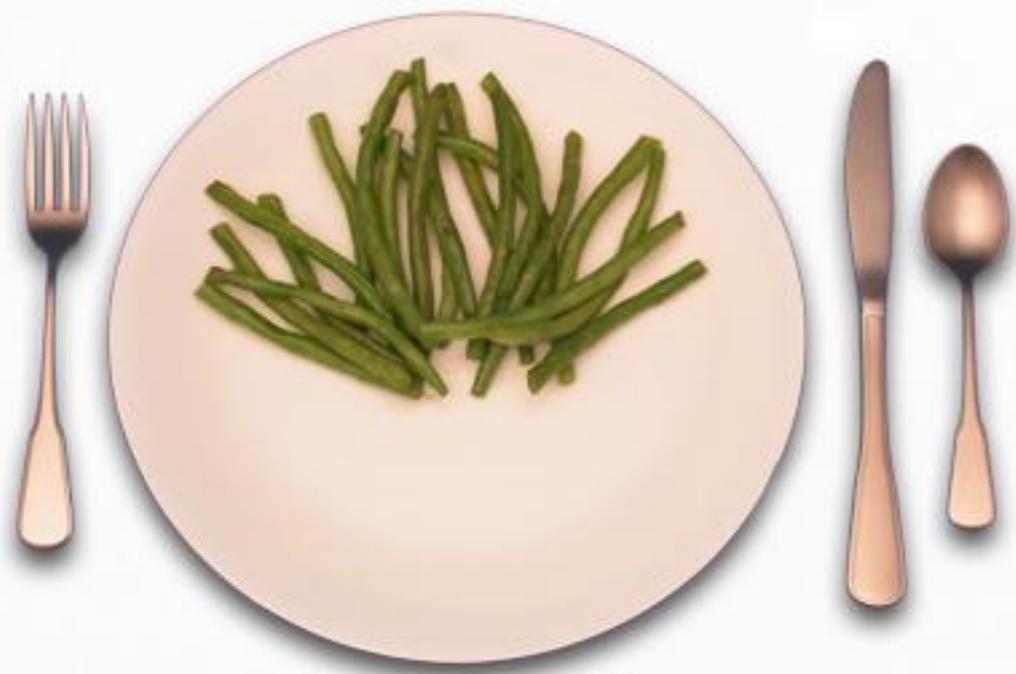
- ▶ Breakfast : 9:00 AM
- ▼ Lunch : 12:30 PM
 - ▶ Coke (regular)
 - ▶ Cheeseburger
 - ▼ Green beans
 - ┆ Preparation: **Cooked**
 - ┆ Type: **Fresh**
 - ┆ Sauce: **No sauce**
 - ┆ Prepared with fat: **Butter**
 - ┆ Other additions: **No**
 - ┆ Amount you ate: **1/2 cup**
- ▼ Snack : 3:00 PM
 - ▶ Mr. Goodbar chocolate bar
 - ▶ Poland Spring bottled water
- ▼ Supper : 4:00 PM
 - ▶ Betty Crocker Hamburger Helper

- Don't know
- ▼ Prepared with fat?
 - No fat or oil used
 - Animal fat/drippings
 - ⊙ **Butter**
 - Margarine (including spreads)
 - Oil (any kind)
 - Shortening
 - Other fat or oil
 - Unknown fat or oil
 - Don't know if fat or oil was used
- ▼ Other additions?
 - Yes
 - ⊙ **No**
 - Don't know
- ▼ Amount you ate?
 - 1/4 cup
 - ⊙ **1/2 cup**
 - 3/4 cup
 - 1-1/4 cups
 - 1 cup
 - 1-1/2 cups
 - 1-3/4 cups
 - 2 cups
 - More than 2 cups
 - Don't know

ADD CHANGE DELETE **NEXT**

SELECT

1/2 cup



Design and Design Development

Next Steps

- Refine vertical tree design
 - Initial working prototype
 - Conduct cognitive testing
- Determine optimal use of food photography
- Expected completion: Summer 2007

Validation

- Planning stages only
- Comparison to AMPM
- Include observation of meals consumed
- Pilot ASA24 in an ongoing cohort study