

Global Questions Cognitive Testing Results

Jennifer Edgar

Office of Survey Methods Research

U.S. Bureau of Labor Statistics

December 16, 2011

Background

The use of global questions has been long discussed in the context of a redesigned Consumer Expenditure Survey (CE) to allow for collection of complete household spending in a time-efficient way. There are multiple possible uses of global questions, including in a split questionnaire design, as part of an allocation model to incorporate CE Diary Survey (CED) data into the Consumer Expenditure Quarterly Interview Survey (CEQ), or to replace detailed questions in a shortened bounding interview.

The quality of the data collected by global questions has been addressed in past research such as Creech et al., 2011; Crossley and Winter, 2011; Goldenberg & Steinberg, 2010; Weber, 2002; and RTI, 2000. These studies overall found that data collected from global questions tend to produce higher expenditure estimates than the associated detailed questions, but without a ‘gold standard,’ are unable to identify which question type yields better quality data. Caswell & O’Hara, 2010, found that global questions were able to collect high quality medical expenditure data, but this finding has not been reported in other studies.

Additionally, these studies have not addressed the cognitive processes behind global questions, how respondents answer these questions. Without understanding the response strategies respondents use when answering global questions, the reason for the difference between global and detailed questions is unknown. Exploring the response process for global questions is a key step in evaluating the quality of the data they collect, and will inform other comparisons between global and detailed questions.

As noted in presentations at the 2010 CE Methods Workshop, laboratory research can be used to evaluate global questions: “Some relatively straightforward laboratory investigations could provide a great deal of information about memory and response strategies, which could be informative about the relative advantages of global and specific questions” (Beatty, 2010). Similarly, Peytchev (2010) noted that “the decision to use global questions, and for which categories, needs to be informed by an understanding not only of the differences in estimates and their properties, but also by the causes for the differences.” Both experts suggested conducting cognitive research to evaluate global questions.

Research Questions

This study addressed the following research questions:

1. What specific items do respondents include when responding to global questions, and how does their definition of the global category align with the intended meaning of the question (and the associated detailed questions)? For example do they include coats in clothing? Socks? Headbands?
2. How do respondents arrive at their answer to global questions (e.g., do they estimate, identify specific purchases and add)?

Method

Cognitive Interviews

Cognitive interviews were conducted in the Bureau of Labor Statistics' Office of Survey Methods Research (OSMR) cognitive lab with participants who had made clothing purchases in the past month. Each cognitive interview session was divided into three main parts:

1. Global clothing questions, with follow up:
 - a. Follow up of global questions:
 - i. Explanation of response process
 - ii. Open-ended questions asking for details about clothing purchases
 - iii. Examples of items in each clothing category (clothing, footwear, jewelry and accessories)
2. CEQ clothing questions
 - a. Debriefing of CEQ questions:
 - i. Comparison of response accuracy between global and CEQ questions
 - ii. Request for revision to global clothing responses
3. Shopping behavior questions

The CEQ clothing questions were taken directly from the current instrument, with the exception of layettes and diapers which were excluded. The remaining 19 clothing items were asked in the same order, with the same question wording, as is done in the production survey.

The semi-structured debriefing questions following the global and CEQ clothing questions were designed to obtain information about the participant's response process and reactions to the questions. For the global clothing questions, the debriefing asked participants to list the exact clothing items they had purchased within the last month, as well as to describe their thought process when answering the global questions. Participants were also asked to provide examples of items in each of the three global expenditure categories. For the CEQ clothing questions, the debriefing asked participants to compare the accuracy of their responses for the global clothing

and the CEQ clothing questions and to explain why they thought one was more or less accurate than the other. Participants were also given a chance to revise their response to the global clothing question if they felt it was inaccurate.

The shopping behavior questions were designed to collect information about how participants purchase clothing, what types of stores, how often, and whether they go shopping with the intention of purchasing clothing or not. This information was collected to gain insight into participant shopping habits, which were thought to potentially impact their response process for the expenditure questions.

Web Surveys

A separate group of participants completed a web survey using a combination of Survey Monkey and TryMyUI, an online usability testing system. A video of their computer screen (e.g., showing mouse movements, keyboard entries) and an audio recording of their voice while they completed the survey were captured through the TryMyUI service. To take advantage of large sample size, and recognizing the limitations of web surveys in terms of administering semi-structured debriefing questions, the survey included a slightly different set of tasks from the cognitive interviews, with an emphasis on close-ended questions rather than in-depth debriefings:

1. Global clothing questions, with follow-up:
 - a. Explanation of response process (think aloud)
 - b. Open-ended questions asking for detailed about clothing purchases
2. CEQ clothing questions, with follow-up:
 - a. Examples of items in each clothing category (clothing, footwear, jewelry and accessories)
3. Clothing categorization questions

The same three global clothing, detailed clothing, CEQ clothing , and providing examples of items in each clothing category were used in both the cognitive interviews and web survey (See Appendix A for question wording).

After completing all three global questions, participants were asked “Now, please describe out loud how you arrived at your answer for question 2. Explain what you thought about or what you remembered as you answered the question.” After answering the global clothing questions, participants were given the instruction “For the rest of the survey, please describe your thoughts as you answer the questions.” Additional reminders to ‘think aloud’ were given throughout the survey. Participants’ verbal responses were transcribed, and the data they entered into the survey was stored by Survey Monkey.

For the clothing categorization question, a list of 51 clothing items, selected from the CEQ Information Booklet was provided and participants were asked to categorize responses as either clothing, footwear, jewelry and accessories, or other.

Global Questions

In both modes, the global clothing questions tested were:

1. How much have you or any member of your household spent on clothing since the first of [refmonth]?
2. How much have you or any member of your household spent on spent on footwear since the first of [refmonth]?
3. How much have you or any member of your household spent on spent on jewelry and accessories since the first of [refmonth]?

Participants

Twenty participants were recruited from the OSMR participant database for the cognitive interview study. Sixty-two participants were selected from the TryMyUI panel, and screened to ensure they had made a clothing purchase in the past month. Of these, 54 provided usable data (some participants did not complete the survey, were missing audio or had other technical problems). For both samples, participants were selected to represent a range of demographic characteristics (Table 1).

Table 1. Participant Demographics

	Cognitive Interviews n=20	Web Surveys n=54
Gender		
Male	50%	52%
Female	50%	48%
Age		
<35	30%	50%
36 – 55	45%	35%
56 >	25%	15%
Education		
HS or Less	20%	9%
Some College	30%	33%
College Degree	35%	44%
Graduate Degree	15%	4%

Analysis

The majority of analysis for this project is qualitative. Participants' verbatim explanations of the process they used to answer the global questions were transcribed for both the cognitive interviews and web surveys. The responses were evaluated and categorized into a response strategy type (Table 2)¹. These strategies were based on the literature (see Edgar 2009) and a preliminary review of the data.

Table 2. Response Strategies for Global Questions

Response Strategy	Definition
Item Retrieval	Participants retrieve information about specific items and report the sum of those events
Event Retrieval	Participants use information from specific events (shopping trips) and report the sum of those
Retrieval and Adjustment	Participants retrieve information about specific items or events and report the sum of those after adjusting the number
Budget	Participants use their planned budget number as a response
Guess	Participants indicate they guessed
General Impression	Participants retrieve a general impression of the event or amount
Receipts	Participants referred to receipts to answer the question*
Not Codeable	Participants did not give enough information to code

*although not asked to refer to records, some web participants appear to have done so, while some cognitive interview participants described remembering individual receipts when answering the question

Analysis was also done on the expenditure data collected from the global, detailed and CEQ questions. For this analysis, data from the cognitive interviews and web surveys were collapsed. Finally, timing data from the surveys were analyzed.

Results

Response strategies

The most commonly used strategy was item retrieval followed by event retrieval (Table 3). Both these strategies involve participants recalling specific items or events and using that information to arrive at an answer. Retrieval and adjustment was used by 14 percent of participants, with the rest of the strategies being used by fewer than 10 percent. Twenty percent of participants used a budget, general impression or guessing strategy, all strategies which are not based on recalling specific expenditure information.

¹ Each participant response was categorized into only one response strategy. If a participant indicated using more than one strategy, a primary strategy was identified.

Table 3. Response Strategies Used

Strategy	Percent of Participants (N=74)
Item Retrieval	34
Event Retrieval	23
Retrieval and Adjustment	14
Budget	9
General Impression	8
Receipts	7
Guess	3
Not Codeable	4

To illustrate the response strategies, Table 4 gives a representative quote for each category.

Table 4. Quotes from each Response Strategy

Strategy	Quote
Item Retrieval	“Well, I had to buy some clothes for my son for back to school because he started school in August. Purchased him t-shirts, jeans, underwear, socks. Just some basic items and I also bought my husband some socks, underwear, kind of thing”
Event Retrieval	“Alright, I went to Kmart and I went to Walmart because I recently lost 30 pounds and I needed to buy new small size shorts and pants.”
Retrieval and Adjustment	“I bought a suit. The suit cost 500 dollars and the four shirts were 90 dollars apiece. So that is 360, that’s 860. And then there is socks. Ok fine, I’ll change this, it was more like 960.”
Budget	“I remember how much it cost because we had a budget.”
General Impression	“Now I know this one is going to be a little tougher. I know the total is around 200 and I know I bought two pairs of pants”
Receipts	“I took a look at my receipts that I purchased. I actually went to two stores in one day, for the whole month of July that is all I spent. I added the two receipts up and that is how I came up with 126.”
Guess	“We did quite a bit of back to school shopping and I was just trying to come up with a number, cause there was quite a bit, I have two children. So I just roughly said, probably about 200 for each child is my guess”

Comprehension

Examples

Both web and cognitive interview participants were asked to give examples of each of the three global categories. Many web participants named 15 examples, the number of lines on the web form for the questions. The average number given was 13, ranging from 2 to 15. Cognitive interview participants on the other hand, averaged 9 examples, ranging from 6 to 10 items

named. Looking at the examples provided, and the order in which they occurred, provides insight into the most commonly recalled items in each category.

For clothing, pants, jackets, jeans and socks were the items most commonly named first or second. For footwear, sandals and tennis shoes were most commonly named first or second, and earrings, bracelets, necklaces and rings were most commonly named first or second in the accessory category.

Overall, there were some items named by a large percentage of participants (Table 5). These items may be thought of as exemplars of the category, items that may be synonymous with the category for a large number of participants.

Table 5. Commonly Named Examples in Different Categories

Clothing	% of Participants Naming	Footwear	% of Participants Naming	Accessories	% of Participants Naming
sweater	52.0%	tennis shoes	46.7%	Necklaces	75.6%
socks	46.7%	boots	44.0%	earring	74.4%
jacket	30.7%	flip flops	41.3%	bracelet	67.9%
underwear	28.0%	dress shoes	40.0%	ring	65.4%
pants	22.7%	slippers	28.0%	watch	37.2%
shorts	21.3%	running shoes	25.3%	Scarf	29.5%
coats	20.0%	sneakers	24.0%	belt	26.9%
dresses	18.7%	heels	20.0%	ankle bracelet	19.2%
hat	18.7%	flats	14.7%	hats	16.7%
jeans	17.3%	loafers	13.3%	pin	14.1%
suit	17.3%	Pumps	12.0%	purse	14.1%
vests	17.3%	shoes	10.7%	toe rings	11.5%
shoes	16.0%	work boots	10.7%		
tie	16.0%				
shirts	12.0%				
t-shirt	10.7%				

Categorization

To explore how well participants understood the intended meaning of the global questions, the examples given for each category were coded as ‘correct’ or ‘incorrect’ (Table 6). A majority (86.2 percent) of the 427 clothing examples were correct, with all the incorrect examples being either footwear (4.2 percent) or accessories (9.6 percent).

A large majority of the 441 footwear examples was also correct. Only 10 percent of the footwear examples were incorrect, and most of these were related to the unique CE specification that athletic shoes (e.g., soccer cleats) are not included in the category. A few other examples were hosiery such as socks or stockings.

Almost all of the 511 jewelry or accessory examples were correctly categorized. The few items that were incorrectly named were bath or make-up items (e.g., soap, lotion, lipstick).

Table 6. Categorization of Examples

Category	Percent
Correct Clothing	86.2
Incorrect Clothing	13.8
<i>Footwear</i>	<i>4.2</i>
<i>Accessories</i>	<i>9.6</i>
Correct Footwear	98.2
Incorrect Footwear	10.2
<i>Hosiery</i>	<i>1.8</i>
Correct Accessories	98.6
Incorrect Accessories	1.8

As part of the web survey, participants were asked to classify a list of items into one of three global categories, or ‘other.’ The extent participants could correctly classify items is an indication of their comprehension of the intended meaning of the global questions. Twenty five items were correctly identified by all, or almost all participants (Table 7).

Table 7. Items correctly classified by at least 90 percent of participants

Clothing	Footwear	Jewelry or Accessories
Athletic shirt	Boots	Hair accessories
Dress shirt	Sandals	Belts
Dresses	Sneakers	Purse
Men's suit	Tennis shoes	Sunglasses
Skirts	Bedroom slippers	Scarves
Sweater	Casual shoes	
Down vest		
Undershirt		
Jacket		
Tennis skirts		
Night gown		
Night shirt		
Pajamas		
Fur coat		

Some items were inconsistently classified, indicating that participants had differing understandings of the categories. Most of the incorrectly classified items were from the clothing category, with an emphasis on hosiery and specialty clothes (e.g., ski suit, thermal underwear) (Table 8).

Table 8. Percent of Participants Classifying Clothing Items Incorrectly

	Clothing	Footwear	Jewelry and Accessories	Other
Apron	30.2	0.0	20.8	49.1
Bra	83.0	0.0	1.9	15.1
Halloween costume	34.0	0.0	5.7	60.4
Knee-highs	52.8	13.2	24.5	9.4
Leotard	86.8	0.0	3.8	9.4
Raincoat	82.7	0.0	5.8	11.5
Robe	83.0	0.0	5.7	11.3
Ski suit	73.1	0.0	1.9	25.0
Snow suit	72.5	0.0	3.9	23.5
Socks	63.5	19.2	15.4	1.9
Swimwear	80.8	0.0	0.0	19.2
Thermal underwear	88.2	0.0	5.9	5.9
Tights	66.7	0.0	25.5	7.8
Windbreaker	86.3	0.0	3.9	9.8
Winter coat	86.3	0.0	3.9	9.8

There was also some confusion about accessory items (Table 9), with participants often putting them into an ‘other’ category rather than classifying them as an accessory.

Table 9. Percent of Participants Classifying Jewelry and Accessory Items Incorrectly

	Clothing	Footwear	Jewelry and Accessories	Other
Ear muffs	3.8	0.0	81.1	15.1
Gloves	15.4	0.0	76.9	7.7
Handkerchiefs	0.0	0.0	81.1	18.9
Mittens	18.9	0.0	71.7	9.4
Shawl	25.0	0.0	61.5	13.5
Ties	15.7	0.0	82.4	2.0
Umbrellas	0.0	0.0	64.0	36.0
Wallet	0.0	0.0	84.3	15.7

In the past, CE did not include sports shoes in the footwear category, but has since changed this specific requirement. Although participants were not aware of the previous specification, nor were they told anything about sport shoes, some found something different about soccer cleats. Only 88.5 percent classified them as footwear, with the rest of the participants putting them into either accessories or other (Table 10).

Table 10. Percent of Participants Classifying Clothing Items Incorrectly

	Clothing	Footwear	Jewelry and Accessories	Other
Soccer cleats	0.0	88.5	3.8	7.7

Expenditure Reports

Finally, the expenditure items reported can be evaluated to explore comprehension of the global questions. The extent to which participants included purchases incorrectly is important in evaluating the effectiveness of global questions. If participants mistakenly report a large number of items in a global question, the likelihood that there will be significant error resulting from comprehension is high. If participants on the other hand only report expenditures that belong in the category, comprehension is not likely to be a significant source of error.

All participants reported clothing purchases, while only 57 percent reported footwear and 31 percent reported accessory purchases. Participants correctly reported their footwear and accessory purchases, but had some trouble reporting clothing purchases (Table 11). Eighty-six percent of reported clothing purchases belonged in that category, with 9.0 percent of the reported purchases belonging in the footwear category, and 3.3 percent belonging in the accessories category.

It is important to note that the footwear and accessory questions followed the global clothing question. If the order of these questions was reversed, the inclusion of footwear or accessories in the clothing question may be minimized.

Table 11. Categorization of Purchases

Category	Percent
Correct Clothing	87.3
Incorrect Clothing	12.7
<i>Footwear</i>	9.4
<i>Accessories</i>	3.3
Correct Footwear	100
Incorrect Footwear	0
Correct Accessories	100
Incorrect Accessories	0

Response Errors

In addition to potential comprehension errors, there are other response errors that may be more common with global questions. Consideration of other household members and the reference period may be less likely when determining the answer, and participants may be more likely to make a calculation error as a result of the multiple steps required to provide a response to the global questions.

Proxy Reporting

This study also provides the opportunity to explore errors that participants make while answering clothing questions, and compare the rate at which those errors are made by question type. Although we cannot say definitively that participants were thinking of other household members and simply did not mention them, looking at the number of participants (with households larger than 1 person) who did mention other people in their responses may indicate the extent to which they were reporting for people other than themselves.

When naming the purchases included in their global responses, more than half mentioned another household member, while only 31 percent of participants mentioned another household member when answering the CEQ questions (Table 12).

The reason for this difference is unclear. For both types of questions, participants were asked to name specific purchases. There may have been more dialogue when participants reported the items for the global question, or they simply may not have included other household members as often in the CEQ questions.

Table 12. Percent of Participants who Mentioned Another Household Member

	Percent
Global Questions	55
CEQ Questions	31

Reference Period

In addition to including other household members in their responses, participants were instructed to report purchases made during the last month. Again, by identifying references to the past month in the comments made while reporting the items included in the detailed and CEQ questions, we can get a sense of how well participants followed this instruction (Table 13).

Again, participants were much more likely to mention the reference period when discussing the items included in their global purchases than in the CEQ. It is interesting to note that only 20 percent of participants explicitly mentioned the reference period when explaining how they arrived at their answer, suggesting that this was not a key part of their response process. Not considering the reference period when calculating a global response may be a critical error, indicating that participants were not thinking through the task as carefully as it was intended.

Table 13. Percent of Participants who Mentioned the Reference Period

	Percent
Global Questions	20
CEQ Questions	9

Calculation Errors

Requiring respondents to add or do other mathematical functions when answering a survey question is one of the known weaknesses of global questions, and was found to be the case in this study as well. To the extent that participants explained their response process in enough detail to do so, these explanations were evaluated to identify calculation errors (Table 14).

Eleven percent of participants made some sort of calculation error in the global questions. The impact of the calculation errors ranged in type and magnitude, resulting in a difference of a few dollars to over a hundred, with errors resulting in increases and decreases in the expenditure totals. It is interesting to note that there was also a calculation error found in the CEQ questions as well.

Table 14. Percent of Participants Making at least one Calculation Error

	Percent
Global Questions	11
CEQ Questions	1

Qualifiers

Although not necessarily indicative of an error, the use of qualifiers when answering survey questions is often used as a sign of respondent uncertainty or estimation. To look for evidence of estimation, the transcripts were examined for use of qualifiers, e.g., “about,” “approximately.” For each type of question the response was marked if a qualifier was used when the participant answered the question (not when they explained their response strategy). As shown in Table 15, a large percent of participants spontaneously used a qualifier when answering the questions, almost half for the global clothing question.

As noted above, not all participants reported answers for global footwear or accessories (57 and 31 respectively). The percents in the table below are based on all participants, not just those who reported amounts. These percentages, therefore, may under-represent the amount of estimation occurring in reported totals, or may reflect participant certainty when reporting lack of spending.

Table 15. Percent of Participants who used a Qualifier When Responding

	Percent
Global Clothing	48.1
Global Footwear	28.6
Global Accessories	16.0
CEQ Questions	38.2

When looking at the percent of participants who used a qualifier when explaining how they arrived at their global clothing answer, we see that 41 percent of all participants did (Table 16). There was a marked difference by mode, with 76.2 percent of web participants using a qualifier in their explanation and 46.9 percent of cognitive interview participants using one.

Table 16. Percent of Participants who used a Qualifier During Global Clothing Explanation

	Percent
Web	76.2
Cognitive Interviews	41.1
Total	49.4

Another potential sign of estimation is the use of rounded numbers. For this analysis, all responses to the global and CEQ questions were coded as either rounded (at the 10’s level), not

rounded, or a range. Rounded responses were far more likely in the global questions than in the CEQ questions, with more than 60 percent of all responses being rounded (Table 17). Ranges were also slightly more common in the global questions, with more than 5 percent of global clothing responses being a range, and only 2.6% of CEQ responses being a range.

Table 17. Percent of Rounded, Not Rounded and Range Responses

	Global Clothing	Global Footwear	Global Accessories	CEQ Clothing
Rounded	69.9	70.9	60.7	41.0
Not Rounded	24.7	27.3	35.7	56.4
Range	5.5	1.8	3.6	2.6

Timing

The time it took to complete the three global questions and the set of CEQ questions could be determined from the videos of the web participants (Table 18). Although it took longer to complete the CEQ questions, the average increase in time (55 seconds) is perhaps not as long as would have been expected given the number of questions (3 global versus 19 CEQ).

Table 18. Time to complete (in seconds)

	Globals duration	CEQ Duration
Min	0:12	0:16
Max	2:55	4:41
Average	0:53	1:48
Median	0:46	1:46

Expenditure Reporting

Participants provided expenditure amounts three times: in response to the global questions, in response to the follow-up to the global questions (“What did you include in that response?”) and in response to the CEQ clothing questions. These three sets of data allow us to look at inconsistencies across the questions.

Reporting Rates

It is important to note that although all participants provided at least one clothing purchase, there were lower reporting rates for footwear; 74.3 percent, and accessories; 39.2 percent (Table 19).

Table 19. Percent of participants providing answer to global questions

	Clothing	Footwear	Accessories
Web	100.0	75.9	33.3
Cognitive Interviews	100.0	70.0	55.0
Total	100.0	74.3	39.2

Average Expenditure Amounts

Looking first at the responses to the clothing questions (Table 20), there are several interesting findings. The first is that the average global and detailed responses were almost identical. One explanation for this is that participants were consciously aligning their responses², since the detailed question immediately followed the global question. Another explanation, however, is that participants had done some sort of enumeration of specific items and used that to respond to both questions (despite this not being their response strategy reported). A final explanation is that participants worked to recall as many clothing expenditures as necessary to arrive at their global answer. This study is not able to determine which explanations, or combination of explanations, is the case here.

Table 20. Clothing Expenditure Reports

	Global	Detailed	CEQ*
Average	\$197.77	\$196.13	\$165.66

* Summed CEQ clothing questions, excluding footwear, watches and accessories

The total expenditures reported for the CEQ clothing questions were found to be significantly lower than the total clothing expenditures reported for the global clothing questions (t-test, $p=.005$). Of the 74 participants, 45 (61 percent) gave higher global clothing responses than the total of their CEQ clothing responses. This result occurred for both the cognitive interview and web participants.

To further explore this result, we can look at the distribution of the responses (Table 21). The trend was highly consistent across the quartiles, with the global and detailed expenditure totals being higher than the CEQ expenditure totals, with one exception: detailed was lower than the

² Some participants did go back and change their answer to the global questions after answering the detailed question; however, their original response is used in all analysis.

CEQ estimate in the 4th Quartile. It is interesting to note that there was at least one participant who did not report any clothing for the CEQ questions despite reporting \$10 worth of clothing purchases for the global and detailed questions.

Table 21. Distribution of Clothing Expenditure Reports

	Global	Detailed	CEQ*
Minimum	\$10.00	\$10.00	\$0.00
1 st Quartile	\$65.00	\$65.00	\$60.00
2 nd Quartile	\$150.00	\$135.00	\$120.00
3 rd Quartile	\$250.00	\$276.50	\$196.25
4 th Quartile	\$960.00	\$810.00	\$872.00
Maximum	\$960.00	\$810.00	\$60.00
Standard Deviation	\$180.91	\$173.07	\$175.45

* Summed CEQ clothing questions, excluding footwear, watches and accessories

The same three expenditure amounts (global, detailed and CEQ) were provided for footwear and accessories (Table 22). The differences between the global and CEQ expenditures were not statistically significant, with the global question yielding higher expenditures in footwear but lower expenditures in accessories. For both categories, total CEQ expenditures were higher than the global for a majority of reporting participants (71 percent for footwear, 76 percent for accessories). The magnitude of the difference, however, was not significant, averaging out to be \$3.04 in footwear and \$1.57 in accessories.

The higher CEQ expenditure total for accessories is likely related to a lack of comprehension of the category and the effectiveness of the CEQ questions for aiding recall. It is likely that the three specific questions about accessories, watches and jewelry are more meaningful and concrete than the global ‘accessory’ question, which previous analyses showed contains more conceptual ambiguity.

Table 22. Footwear and Accessory Expenditure Reports

	Global	Detailed	CEQ*
Average Footwear	\$66.85	\$64.57	\$63.16
St. Deviation Footwear	\$54.03	\$56.26	\$54.04
Average Accessories	\$53.00	\$31.42	\$56.41
St Deviation Accessories	\$119.59	\$32.17	\$136.17

*CEQ Footwear consists of one question. Accessories is the sum of accessories, watches and jewelry.

Differences in Expenditure Items Reported

The detailed and CEQ expenditure reports provide the opportunity to identify specific differences between the question types across all expenditure categories (clothing, footwear, and accessories). Items that were listed either in the detailed questions following the global question or the CEQ questions but not both were flagged³. The flagged expenditures were counted and total expenditure amounts were calculated (Table 23).

Thirty-three participants listed at least one item in the global question but not the CEQ, and 33 participants (with some overlap, but not complete) listed at least one item in the CEQ questions but not the global. On average, more items were added during the CEQ than during the global (0.92 versus 0.68), but this difference was not statistically significant ($p > .05$).

The total expenditure amounts included in the CEQ but not the global questions were also higher (\$43.81 versus \$23.94), but again this difference was not statistically different. There were some large expenditure amounts excluded from both question types, up to \$245 in the global but not the CEQ and \$810 in the CEQ but not the global.

Table 23. Sum of differences in total expenditures between Global and CEQ Questions

	Number of Items in Global but not CEQ	Number of Items in CEQ but not Global	Sum of items in Global but not CEQ	Sum of items in CEQ but not Global
Average	0.68	0.92	\$23.94	\$43.81
Min	0.00	0.00	\$0.00	\$0.00
Max	4.00	5.00	\$245.00	\$810.00
St Dev	0.89	1.26	\$46.13	\$109.72

Since almost half the participants had at least one item which was excluded from one of the question types, this indicates that both question types are able to solicit expenditure information from participants, perhaps in different ways. Looking at the specific items excluded from each question type can provide insight into the differences between the questions (Table 24).

³ Items were only flagged if it was clear they were not reported for the other question. If there was any uncertainty due to inconsistent or missing item descriptions, the item was not flagged.

Table 24. Items Included in One Question Type but not Another

Items included in Global but not CEQ	# of Participants Including*	Items included in CEQ but not Global	# of Participants Including**
Shirts	7	Undergarments	7
Socks	5	Swim suits	6
Shorts	3	Dresses	5
Skirts	3	Jewelry	5
Ties	3	Accessories	4
Dresses	2	Earrings	4
Jackets	2	Coats	3
Outfits	2	Skirts	3
T-shirts	2	Sweaters	3
Underwear	2	Watches	3
		Jackets	2
		Nightgowns	2
		Pants	2
		Uniforms	2

*There were an additional 16 items named by only one participant

**There were an additional 8 items named by only one participant

Looking at the items named in the global questions but not the CEQ questions, possible explanations can be developed. For some items, it seems likely the correct CEQ question was not meaningful enough to either stimulate recall of the item, or for the participant to know to report the item there. Examples of this may be socks (hosiery) and ties (accessories). For other items, where it is unlikely that participants misunderstood the category (e.g., jackets, dresses), it is possible that the number of CEQ questions read caused the participants not to hear or be able to process them all, and so they did not spend the time required on the response process to recall and report the items, or that they were not attending to all the categories.

Looking at the items named in the CEQ questions but not the global questions, it seems likely that the detailed questions aided recall for items the participants otherwise did not think of. Examples of this are undergarments and swimsuits, categories which may not immediately occur to participants when considering the global category of ‘clothing.’ This is consistent with the comprehension findings of this study, there are certain types of items, including swimwear, which were not mentioned by any participants when giving examples of clothing. There was one participant who reported for other household members when answering the CEQ questions, suggesting that the question introduction, “Since the first of [refmonth], have you or any

members of your household...” may have added to her understanding of the task in a way the global question did not⁴.

Finally, there are some items that appear on both lists that some participants named only in one question type, while others only named it in the other question type (e.g., jackets and underwear). This finding may indicate that question type has a differential effect on participants, and that the effects noted above are not consistent across all participants.

Cognitive Interview Debriefings

The cognitive interview participants answered a series of debriefing questions aimed at better understanding their experiences with the questions, and their clothing purchases. This information may be useful when making revisions to the clothing survey questions.

Global versus CEQ

Participants were asked which set of questions, global or CEQ, gave the most accurate answers. Ninety-five percent of participants felt that the CEQ questions yielded more accurate answers. The one participant who said the global questions were more accurate explained that she had one big trip and the total amount was just “something in my head,” but she didn’t know the price of each of the clothing items she bought.

In general, participants said the CEQ questions made them think more carefully about their responses “Because it forces you to brainstorm and get down to the nitty gritty. Then when you get down to the specific items it forces you to think about the specific number.” Many also explained that the CEQ questions made them think of different items or categories they hadn’t thought of when answering the global question “what is clothing? It’s not as specific, it could be something to one person but to me it’s something else. The more I think about it, the more clothing I think of.” Another participant commented “the categories offered stimulated memory better than trying to think through categories myself. “You really think about the detailed questions, if you don’t mention skirt, I don’t remember skirts”

Some participants commented that the vagueness of the global questions influenced their answers “you ask a general question, so I gave a general answer.”

⁴ Note that the global question also included “have you or any member of your household,” but the phrase occurs at the beginning of the question and may be easily forgotten as the participant calculates a response.

Shopping Patterns

Cognitive interview participants were asked to describe how they typically buy clothing. This portion of the debriefing evolved from several discussions with participants about their purchases, which revealed that there was a relationship between how people responded to the global questions and how they shop for clothing.

There were three main types of shopping behaviors: participants who planned big shopping trips, participants who pick up items as they see them, and participants who buy based on sales or coupons. The first two behaviors were more commonly reported than the last, with some participants noting that sales play a role in their behavior (e.g., scheduling big trips around sales, or picking up individual items because it was one sale).

In addition to reporting how they typically buy clothing, participants also described whether they typically buy clothing items one at a time or if they stock up on clothing items. Most participants said they buy items ‘here or there,’ with about a quarter reporting that they do both (stock up and pick up individual items), and 30 percent saying that they stock up.

Participants were also asked if they typically buy clothing from a clothing store, or from a store which sells more than just clothing, like a department store. Three-quarters of participants buy clothing from the latter. Some of the participants who reported buying clothing at a clothing only store referred to a specialty store, such as “Big-and-Tall.”

When asked how often they buy clothing, participants provided a range of answers (Table 25). No relationship was found between the reported frequency of reporting, reported shopping pattern or ‘stock-up’ behavior.

Table 25. Reported Shopping Frequency.

Frequency	Percent
Monthly	30.0
Seasonally	20.0
Every 2 months	15.0
Every 2 weeks	10.0
Weekly	5.0
Every 3-6 months	5.0
Every 6 weeks	5.0
It depends	5.0

Conclusions

Summary

This study was designed to explore how well participants’ understanding of global clothing questions align with the CE definitions, and how they arrive at answers to global clothing

questions. In addition to these goals, the data were explored to identify errors in reporting, the time it takes to answer both global and CEQ questions, and differences in expenditure reporting between question types.

One of the key findings was that global clothing questions resulted in statistically higher expenditures when compared to the CEQ questions. On the other hand, global questions for footwear and accessories did not result in statistically higher expenditures when compared to the CEQ questions. A partial explanation appears to be the more ambiguous nature of the footwear and accessories categories.

Overall participant understanding of the global clothing, footwear and accessory questions align well with the CE definitions of the categories. The majority were able to name purchases and examples in each category, and classify items into the correct category. There are some items that were problematic for participants, and which had higher rates of misclassification.

The majority of participants identified either clothing items or shopping events when determining their answer to the global clothing question. The extent to which this yielded complete and accurate responses is unknown, but the differences between the global, detailed and CEQ clothing expenditure totals indicates that there is inaccuracy in the responses.

Limitations

There are several significant limitations of this study which will reduce the applicability of the findings. Without validation or other benchmark data, the study is not able to identify which type of question yields more accurate answers. As noted above, the discrepancy between the three sets of expenditure totals indicates that there is inaccuracy, but this study is not able to identify which is more accurate.

Another important consideration is the order the questions were presented; by the time participants received the CEQ questions, they had been asked about their purchases twice. This likely has the effect of improving CEQ reporting, but the effect cannot be confirmed and is a limitation of the study.

The focus of this study is clothing. Therefore, the information about response strategies and comprehension is only available for this category, and the extent to which these findings can be generalized to other expenditure categories is unknown.

This study used a one month recall period. If global questions are used with a different, longer reference period, it is likely that participant response strategies would differ.

This study cannot, nor can any cognitive lab study, evaluate the effectiveness of using global questions to prevent telescoping in future interviews. A field test would be required to evaluate that issue.

Implications

The finding that participants use a range of response strategies to arrive at an answer to global clothing questions, and the high percentage of participants who used a qualifier when answering the global questions, confirm that answering these types of questions is not a straightforward task, and the use of these types of questions should be carefully considered.

Overall, participants understood the three clothing questions as intended, suggesting that the tested wording may be appropriate for future use. Although there was more misclassification within the footwear and jewelry and accessories questions, participants tended to correctly define these questions as well.

The errors made by participants, however, particularly the lack of mention of the reference period, suggest that the introduction to the global questions should be carefully developed to ensure participants are considering the correct reference period (or any specific time period at all) when answering global questions.

An unanticipated finding of statistically significant differences in expenditure totals between global and CEQ questions, even with a small sample size, confirms other studies showing differences in reporting levels between global and detailed questions. Given that one potential use of global clothing questions in the CEQ survey is to provide a picture of complete spending, while collecting the required detailed clothing data from the CED, these results raise concern about the comparability of the two data sources (global and detail).

Another potential use of global questions is to prevent telescoping. As noted above, additional testing will be required to determine the effectiveness of this approach; however, the results from this study do suggest that caution be used in this approach. Twenty percent of participants in this study did not recall specific expenditure information when answering the global clothing question, and so the global question would not be effective in preventing telescoping for these participants.

Future Work

Additional analysis will be conducted on this data to further explore differences in response strategies. Exploring response strategy by demographic characteristics and reporting shopping behavior may shed additional light on the results, or allow for more conclusions to be drawn about the use of global questions in the CE.

References

Caswell & O'Hara, 2010. [Medical Out-of-Pocket Expenses, Poverty and the Uninsured](#). SEHDS Working Paper 2010-17, US Census Bureau.

Creech, B., Smith, M., Davis, J., Tan, L., To., Fricker, S., & Gonzalez, J. (2011). Measurement Issues Study Final Report. BLS Internal Document

Crossley, T.F. & Winter, J. K. (2011). [Asking households about expenditures: What have we learned? Paper presented at NBER CRIW workshop](#).

Beatty, P. (2010). [Considerations Regarding the Use of Global Survey Questions](#).

Edgar, J. (2009). What does 'usual' usually mean? Presented at the 2009 American Associate for. Public Opinion Research Conference, Hollywood FL

Goldenberg, K., & Steinberg, B. (2010). Global Questions Report Final. BLS Internal Document

Peytchev, A. (2010). [Global versus Specific Questions for the Consumer Expenditure Survey](#).

RTI (2000). CE Interview Global Questions Research: BLS Conference Presentation Report. BLS Internal Report.

Weber, W. (2002). CE Diary Food-at-Home “Global-Detailed” Comparisons. BLS Internal Report.

Appendix A: Clothing Questions

Global Questions

1. How much have you or any member of your household spent on clothing since the first of [refmonth]?
2. How much have you or any member of your household spent on footwear since the first of [refmonth]?
3. How much have you or any member of your household spent on jewelry and accessories since the first of [refmonth]?

Open-ended detailed clothing question

1. What specific clothing items have you, or someone in your household, purchased since the first of [refmonth] and how much did each cost?

CEQ Questions

Since the first of [refmonth], have you or has any member of your household purchased any of the following items, either for members of your household or for someone outside your household? *If yes:* What did you buy and how much did each cost?

- | | |
|------------------------------------|---|
| 1. Coats, jackets or furs | 12. Nightwear or loungewear |
| 2. Sport coats or tailored jackets | 13. Accessories |
| 3. Suits | 13. Swimsuits or warm-up or ski suits |
| 4. Vests | 14. Uniforms |
| 5. Sweaters or sweater sets | 15. Costumes |
| 6. Pants, jeans, or shorts | 16. Footwear, including athletic footwear |
| 7. Dresses | 17. Diapers |
| 8. Skirts | 18. Layettees |
| 9. Shirts, blouses, or tops | 19. Watches |
| 10. Undergarments | 20. Jewelry |
| 11. Hosiery | |