

THE PENNSYLVANIA STATE UNIVERSITY
SCHREYER HONORS COLLEGE

DEPARTMENT OF NUTRITIONAL SCIENCES

AN EVALUATION OF TELEPHONE AND INTERNET BASED METHODS FOR
ASSESSING DIETARY INTAKES

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ABSTRACT

The most common methods of dietary assessment are food frequency questionnaires, food records, and 24-hour dietary recalls (1). Dietary recalls are generally considered to be a “gold standard” for the collection of self-reported food intakes. The relative validity has been well documented in the literature (2). Telephone methods for collecting dietary recalls are the most common, but can be too costly for larger studies. With many advances in technology, new types of dietary assessment methods have become available. One such method is an automated self-assessment using Internet-based software, which can be used as a low cost alternative to 24-hour dietary recall data collection. There are, however, limited data to demonstrate the feasibility and validity relative to other more traditional methods. The objective of this thesis is to determine the feasibility of this newer technology and to compare and contrast the two different methods: traditional telephone vs. an Internet based method of assessing dietary intake. The results suggest that an Internet-based method was feasible but required some effort to obtain complete data from participants. Results also indicate that the telephone 24-hour dietary recalls were more seamless and effective when trying to enter foods that were not in a normal diet or in mixed dishes. However, most participants found that the Internet assessment process was more anonymous and convenient with their hectic lifestyles.

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INTRODUCTION

Understanding food and nutrient intakes is critical to studying relationships between diet and health. The methods for the assessment of food intake have been widely studied yet no perfect method of assessment exists (1). The most common methods for collecting dietary information are 24-hour dietary recalls, food frequency questionnaires, and food records (1). All of these methods are prone to over and underreporting of intakes to some degree. The most widely used method in research for collecting detailed quantitative dietary data is the 24-hour dietary recall. Twenty-four hour dietary recalls provide retrospective dietary information on the previous day or past 24-hour period (1). Dietary recalls are often administered by telephone because they can be done quickly and easily with a low respondent burden (1). They are also often done using interactive software that will help guide the interviewer through the process of data collection (1). This type of software requires extensive interviewer training (1). The most common software used for the collection of dietary recalls is the Nutrition Data System for Research (NDSR). It is the software used by the Penn State Diet Assessment Center for many research studies. Several studies have demonstrated that conducting multiple 24-hour dietary recalls is a reliable and valid assessment method (3,4).

The 24-hour dietary recall method includes multiple opportunities (passes) to recall dietary intake through the day. Randomly selected multiple days of intake generally include weekdays and at least 1 weekend day are considered the best assessment of usual intake for groups.

Studies have shown that number of days needed to assess intake vary depending on sample size, subject characteristics, and the variables of interest or research questions (5). In addition, previous research has shown that a telephone 24-hour dietary recall provides a valid estimate of total energy expenditure when compared to energy intake measured through the doubly labeled water method (6). Telephone interviews seem to be just as accurate and valid as in-person 24-hour dietary recalls, which is helpful to researchers studying large populations because telephone recalls are more feasible and cost effective for larger studies (1, 7, & 8). However, there are some considerations. Twenty-four-hour dietary recalls are prone to errors in portion size estimate and memory issues (1). Advances in software include standardized probes that guide the respondent through multiple passes of the day that assist the participants to correctly remember what foods they consumed (1). Providing visual portion size aids to respondents improve errors in estimating the amount of food consumed.

Recently new approaches to dietary assessment methods have become available, including Internet-based software (9). The Automated Self-Assessment 24 (ASA24), developed by the National Cancer Institute (NCI) is one internet based method that is currently being tested (10). The ASA24 is not meant to replace the more costly telephone dietary recall but it is a lower cost alternative to other methods and for large population based studies where food frequency questionnaires have been traditionally used. It is a state-of-the-art program that follows the Automated Multiple Pass Method (AMPM) that is used by the United States Department of Agricultural for monitoring dietary intakes of the U.S. population (10). It contains visual cues for portion size as well as an automated voice that helps guide respondents through the recall process (10). Some problems that

can occur with the self-automated assessments are language interpretations, literacy levels, incomplete assessments, and possibly a more tedious process that puts the responsibility of data entry on the respondent (9).

The purpose of this study was to determine the feasibility of conducting dietary recalls using the ASA24 and to compare this process with more traditional telephone methods using NDSR. Focus groups are conducted to gather qualitative information from a specific group of participants (11). Participants share their perceptions and opinions on a certain area of interest in a neutral and non-intimidating atmosphere (11). Focus groups are led by a skilled moderator who follows a planned agenda with certain questions that lead to a relaxed discussion on their perceptions (11). In this study, focus groups were used to evaluate both processes for ease of data entry or collection, participation, difficulty in providing detail or entering detail, technology, and participant burden. Another researcher did the analyses of comparing the nutrient and food results of both processes.

METHODS

Participants and Recruitment

Twenty-four healthy adult men and women between the ages of 24-50 years old with a body mass index of less than 30 were recruited. This criteria was used for the reason that most people in this category would be able to use the technology and physically healthy. The study was advertised on the PSU faculty/staff newswire via email

and the Penn State Live website. Once the participants had responded to the advertisement, they were screened by telephone (Appendix A) and then in-person (Appendix C). During telephone screening potential participants were asked to self-report their height and weight so that eligibility could be determined by calculating body mass index (BMI; height in centimeters /weight in kilograms²). A brief overview of the research procedures was also provided. If they were eligible, an in-person appointment was set up to measure their actual height and weight. A written and verbal explanation of the study was provided and participants were asked to sign a consent form (Appendix C). In addition, they completed a convenient time schedule form to help with the scheduling of the randomized telephone recalls. The study was reviewed and approved by the Office of Research Protections at the Pennsylvania State University. Also, we consulted with the developers of the ASA24 process (personal communication with Drs. Amy Subar , Nancy Potischman and Sharon Kilpatrick, NCI).

Participants were randomized to two different groups. The first group performed three telephone interviews using NDSR and then three ASA24 recalls while the second group performed three ASA24 recalls first and then three NDS-R interviews. Each participant completed a total of six dietary recalls in a random cross-over design. The dietary recall days by both methods were also randomized to balance days of data collection across all days of the week. The participants were contacted via e-mail in the early morning do their ASA24 recall which allowed participants to complete the online assessments at a time and location throughout the day that was convenient for them.

For the ASA24 internet process, the participants were instructed to email one of the staff members in the Diet Assessment Center for help with any problems they may

have had with the software. Some participants were unable to find certain foods that they consumed and had to find appropriate substitutions, while others had technical problems that needed to be addressed. When the staff members received the emails, they would respond as quickly as possible with a resolution to the problem and provide them with additional information if needed. All parts of the study including the recruitment were done by the author.

Focus Group Moderators

Two focus groups were designed and conducted using the methods of Richard Krueger (11). The two focus groups both had the same moderator. The moderator was Diane Mitchell, and she was the secondary investigator of the study. Some of the participants had met her during the in-person screening prior to the start of the study.

Selecting Focus Group Sites

Both of the focus groups were held in the Chandlee Laboratory on the Pennsylvania State University campus. This was chosen for convenience because this was also the same site as the in-person screenings. The participants were required to pay for their own parking either in the parking garages downtown or meter parking.

Data Collection Procedures

Since the same moderator conducted both focus groups, there was much consistency when addressing the two different groups. All the same questions were asked to both groups from the focus group agenda (Appendix D) that was followed. The moderator arrived at the site early, along with two researchers who took notes during the discussion in case the audiotape failed at any time. Before the participants arrived, note cards with their first names were placed at each seat. When the participants arrived, they would look for their name card and sit down at the appropriate seat. After all participants arrived, the discussion was started. The moderator introduced herself, the research group, and then went over some general ground rules for the discussion. Each person was encouraged to talk and express any positive and/or negative feelings they had about any questions asked. After which, the moderator then proceeded on with the focus group agenda's written questions. At the end of the discussion, the participants were thanked for their participation and patience throughout the study. The members of the focus groups were compensated for their participation in the study. The focus groups were transcribed for review and were read independently by two researchers, one Penn State Nutrition graduate student and the other was the author. The researchers formulated their interpretations separately and then met to make comparisons and generate a final report. (Appendix E).

RESULTS

From the focus groups, we were able to gain insight from the questions asked during the discussion from the study's participants. The comparisons of the two dietary recall methods are summarized below.

Focus Group Participant Demographics

All twenty-four subjects participated in the focus groups. Subjects were equally divided between the two groups. Group number one first performed the NDSR telephone recalls and then the ASA24 online recalls. Group number two did the ASA24 recalls first, and then performed the NDSR telephone recalls. The first focus group had five males with an age and BMI mean of 30 and 24, respectively. The 11 women in the first focus group had a mean age of 35 and mean BMI of 23. The second focus group had four men and four women. The men's mean age and BMI were 30 and 29, respectively. The women in the second group had a mean age of 33 and mean BMI of 23.

Table 1-1 Focus Group Participant Characteristics

Group	Sex	Age (mean ± SD)	BMI (mean ± SD)
1	M	30 ± 3.19	24 ± 2.47
	F	35 ± 8.36	23 ± 2.33
2	M	30 ± 4.01	29 ± 2.49
	F	33 ± 6.42	23 ± 1.84

Initial Impressions

The first question that was asked to the focus groups was their overall opinion of their experience with participating in the project. Most participants found the overall process to be interesting but at times frustrating. The frustration stemmed from not being able to remember what they ate the day before, regardless of the two methods. The participants also found the processes to be intriguing and found that they were unaware of the way that they ate throughout the day until they were asked to recall the information.

“I thought it was interesting just cause I never realized how many times I skipped meals or have weird days that I didn’t think were normal. “

“As I thought back, and I realized I don’t have a normal eating schedule, so that was definitely interesting to find out.”

ASA24 (Automated Self-Assessment via Web-based Software)

During this part of the focus groups, many of the participants found that ASA24 was somewhat difficult because of the different levels of questions that were presented and the flipping between different computer screens for the assessment. Also, they seemed to have problems with specific screens. Some screens would not show up or parts of the page would not work, and some of the check boxes were not always apparent or did not work at times. Many individuals had problems with the software because the lack of understanding of how to use the program correctly. The process did offer a tutorial that was supposed to guide the participants through the process, however only

about half the individuals actually watched and listened to some of the tutorial but did not completely finish it.

“I was trying to figure out where you put milk for your cereal. Do you add it as it’s own thing, or do you add it to the cereal. And then once I added it to the cereal, it got stuck and froze.”

However, once the problem was brought to the staff’s attention and resolved, the process seemed to improve. Also, another barrier in the software was that the portion size pictures did not always show up during the assessment. Some of the participants thought it might be beneficial to have a “live chat” available with the software so that if a specific problem occurred, it could be resolved within minutes.

As mentioned, ASA24 has audio instructions to help the participants through the process, however many did not even know there was sound or turned it off because they did not like the voice. Also, the portion sizes showed up as pictures of specific serving sizes, which most found very helpful and easy to estimate when they did appear. Some participants had trouble when the pictures did not show up to help estimate, and one person suggested including text detailing the portion size because the software didn’t label each size portion.

“It didn’t label them. That was annoying. You had a picture of a glass...but in my mind it could be a giant martini glass or a mini martini glass.”

As time progressed, participants were able to predict their portions better without the help of the visuals.

Depending on the individual, the time it took to complete the assessment varied. Most of them only took about ten minutes or so to complete the assessment. While one or

two of the individuals took up to one hour because of technical difficulties due to frozen screens and questions, most of the participants did not have much difficulty. Throughout the process, most of the participants said that they were very truthful because they said it would be pointless to lie, and it was much easier to just tell the truth. They said that it was easier to tell the truth on ASA24 because it was less judgmental and more anonymous.

“I was more hesitant on the phone to say everything I ate. Even though I know I had three Big Macs, that’d be a lot harder to say to the person on the phone than to the internet program. I was truthful in both cases, but I think it would be a lot easier to be truthful in the internet program.”

Participants also liked the ASA24 process because it offered more flexibility and convenience. One suggestion from a participant for the software was for a “notes” field in which they could leave comments and information about the food they consumed to possibly help with the accuracy of this process.

NDS-R (Telephone Interview via Computer-Assisted)

For this part of the focus groups, individuals were first informed about the portion size poster that was given to them to estimate their food amounts consumed. About half of the individuals used this poster during the telephone dietary recalls and found it helpful, however others did not use it because they felt they could estimate the size correctly without it.

When asked about the interviewers' questions, the participants all said that the interviewers' comments helped them remember what they ate and were very helpful. Also, they said it was very nice when they got the same interviewer twice or three times in a row because they felt more comfortable.

“It was also nice if you got the same interviewer in a row. Cause I don't know if I got, at least two, if not all three the same person, so when I listed a similar meal, they helped me fill in the blanks. I make curry a lot, which isn't a standard meal, and they knew how to enter it cause they had to the first time around.”

All participants found the interviewers helpful and nice, but they always felt bad having the interviewers waiting on the other line while they figured out what they ate yesterday. The awkward silences sometimes made the participants feel anxious and rushed. Also, most participants thought that the telephone interviews became easier with the second and third interview as compared to the first. This is also in comparison with the ASA24 process that seemed to be easier as the interviews progressed. The interviewers also helped the participants to clearly explain their food choices during the process. However, some individuals felt that it was redundant at points especially if they repeatedly ate the same foods.

As shown in the ASA24 assessments, the participants were as honest as possible when reporting their dietary intake and felt like they would ruin the study if they lied. However, they felt guiltier and some even more embarrassed to admit what they ate the past day. The individuals were a little bit more hesitant when describing their food choices because they were actually talking to a person about their consumption.

From the focus groups, the individuals discussed their likes and dislikes about the NDSR. Some likes about the process were already mentioned such as getting the same interviewer, and they felt that talking to an interviewer helped to get the accurate information for the recall. However, some disliked that they were not able to call the interviewer back. Also, they felt that this process was more inconvenient and did not like being put on the spot about what they ate the previous day.

“I think the telephone interview was more accurate, but that’s when I had more trouble remembering what I had the day before and because I knew there was someone waiting for me to recall what I had, I felt a little rush especially if there was an awkward silence.”

Some other comments that the participants had were that interviewers should refer to people as a number to make it feel more anonymous. Also, some individuals felt they were required to listen to what the interviewer was saying instead of just clicking the “OK” button on a website program after scanning (and not really reading) what it said.

Comparison of Both Methods

Both dietary assessment methods have advantages and disadvantages. Even though the interviewer in the NDSR process helped the participants remember more information, they felt more uncomfortable and at times guilt-ridden about what they consumed. Also, they felt rushed in the telephone interview because they knew someone on the telephone was waiting for a response from them. Some of the participants liked being able to see their list written down on the computer screen instead of having it read

over the phone to them. This would all depend on the type of learner the individuals are such as visual or audio learners.

Throughout the whole experience, most participants reported they did not usually let either process influence their food choices, unless they knew that they may have to enter the food into ASA24. If the food seemed like it would be too difficult to enter, a couple of participants decided not to eat it so that they did not have to go through all the trouble.

When comparing the processes of better identifying their portion sizes, the visual aids of ASA24 seemed to help the participants more when they were available. The only problem that ASA24 had was if the individual knew the portion size but could not find the right portion picture on the software. Also, participants thought that ASA24 was preferred for convenience and availability; however NDSR was more preferred for accuracy. As mentioned, some participants preferred NDSR because the interviewer helped them out with their memory.

“It just felt much more seamless on the phone, and I felt like I remembered more talking with somebody, and them asking certain kinds of questions that might have lead me into discovering other stuff that I did add into my coffee or whatnot.”

From the focus groups members, it seemed split fifty-fifty in which process that they preferred. Some people liked the interaction of talking to an individual while other like the anonymity of the web-based software process. However, the ASA24 process was not the best for weekends because not everyone checks their e-mails during the weekends. One person said that a combination of the two processes put together would be ideal and many agreed with this statement.

Also, the NDSR process was easier when the participants ate mixed dishes that were difficult to enter in ASA24, but easy for the interviewers to enter into NDSR. The telephone dietary recalls were much more seamless and had more specific questions that helped describe their food choices better than ASA24. However, the ASA24 was more convenient.

Researcher Recommendations

Throughout the focus groups, there were several areas for improvement in both the NDSR process and ASA24 process that the participants mentioned.

The main problem that concerned the participants was the inconvenience of the NDSR process. Most people felt very badly when they missed the phone call by a second, and they had no way of calling the interviewer back. In order to have participants call back, new protocols would have to be developed to allow for returned phone calls. One such idea may be to leave a window of fifteen minutes for the participants to call back and if they did not, they would be reassigned to a different random day. Also, another problem with the telephone interviews was the sense of judgment and embarrassment with the participants when describing everything they consumed in a 24-hour period. One participant mentioned a way in which the process could be more anonymous such as referring to the individuals as a number instead of by their first name. However, even with those two main issues the participants thought that the overall process of NDSR was more accurate and specific to the types of foods they were consuming.

The two main issues mentioned about the ASA24 were the ease of movement from screen to screen along with not being able to input their exact food and portion sizes. Some individuals reported that many screens froze at points, which meant that the recall took much longer. Future updates to the software are recommended to fix these specific technical problems.

Many participants complained that the ASA24 did not allow them to enter the exact food that they ate and therefore they had to substitute with a different food. This could be corrected easily by adding a comment box for individuals, as one participant mentioned during the discussion. By adding this, researchers can then have a more accurate reading for what the participants ate that day. Participants also could not always note the exact amounts of food they had, and they had to choose from the available pictures instead. By adding a blank fill-in section at the portion size probe, this problem could easily be fixed. The majority of the problems with ASA24 seem to be technical and software issues. With updates on these things, the process could become more accurate and user friendly.

DISCUSSION

The results of this study describe some important advantages and disadvantages that are inherent in the 24-hour dietary recall process regardless of method. It was shown that the ASA24 internet method seemed to be much more convenient and flexible compared to the NDSR method. However, the NDSR seemed to be more seamless when

helping the participants to remember foods and entering mixed dishes that may not always be available on the ASA24 internet process. The NDSR process was described as more embarrassing and rushed for the participants and the ASA24 internet process seemed more anonymous and allowed participants to respond at their own pace.

In order to better distinguish between the two processes, it may have been better to split the two focus groups into three or four. The first group was a rather large group and some people may have been more hesitant to talk freely about their opinions with so many individuals present. Even though both groups were rather large, many opinions were expressed, even though a few participants tended to dominate the session. With smaller groups, people may have felt more comfortable to talk about their own thoughts, instead of just agreeing or disagreeing as a whole.

Research participants were randomly assigned to focus groups, which meant that the groups included participants that had completed the dietary recall processes in both orders (e.g computer first v. telephone first). It may have been more beneficial to have a focus group with just members from group one, who performed NDSR recalls then ASA24 recalls, and then another focus group with members from group two, who performed ASA24 recalls first and then NDSR recalls. If we would have done this, it might have shown trends that were not quite apparent in the mixed focus groups. Group one may have been able to complete ASA24 easier than those individuals who were in group two. Group two had never done a 24-hour dietary recall before, unlike group one, and were just put in a situation that they had no clue where or how to start. Those participants in group one already knew what to expect while group two individuals were probably quite confused at points.

In summary, the responses and opinions from the participants of the focus groups contributed greatly to the advantages and disadvantages of both processes. The focus groups provided great information that should be reviewed to help with the improvement of possibly both methods. Even though there was a sufficient amount of opinions and ideas about the processes, no definitive conclusion can be drawn from this pilot study. More studies need to be done that focus on the strengths and weaknesses of these methods. The participants pointed out specific flaws and difficulties of both systems that should provide valuable insight for researchers that could be used enhance the current methods of dietary assessment. Further research is needed to test the validity of internet based methods and to determine the comparability of nutrient intakes between methods.

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Appendix A: Phone Screening Invitation Script

Introduction:

Hello, this is _____ calling from the ASA24 Research Study at Penn State University. Do you have a few moments to go over a couple questions regarding the qualifications and the procedures for this study? Great! The purpose of the study is to compare two different food record collection programs. You will be asked to complete 3 telephone interviews and 3 internet sessions which will ask about the foods that you ate on the previous day. After you have completed the 6 food interviews, you will be asked to come to the Penn State campus and participate in a group discussion of the two different methods. As another part of this study, you will also be required to have your height and weight measured. Does this sound like something you are still interested in?

Name: _____

Phone Number: _____

Email: _____

Screening Questions:

There are a few questions that I need to ask you to make sure that you are eligible for this study. The first thing I need to know from you is your age? _____.

Next, can you provide me with an estimate of your height? _____ and weight? _____.
BMI: _____

Do you have a high speed internet connection available to you on a daily basis? _____.

Have you participated in any other nutritional study that required you to do a food recall interview? _____

Would you have any difficulty completing 3 telephone interviews with us? Each one would take approximately 20-30 minutes. _____

Would you have any problems responding to emails or completing the 3 web-based surveys? Each one would take approximately 30 minutes. _____

Would you have any difficulty traveling to the Penn State campus two separate times, the first time for the screening and the second time for the discussion portion of the study? _____.

Finally, are you on a special diet or do you have any dietary restrictions due to any chronic illness? _____.

Conclusion:

Eligible: The information that you provided makes you eligible for coming in for an in-person screening to have your height and weight measured and we will also give you an explanation of the study procedures at that time. Would you like to set up a date and time to come in for the screening at this moment? Date & Time: _____

Not eligible: We really appreciate your interest in the study and we will get back to you via e-mail to let you know if you were selected for the study.

In-Person Screening

Measured Height: _____

Weight: _____

BMI: _____

Age: _____

Appendix B: Consent Form for Participants

Informed Consent Form for Biomedical Research
The Pennsylvania State University

Title of Project: *ASA24 Project*

Principal Investigator: Terry Hartman, Ph.D., R.D.

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Purpose of the Study: The purpose of this research is to determine the feasibility of a web-based self-assessment tool in comparison to more traditional methods of assessing food intake and to compare calories and nutrient intakes using these two methods. The study will involve about 30-40 adults between the ages of 25 and 50.

Procedures to be followed: You will be asked to participate in 3 telephone interviews and 3 self-guided food intake sessions using a web-based or internet program. During each interview or session you will be asked to provide detailed information on the food and beverages you consumed during the previous day. This is called a 24-hour dietary recall. Each interview or web-based session will take approximately 20-30 minutes for a total involvement of 3 hours. You will be randomly assigned to either a group that will complete the telephone interviews first and then the web-based assessments or to a group that will complete the web-based assessments first followed by the telephone interviews. Upon completion of the two methods, there will be a 60-90 minute group discussion held to compare the two processes. The discussion group will be tape recorded.

ORP OFFICE USE ONLY
DO NOT REMOVE OR MODIFY
IRB# Doc. #
The Pennsylvania State University
Institutional Review Board
Office for Research Protections
Approval Date:
Expiration Date:

Discomforts and Risks: There are no risks in participating in this research beyond those experienced in everyday life.

Benefits: The benefits to you include an individualized nutritional analysis based on the 24-hour food histories collected. A better understanding of how different methods compare could potentially help researchers discover how food intake relates to obesity and other diseases.

Duration/Time: You will be asked to give approximately 4-5 hours of your time over a four week period for the six data collection sessions and the one group discussion.

Statement of Confidentiality: Your participation in this research is confidential. The data will be stored and secured on a server located in the College of Health and Human Development in a password protected file. All audio tape recordings will also be stored as a password protected audio file and will be stored using study/subject number. No names or other identifiers will be associated with the transcribed recordings. If you speak about the contents of the focus group discussions outside of the group discussions, it is expected that you will not tell others what individual participants said. All recordings will be destroyed upon completion of the study. Only study personnel will have access to your data. Your confidentiality will be kept to the degree permitted by the technology used. No guarantees can be made regarding the interception of data sent via the internet by any third parties. The Pennsylvania State University's Office for Research Protections, the Institutional Review Board and the Office for Human Research Protections in the Department of Health and Human Services may review records related to this research study. In the event of a publication or presentation resulting from the research, no personally identifiable information will be shared.

Right to Ask Questions: Please contact Diane Mitchell at 814-863-5955 with questions, complaints or concerns about this research. You can also call this number if you feel this study has harmed you. If you have any questions, concerns, problems about your rights as a research participant or would like to offer input, please contact The Pennsylvania State University's Office for Research Protections (ORP) at (814) 865-1775. The ORP cannot answer questions about research procedures. Questions about research procedures can be answered by the research team.

Injury Clause: In the unlikely event you become injured as a result of your participation in this study, medical care is available but neither financial compensation nor free medical treatment is provided. By signing this document, you are not waiving any rights that you have against The Pennsylvania State University for injury resulting from negligence of the University or its investigators.

Payment for participation: Participants will receive \$50.00 upon completion of all study procedures. You will receive \$25.00 after the completion of the telephone interview and web-based sessions and an additional \$25.00 for participation in the group discussions.

Cost of participating: Participant has no financial responsibility.

Voluntary Participation: Your decision to be in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer. Refusal to take part in or withdrawing from this study will involve no penalty or loss of benefits you would receive otherwise.

You must be 18 years of age or older to consent to take part in this research study. If you agree to take part in this research study and the information outlined above, please sign your name and indicate the date below.

You will be given a copy of this consent form for your records.

Participant Signature

Date

Person Obtaining Consent

Date

Appendix C: In-Person Screening Script

In-Person Screening Script

Name _____

Email _____

Phone Number _____

Group _____

User Name _____

Password _____

The purpose of the study is comparing two different food record collection programs. You will be asked to complete 3 telephone interviews and 3 internet sessions and a discussion of the two methods over the next few months. As a part of this study, you will also be required to have your height and weight measured. Does this sound like something you are still interested in?

Do you have high speed internet available to you on a daily basis? _____

Are you on any special diet or restricted food intake due to chronic illness? _____

Height _____

Weight _____

BMI _____

Age _____

Appendix D: Focus Group Questions

ASA24 Project
Focus Group Agenda
Total Time: 90 minutes

Welcome (5 minutes)

Have participants fill out a nametag or table tent with their first name.

Introduction to focus group (5 minutes)

Explain what will happen and what information will be used for. Stress that comments will remain confidential. Present focus group ground rules. Discuss compensation.

Focus group discussion (1 hr 15minutes)

Present and discuss focus group questions. [See below.]

Dismissal (5 minutes)

Thank participants for their involvement. Remind them of contact information in case of any questions or if they think of something else.

Focus Group Questions

I) Introductory questions (used to introduce the general topic or to reflect on their experience in general)

1. How was your overall experience throughout the process? (allow everyone to respond)

II) Key questions

A) ASA24 (Automated Self Assessment via Web-based software)

1. Technology continues to infiltrate our daily lives, how comfortable were you using the internet based ASA 24 software?
2. Did you encounter any technology barriers while using this software and if so, what were they and how did you get around them?
3. Tutorials were available to guide you through the process, did you use them and were they helpful?

4. Were the audio instructions easy to understand and were they helpful in aiding you through the food choices?
5. Did you find the website easy to navigate and if not, do you have any suggestions for improvements?
7. Did you find portion size visuals to be helpful in determining the amounts of food you consumed?
8. There is not always a visual aid in helping to determine portions sizes, do you think you were able to accurately estimate the amount consumed without the visuals?
9. How long did it take you to complete the first 24-hour recall. Did this time lessen during the second and third recall?
10. Were you able to be as honest as possible when reporting your dietary intake and if not what were certain foods/groups that you felt uneasy about reporting?
11. Were there any other likes and dislikes about the process and if so, what were they?
12. Any other comments about the process?

B) Computer-assisted telephone interview

1. Did you find the portion size poster to be helpful in determining the amounts of food you consumed?
2. Were the telephone interviewers' questions about your food intake clear? If not, why?
3. Were there any problems encountered when communicating with the interviewer, and if so, what were they?

4. Did you find that the questions seemed easier in the second and third interview compared to the first?
5. Were you able to be as honest as possible when reporting your dietary intake and if not what were certain foods/groups that you felt uneasy about reporting?
6. Were there any other likes and dislikes about the process and if so, what were they?
7. Any other comments about the process?

C) Comparison (comparison of both methods)

1. Can you think of any differences in the processes that helped you recall your food choices more easily?
2. Which process helped you to better identify your portion sizes and why?
3. Which assessment process (ASA24 or NDS-R) did you prefer and why?
4. Which process did you find more convenient and why?
5. Which process did you find easier and why?
6. Did the study influence your food choices and if so, in what ways?
7. Any other comments or questions about either procedure?

III. Conclusion (ask participants if they have anything else they would like to add)

Thank participants for their involvement and remind them that their discussion comments will remain confidential and provide contact information for any questions or concerns.

Appendix E: Common Themes Chart for Focus Groups

Common Themes Chart

QUESTION NUMBER	MAJOR THEMES	MINOR THEMES
Introductory Question		
1. How was your overall experience throughout the process?	<p>Interesting – realized how much and what they were eating</p> <p>Frustrating remember information</p> <p>Intriguing</p> <p>Details difficult</p> <p>Didn't change their eating habits</p>	<p>Enjoyed it</p> <p>Entered incorrect information during ASA24</p> <p>Simplified food</p> <p>Wasn't as hard as anticipated</p> <p>Mostly ate Indian food – difficult to report (one person)</p> <p>Inconsistencies with measurements between the phone and the online assessment</p>
Overall Impression →	<p>Most of the frustration appeared to arise from trying to remember all of the details of what one ate from the day before and inputting them into the system. Some participants found it interesting to be held accountable for what they ate because they were unaware of how many times meals were skipped or what exactly they were consuming.</p>	
ASA 24 (Automated Self Assessment via Web-based software) Questions		
1. How comfortable were you using the internet-based ASA 24 software?	<p>The different levels of questioning (i.e. the quick list, and then filling in with more detail) were difficult because the participants had to go back and forth between screens to ensure accuracy.</p>	<p>Participants were somewhat more comfortable with the online software if they had done the phone interviews first due to having an idea about how the food was entered into the system.</p>
Over all Experience →	<p>Adding in details took a long time and participants would get stuck or experience software issues.</p>	
2. Did you encounter any technology barriers while using this software and if so, what were they and how did you get around them?	<p>Confusion on where to put certain foods and additions</p> <p>Missing pictures for portion size</p> <p>Frustrated</p> <p>Just generic questions – nothing too specific so hard</p>	<p>Screen would get stuck</p> <p>Take a long time for a couple people</p> <p>Took a lot of time to work out the “kinks” of the system</p>

	<p>to answer sometimes</p> <p>Some of the buttons wouldn't show up or were not immediately apparent, so it was difficult to continue through the assessment.</p> <p>Pictures wouldn't always appear (portion sizes)</p>	
Overall Experience →	<p>Many of these barriers appeared to arise from just a lack of familiarity with the software. Once attention was brought to the problems, things appeared to be a little bit easier.</p>	
3. Tutorials were available to guide you through the process, did you use them and were they helpful?	<p>About half used them</p> <p>In person tutorial would have been better</p> <p>If they did start the tutorial, most didn't completely finish it and figured it out on their own</p>	<p>Needed more help to learn the system – do first session with person</p>
Overall Experience →	<p>It would have been more helpful to have a person answer specific questions, whether through a tutorial in a lab or through a “live chat” in the software. Perhaps maybe a FAQs would be better and more straightforward.</p>	
4. Were the audio instructions easy to understand and were they helpful in aiding you through the food choices?	<p>Very robotic voice</p> <p>Didn't realize there was a voice or had noise turned off</p>	<p>Nobody likes to hear automated things telling them stuff</p> <p>Turned voice off right away</p>
Overall Experience →	<p>Many did not know about the sound or turned it off because they did not like it.</p>	
5. Did you find the website easy to navigate and if not do you have any suggestions for improvement?	<p>Specific screens would not show up or parts of the page would not work</p> <p>The check box was hard to find or did not work at points</p>	<p>There was no place to add missing foods</p> <p>Some of the buttons would not work or were not apparent – caused frustration</p>
Overall Experience --	<p>A better training session would have helped more if ASA24 was going to be used on a regular basis. The multiple levels that were used in the software make it difficult at times when switching back and forth from screen to screen.</p>	
6. Did you eat foods that you couldn't find or had? If	<p>Some difficulty finding foods (particularly</p>	<p>Substitutes not hard to figure out – one person</p>

you substituted did you email Linda with what you ate and how you entered it?	packaged food) so just found substitutes Yes, they did send substitute foods to Linda Frustration because knew what they ate but were not able to find it	
Overall Experience →	Many participants felt comfortable with substitutions but frustrated that they had to do it	
7. Did you find portion size visuals to be helpful in determining the amounts of food you consumed?	Very helpful Did not always appear though Easy to estimate using them	Sometimes the portion size pictures didn't help estimate the amount (no can of tuna) Would like to know size of plate to help figure out sizes (label the pictures)
Overall Experience →	When pictures did appear, they were very helpful in determining portion size.	
8. There is not always a visual aid in helping to determine portion sizes, do you think you were able to accurately estimate the amounts consumed without the visuals?	More difficult to determine when there were no visuals available Got more accurate with time since they became more aware of portion and measurement sizes	N/A
Overall Experience →	As time progressed, participants were better able to predict accurately their portion sizes without the help of visuals. But, visuals were helpful throughout the study.	
9. How long did it take you to complete the first online assessment? Did this time lessen during the second and third recall?	A long time Only took about ten minutes – just a breeze Easier for the group who had the phone calls first and then the internet software More difficult for those assigned to internet software first	The first time took an hour – one participant Some did have difficulty through all 3 online assessments
Overall Experience →	Online assessments went more smoothly when the participants had some idea of how to enter the food. Entering the food in the proper order seemed to have the most difficulty.	
10. Were you able to be as truthful when reporting your dietary intake and if not, what were certain	It would be pointless to lie – more hesitant on phone Be counterproductive if didn't tell the truth	Easier just to tell the truth Less judgmental and more anonymous

foods/groups that you felt uneasy about reporting?	Most did not have a problem with reporting what they ate	
Overall Experience →	Internet software was less judgemental and more anonymous. However difficult to remember or accurately represent some of the foods in which they ate.	
11. Were there any other likes or dislikes about the process and if so, what were they?	Internet gives good flexibility and more convenient Open box to enter foods General frustration about going back and forth between the different screens	It had more open-ended questions Nice to sit down and think about what they ate, instead of being put on the spot by an interviewer One participant would have liked more straightforward software
Overall Experience →	The internet software assessment was more convenient and flexible, along with the participants feeling much less pressure and guilt about what they ate.	
Any other comments about the process?	Some kind of “notes” field where you could leave information about the food you ate	N/A
Overall Experience →	Participants felt it would have been more accurate if you could leave notes or messages about the food they consumed.	
Computer-assisted telephone interview (NDS-R) Questions		
1. Did you find the portion size poster to be helpful in determining the amounts of food you consumed?	Half of participants did not use it Other half did use it and found it useful when they referred to it	Hard to extrapolate 2-D to 3-D
Overall Experience →	Half of participants liked the poster and used it, while others did not use the poster at all.	
2. Were the telephone interviewers’ questions about your food intake clear? If not, why?	Actually helped to remember things – prompts Very helpful	Convenient if they received the same interviewer in a row
Overall Experience →	Participants seemed to be happy and liked the interviewers.	
3. Were there any problems encountered when communicating with the interviewer and if so, what	None, interviewers were very nice and helpful Participants felt bad when they made the interviewers	N/A

were they?	wait while thinking about what they ate	
Overall Experience →	Communicating with the interviewers went smoothly and helped the participants to clearly explain their food choices.	
4. Did you find that the questions seemed easier in the second and third interview compared to the first?	Many participants agreed that the phone interviews were easier the second and third time Idea from one participant that it would have been nice to keep profiles, so that if they ate the same foods daily the interviewer could easily input data	Some thought phone interviews would be better for short studies – ASA24 would have been better for longer studies because it was more involved and more convenient
Overall Experience →	Phone interviews became easier as time went on, but felt redundant at points.	
5. Were you able to be as honest as possible when reporting your dietary intake and if not, what were certain foods/groups that you felt uneasy about reporting?	No question of honesty – ruin purpose of study More guilty telling person food choices – felt more judged	Some embarrassment or hesitation when eating strange food combinations or large amounts of food
Overall Experience →	Most participants were as honest as possible, but others did feel like they were being judged or hesitated about the foods they consumed	
6. Were there any other likes and dislikes about the process and if so, what were they?	Could not call back Felt bad when missed calls Felt like they were playing phone tag	Nice to get same interviewer in a row – can help fill in blanks
Overall Experience →	Many participants felt the phone interviews were much more accurate, but they were also more inconvenient and having to be put on the spot about the foods they ate the previous day.	
7. Any other comments about the process?	When call someone, maybe refer to as a number to make less personal Many thought this process was more accurate	Felt more forced to listen to what interviewer was saying instead of rushing through and just clickin “OK” on screens
Overall Experience →	Mostly all thought phone interviews were more accurate but were less convenient when compared to online software.	
Comparison (of both methods) Questions		

1. Can you think of any differences in the processes that helped you recall your food choices more easily?	The interviewer was able to help in remembering more than the internet Had trouble remembering sometimes because they knew someone on the telephone was waiting for them – rushed because of the awkward silence	More guilty over the phone – felt like they had to justify their food choices They were able to see what was written down on the computer screen (was preferred and helped to see what they missed) instead of hearing it over the phone
Overall Experience →	Both methods seemed to have their own pros and cons.	
2. Which process helped you to better identify your portion sizes and why?	Forgot chart for telephone or did not have because it was at home ASA24 visuals were more helpful	Couldn't figure out the portion online when they knew exactly what they ate Pictures did not always show up online
Overall Experience →	The visual aids on ASA24 seemed to help the participants the best when they were available.	
3. Which assessment process (ASA24 or NDS-R) did you prefer and why?	For convenience and availability, the participants said ASA24 For accuracy, they said NDS-R	Internet was very anonymous – wasn't disappointing someone or being judged Telephone was easier because interviewer helped out
Overall Experience →	Addressed in previous questions as to why participants preferred a certain process.	
4. Which process did you find more convenient and why?	Internet because they had all day to complete the recall Frustrating when they missed a call and could not call back when they were available – felt bad	Phone was more convenient if they ate mixed dishes that were difficult to put into ASA24
Overall Experience →	ASA24 seemed to be more convenient for participants because they had all day to do it with unlimited time. It was more difficult to reach participants by telephone which likely resulted in more attempts to complete the assessments than the ASA24.	
5. Which process did you find easier and why?	More seamless on phone Would prompt the participants on phone Remembered more when talking to someone on phone	More specific questions on the phone and able to describe their food choices better

	Able to see what they ate listed on the computer – easier to remember what they had put or not put down (can't mentally picture the list from on the phone)	
Overall Experience →	The phone process was more specific and would help to participants by prompting them about the foods they ate. However, ASA24 was much more convenient.	
6. Were you more comfortable reporting foods online than in the telephone interview?	No question on honesty – would ruin purpose of study if lied Internet more anonymous and comfortable	More guilty on phone Phone was more awkward during silences when remembering food – so felt rushed Participants tried being as honest as possible in both methods
Overall Experience →	Most participants felt less judged and anonymous through reporting their foods with the online method.	
7. Did the study influence your food choices and is so, in what ways?	Did not change food choices Became more aware of what they were eating	Checked serving sizes more often
Overall Experience →	Most participants seemed more aware of what and how much of a single food they were eating. Also, they said they improved on estimating portion sizes throughout the study.	
8. What was more accurate?	Phone because interviewer could put in missing food	Misreported a couple times on internet Could not always find the right food on the internet
Overall Experience →	Both methods had its pros and cons. Many of which have been discussed in above questions. When participants were on the phone, they were able to describe exactly what they ate, which would make it more accurate. For the online method, they had to find substitutes for the food in which they could not find.	
9. Any other comments or questions about either procedure?	Idea to add a live chat with someone on the internet software if have a question – many people agreed Combination of the two processes would be an idea Split fifty-fifty on which	Internet process not good for weekend – not everyone checks emails on weekends

	process they would prefer to use	
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Chantal C. Kropp

EDUCATION

The Pennsylvania State University, University Park, PA May 2011
Bachelor of Sciences in Nutritional Sciences Applied Option
Schreyer Honors College

RELATED EXPERIENCE

Pennsylvania State University, Chandlee Laboratory, University Park, PA Oct 2010-Present
Teaching Assistant for Nutrition Counseling Course

- Attend course and help students with specific counseling practicums
- Grade all online quizzes for course students and keep online course webpage up-to-date such as changing open/close drop box times and titles/due dates

ASA24 Research Project, Diet Assessment Center, University Park, PA Jan 2010-Present
Senior Research Assistant for Honors Thesis

- Involved in research comparing ASA24 and NDSR 24-hour recall methods and nutrition analysis for a honor thesis paper

Diet Assessment Center, Diet Assessment Center, University Park, PA Jan 2010-Present
Part-Time 24-Hour Dietary Recall Interviewer

- Trained interviewer on 4-pass method to obtain research participant's 24-hour food recall

Metabolic Kitchen, GCRC in Noll Laboratory, University Park, PA Nov 2009-Present
Part-Time Kitchen Assistant (only worked from Nov 2009-Dec 2009 and Feb 2011)

- Assisted in preparing specific weighed food portions for research participant's meals

Focus Group Research, Chandlee Laboratory, University Park, PA Feb 2010-May 2010
Focus Group Aide

- Assisted in presenting/note taking of focus group sessions for research participants

SPACE Program, Loyalsock Township High School, Williamsport, PA Jan 2007-May 2007
Nutrition Intern

- Involved with making meal plans, scheduling meals, food/product ordering and other nutrition-related jobs in school district and nursing home setting

OTHER EXPERIENCE

Victoria's Secret, Lycoming County Mall, Muncy, PA Jun 2007-Present
Sales Associate (only during summer and holidays)

- Involved with leadership, sales, communicating, and helping customers

Wire rope Works, Williamsport, PA Aug 2008-Dec 2010
Receptionist (only during summer and end-of-year inventory)

- Answered phone calls and filed billings and invoices
- Input data during end-of-year inventory

HONORS AND ACTIVITIES

Schreyer Honors College Scholar
American Dietetics Association Membership
School Nutrition Association Membership
Kappa Omnicon Nu Honor Society – Active Member
Penn State Student Nutrition Association – Active Member
Alpha Lambda Delta Honor Society – Active Member
National Society of Leadership and Success-Secretary, Nov 2009-May 2010
Penn State Altoona Dance Team-Captain, Jan 2008-Apr 2009

CERTIFICATIONS

ServSafe Certified Mar 2010-Present
HIPPA Training Certified Jan 2010-Present
IRB Training Certified Nov 2009-Present