Global versus Specific Questions for the Consumer Expenditure Survey

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Introduction

The choice in the level of specificity of survey questions has far-reaching implications. In general, asking global questions as opposed to questions on behaviors within more specific subcategories leads to a shorter survey instrument. This reduction is at the expense of obtaining less detailed information. The tradeoff between global and specific questions, however, is far more complex and ill-understood – and can be quite unique to a survey. This paper presents likely causes of differences between global and specific questions and suggests areas for further study, in the context of the Consumer Expenditure Survey (CE) program.

The CE includes specific questions on purchases of goods and services that fall within relatively narrow subcategories. For example, within the clothing and sewing materials category, respondents are asked to report whether they purchased any items that fall in the vests subcategory. Each subcategory is further followed by multiple questions asking for additional details, such as a description of the particular item, for whom it was purchased, their name, age range, and gender, the amount, and whether it included taxes. While this level of detail is used in the creation of the weights for the Consumer Price Index (CPI), it is taxing to the respondent through the amount of information that is requested and the sheer length of the survey. The latter can be expected to be adversely affecting response rates. Since the expected length of the survey is longest for those who have more expenditures to report, increased nonresponse due to these reasons can induce nonresponse bias in expenditure estimates.

Whether it is the length of the interview, the difficult-to-recall information being requested, the lack of interest in reporting expenditures, or a combination of these and other factors, there is evidence for decreased reporting of expenditures both within and across waves of the CE. Although the order of modules has not been experimentally manipulated, Biemer (2000) found greater underreporting of expenditures asked later in the interview, based on latent class analysis. There is also evidence showing decreased reporting by the same respondents across interview waves (Silberstein and Jacobs, 1989; Shields and To, 2005) although some have failed to observe this when excluding the first interview that is used for bounding (Cho, Eltinge and Steinberg, 2004). Methods to reduce the length of the interview have the potential to alleviate these effects on reporting in the CE.

1 The fact that there was a tendency for a steady decline in reporting across waves means that not all could be explained by telescoping in the first interview.
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. There can be several key influences on reporting acting simultaneously when changing the question format and structure. Thus, obtaining a lower estimate of expenditures for clothing based on a global question can be a desirable outcome for some respondents, undesirable for others, and overall, can be eliciting reports to a different construct and through different cognitive processes.

There are several dimensions along which global and specific questions differ, which can produce differences in the data that they yield. The next section presents these differences and the likely mechanisms of how they affect reporting of behaviors informed by the extant literature and the last section presents suggestions for future research.

**Differences between Global and Specific Questions and Likely Mechanisms Affecting Survey Estimates**

For simplicity, the Clothes and Sewing Materials category will mostly be used as an example in the following discussion. The text for this expenditure section is provided in the Appendix. The discussion, however, pertains to the other categories as well. It is also important to note that the mix of influences on reporting to any given global question compared to reporting to the specific questions can be different across categories.

**Global questions may not be interpreted uniformly**

A global question on clothes or furniture can be interpreted across respondents as including a different set of expenditures (e.g., Schober and Conrad, 1997; Conrad and Schober, 2000). The same degree of vagueness is unlikely for the specific expenditures, such as shoes and lamps. That is, the ease of defining whether an object is a lamp is easier and less ambiguous to the respondent than defining whether a lamp is furniture. There are ways to alleviate this problem, such as providing a list of examples in the global question to help define what expenditures should be included. Another option is to include explicit definitions—this may take less time to administer if they are not needed by all respondents, but leaves the potential for respondents to assume they use the intended definition when that is not the case.

**Global questions ask for a wider array of “targets”**

It may seem fairly straight-forward to state that a global question that encompasses the content of multiple specific questions requests information on expenditures for a greater set of items (“targets”). This does not necessarily imply a more difficult respondent task for a single question.

One critical issue is how respondents organize this information in memory. Are the targets disparate and encoded in the respondent’s memory separately, or is the broader category
of expenditures more coherent and therefore encoded together? If the former tends to be true for
most respondents, then asking global questions will require additional aides to help recall and
greater reliance on the ability of respondents to do arithmetic tasks to compute expenditures as
noted in earlier research on the CE (Mullin, 2000). If the latter, that different expenditures in the
same category are encoded together, then a global question should simplify the respondent task
by omitting the additional decomposition task.

Another issue is whether respondents consider all targets when asked a global question—
such questions may offer fewer memory queues and even when scripted, may not be delivered to
the respondent as intended for a number of reasons. In our example, respondents may not think
of hosiery or uniforms when reporting clothing. Note that this is not the same as the definitional
problems discussed in the previous subsection, but rather a lack of cueing the respondent’s
memory. Specific questions explicitly ask for subcategories; global questions rely on the
effectiveness of additional cues, such as adding lists of items in the question and including
definitions.

Providing such additional cues has been found to increase reporting of underreported
events and can improve the design of global questions. Based on experimental work on the crime
victimization screening questions in the National Crime Survey (Martin, Groves, Matlin and
Miller, 1986), subsequent feasibility studies in 1988, and a field test in 1989 (Hubble, 1990), a
redesigned screener was tested in 1992 and 1993 with half of the sample receiving the existing
(global) victimization questions and the other half receiving more elaborate versions of the
(global) questions that provide multiple examples of types of crimes in each category. For the
majority of the crime types, the new questions that provided additional cues led to significantly
higher crime victimization estimates (Hubble, 1995). This technique shows promise in
addressing a limitation of global questions. The drawbacks of this approach, however, are similar
to those of the use of specific questions as they lengthen the survey—although not nearly as
much as they do not ask for separate reports.

**Global questions require the recall of a greater number of events at the same time**

Inclusion of a greater number of targets in a single question leads to the need to recall a
greater number of events. This has at least two related implications. First, the higher frequency of
events can spur greater use of estimation rather than enumeration of expenditures (Blair and
Burton, 1987; Burton and Blair, 1991; Means and Loftus, 1991; Conrad, Brown and Cashman,
1998) – reporting of an estimated number as opposed to a sum of individual recalled instances.
This can lead to a different error structure in expenditure reports. If respondents tend to use
enumeration in the specific questions design, particularly as the current design follows these
questions with particular details about each event, expenditures are likely to be underreported
due to the failure to recall all individual purchases.
If a greater proportion of respondents resort to estimation when global questions are used, it is unclear whether it would lead to over- or under-reporting as the recall technique respondents choose to employ can be influenced by many factors. There is evidence that for larger categories estimation can also lead to underreporting, but that for smaller categories (decomposed into subcategories) estimation can lead to overreporting (Belli, Schwarz, Singer and Talarico, 2000). This is often tied to frequency with high frequencies being underreported and low frequencies being overreported when estimation is used (e.g., Fiedler and Armbruster, 1994). The findings by Belli and colleagues, however, were based on questions about the number of telephone calls and the extent to which they apply to expenditure questions remains unanswered.

For the purposes of the CE, particularly for developing the weights for the CPI as they are currently defined, information based on estimation alone is not sufficient. Respondents may still be required to use enumeration even for global questions in order to provide detailed information on particular purchases. It seems reasonable to speculate that even when enumeration is employed, the underreporting observed for global questions will be larger than for specific questions due to the possibility of omitting certain targets and events.

Thus, there are two related aspects of recall that influence the level and accuracy of reporting to global questions relative to specific questions: whether estimation leads to more or less accurate responses, and whether if enumeration is required, it can lead to comparable levels of accuracy. The accuracy of reporting for the various expenditures collected in the CE by recall method may be of greatest interest—not just overall measurement error bias, but also measurement error variance. Further research in this area is needed.

**Global question effectiveness compared to specific questions can vary depending on the particular set of questions**

The performance of global questions relative to specific questions is unlikely to be uniform across topics. Information for some expenditures may be encoded together, yet for other types of expenditures information may be stored separately. For example, respondents may tend to group all clothing items together and know how much they spent on clothing especially as different garments can be bought from the same stores and on the same trips. Such information should therefore be most easily retrieved through a global question and efforts to decompose it can contribute to respondent burden and measurement error. For furniture, however, respondents may put each purchased item separately in their memory, such as a kitchen table or a set of garden chairs. Such information should be most easily retrieved through specific questions so that individual items are not omitted and the respondent does not have to combine expenditures in order to produce a response.

The key argument is that it should be least burdensome to the respondent if there is a match between the survey question and the way that the information is encoded by the respondent. There is empirical evidence showing that the perceived length of the survey is not
the same as the actual length (e.g., Galesic, 2002); thus, if the survey is perceived more burdensome by the respondent, it may also seem longer. Extending this line of argumentation, the ubiquitous use of global questions may not necessarily reduce respondent burden, improve reporting, and increase survey participation.

The recall method, described earlier, may change only for some topics when transitioning to global questions. A global question on food or clothing expenditures can make it more difficult for respondents to employ enumeration due to the higher frequency and lower amounts of such purchases. For some more rare types of expenditures such as major household appliances, enumeration may remain the primary recall method.

**Global questions lead to a shorter interview**

One of the primary objectives of moving from specific to global questions is the reduction in survey length. A reduction in the length of the interview can, in turn, be expected to lead to a reduction in nonresponse and measurement error—reducing the refusal rate to the first interview, lowering attrition across waves, and increasing reporting of expenditures among those avoiding a long interview.

Survey length is only one measure of respondent burden. Some of the decomposed questions may be easier for respondents to answer despite the longer time to administer, as noted previously. Therefore, the effect of the introduction of global questions on unit nonresponse and attrition can also be topic-specific.

The effect on measurement error also requires empirical evaluation. In addition to the ability of specific questions to decompose expenditure categories that can aid recall of some purchases, the longer administration time for specific questions can by itself lead to less underreporting. Cannell, Miller, and Oksenberg (1981) showed that merely making the question longer can increase the reporting of health events. One of their explanations was that making the question longer allows the respondent to spend more time on recalling the requested information. Their other explanations were that restating the question twice made it clearer to the respondent and that it may have implied greater importance of the question.

With respect to measurement error it is of critical importance to understand the causes of differences in reporting to global compared to specific questions. Understanding the causes will allow asking the question of how to implement global questions instead of whether to use them. The global questions can then be designed to address the causes of inaccurate reporting, such as providing more examples, definitions, or making the questions simply longer.

**Global questions may be less susceptible to question order effects**

Larger categories can be more mutually exclusive. Some people may find difficulty in distinguishing between “tailored jackets and pants” and “suits,” and between “pants and shirts”
and “uniforms.” The distinction is inarguably greater between clothes and any other expenditure category in the CE. When categories are not seen as mutually exclusive, question order effects can arise (e.g., Schwarz, Strack and Mai, 1991; Schwarz and Hippler, 1995), where interpretation of a question depends on the previous questions.

However, some global questions will include expenditures that are currently in other categories, as noted in an earlier report (Mullin, 2000). This has implications for how the data are used as the definitions for the current expenditure categories will have to be slightly revised.

Any downward biasing (underreporting) effect of order may also be reduced when using global questions due to shortening of the survey, especially if global questions are not followed up with as many questions about the purchases as the specific questions. Respondents have been found to learn to avoid subsequent questions by not reporting events and behaviors that lead to additional questions, and there is evidence suggesting that this learning occurs not only across waves of the CE (Silberstein and Jacobs, 1989; Shields and To, 2005) but also within the interview (Biemer, 2000). Thus, a desirable outcome from the use of global questions would be a reduction in underreporting particularly of expenditures asked late in the interview.

**Global questions may be more susceptible to social desirability influences**

Although few, some expenditures in the CE can be expected to be influenced by social desirability. Some research has shown that reports of alcohol consumption, which is typically underreported in Western societies, are increased when the questions about frequency and amount are decomposed further by location (Mooney and Gramling, 1991). Without a gold standard to evaluate the accuracy of the reports, such a finding relies on the assumption of higher reporting is more accurate. As other research has shown that decomposition can lead to overreporting (Belli et al., 2000), this suggests the need for further research particularly focused on socially undesirable expenditures, in which the accuracy of reports can be evaluated.

**Directions for Future Research**

By simplifying the respondent task and shortening the survey interview, global questions show substantial potential to reduce measurement error by minimizing underreporting within and across CE interview waves and to reduce unit nonresponse by limiting refusals to the first interview and reducing attrition across waves. These benefits need to be measured empirically and weighed against any drawbacks, such as reduction in the data that are collected or potential reduction in accuracy.

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2 Speculation can also be made that asking for less specific information may also reduce *item nonresponse* and reduce reliance on imputation models.
The experiences from the redesign of the global questions that are used in the current National Crime Victimization Survey is a valuable resource for a CE redesign both in terms of evaluation and implementation process and in terms of findings. A series of gradated empirical studies was used to develop, test, and implement a revised set of crime victimization questions. The ideas behind using a different question structure were first tested, followed by a field test of the complete set of redesigned questions, which culminated in a phase-in period during which half of the sample started to receive the newly redesigned questions. The CE may also benefit from the findings of these experiments; instead of moving to brief and concise global questions, less underreporting may occur if they incorporate extensive cues for the types of expenditures that should be included.

A necessary step in the construction of a comprehensive program to evaluate the use of global instead of specific questions is a concise list of the primary uses of the data from the questions being considered for redesign or omission. For example, having a clear understanding of the CE data that are actually used in the construction of the CPI weights is needed in order to construct global questions of mix of global and specific questions that meet the study objectives. This, of course, does not exclude the possibility of identifying other sources for some of the information that is currently derived from the CE. Of great importance yet more difficult to gauge, however, is an understanding of how the broader array of data users employ CE data—changes to the CE instrument can have important implications for data users.

A total survey error approach is needed; the impact of the use of global questions should be evaluated for multiple error sources. By shortening the survey, making it less repetitive, and requesting less information can lead to higher survey participation and hopefully reduce nonresponse bias. Similarly, these factors may lead to higher participation on reinterview attempts (waves 2 through 5), reducing nonresponse bias due to attrition.3

Information on cognitive processes that cause differences between reports to global and specific questions can help the selection and the improvement of the survey questions. The survey response process model (Cannell, Marquis and Laurent, 1977; Cannell, Miller and Oksenberg, 1981; Tourangeau, 1984; Strack and Martin, 1987; Tourangeau, Rips and Rasinski, 2000) can serve as a framework through which to identify causes of differences, within each process (comprehension, retrieval, judgment, and response).4 For example, a critical process to track is the extent to which respondents use estimation as opposed to episodic enumeration for

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3 It can be argued that wave 2 nonresponse is not attrition bias as the first wave is the bounding interview, which is not used in survey estimates.

4 Encoding is another process that does not occur at the time of responding to a question, but affects how questions should be asked and how respondents answer them. Some versions of the response process model have slightly different categories of processes, which is a matter of preference.
expenditure information retrieval. Use of either process can be encouraged if comparability of estimates using global and specific questions is desired.

Rigorous scrutiny needs to be given to the “more is better” assumption for reduction of measurement error. Although specific questions have been found to lead to underreporting, obtaining higher reports does not imply greater accuracy.

Ideally, expenditures for all household members will be known for a probability-based national sample of households and different questionnaire designs randomly assigned to these sample members. Failing to meet these objectives, assumptions need to be made and a common remedy is the use of multiple approaches to the evaluation of the design feature, each making a different set of assumptions. For example, multiple approaches to the estimation of measurement error can be included, such as obtaining replicate measures from the respondents, using reverse record checks from obtained receipts after the interview, obtaining reports from other household members, and modeling changes in reported expenditures across waves.

Designs that exploit the panel nature of the CE can be considered in order to obtain the desired information with minimal respondent burden—by carefully balancing a mix of global and specific questions. Global questions can be used in a matrix survey design where some, but not all, specific questions are also asked. In a basic design, specific follow-up questions can be asked only on a random subset of purchases reported to a global question. The probabilities of asking a particular specific question can vary across respondents and modules in order to optimize the utility of the collected information. The burden to the respondent can also be managed at the person rather than at the interview level—specific questions in any given module may be asked only during one of the five waves (or four waves if the first is not to be used). Such burden reduction optimization problems have received attention in the past (e.g., Tortora and Crank, 1978) but have not seen wide use in household surveys.

Finally, the broader scientific community can be used not just for feedback on how CE data are used, but also to conduct analyses focused on the survey’s methodology. Granting free access to the CE data for methodological research, including paradata (data about the survey process to include interviewer observations, call records, and question timing data), and releasing datasets from any experiments can be beneficial to the future of the CE for a number of reasons. Unfortunately, field experiments on large national surveys are seldom released to the research community as public use files when they are not part of the main data collection and although they have served their purpose in answering the key *a priori* questions, much can be gleaned from further analysis with different perspectives. Similarly, the release of paradata can be valuable for methodological studies and at least for a subset of paradata elements, NCHS and the U.S. Census Bureau have been able to release such data for the National Health Interview Survey while protecting respondent confidentiality. These data are beginning to prove their usefulness (e.g., Bates, Dahlhamer and Singer, 2008; Dahlhamer and Simile, 2009) and hopefully more
surveys will join—and a broader array of paradata elements will begin to be released in the future.
References


Appendix

Section 9, Part A - Clothing

Section 9, Part A deals with purchases of clothing for persons age 2 years old and older. IMPORTANT: The Census Bureau does not release to the Bureau of Labor Statistics any confidential information such as names and addresses. This information is only used during the course of the interview.

Now I am going to ask you about clothing expenses. You may find it helpful to refer to receipts, credit card statements or other records to answer the questions.

1. Enter 1 to Continue

Since the first of the reference month, have you or has any member of your household purchased any of the following items, for persons age 2 and over either for members of your household or for someone outside your household?
* Read each item on list.

1. Coats, jackets or furs
2. Sport coats or tailored jackets
3. Suits
4. Vests
5. Sweaters or sweater sets
6. Pants, jeans, or shorts
7. Dresses
8. Skirts
9. Shirts, blouses, or tops
10. Undergarments
11. Hosiery
12. Nightwear or loungewear
13. Accessories
14. Swimsuits or warm-up or ski suits
15. Uniforms, for which the cost is not reimbursed
16. Costumes
17. Footwear

99. None/No more items

[For definitions Information Booklet]

[For each positive report above, ask detailed questions]

What did you buy?
* Describe briefly the item purchased. [enter text] _____________

Was this (were these) purchased for someone inside or outside of your household?

1. Inside your household
2. Outside your household

For whom was it purchased?
* Enter all that apply, separate with commas. [enter text] _______________

For whom was this purchased?
* Enter all age/sex categories that apply to the purchase, separate with commas.

40. Male 16 and over
41. Female 16 and over
42. Male 2-15
43. Female 2-15
44. Children under 2 years old

* Enter name of person. [enter text] _______________

How many did you purchase?

* Enter number of identical items purchased, [enter value] _______________

When did you purchase it/ THEM?[enter text] _______________

How much did it/they cost?[enter value] _______________

Did this include sales tax?

1. Yes
2. No

* Enter 'C' for a combined expense.

1. C
2. Not combined

What other clothing is combined with the item?

* Enter all that apply, separate with commas.

1. Coats, jackets, or furs
2. Sport coats or tailored jackets
3. Suits
4. Vests
5. Sweaters or sweater sets
6. Pants, jeans, or shorts
7. Dresses
8. Skirts
9. Shirts, blouses, or tops
10. Undergarments
11. Hosiery
12. Nightwear or loungewear
13. Accessories
14. Swimsuits or warm-up or ski suits
15. Uniforms, for which the cost is not reimbursed
16. Costumes
17. Footwear
177. Miscellaneous combined expense (unable to specify)

For definitions Information Booklet »

Did you purchase any other clothing?

1. Yes [REPEAT ALL FOLLOW-UP QUESTIONS]
2. No

Information Booklet for Section 9a - CLOTHING AND SEWING MATERIALS
Part A - Clothing (Do not include here -- clothing for children under 2 years of age.)

1. - COATS, JACKETS, AND FURS, including -

   down vest       raincoat
   fur coat        shawl
   jacket          winter coat
   outerwear

2. - SPORT COATS AND TAILORED JACKETS, including blazers

3. - SUITS, including -

   formal suit       woman's suit (of two or more pieces)
   man's suit (of two or more pieces)

4. - VESTS (purchased separately, not with a suit), excluding sweater vests and down vests

5. - SWEATERS AND SWEATER SETS, including -
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6. - PANTS, JEANS, OR SHORTS, including -

- blue jeans
- dress slacks
- overalls
- casual pants
- jump suit
- short sets
- dress pants
- maternity pants
- shorts

Do not include any athletic shorts.

7. - DRESSES, including -

- formals or semi-formals
- two-piece dresses
- maternity dresses
- wedding gown

8. - SKIRTS, including skorts

Do not include any tennis skirts, golf skirts, or other athletic skirts.

9. - SHIRTS, BLOUSES, AND TOPS, including -

- dress shirts
- knit blouses
- sport shirts
- maternity tops
- T-shirts
- tops

Do not include any sweat shirts or athletic shirts.

10. - UNDERGARMENTS, including -

- bras
- slips
- undershirts
- shapewear
- thermal underwear
- underwear

11. - HOSIERY, including -

- knee-highs
- panty hose
- socks
- tights

12. - NIGHTWEAR AND LOUNGEWEAR, including -

- night gown
- pajamas
- robe
- house coat
- night shirt
- thermal sleeping garments

13. - ACCESSORIES, including -

- apron
- fold-up rain accessories
- mittens
- wallet
- bandanas
- gloves
- non-prescription sunglasses
- umbrella
14. - SWIMSUIT OR WARM-UP OR SKI SUITS, including -

- athletic shirt
- jogging suit
- swimwear
- athletic shorts
- leotards
- swimwear accessories
- hunting wear
- sweatshirt
- snow and ski suit

Do not include any sports uniforms.

15. - UNIFORMS, other than sport, for which the cost is not reimbursed, including shirts, pants, suits, service apparel, such as: medical, barber, boy or girl scout, mechanic, waiter/waitress, plumber and lab smocks, and military apparel.

16. - COSTUMES, including costumes for dance, ballet, Halloween, etc.

17. - FOOTWEAR, including -

- bedroom slippers
- dress shoes
- boots
- sandals
- casual shoes
- sneakers, jogging, aerobic, basketball, tennis shoes

Do not include specialized athletic shoes such as for football, soccer, bowling, biking, or baseball.