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Retention Interval and Prompts: Creation and Cross-Sectional Pilot-Testing of Eight Interview Protocols to Obtain 24-Hour Dietary Recalls from Fourth-Grade Children

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Abstract

Background—Any 24-hour dietary recall (24hDR) has a retention interval and prompts. No research has investigated their combined effect.

Objective—Eight 24hDR protocols, constructed by crossing two retention intervals (prior-24-hour recall obtained in afternoon; previous-day recall obtained in morning) with four prompts (*forward* [distant-to-recent], *reverse* [recent-to-distant], *meal-name* [breakfast, lunch, etc.], *open* [no instructions]), were pilot-tested.

Design—Via a cross-sectional design, children were interviewed once, using one of eight 24hDR protocols.

Participants/setting—Forty-eight fourth-grade children (79% Black; 50% girls; six per protocol) were randomly selected from two schools in Spring, 2011. Protocol assignment was random. Analyses excluded one interview due to protocol deviation.

Statistical analyses performed—Multivariate analysis of variance (ANOVA) with four non-accuracy-related response variables was conducted, with independent variables retention interval, prompt, and their interaction. The significance level was 0.10 due to the study's exploratory nature.

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Results—The response variable set differed across retention intervals ($P=0.0003$) and prompts ($P=0.045$) but not their interaction ($P=0.11$). Follow-up ANOVA for each of four variables showed differences by retention interval for three and prompt for two: Interview length (minutes) differed by retention interval (prior-24-hour-afternoon=21.8, previous-day-morning=16.1; $P<0.0008$) and prompt (open=20.3, reverse=20.0, forward=19.1, meal-name=16.3; $P=0.079$). Number of school meals reported eaten during the target period did not depend on retention interval or prompt, but was greater using meal-name prompts (1.7) than the other three prompts (1.3; $P=0.055$; contrast t -test). Number of 10 possible meal components reported eaten at school meals differed by retention interval (prior-24-hour-afternoon=4.1, previous-day-morning=2.9; $P=0.048$). Weighted number of items (condiment=0.33, combination entrée=2.0, else=1.0) reported eaten at school meals differed by retention interval (prior-24-hour-afternoon=5.8, previous-day-morning=4.1; $P=0.079$) and prompt (forward=6.2, meal-name=5.3, reverse=4.9, open=3.3; $P=0.093$).

Conclusions—Children's non-accuracy-related responses to eight 24hDR protocols varied as hypothesized. The selected protocols will be useful in a planned validation study to investigate differences by protocol in children's recall accuracy.

Keywords

dietary recall; children; retention interval; prompts; interview protocol

INTRODUCTION

Understanding the relationship between dietary intake and chronic disease is critical for health.^{1,2} Assessing children's intake is important because some of the physiological processes leading to the diet-related chronic diseases of adulthood begin during childhood.^{1–3} Older elementary school children have provided 24-hour dietary recalls (24hDRs) without parental help for research studies^{4–7} and to evaluate nutrition interventions.^{8–10} However, validation studies have identified errors in children's dietary recalls.^{11–13} To develop methods to improve 24hDRs, factors related to misreporting must be identified. These almost certainly include retention interval (elapsed time between the to-be-reported meals and the interview)¹² and may include prompts to elicit reports of intake.

For a 24hDR, the combination of target period and interview time determine retention interval. Research has shown that children's dietary recall accuracy is better for shorter than longer retention intervals^{12,14–17}; this may be partially due to the occurrence of fewer report-irrelevant meals between the target period's end and the interview. Two 24-hour target periods often used for 24hDRs are the prior 24 hours (24 hours immediately preceding the interview) and previous day (midnight to midnight of the day before the interview). An interview may be any time of day (morning, afternoon, evening). For prior-24-hour 24hDRs, the target period's end coincides with the interview's start time, and no meals intervene between the to-be-reported meals and the interview. For previous-day 24hDRs, both time from the target period's end to the interview's start time, and number of intervening meals, increase as interviews are held later in the day.^{12,14}

Research on memory and other cognitive aspects of survey responding^{18–20} shows that recall accuracy may be influenced by how respondents are prompted to report the target period's events. Respondents reporting their 24-hour dietary intake may be prompted to do so in forward order, from the target period's beginning to its end; in reverse order, from the end to beginning; by meal name; or may be given no specific instructions. Two validation studies of fourth-grade children's previous-day recalls showed that dietary recall accuracy depended on prompts: In one study, accuracy was better for boys with reverse than forward prompts, but for girls with forward than reverse prompts.²¹ In the other study, although children reported fewer items with no specific prompts than with meal-name prompts, accuracy was better with no specific prompts than with meal-name prompts.²² Neither study used prior-24-hour recalls.

Two prominent 24hDR protocols are the Nutrition Data System for Research (NDSR) protocol^{23,24} and Automated Multiple-Pass Method (AMPM).²⁵ Each is an interviewer-administered, multiple-pass protocol. The NDSR protocol targets the previous day* and uses forward prompts during the first pass. The AMPM protocol targets the previous day and asks respondents to report intake freely in the first pass without providing specific prompts.

A newer 24hDR multiple-pass protocol is the web-based Automated Self-Administered 24-Hour Recall (ASA24TM).²⁶ Two versions—ASA24TM-2011 and ASA24TM-Kids-2012—target the previous day,** and use meal-name prompts in a computer-based environment (i.e., without an interviewer).

As any 24hDR has a retention interval and prompts, it is necessary to identify how their combined effect influences recall accuracy. Several validation studies have investigated retention interval effects on children's dietary recall accuracy^{12,14–17,27}, but few have investigated prompt effects;^{21,22} to our knowledge, no published validation study has investigated their combined effect. For example, it is possible that reverse prompts have a stronger influence on accuracy for prior-24-hour than previous-day recalls. This may be because the prior-24-hour concept is cognitively abstract, especially for children, but it can be simplified by segmenting the 24-hour period into today and yesterday, and covering today first, and then yesterday, to complete the 24 hours.

In preparation for a planned validation study funded by the National Institutes of Health to investigate the combined influence of retention interval and prompts on fourth-grade children's dietary recall accuracy, eight 24hDR protocols were constructed by crossing two retention intervals with four prompts. The specific protocols were selected for the planned validation study for these reasons: The previous-day target period was included because the NDSR²⁴ and AMPM²⁵ protocols use it, and it is commonly used for 24hDRs in studies with recovery biomarkers that involve 24-hour urine samples.^{28–30} However, children's dietary recall accuracy is better for prior-24-hour than previous-day recalls.^{12,14–17} For the two retention intervals for the planned validation study, we combined with each target period the

*Since 2013, NDSR has allowed researchers to modify the target period to be the prior 24 hours.

**The current ASA24TM versions (ASA24TM-2014 and ASA24TM-Kids-2014) allow selection of either target period — prior 24 hours or previous day. As of late 2014, previously released versions (ASA24TM-2011 and ASA24TM-Kids-2012) will no longer be available for use.

interview time for which children's accuracy was best in a 2009 study in which we crossed two target periods with three interview times (morning, afternoon, evening)—*prior-24-hour recalls obtained in the afternoon* (prior-24-hour-afternoon) and *previous-day recalls obtained in the morning* (previous-day-morning).¹² We crossed each of these two retention intervals with four prompts: *Forward*, *open*, and *meal-name* prompts were included because the NDSR,²⁴ AMPM,²⁵ and ASA24^{TM26} protocols, respectively, use them. *Reverse* prompts were included because accuracy was better with reverse than forward prompts for boys in our 2003 study²¹ and for prior-24-hour recalls in our unpublished pilot study in Spring, 2007.

This article describes the eight 24hDR protocols, and provides results from cross-sectional pilot testing conducted to investigate whether, for variables for which predictions could be made, children's responses would be consistent with hypotheses. We examined the effects of retention interval, prompt, and their interaction on four non-accuracy response variables (Table 1). Recall accuracy was not assessed because doing so would require direct meal observation, or another validation method, not feasible for this pilot study. The variables examined are useful and logical for comparing interview conditions when recall accuracy assessment is not possible; past studies examined similar non-accuracy variables to investigate whether observation of children eating school meals affected their subsequent recalls about those meals.^{31,32} For this pilot study, it was hypothesized that interview length would be greater for prior-24-hour-afternoon than previous-day-morning recalls based on two past studies.^{31,32} It was also hypothesized that more school meals would be reported eaten with recalls using meal-name prompts than with recalls using the other three prompts. As prompts in dietary recalls are relatively unstudied, general differences were tested among the effects of prompts on the other response variables. General differences on response variables for the retention-interval-by-prompt interaction were also tested.

METHODS

The University of South Carolina's Institutional Review Board provided approval. Written parental consent and child assent were obtained.

Participants were recruited from all six fourth-grade classes at two elementary schools in one district in Columbia, South Carolina, in mid-Spring, 2011. Of 134 children (83% Black; 45% girls) invited to participate, 101 agreed (80% Black; 51% girls).

During late Spring, 2011, researchers conducted 24hDR interviews with 48 children (79% Black) randomly selected from those who agreed with the constraint that 50% were girls. Children had to speak English clearly and hear without impairment. Before random selection, teachers identified children not meeting these criteria. The sample size of 48 was based on this pilot study's budgetary constraints.

Each interview followed one of eight written, multiple-pass protocols (Table 1). Figure 1 gives an overview of each pass of each protocol. The prior-24-hour protocol passes, regardless of prompt, involved a segmented approach in which children were asked first to report intake for the interview day, and then for the previous day beginning 24 hours before

the interview's start time. This segmented approach was described by Buzzard,³³ and used in past studies with children.^{12,14,15,32,34}

Six children were randomly assigned to each protocol with the constraint that three be girls. Each child was interviewed once. A total of three researchers conducted interviews. Before data collection, interviewers received training through modeling, practice, and quality control for interviews. Interviews occurred in person at school on Tuesdays through Fridays. Previous-day-morning and prior-24-hour-afternoon recalls were conducted after breakfast and lunch, respectively. Interviewers wrote information reported by children, and documented beginning and ending times of interviews, onto paper interview forms. Each interview was audio-recorded and transcribed. Using established quality control for interview procedures^{12,14,16,21,35,36}, a non-interviewing researcher reviewed each interview's audio recording, typed transcript, and paper interview form to ensure protocol adherence. (One interview [prior-24-hour-afternoon/forward] deviated from protocol and was excluded from analyses.) Each interviewed child was mailed a \$10 check 4 to 6 weeks after the interview.

Each interview's length (in minutes) was calculated by subtracting beginning time from ending time.

As in past studies^{12,14,16,17,21,31,32,35,37}, to be counted as a school meal, children had to refer to a reported breakfast as "breakfast" or "school breakfast", refer to a reported lunch as "lunch" or "school lunch", identify the location in which the meal was eaten as "school", and report the meal time to within one hour of the scheduled meal time.

Each item reported eaten was categorized as one of ten meal components as in past studies^{31,32} (Table 1, footnote d). Number of meal components reported eaten at school meals was the number of these reported in the interview, regardless of number of instances. For example, a child who reported eating pancakes, syrup, and orange juice at school breakfast, and chicken-and-rice casserole, biscuit, broccoli, and milk at school lunch, reported five unique meal components (bread, condiment, beverage, combination entrée, vegetable) eaten at school meals.

Each item reported eaten was assigned a subjective weight according to meal component (Table 1, footnote e) so that combination entrées counted the most, condiments the least, and all other items in between, as in past studies.^{12,14,16,17,21,31,32,35,37,38} For example, the previous paragraph's child (who reported eating pancakes, syrup, orange juice, chicken-and-rice casserole, biscuit, broccoli, and milk) reported 7.33 weighted items eaten at school meals.

Multivariate analysis of variance (MANOVA) was conducted with the set of response variables; independent variables were retention interval, prompt, and their interaction. Follow-up analysis of variance (ANOVA) was conducted for each of the four response variables. For the hypothesis concerning school meals, a *t*-test was conducted about the corresponding contrast for meal-name prompts versus the other three prompts. Reported *P*-values were adjusted using the Benjamini-Hochberg procedure.³⁹ Given the pilot study's

exploratory nature, the significance level was chosen to control the false discovery rate at 0.10.

RESULTS

Of the 47 children included in analyses, 37 were Black, 24 were girls, and the mean age was 9.7 years (standard deviation=0.49). Table 1 provides least squares means for the four response variables by retention interval and by prompt, and for descriptive purposes only, their interaction.

For the set of response variables, MANOVA showed, after adjusting for multiple tests, differences between retention intervals ($P=0.0003$) and across prompts ($P=0.045$). The retention-interval-by-prompt interaction was not significant ($P=0.11$).

Follow-up ANOVAs for each of the four response variables showed a retention interval effect for three (interview length, number of meal components reported eaten at school meals, weighted number of items reported eaten at school meals) and a prompt effect for two (interview length, weighted number of items reported eaten at school meals), after adjusting for multiple tests.

Interview length differed by retention interval and was longer for prior-24-hour-afternoon than previous-day-morning recalls, which lasted approximately 22 and 16 minutes on average, respectively ($P<0.0008$, ANOVA). Also, interview length differed across prompts; meal-name prompt recalls were the shortest and lasted approximately 16 minutes on average, whereas open-, reverse-, and forward- prompt recalls lasted approximately 19 to 20 minutes on average ($P=0.079$, ANOVA).

The number of school meals reported eaten during the target period was not affected by retention interval ($P=0.21$, ANOVA), nor did it vary over prompts ($P=0.23$, ANOVA). However, more school meals were reported eaten during meal-name prompt recalls (1.7 on average) than during recalls using the other three prompts (overall average of 1.3) (one-sided $P=0.055$; corresponding contrast t -test).

The number of meal components reported eaten at school meals differed by retention interval and was greater for prior-24-hour-afternoon than previous-day-morning recalls, with average numbers of meal components of approximately 4 and 3, respectively ($P=0.048$, ANOVA). However, number of meal components did not depend on prompt ($P=0.74$, ANOVA).

The weighted number of items reported eaten at school meals differed by retention interval and was greater for prior-24-hour-afternoon than previous-day-morning recalls, with averages of approximately 6 and 4, respectively ($P=0.079$, ANOVA). Also, the weighted number of items differed across prompts and was smallest using open prompts with an average of approximately 3, whereas the average was approximately 5 to 6 using forward, meal-name, and reverse prompts ($P=0.093$, ANOVA).

DISCUSSION

Analyses of four non-accuracy-related response variables indicated that children's 24hDR performance was consistent with hypotheses concerning interview length and school meals reported, and demonstrated that responses to the eight 24hDR protocols varied as expected.

The retention interval effect on interview length, with greater length for prior-24-hour-afternoon than previous-day-morning recalls, was as hypothesized. The segmented approach for prior-24-hour-afternoon protocols likely contributed to its longer interviews. These results are consistent with two past studies^{31,32} with fourth-grade children who were not observed eating school meals but provided 24hDRs using forward prompts. In one of those studies,³¹ mean interview length was 16.9 and 12.3 minutes for prior-24-hour-afternoon and previous-day-morning recalls, respectively; in the other study,³² these were 19.3 and 15.9 minutes, respectively.

The meal-name prompt effect on number of school meals reported eaten during the target period, with more school meals for meal-name prompt recalls, was as hypothesized. Each of the eight protocols included "school" as a response option for location for where meals were eaten. However, only meal-name prompt recalls asked children directly whether they had eaten breakfast, lunch, etc.

Interview length differed across prompts, with a shorter length for meal-name than open-, reverse-, and forward-prompt recalls. Meal-name prompting may have increased the speed with which children retrieved and reported meals and their contents.

The retention interval difference in two response variables—number of meal components reported eaten at school meals, and weighted number of items reported eaten at school meals—may be connected as both were in the same direction, with more for prior-24-hour-afternoon than previous-day-morning recalls.

The weighted number of items reported eaten at school meals differed across prompts, with fewer items reported eaten with open- than reverse-, meal-name, and forward-prompt recalls. The use of open prompts may be less helpful as it offers no instructions or guidance in terms of meal names or behavior chaining. (Behavior chaining may occur with forward prompts as children are prompted to report the "next time" they ate after what they just reported; likewise, behavior chaining may occur with reverse prompts as children are prompted to report the "last time" they ate before what they just reported.⁴⁰)

Based on pilot testing, it was determined that the eight protocols needed only minor wording changes prior to use in the planned validation study. The minor changes were made to ensure that questions were worded appropriately and consistently across retention intervals.

Limitations of the study included a small sample size, which restricts generalizability and power to detect significant interactions. This pilot study's 24hDRs were not validated; thus, differences in *accuracy* by retention interval, prompt, and their interaction could not be determined.

CONCLUSIONS

Children's non-accuracy-related responses to eight 24hDR protocols varied as hypothesized. Results showed that the selected protocols will be useful in the planned validation study which will investigate differences in children's dietary recall accuracy for the eight protocols. Such research will provide empirical guidance for obtaining more accurate 24hDRs from children for epidemiologic studies, interventions, and clinical practice.

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Forward Prompts	
Pass	
1st	Initial recall: "After you got up <i>this</i> yesterday morning at (time), what was the first time you had something to eat or drink? What did you eat or drink at that time? Did you eat or drink anything else at that time? Going forwards through <i>today</i> yesterday , what was the next time after (time) <i>this morning/today/this afternoon</i> (yesterday morning/yesterday/yesterday afternoon/last night) that you had something to eat or drink? What did you eat or drink at that time? Did you eat or drink anything else at that time?" [Repeat to cover <i>today</i> yesterday using forward prompts.] After covering each day, ask "Can you remember any other times <i>today</i> yesterday that you ate or drank something – either at home, at school, or somewhere else?"
2nd	Review: Using forward prompts, repeat everything reported at each time and ask both of the following questions for each time, "Can you think of anything else you ate at that time? Can you think of anything else you drank at that time?"
3rd	Detailed information: Using forward prompts, ask child to identify for each time a meal name ^a and location ^c , and for each item additions, details, and amounts consumed ^d .
4th	Final review: Using forward prompts, review each meal time and ask, "Is this correct? Did you eat or drink anything else at that time?" After covering each day, ask, "Can you remember any other times <i>today</i> yesterday that you ate or drank something?"

Reverse Prompts	
1st	Initial recall: "Before you <i>left class to come talk with me</i> went to bed last night at (time) , what was the last time you had something to eat or drink <i>today</i> yesterday ? What did you eat or drink at that time? Did you eat or drink anything else at that time? Going backwards through <i>today</i> yesterday , what was the last time before (time) <i>this morning/today/this afternoon</i> (yesterday morning/yesterday afternoon/last night) that you had something to eat or drink? What did you eat or drink at that time? Did you eat or drink anything else at that time?" [Repeat to cover <i>today</i> yesterday using reverse prompts.] After covering each day, ask, "Can you remember any other times <i>today</i> yesterday that you ate or drank something – either at home, at school, or somewhere else?"
2nd	Review: Using reverse prompts, repeat everything reported at each time and ask both of the following questions for each time, "Can you think of anything else you ate at that time? Can you think of anything else you drank at that time?"
3rd	Detailed information: Using reverse prompts, ask child to identify for each time a meal name ^a and location ^c , and for each item additions, details, and amounts consumed ^d .
4th	Final review: Using reverse prompts, review each meal time and ask, "Is this correct? Did you eat or drink anything else at that time?" After covering each day, ask "Can you remember any other times <i>today</i> yesterday that you ate or drank something?"

Meal-Name Prompts	
1st	Initial recall: "Did you eat ____ <i>today</i> yesterday ?" [For prior-24-hour-afternoon protocols, for today, fill blank with each of: breakfast, morning snack, lunch, afternoon snack; then, for yesterday, fill blank with each of: afternoon snack, dinner/supper, evening snack.] For yesterday, fill blank with each of: breakfast, morning snack, lunch, afternoon snack, dinner/supper, evening snack. (If yes) "What time did you eat ____? Where did you eat this ____? What did you eat or drink for this ____? Did you eat or drink anything else for this ____?"
2nd	Review initial recall: Ask child if s/he ate any meals or snacks before earliest reported meal, between each meal, and after latest reported meal.
3rd	Detailed information: For each meal, for each item reported for the meal, ask child to report additions, details, and amounts consumed ^d . After covering each day, ask, "Are you sure you have told me everything you ate and drank <i>today</i> yesterday ?"
4th	Final review and forgotten foods list: Review each meal and ask: "Is this correct?" Then ask, "In addition to what you have already told me, did you have any other ____ <i>today</i> yesterday ?" Fill blank with each of: drinks, fruits, vegetables, bread/crackers/cereals, desserts, anything else. Then ask, "Did you have anything else to eat or drink <i>today</i> yesterday that you did not already tell me?" (For prior-24-hour-afternoon protocols, ask forgotten foods list twice – first for today, then for yesterday.)

Open Prompts	
1st	Initial recall: "Tell me everything you had to eat and drink <i>today/yesterday</i> . Include everything you ate and drank <i>today/yesterday</i> , even snacks." After covering each day, ask, "Can you remember anything else you ate or drank <i>today/yesterday</i> – either at home, at school, or somewhere else?"
2nd	Forgotten foods list: "In addition to what you have already told me, did you eat/drink any other ___ <i>today/yesterday</i> ?" Fill blank with each of: drinks, fruits, vegetables, bread/crackers/cereals, desserts, anything else. (<i>For prior-24-hour-afternoon protocols, ask forgotten foods list twice – first for today, then for yesterday.</i>)
3rd	Detailed information: For each item, ask child to identify a name for the meal at which it was eaten ^b , time s/he began eating each meal, where each meal was eaten ^c , and for each item, additions, details and amounts consumed ^d .
4th	Final review: Review each meal and ask, "Is this correct?" Then ask if anything was eaten before first meal, between meals, after last meal, and finally "Did you have anything else to eat or drink <i>today/yesterday</i> that you did not already tell me?"

Figure 1. Overview of multiple-pass dietary recall interview protocols for four prompts and two retention intervals (previous-day-morning; prior-24-hour-afternoon)^a created and pilot-tested in a study with fourth-grade children

^a Italicized text is used for the "today" part of the prior-24-hour-afternoon retention interval; for each pass for each of these protocols, today was always covered first, and then yesterday. The interviewer would say, "Now, let's talk about what you ate or drank after (time) yesterday afternoon" and fill in the blank with the start time of the interview. Bolded text is used for the previous-day-morning retention interval and the "yesterday" part of the prior-24-hour-afternoon retention interval. Each protocol's Introduction included, "I'll be asking you questions about what you ate or drank *in the past 24 hours/yesterday*."

^b Response options for meal name — breakfast, school breakfast, lunch, school lunch, dinner/supper, snack.

^c Response options for location — home, school, somewhere else.

^d Response options for amount consumed — none, taste, little bit, half, most, all, more than one serving.

Table 1

Least squares means for four non-accuracy response variables by retention interval, prompt, and their interaction in a study with 47 fourth-grade children to create and pilot-test eight dietary recall interview protocols.

Dietary recall interview protocols	n	Interview length (in minutes) ^a	Four non-accuracy response variables		
			Number of school meals reported eaten during target period ^{b,c}	Number of meal components reported eaten at school meals ^{c,d}	Weighted number of items reported eaten at school meals ^{c,e}
Retention interval		***f		**g	*h
Prior-24-hour-afternoon	23	21.8	1.5	4.1	5.8
Previous-day-morning	24	16.1	1.3	2.9	4.1
Prompt		*i	j		*k
Forward	11	19.1	1.5	3.9	6.2
Reverse	12	20.0	1.3	3.3	4.9
Meal-name	12	16.3	1.7	3.5	5.3
Open	12	20.3	1.1	3.3	3.3
Retention interval by prompt					
Prior-24-hour-afternoon/forward	5	20.6	1.8	4.6	7.4
Prior-24-hour-afternoon/reverse	6	23.7	1.5	4.3	5.9
Prior-24-hour-afternoon/meal-name	6	16.5	1.7	3.5	5.4
Prior-24-hour-afternoon/open	6	26.3	1.2	3.8	4.3
Previous-day-morning/forward	6	17.5	1.2	3.2	5.1
Previous-day-morning/reverse	6	16.3	1.2	2.2	3.9
Previous-day-morning/meal-name	6	16.2	1.7	3.5	5.2
Previous-day-morning/open	6	14.3	1.0	2.7	2.3

^a Interview length was calculated for each interview by subtracting beginning time from ending time.

^b Number of school meals reported eaten by the child at school during the target period about which the child was to report.

^c For a reported meal to be counted as a school meal, a child had to refer to breakfast as “breakfast” or “school breakfast”, refer to lunch as “lunch” or “school lunch”, identify the location as “school”, and report the meal time to within one hour of the scheduled meal time.

^d Ten possible meal components were beverage, bread, breakfast meat, combination entrée, condiment, dessert, entrée, fruit, vegetable, and miscellaneous.

^e A weight was assigned to each item according to meal component with combination entrée (e.g., spaghetti with meat sauce)=2; condiment (e.g., mustard, jelly)=0.33, and remaining meal components=1. This was done so that combination entrées counted the most, condiments counted the least, and everything else counted in between. The weighted number of items reported eaten at school meals was the sum of the weighted number of items reported eaten at school meals.

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- f* Interview length was longer for prior-24-hour-afternoon than previous-day-morning recalls.
- g* More meal components were reported eaten at school meals during prior-24-hour-afternoon than previous-day-morning recalls.
- h* A greater number of weighted items was reported eaten at school meals during prior-24-hour-afternoon than previous-day-morning recalls.
- i* Interview length was shortest for meal-name prompt recalls.
- j* More school meals were reported eaten during meal-name prompt recalls than during recalls using the other three prompts (one-sided $P=0.055$; corresponding contrast t -test).
- k* The fewest number of weighted items was reported eaten at school meals during open prompt recalls.
- * $P<0.10$,
- ** $P<0.05$,
- *** $P<0.01$ from follow-up analyses of variance on each of the four response variables